U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Reports No. 50-237/93032(DRSS); 50-249/93032(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 Generating Station, Units 2 and 3

Inspection At: Dresden Site, Morris, Illinois

Inspection Conducted: November 22 through December 3, 1993

Inspectors: M. A. Kunowski 12-23-93
M. A. Kunowski Date

M. A. Kunowski for 12-23-93
N. Shah Date

Approved By: M. A. Kunowski for 12-23-93
J. W. McCormick-Barger, Chief Date
Radiological Programs Section 1


Summary

Inspection on November 22 through December 3, 1993 (Reports No. 50-237/93032 (DRSS); 50-249/93032(DRSS))

Areas Reviewed: Routine inspection of the radioactive material shipping and solid radioactive waste (radwaste) programs (Inspection Procedure (IP) 86750) and the radiation protection program (IP 83750), particularly the status of corrective actions for previously identified problems with exposure control review of outage emergent work and outage contamination cleanup efforts. In addition, licensee actions on the identification of two recently discovered potentially unmonitored release paths were reviewed (IP 84750).

Results: Overall, implementation of the radioactive material shipping program was good. In the solid radwaste area, the licensee began a program to reduce the quantity of dry-active waste generated at the station for burial. In radiation protection, some progress was made on correcting the previously identified problems with emergent work planning and contamination control, but much work remains to be done before the upcoming (March 1994) Unit 3 refuel outage (Section 2). One violation was identified for the inadequate survey of 20 drums of a contaminated oil/water mixture that were released from the protected area as uncontaminated (Section 6) and one violation was identified

for the several instances of workers not wearing the dosimetry required by the radiation work permit (Section 5). A restructured disciplinary policy for station employees who do not follow radiation protection (RP) requirements was recently instituted. The station manager's imposition of discipline under this policy on himself and the maintenance manager was a cogent demonstration of the licensee's resolve to correct the problem of non-adherence to RP requirements (Section 5). The identification by the licensee of contamination in two outdoor oil separator pits and of water drainage from the contaminated Unit 1 radwaste tunnel suggested the possibility of unmonitored releases of radioactive material. The licensee's corrective actions for these problems are continuing and will be reviewed during a future inspection (Section 7).

## DETAILS

1. Persons Contacted

Commonwealth Edison Company

D. Ambler, Executive Assistant to the Site Vice President
E. Carroll, Chemistry Supervisor
R. Flahive, Technical Services Superintendent
L. Jordan, Health Physics Services Supervisor
G. Kusnik, Quality Control
R. Robey, Director, Site Quality Verification (SQV)
R. Rysner, SQV
J. Shields, Regulatory Assurance Supervisor
R. Stachniak, Operating Engineer
D. Szumski, Mechanical Maintenance Master Mechanic
D. Wheeler, Construction Superintendent, Site Engineering and Construction (SEC)
R. Wroblewski, Regulatory Assurance, NRC Coordinator

U. S. Nuclear Regulatory Commission

J. McCormick-Barger, Chief, Radiological Programs Section 1
R. Roton, Resident Inspector

The individuals listed above attended the exit meeting on December 3, 1993.

Other plant personnel were contacted during the inspection.

2. Licensee Action on Previous Inspection Findings (IP 84750)

(Open) Inspection Followup Item (IFI) No. 50-237/93016-02(DRSS); 50-249/93016-02(DRSS): Licensee actions following discovery of corrosion in outdoor radwaste storage tanks. Evidence of corrosion, but no leakage, was identified following inspection of the "A" Waste Storage Tank (WST). The "A" WST will be repaired by March 1994, and inspection of the remaining tanks should be completed by 1995. In the interim, the licensee increased the leakage test frequency from semi-annually to quarterly for all the tanks, and now requires an external visual inspection of the tank each shift. This item will be reviewed during a future inspection.

