

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Reports No. 50-456/92006(DRSS); 50-457/92006(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 25 - March 13, 1992

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

3-19-92
Date

Accompanied By: G. Smith
NRC Intern

Reviewed By: *M. C. Schumacher*
M. C. Schumacher, Chief
Radiological Controls and
Chemistry Section

3/19/92
Date

Inspection Summary

Inspection on February 25 - March 13, 1992 (Reports No. 50-456/92006(DRSS); 50-457/92006(DRSS))

Areas Inspected: Routine inspection of the radiation protection program (Inspection Procedure (IP) 83750), the solid radioactive waste management and transportation of radioactive materials program (IP 86750), and the waste generator requirements of 10 CFR 20.311 and 10 CFR 61 (IP 84850).

Results: The licensee's radiation protection, solid radioactive waste management, and transportation programs, and its implementation of the waste generator requirements of 10 CFR 20.311 and 10 CFR 61 were adequate. The licensee has a well-developed certification program for staff health physicists (Section 3). Unexpectedly high values for Fe-55 reported for waste stream analyses and in liquid effluents are being evaluated by the licensee (Section 6). One non-cited violation involving the reporting of incorrect data was identified (Section 6).

DETAILS

1. Persons Contacted

+K. G. Bartes, Onsite Nuclear Safety, Administrator
+A. J. D'Antonio, Nuclear Quality Programs (NQP), Superintendent
+R. Flessner, PWR Operations--Station Partner
J. Gosnell, Radwaste Planner
+P. Habel, Unit O, Operating Engineer
+A. R. Haeger, Regulatory Assurance Supervisor
D. Johnson, Radwaste Dayshift Supervisor
+K. L. Kofron, Station Manager
+M. Kurth, Radwaste Shipping Coordinator
+R. D. Kyrouac, NQP Supervisor, Downers Grove
+J. M. Lewand, Regulatory Assurance, NRC Coordinator
+D. E. O'Brien, Technical Superintendent
E. M. Roche, Health Physics Services Supervisor
+R. F. Rysner, NQP Inspector
D. Staney, Site Supervisor, Scientific Ecology Group (SEG)
@+R. L. Thacker, Lead Health Physicist, Technical Group

The inspector also spoke with other licensee personnel.

S. G. DuPont, NRC Senior Resident Inspector
R. A. Kopriva, NRC Resident Inspector
D. J. Hartland, NRC Reactor Engineer
V. L. Axelson, NRC Deputy Director, Division of Radiation Safety and Safeguards

+Denotes those present at the onsite exit meeting on March 3, 1992.

@Denotes those contacted by telephone on March 13, 1992.

2. General

This was a routine inspection of the radiation protection (RP) program, the solid radioactive waste (radwaste) management and transportation of radioactive materials program, and the licensee's compliance with the waste generator requirements of 10 CFR 20.311 and 10 CFR 61.

3. Organization, Training, and Qualifications of Personnel (IPs 83750, 84850, and 86750)

a. Solid radwaste and shipping: The training and experience of most of the individuals involved in this area had been reviewed during previous inspections (Inspection Reports No. 50-456/90024(DRSS); 50-457/90025(DRSS), 50-456/91005(DRSS); 50-457/91005(DRSS)). One major change was the recent appointment of a licensed operator to the radwaste planner position. Many of the duties of this position had formerly been assigned to the radwaste dayshift supervisor, but because of high work load, an additional person was needed. Recently, the planner has been heavily involved in the station's nascent efficient curie reduction program and a dry active waste (DAW) reduction program.

The inspector also noted during a review of oversight activities in solid radwaste and shipping that two of the NQP auditors who are currently assigned to this area have not had the three-day training course on radwaste shipping routinely given at the licensee's training center. Although the auditors are not required to take the course, it would enhance their knowledge of the numerous requirements involved in radwaste shipping.

- b. Health Physics Supervisor Qualifications--(Closed) Concern (AMS RIT-92-A-0018): The inspector reviewed a concern received by the NRC that a named, recently appointed health physics supervisor (foreman) was unqualified.

