

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Reports No. 50-237/91012(DRSS); 50-249/91011(DRSS)

Docket Nos. 50-237; 50-249

Licenses No. DPR-19; DPR-25

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

Facility Name: Dresden Nuclear Power Station, Units 2 and 3

Inspection At: Dresden Site, Morris, Illinois

Inspection Conducted: April 17-23, 1991

Inspectors: M. A. Kunowski for 5-16-91
M. A. Kunowski Date

N. Shah for 5-16-91
N. Shah Date

Accompanied By: M. C. Schumacher 5-16-91
(April 23, 1991) M. C. Schumacher Date

Approved By: M. C. Schumacher 5-16-91
M. C. Schumacher, Chief Date
Radiological Controls and
Chemistry Section

Inspection Summary

Inspection on April 17-23, 1991 (Reports No. 50-237/91012(DRSS);
50-249/91011(DRSS))

Areas Inspected: Special, unannounced inspection of the circumstances of the unintended release of approximately 9680 gallons of liquid radioactive waste from an outdoor, underground pipe (Inspection Procedure (IP) 84750). The inspectors also reviewed the status of several large-scale radioactive waste (radwaste) projects.

Results: The liquid waste, which contained approximately 16 millicuries of mixed activation products, apparently leaked from a corroded portion of the pipe used when the contents of an outdoor radwaste holding tank are recirculated. The contents were being recirculated in preparation for a routine release to the discharge canal when the leak was identified. No offsite exposure problems are expected and no violations were identified;

however, there was an approximately three-week delay in the licensee's radiological assessment of the spill. The progress of the radwaste projects, which include the upgrade of equipment in the radwaste building and solidification of Unit 1 chemical decontamination waste, is generally adequate. Many of these projects are high exposure and resource intensive undertakings that pertain to problems that arose, or radwaste that was generated, over five years ago.

DETAILS

1. Persons Contacted

- +T. Bennett, Assistant Radwaste Coordinator
- +G. Bergan, Onsite Nuclear Safety Group
- +E. D. Eenigenburg, Station Manager
- +P. Hamby, Principal Health Physicist, Nuclear Services
Radiation Protection
- +J. Kotowski, Production Superintendent
- +D. Lowenstein, Regulatory Assurance
J. J. McGowan, Radwaste Supervisor
- +W. Morgan, Nuclear Operations (Commonwealth Edison Corporate)
- +T. R. Murphy, Radwaste System Engineer, Technical Staff
- B. Nielsen, Radwaste Upgrade Project Health Physicist
- +D. Saccomando, Health Physics Services Supervisor
- +R. W. Stobert, Operating Engineer, Radwaste Coordinator
- +M. Vincent, Chemistry Services (Commonwealth Edison Corporate)
- +R. L. Williams, Senior Nuclear Quality Programs Inspector

The inspectors spoke with other licensee and contractor personnel during the inspection.

- +M. S. Peck, NRC Resident Inspector
- +M. C. Schumacher, NRC Section Chief, Radiological Controls
and Chemistry Section

+ Denotes those present at the exit meeting on April 23, 1991.

2. General

Special, unannounced inspection to review the circumstances of the loss of approximately 9680 gallons of liquid radwaste from an outdoor, underground pipe. The inspectors also reviewed the status of several major radwaste projects.

3. Liquid Radwaste Leak

On March 12, 1991, the liquid radwaste contents (approximately 20,680 gallons) of the outdoor 'A' Floor Drain Sample Tank were being recirculated in preparation for sampling and release to the station's discharge canal when the Radwaste Control Room operator noticed a decrease in level indication. Recirculation was halted, but the level continued to decrease. Valve lineups and valve operations were verified as the radwaste operations group attempted to determine the source of the leak. On March 15, 1991, the remaining waste was transferred to another tank in the radwaste building and efforts to locate the leak continued. The leak was eventually attributed to an underground section of the 3" diameter carbon steel pipe used for tank recirculation. There was no indication aboveground where the leak was located. In total, approximately 9680 gallons of radwaste containing 15.81 millicuries of mixed activation products escaped from the leak into the ground surrounding the pipe. Because this section of the pipe is colocated with

numerous other pipes for the six outdoor radwaste tanks, the licensee decided not to excavate and the pipe was abandoned in place. The licensee stated that an aboveground replacement pipe would be installed and that the engineering evaluation would include allowing for the installation of additional pipes should leaks develop in the remaining underground pipes. The licensee also stated that it planned to submit a request pursuant to 10 CFR 20.302 to the State of Illinois to leave the contaminated soil in place.

Sampling conducted in early April of several onsite points and of Sampling Point D-23 (the Thorsen Well) of the Environmental Sampling Program identified no elevated radioactivity attributable to the leak. The licensee stated that although the onsite groundwater flow is north to the Illinois River, the normal discharge point for liquid radwaste releases, it has increased the sampling frequency of the Thorsen Well, located about 0.25 mile south of the plant, from quarterly to monthly for the next six months. Because of the relatively small quantity of radioactive material involved and the large distance through which it would have to migrate, the offsite dose consequences of the leak are minimal. Documentation of onsite groundwater flow was not available during the inspection and will be reviewed, with the Thorsen Well sampling data, at a later date.

The inspectors' review indicated that sampling of onsite and offsite locations did not begin until about three weeks after the possibility of a leak was identified. The delay was due to the radwaste group not promptly informing the health physics (HP) group of the possibility of the leak. The licensee stated that radwaste personnel have since been instructed to promptly notify HP for future similar problems.

The licensee's corrective actions for this problem seem appropriate. No deviations or violations of NRC requirements were identified.