(Open) IFI No. 50-237/93022-01(DRSS); 50-249/93022-01(DRSS): Inspector to review licensee's efforts to strengthen inplant contamination control. The licensee developed and presented a training course for station laborers on proper area decontamination techniques. This course will be given to other cleanup crews hired for the Unit 3 refueling outage (D3R13) scheduled for March 1994. The licensee also decided to have one individual coordinate the activities of the several cleanup groups that will be onsite during the outage. As of the end of the

inspection, that individual had not been named. Further licensee action in this area will be reviewed during a future inspection.

(Open) IFI No. 50-237/93022-02(DRSS); 50-249/93022-01(DRSS): Inspector to review licensee's efforts to improve exposure control planning for emergent outage work. As described in a letter from the licensee dated September 17, 1993, improvements have been made in the upfront involvement of the radiation protection department (RP) in the work planning and control process. In addition, the inspector noted good support effort to the station ALARA (as-low-as-reasonably-achievable) group from the SEC and maintenance department ALARA coordinators (both experienced contractors). However, the inspector noted that a September 10, 1993, "scope freeze" date (approximately six months before the outage) for D3R13 did not apply to corrective maintenance jobs. The freeze for corrective maintenance was near the end of November 1993. Radiation protection personnel indicated that if three recently created positions on the ALARA staff are filled and work packages are routed to the ALARA group by early February, adequate preparations could be made for the approximately 2166 outage work requests scheduled for the outage. Work control personnel indicated that an imminent revision to the work control administrative procedure would incorporate corrective maintenance work in the six-month "scope freeze." Further licensee action in this area will be reviewed during a future inspection.

No violations of NRC requirements were identified.

3. Audits and Appraisals (IPs 83750 and 86750)

The inspector reviewed selected audits of the solid radioactive waste (radwaste) and shipping program. A licensee audit of Diversified Technologies, and Nuclear Procurement Issues Committee audits of Chem-Nuclear and Scientific Ecology Group, were found to be technically sound, performance based, and in accordance with the corporate Quality Assurance Plan, as were surveillances of radwaste activities performed by SQV. The inspector noted that the radwaste group was knowledgeable of audit findings and the vendor's program.

No violations of NRC requirements were identified.

4. External Exposure Control (IP 83750)

The licensee recently completed a 36-day forced outage on Unit 2 that involved work on the transversing incore probe system and the main steam isolation valves. The 71.8 person-rem (0.718 person-Sievert) incurred raised the station's dose total for 1993 to approximately 1637.5 person-rem (16.375 person-Sievert). For 1994, the licensee estimated the station dose will be approximately 938 person-rem (9.38 person-Sievert), of which about 650 person-rem (6.5 person-Sievert) will be taken during D3R13, scheduled for March 12 to June 12, 1994. Radiological controls and administrative changes for the outage that should help reduce dose or improve the effectiveness of the RP group include (1) a three-step chemical decontamination, (2) an improved worker dose extension policy,

(3) a revision to the out-of-service tagging procedure to allow the selective return of components to service, (4) a computer program for temporary lead shielding analyses for the shutdown cooling and core spray systems (previously, only software for the reactor water cleanup system was available), and (5) an addition to the RCA/RWP access control program to allow assigning dose to specific work requests.

Discussions with the licensee indicated that the RP review of daily non-outage dose had improved (this was previously identified as a weakness, NRC Inspection Reports No. 50-237/93022(DRSS); 50-249/93022(DRSS)). The inspector also noted a need to improve the process of establishing the annual dose goals. Station departments were not involved in the initial development of the 1994 department dose estimates, instead deferring the task to the ALARA group.

During tours of the plant, the inspector made independent dose rate measurements and verified that doors to high radiation areas were controlled as required by the technical specifications. No discrepancies were found with postings and station survey data, and doors were controlled as required. A review of the licensee's problem reporting system indicated that earlier in 1993 there were several instances where doors to areas controlled as high radiation areas were not secured as required. Discussions with the licensee and a review of survey data indicated that dose rates in these areas did not warrant locked doors. Recently, doors to two other areas controlled as high radiation areas were found unlocked: the maximum recycle mixing pump aisle, on October 14, 1993, and the radwaste mezzanine, on November 22, 1993. Circumstances of those problems will be reviewed during a future inspection (Unresolved Item No. 50-237/93032-01(DRSS); 50-249/93032-01(DRSS)).