Discussion--Technical Specification (T/S) 6.3.1 requires that each member of the Braidwood staff, with certain exceptions, meet or exceed the minimum qualifications of ANSI N18.1-1971. The qualification requirements for the foreman position are a high school diploma or equivalent and a minimum of four years experience in the craft or discipline he supervises. A review of the foreman's work history at Braidwood and discussions with him and other members of the RP staff indicated that he met the requirements for his current position. The foreman was a U. S. Navy Engineering Laboratory Technician (ELT) aboard a nuclear-powered submarine for three years, and since mid-1988 was an instructor in the Braidwood training department, where he provided health physics training to radiation protection technicians (RPTs) and developed and taught an advanced radiation worker training course (Inspection Reports No. 50-456/91010(DRSS); 50-457/91008 (DRSS)).

Because he did not have commercial nuclear power experience as an RPT, unlike the other five RP foremen at Braidwood, the licensee was modifying its foreman training signoff package for this individual to include additional signoffs related to RPT tasks. This package was originally developed assuming this experience. The licensee estimated that the individual would complete the modified training program in 10 weeks, compared to the six weeks typically required by individuals with Braidwood RPT experience.

In addition, discussions with RP management indicated sensitivity to the qualifications requirement in light of a Notice of Violation that was issued in early 1991 at Zion (Inspection Report Nos. 50-295/91003(DRSS); 50-304/91003 (DRSS)).

Findings--The concern was not substantiated. Through previous related work experience, the individual met the minimum requirements in the T/S. The modification of his training package to account for his lack of experience as a commercial power plant RPT will provide added assurance that he will effectively perform his duties as a foreman.

- c. Other RP staff: The station currently has 31 RPTs, of which two have recently begun the classroom portion of the training program and 18 are fully qualified per ANSI N18.1-1971. In addition, there are six non-degreed engineering assistants (EAs), seven degreed health physicists, and the radiation protection manager (RPM). As with the foremen, there is a training signoff package for the EAs. For the health physicists, the licensee has expended additional effort and developed an extensive task matrix and training program similar to its industry-accredited program for RPTs. The qualifications of the RPM were previously reviewed (Inspection Report Nos. 50-456/91025 (DRSS); 50-457/91025(DRSS)).

No violations of NRC requirements were identified.

4. Audits and Appraisals (IPs 84850 and 86750)

The inspector reviewed the reports of several detailed audits and numerous field monitoring records (surveillances) related to shipping and solid radwaste. No major problems were identified in or with these reports. Audit No. 20-91-14, conducted June 28 to July 12, 1991, reviewed the onsite solid radwaste processing vendor and identified several administrative problems. These were promptly corrected by the vendor. The inspector's review of the audit report identified an instance where the auditor incorrectly referred to the total activity of two radwaste shipments in units of microcuries instead of the correct units, millicuries. This error was discussed with NQP management.

The inspector also reviewed Audit No. G-89-227, conducted on May 30-31, 1989, of Science Applications International Corporation (SAIC), the vendor who provided 10 CFR 61 analyses services for the six Commonwealth Edison nuclear stations. The audit was conducted by an experienced quality assurance (QA) auditor and a corporate chemist, and concentrated on quality control (QC), QA, training, and laboratory techniques, practice, and facilities. No major problems were identified during the audit. The next audit of SAIC is scheduled for mid-1992, as part of the licensee's triennial review of companies on its approved bidders list.

To provide an indepth, independent assessment of its 10 CFR 61 waste classification and characterization program, the licensee recently contracted with a leading industry authority in this area. This individual, who was the principal author of EPRI report NP-5983, "Assessing the Impact of NRC Regulation 10 CFR 61 on the Nuclear Industry," will review the program at the six Commonwealth Edison station and then provide a two-day training session to the staff. The results of that assessment will be reviewed during a future inspection.

No violations of NRC requirements were identified.