4. NS-1 Project

As discussed in NRC Inspection Reports No. 50-237/91002(DRSS); No. 50-249/91002(DRSS), the licensee recently initiated a project to solidify and ship for burial the waste generated in mid-1984 during the chemical decontamination of Unit 1. This project is referred to as the NS-1 project by the licensee for the proprietary chemical used in the decontamination. The waste consists of approximately 17000 gallons of liquid waste (concentrated from the original 400,000 gallons of decon solution and rinse water) and 2500 gallons of resin. The waste will be solidified in 55-gallon drums and shipped to a burial site in Beatty, Nevada.

The inspectors attended a planning meeting for the project and observed a good exchange of information between corporate, station, and contractor personnel. An individual with many years of health physics and emergency preparedness experience, including HP coordination of the Dresden Unit 3 recirculation pipe project in 1984, has been hired as the project health physicist. The station employee who was formerly the radwaste shipping coordinator is now the NS-1 project manager. No project dose estimate has been established to date, however, a project schedule has been developed.

Solidification and shipment are expected to begin in September, 1991, and the project should be completed by the spring of 1992.

5. Radwaste Upgrade Project

This project involves the replacement of corroded/eroded components of portions of the liquid radwaste system in the radwaste building. The project began in early 1989 and had a projected person-rem total of 1958 for the four-year time span of the project. A change of contractors early in the project and Unit outage demands have delayed completion of scheduled work; however, the dose accumulated for completed work has been low (approximately 120 person-rem) and the project dose estimate has been revised to around 400 person-rem. The number of personnel contaminations has also been low. Overall, project radiological controls have been well implemented. The licensee estimates that the project is 20% complete and will be finished near the end of 1993.

6. Sludge Tank Room Cleanup

As discussed in Inspection Reports No. 50-237/91002(DRSS); No. 50-249/91002(DRSS), the completion of the cleanup of the sludge tank room has been delayed twice, because of problems with the robot used for the cleanup and with personnel issues. During the current inspection, the licensee stated that the personnel issues have been resolved and the remaining cleanup will be performed manually. The licensee indicated that the cleanup should be completed by June 30, 1991.

The licensee also stated that an evaluation of two other limited access areas in the Radwaste Building have been completed and that no cleanup efforts are planned because of the estimated 20 person-rem per area cost of the cleanup and the lack of need to enter these areas. One area is the Waste Concentrator Vaults, which has not been used for over 10 years. The other is the Main Concentrator Waste Tank Vault, in which the tank is currently used to hold evaporator bottoms prior to processing by the onsite radwaste processing vendor, but which is entered only infrequently. According to the licensee, both areas have approximately 6-12 inches of dust and solid material on the floor, and the Waste Concentrator Vaults area has standing water. The licensee added that statements of long-time plant personnel indicated that the water may be an ephemeral accumulation of rainwater. At the exit meeting (Section 9), the licensee stated that a letter describing the proposed plan for these two areas will be submitted to the NRC shortly.

7. Stockpile of Drums of Radwaste in Excess of 5 Years

As discussed in Inspection Reports No. 50-237/91002(DRSS); 249/91002(DRSS), the licensee has approximately 210 55-gallon drums of solidified waste stored in the south bay of the Radwaste Building. The drums apparently date from 1979 to 1985. Specific information on the type of waste, activity, and date of waste generation and solidification for most of the drums is not available. According to the licensee, the physical condition of some of these drums is poor. Dose rate information indicates that several of the drums have contact readings of several R/hour.

A preliminary evaluation by the licensee indicated that analysis of the drum contents to satisfy 10 CFR 20.203 and burial site requirements, repackaging, shipment, and burial of the drums would cost between \$1-2 million. The licensee's tentative plans are to start work on the project in May, 1991, and complete it by December 1992. No project person-rem estimate or detailed schedule have been developed to date.

8. Contaminated Soil

Over the years in which Unit 1 and Units 2 and 3 have operated, operational events have resulted in low level contamination of soil in several onsite areas. Although some of the soil has been shipped to burial facilities, there is still approximately 1 million cubic feet onsite. This includes one pile of approximately 60,000 cubic feet (containing an estimated 6 millicuries of Co-60 and Cs-137) that was generated from various events over the years; one pile of 10,000 cubic feet (containing an estimated 1 millicurie of Co-60 and Cs-137) that was generated during an isocondenser actuation in March, 1989; 872,000 cubic feet of unexcavated soil (containing an estimated 110 millicuries of Co-60 and Cs-137) that was generated around late 1984 when leaks developed in the radwaste discharge line; and several other small areas of contaminated soil near the Units 2 and 3 isocondenser exhausts and the Unit 1 radwaste building. The licensee has not yet estimated the amount of contaminated soil that resulted from the March 12 radwaste recirculation pipe leak discussed in Section 3.

According to the licensee, its request for insitu onsite disposal of the 60000 cubic foot pile had been submitted to the State of Illinois in 1988, but approval has not been received. In addition, a similar request is being prepared for the radwaste discharge line soil.

9. Exit Meeting

The inspectors met with the licensee representatives denoted in Section 1 at the conclusion of the inspection to discuss the findings and the likely content of the inspection report. In particular, the inspectors discussed the delay in notifying HP personnel of the possibility of the leak from the recirculation line, the need for proper sampling after onsite releases, and the need for pursuing onsite disposal authorization with the State of Illinois. The inspectors also discussed observations of the other radwaste projects reviewed during the inspection. Finally, the inspectors requested the licensee to meet with Region III management to further discuss these projects and to provide information on the success of its efforts in radwaste in general. The licensee acknowledged the inspectors comments and stated that it welcomed the opportunity to discuss these matters further. The licensee identified no likely inspection report material as proprietary.