No violations of NRC requirements were identified.

5. Radiation Worker Adherence to RP Requirements (IP 83750)

During tours of the plant, the inspector identified two examples of workers failing to wear the dosimeters required by the radiation work permit (RWP). On December 2, 1993, a station laborer working in a contaminated area in the main RCA was observed not wearing a thermoluminescent dosimeter (TLD) or an electronic dosimeter (ED). Both were required by RWP 39010A, on which the worker had signed. The dosimeters had been inadvertently left on a nearby bench outside the contaminated area boundary. On December 3, 1993, a contract pipe fitter working in the main RCA was observed wearing a TLD, but not an ED. Both were required by RWP 30142B, on which the worker had signed. The dosimeter had been inadvertently left in a clothing change area. In addition, on November 29, 1993, the licensee identified that three security personnel entered the main RCA with the required EDs, but not the TLDs. Both dosimeters were required by RWP 39013A, on which they had signed. The security personnel were infrequent visitors to Dresden and apparently did not recognize the need for the TLDs. The inspector also noted that there has been several other instances in the past two

years of workers not wearing the required dosimetry. The failure in the three instances specified above to wear the dosimetry required by the RWP is contrary to Dresden Administrative Procedure DAP 12-25, Revision 3, "Radiation Work Permit Program," which stated that personnel performing a job under a radiation work permit (RWP) will follow the requirements of the RWP and all associated documents. As such, it was a violation of Technical Specification 6.11.1, which requires that procedures for personnel radiation protection be adhered to for all operations involving personnel radiation exposure (Violation No. 50-237/93032-02(DRSS); 50-249/93032-02(DRSS)).

In response to similar recent events where workers did not follow RP requirements, the station instituted a restructured disciplinary action policy that resulted in more stringent discipline being meted out. The policy had been used on both bargaining unit and management employees, and in a demonstration of resolve to reduce the number of events, the station manager docked himself and the maintenance manager a day's pay for a minor event. The effectiveness of this policy will be reviewed during future inspections.

One violation of NRC requirements was identified.

6. Control of Contaminated Items (IP 83750)

On November 8, 1993, the licensee formed a multi-discipline task force to review and develop corrective actions for a problem with contaminated items being taken out of the RCA without the knowledge of the RP department. Six examples that occurred from August to November 1993 were reviewed by the task force and recommendations were developed. Implementation of the recommendations began near the end of the inspection and will be reviewed in detail during future inspections (IFI No. 50-237/93032-03(DRSS); 50-249/93032-03(DRSS)). The inspector noted that two previous licensee task force reviews of a similar problem with contaminated items had been conducted, one in 1989 at all six reactor sites, and one in mid-1993 at Dresden in response to a Notice of Violation (Inspection Reports No. 50-237/93007(DRSS); 50-249/93007 (DRSS)).

On November 17, 1993, the licensee detected contamination (Co-60, Cs-137, and Mn-54) in an oil-sludge-water mixture being removed from an outdoor oil separator pit, located near the Unit 2/3 discharge canal (see Section 7). A subsequent survey of 40 drums of the same mixture that had been released as uncontaminated from the protected area on or around November 16 (likely from November 11-16) readily identified contamination in 20 drums. The drums were then labelled as containing radioactive material in accordance with 10 CFR 20.203(f)(1) and returned to an RCA within the protected area. According to the licensee, the RP technician who released the 40 drums assumed that the contents of all 40 drums were uncontaminated because the initial isotopic analyses of the separator pit contents did not identify any contamination and a survey of several of the drums with a hand-held survey meter did not identify any problem. Apparently, the samples of the pit contents used in the

analyses were not representative. The failure to survey all of the drums prior to release from the protected area to ensure that they were properly labelled is a violation of 10 CFR 20.201(b) (Violation No. 50-237/93032-04(DRSS); 50-249/93032-04(DRSS)), and represented another example of ineffective corrective actions and the licensee's poor control of contaminated material.