5. Waste Manifests and Shipping Papers (IPs 84850 and 86750)

A review of selected radwaste shipment records verified the licensee's compliance with the manifest requirements of 10 CFR 20.311(b), (c), and (d)(5)-(7), and the shipping paper requirements of 49 CFR 172.200-204. In

recent years, the station has often used the Quadrex facility in Tennessee for supercompaction or decontamination of DAW and the Richland, WA burial site for dewatered resin, filters, and other DAW. Preprinted manifests supplied by US Ecology Nuclear have been used for these shipments. For shipments of contaminated laundry and other non-radwaste radioactive material, the licensee has used a radioactive material shipment record, containing the information required by 49 CFR 172.200-204.

No violations of NRC requirements were identified.

6. Waste Classification (IPs 84850 and 86750)

The licensee uses the WASTRAK computer program for classifying waste according to 10 CFR 61.55 and 49 CFR 173.403(n) and 173.431-433. In 1991, 30 of the 31 radwaste shipments were Class A, Low Specific Activity (LSA); and one was Class B, LSA. Eighteen of the shipments were spent resins or waste filters sent to Hanford; 11 were DAW sent to Quadrex; and one was DAW sent to SEG for incineration (as part of a utility-wide trial program). Prior to 1991, two Class B shipments were made; the rest were Class A.

Through independent calculations using the licensee's radionuclide concentration data, the inspector verified that several shipments were properly classified. However, a review of the licensee's Semiannual Radioactive Effluent Release Report by the inspector indicated that the Report for January to June 1991, dated August 9, 1991, incorrectly listed the Class B shipment (shipment number RWS-91-007) as a Class A shipment. This was discussed with licensee representatives who indicated the problem resulted from personal error and stated that a correction to the report would be submitted. The failure to correctly report the waste class of the shipment is a violation of Technical Specification 6.9.1.7, which in part specifies the information that must be submitted in the Report. Because the health and safety significance of the violation is minimal, it is categorized as a Severity Level V violation and is not being cited because the criteria specified in Section V. A. of the Enforcement Policy were satisfied.

Currently, the station has identified ten waste streams: DAW, Unit 1 primary resin, Unit 2 primary resin, Unit 1 secondary resin, radwaste resin, Unit 1 primary filters, Unit 2 primary filters, radwaste filters, secondary filters, and sewage water treatment plant soil. Samples of all the waste streams except DAW are sent to SAIC annually for analysis for those isotopes not readily quantifiable with gamma spectroscopy. DAW samples are sent twice a year. Braidwood-specific scaling factors are developed by SAIC relating the difficult to measure isotopes to common gamma-emitters such as Co-60 and Cs-137. Generic scaling factors are used occasionally. Since late-1990, SAIC reported scaling factors for Fe-55/Co-60 and Pu-239/Co-60 for various waste streams (but particularly DAW) that were up to 100 times larger than previous factors. The change in the Fe-55/Co-60 factor had the potential to affect the waste class; whereas the Pu-239/Co-60 did not. The licensee's subsequent review determined the factors were erroneous because there had been no reactor coolant or radwaste system changes that could account for the increase and there were no similar factors reported in industry data. Because

of this, factors generated in mid-1990 were used instead. According to the licensee, this matter will be reviewed further by a recently hired consultant, discussed in Section 4. The results of that review will be evaluated during a future inspection (Open Item No. 50-456/92006-01(DRSS); 50-457/92006-01(DRSS)). In part because of the disputed scaling factors, the 10 CFR 61 samples for 1992 were sent to a different vendor.

Discussion with the licensee and a review by the inspector of the licensee's Semiannual Radioactive Effluent Release Reports for the 1990 and 1991 identified that the total activity of Fe-55 released in liquid effluents increased by a factor of 5.8 from 247 mCi in 1990 to 1.4 Ci in the first three quarters of 1991, whereas the total activity of fission and activation products released only increased by a factor of 1.6. As with the 10 CFR 61 samples, SAIC analyzes liquid effluent samples for Fe-55. The large increase in Fe-55 in liquid effluent was discussed with the licensee who agreed to review the effluent release data in more detail to determine if the quantity is valid. The results of that review will be evaluated during a future inspection (Open Item No. 50-456/92006-02(DRSS); 50-457/92006-02(DRSS)).

During the inspector's review of the scaling factors program, it was noted that there has been three different health physicists assigned to the area in the past three years. This relatively high turnover has limited the program from attaining the station's intended level of development, although regulatory requirements have been met.

One non-cited violation of NRC requirements was identified.

7. Waste Form and Characterization (IPs 84850 and 86750)

A review of procedures and discussions with the licensee indicated that the waste form and characterization requirements of 10 CFR 61.56 were met. Class A is typically shipped unsobilized. The Class B shipment in early 1991 was shipped unstable in a polyethylene high-integrity container (HIC), but stabilized at the burial site by burial in a concrete enclosure, in accordance with the State of Washington Certificate of Compliance No. WN-EB-02. Resin is dewatered in accordance with an NRC-approved (approval dated October 31, 1986) topical report, STD-R-05-011, "Hittman Mobile Incontainer Dewatering and Solidification System (MDSS)," Revision 2, and the vendor's process control program, STD-PCP-03-003. These documents have been reviewed by the station's onsite review committee and are controlled as station procedures.

The inspector also reviewed the discussion of radwaste solidification in the licensee's PCP (Braidwood Administrative Procedure, BwAP 371-1, Revision 3, dated November 1, 1989) and in Section 11.4.4. in the Updated Final Safety Analysis Report (UFSAR). Although these documents briefly reference the possible use of vendor mobile equipment for solidifying waste, detailed description for the installed Stock Equipment Company polymer solidification system is provided and implies that that system is used for solidification. However, since initial startup of the plant, solidification has been done once (with cement) and with vendor equipment. Moreover, discussions with mid-level personnel indicated that the installed system would likely not be used in the future and that a vendor

would be used for any necessary solidification. The need to revise the PCP and UFSAR to reflect current station practice was discussed at the exit meeting (Section 11). Station management agreed to review the matter further. The results of that review will be evaluated during a future inspection (Open Item No. 50-456/92006-03(DRSS); 50-457/92006-03(DRSS)).

No violations of NRC requirements were identified.

8. Labelling, Marking, and Placarding (IPs 84850 and 86750)

Through a review of procedures and records and discussions with personnel, the inspector verified that radwaste intended for shipment to a burial facility and other radioactive material intended for shipment is labeled, as appropriate, in accordance with 10 CFR 20.311(d)(1) and 49 CFR 172 Subpart E and is marked in accordance with 49 CFR 172 Subpart D and 49 CFR 173.425(b)(8). Vehicle placarding requirements of 49 CFR Subpart F and 173.425(b)(7) were also met.

No violations of NRC requirements were identified.

9. Tracking of Waste Shipments and Disposal Site License Conditions (IP 84850)

Licensee procedures and records indicated the system for tracking waste shipments and notifying the NRC of missing shipments was adequate. The licensee stated that, in 1991 to date, there has been no problems with missing shipments, late arrival of shipments, or delayed acknowledgement of receipt of shipments. In addition, adequate procedures were in place to ensure that the applicable disposal site and waste processor license conditions were met.

No violations of NRC requirements were identified.

10. Tours (IPs 83750, 84850, and 86750)

Tours were conducted of the solid radwaste processing building, the liquid and gaseous radwaste control room, and other licensee facilities. No problems were identified. Except for a large accumulation of contaminated outage equipment in the decon facility, housekeeping and material condition were good. Dose rate measurements made by the inspector in various buildings and around a sea-van of DAW awaiting shipment identified no discrepancies with licensee survey information. Observations of the changeout of a boron recycle system demineralizer afterfilter indicated the work was well planned and executed. Dose rates on the filter were as high as 12 Rem per hour.

No violations of NRC requirements were identified.

11. Exit Meeting

The scope and findings of the onsite inspection were discussed with licensee representatives (denoted in Section 1) on March 3, 1992. Specifically, the inspector discussed the concern over the qualifications of the RP foreman (Section 3), audit activities in solid radwaste and

shipping (Section 4), the need for the PCP and UFSAR to reflect current station practice (Section 7), and the recent selection of a consultant to review the station's 10 CFR 61 program (Section 6). In addition, the inspector stated that the specific contents of several vendor proprietary documents reviewed during the inspection would not be used in the inspection report. The concern with Fe-55 and the non-cited violation (Section 6) were discussed with a licensee representative on March 13, 1992.