One violation of NRC requirements was identified.

7. Unmonitored Releases of Radioactive Material (IP 84750)

As discussed above in Section 6, contamination was identified in an outdoor oil separator pit. This pit and another nearby pit in which contamination was also found in late November 1993, discharge to the Unit 2/3 discharge canal, but had not been considered potential release pathways of radioactive effluent. The licensee's preliminary evaluation after the contamination was found indicated that several drains in the main RCA of the plant feed into one or both of these pits instead of feeding into the equipment and floor treatment systems. This condition apparently existed since the plant was constructed and represented a possible pathway for the unmonitored release of radioactive material. The licensee subsequently instituted corrective actions to prevent the release of material from these two pits and was evaluating the possible offsite dose consequences of any likely releases. Based on the affinity of the contamination for the oil and sludge in the separator pits, it appeared unlikely to the inspector that a significant quantity of radioactive material was released in the water that was discharged from the pits. The results of the licensee's evaluation and the implementation of long-term corrective actions will be reviewed during a future inspection (IFI No. 50-237/93032-05(DRSS); 50-249/93032-05(DRSS)).

In July 1993, the licensee discovered groundwater in the contaminated Unit 1 radwaste pipe tunnel. Subsequently, the tunnel was dry and the licensee assumed that the water drained to the surrounding soil, possibly carrying contamination. A modification to the tunnel was being drawn up to allow any future influx of water to be removed to the radwaste system. The licensee's evaluation of the possible offsite dose consequences of the release and the implementation of long-term corrective actions will be reviewed during a future inspection (IFI No. 50-237/93032-06(DRSS); 50-249/93032-06(DRSS)).

No violations of NRC requirements were identified.

8. Unit 1 Turning Vane Vault (IP 83750)

In early November 1993, the licensee drained a large quantity of rain water that had accumulated in the Unit 1 turning vane (a reactor upper internals component) storage vault, located outdoors and partially below ground near the Unit 1 sphere. The irradiated and highly contaminated turning vane, sealed in an overpack, had been placed in the vault in 1971. A periodic surveillance had been conducted since then by the RP

group to determine if radiological conditions in the vault had degraded (because of a failure of the overpack). Although the vault had standing water for several years and the 1993 surveillance did not indicate a radiological problem, RP management had the vault drained and a faulty seal in the vault roof repaired. In addition, the surveillance requirement was revised to ensure standing water detected during subsequent surveillances was removed. The RP department's action in this matter, as well as that in a recent decision to cancel a feedwater flow test with a high specific activity Na-24 tracer, represented a noteworthy, conservative philosophy.

No violations of NRC requirements were identified.

9. Solid Radioactive Waste and Transportation (IP 86750)

The inspector reviewed the licensee's program for processing, storage, and shipping of solid radwaste.

a. **Waste Generation and Processing**

The inspector reviewed the licensee's administrative and associated lower-tier procedures for the radwaste shipping and processing programs; no problems were identified. The inspector verified the procedures were consistent with the licensee's Process Control Program (PCP), and that they referenced technical and regulatory requirements related to radwaste shipping.

Primary waste streams at Dresden included spent resins, filter sludges, dry active waste (DAW) and irradiated metal components. Spent resin and filter sludges were either dewatered or solidified in cement via onsite vendor systems. Compliance with 10 CFR Part 61 waste form requirements were demonstrated by NRC approved topical reports maintained by the vendor, and by encasing the processed waste in an approved high integrity container (HIC). Each batch of processed waste was verified by the licensee against the vendor's process control program per procedure DOP 2000-32 "Verification of Vendor's Process Control Program and Waste Processing Procedure." The inspector noted both licensee and vendor workers were knowledgeable of program and regulatory requirements related to radwaste processing.

The licensee recently overhauled the "B" evaporator and will perform similar work on the "A" evaporator by January 1994. Additionally, the radwaste sludge tank and floor drain sumps have been cleaned. These actions should result in increased use of the evaporators and a decrease in generation of filter and resin wastes. To further monitor resin and filter waste, a weekly report was generated of plant water usage to identify either excessive use of radwaste systems or leakage.

DAW was normally sent offsite for vendor processing (incineration, supercompaction, etc) prior to burial. Occasionally, noncombust-

ible wastes were compacted onsite. The inspector noted that the amount of shipped DAW has been increasing. While some of the increase was attributed to a radwaste backlog reduction prior to closure of the burial sites, the majority was due to the lack of significant DAW reduction measures. The licensee formed a committee to address this issue and has taken some measures to reduce DAW generation, such as the use of launderable DAW bags and presentation of plant-wide awareness sessions. Further progress will be reviewed during future inspections.

Accompanied by a radwaste operator, an inspector toured the solid radwaste processing and shipping areas and observed ongoing work. Workers demonstrated good knowledge of radwaste systems and radiological requirements during interviews with the inspector. Housekeeping was good and the inspector's dose rate measurements agreed with the licensee's. During the tour, the inspector noted drums of contaminated oil arranged such that higher dose rate drums were not shielded behind lower dose rate drums, resulting in a general area dose rate higher than necessary. This was discussed with the RP group who dispatched an RP technician to resolve the issue.

b. **Waste Certification and Transportation**

Resin correlation factors were based on isotopic analyses of spent resin samples by offsite contractors. Proposed scaling factors were compared to historical results, with the most conservative factors used for shipping purposes. DAW shipments were classified via a dose-to-curie conversion using correlation factors determined from isotopic analyses of representative samples from the waste stream. The inspector reviewed both DAW and resin correlation factors and performed a confirmatory calculation on a DAW shipment; no problems were identified.

Irradiated metal components were classified using factors calculated by a contractor. These factors were based on the component's dose profile, composition, and irradiation history, and a summary of plant resin isotopic data. The inspector reviewed the classification of selected irradiated metal shipments; no problems were identified.

Approximately 127 shipments (71000 cu ft) of waste has been shipped to date, either directly to burial or to a processor. Each shipment was recorded on a shipping log, reviewed by radiation protection, operations, and quality control personnel, and had proper documentation. The licensee planned to purchase the computer program RADMAN to streamline the process. The inspector verified that current certificates of compliance, vendor procedures, and material descriptions for those shipping casks and HICs used were available for reference. No shipping incidents involving radwaste have occurred since the previous inspection of this area (Inspection Reports No. 50-237/92031(DRSS); 50-249/92031

(DRSS)). On December 2, 1993, the licensee informed the inspector of a possible problem with a limited quantity (per 49 CFR 173.421) shipment of a potentially contaminated condensate booster pump motor sent to the Quad Cities station from Dresden. The motor had been shipped from Dresden without the knowledge of the RP group, who ensure shipments of radioactive materials meet the Department of Transportation requirements in 49 CFR Parts 170-189. However, further review of the matter indicated that the motor had never been unpacked at Dresden after receipt from the vendor's facility and the requirements of 49 CFR 173.421 had been met by the vendor. No elevated dose rates or contamination levels were detected by Quad Cities personnel upon receipt of the motor.

No violations of NRC requirements were identified.

10. Exit Meeting

The inspector and his supervisor discussed the scope and findings of the inspection with licensee representatives (denoted in Section 1) on December 3, 1993 at the conclusion of the inspection. No documents reviewed during the inspection were identified as proprietary by the licensee. The following items were specifically discussed:

- the apparent problem with possibly contaminated motor sent to Quad Cities (Section 9);
- the need to fill three vacancies on the ALARA staff and appoint a coordinator for outage cleanup crews (Section 2);
- the violations (Sections 5 and 6);
- the problem with control of contaminated items (Section 6);
- the identification of contamination in the oil separator pits (Sections 6 and 7);
- the DAW reduction efforts (Section 9); and
- the revised discipline policy (Section 5).