

U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT

REGION III

Report No. 50-010/81-02; 50-237/81-03
50-249/81-02

Docket No. 50-010; 50-237; 50-249

License No. DPR-02; DPR-19,
DPR-25

Licensee: Commonwealth Edison Company
P.O. Box 767
Chicago, IL 60690

Facility Name: Dresden Nuclear Power Station, Units 1, 2 and 3

Inspection At: Dresden Site, Morris, Illinois

Inspection Conducted: January 1-30, 1981

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3-23-81

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Inspection Summary

Inspection on January 1-30, 1981 (Reports No. 050-010/81-02; 50-237/81-03; 50-249/81-02)

Areas Inspected: Routine, Unannounced, Resident Inspection of Operational Safety Verification, Monthly Maintenance Observation, Monthly Surveillance Observation, Plant Trips, Surveillance, Calibration, Refueling Activities, Maintenance Refueling, Inspection during Long Term Shut Down, Procedures for Coping with ATWS Events, Preparations for Guard Strike, Followup on alleged Water Loss, and a Special Inspection of Matters related to containment water on the ground following the Unit 2 Isolation Condenser Test. The inspection included a total of 184 inspector-hours onsite by five NRC inspectors including 60 inspector-hours onsite during off-shifts.

Results: Of the 12 areas inspected, there were no items of noncompliance in 11 areas. There was one item of noncompliance (Security Level V-Status of Systems-Paragraph 2) in one area.

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DETAILS

1. Persons Contacted

- *D. Scott, Station Superintendent
- *R. Ragan, Operations Assistant Superintendent
- *J. Eenigenburg, Maintenance Assistant Superintendent
- *D. Farrar, Administrative Services & Support Assistant Superintendent
- *J. Brunner, Technical Staff Supervisor
- *C. Sargent, Unit 1 Operating Engineer
- *J. Wujciga, Unit 2 Operating Engineer
- *M. Wright, Unit 3 Operating Engineer
- *E. Budzichowski, Unit Support Operating Engineer
- D. Adam, Waste Systems Engineer
- *G. Myrick, Rad-Chem Supervisor
- B. Saunders, Station Security Administrator
- B. Zank, Training Supervisor
- E. Wilmer, QA Coordinator

The inspector also talked with and interviewed several other licensee employees, including members of the technical and engineering staffs, reactor and auxiliary operators, shift engineers and foremen, electrical, mechanical and instrument personnel, and contract security personnel.

*Denotes those attending one or more exit interviews conducted on January 16, 20, and 30, 1981.

2. Operational Safety Verification

The inspector observed control room operations, reviewed applicable logs and conducted discussions with control room operators during the period of January 1-30, 1981. The inspector verified the operability of selected emergency systems, reviewed tagout records and verified the return to service of affected components.

On January 28, 1981, Unit 3 was at full power. Operators were clearing several outages taken out to perform maintenance on the 3A Reactor Feedwater Pump (RFP). As out of service tags were cleared for valves which were repositioned for the feedwater pump repairs the unit operator noted an increase in Steam Jet Air Ejector flow and off gas radioactivity levels. The operator initiated an immediate reduction in reactor power (in accordance with procedures), and contacted the "B" man who was removing out of service tags and repositioning valves to clear the outages. It was determined that a drain valve in the 3A RFP minimum flow recirculation piping to the main condenser was open, allowing turbine building air to be drawn into the main condenser after a manual isolation valve in the recirculation piping was opened. It appears that the decision to open the drain

valve was made after the repair outages were initiated, and, therefore, was not properly tagged or added to outage documentation. The drain valve was closed and the RFP outage was successfully cleared, and the unit was returned to full power operation. It does not appear that abnormal radioactivity releases occurred as a result of the indicated increase in off gas activity.

Failure to control the status of the drain valve causing this event is in noncompliance with Criterion XIV of 10 CFR 50, Appendix B, which states that "measures shall be established for indicating the operating status of structures, systems, and components of the nuclear power plant....such as tagging valves and switches to prevent inadvertent operation;" and Dresden Administrative Procedure (DAP) 3-5, which states "This procedure will provide a record of the equipment status before, during, and after an outage so that abnormal system configurations can be evaluated." Although DAP 3-5 allows for verbal outages for periods of less than eight hours, the drain valve was opened, without notification of the shift supervisor, and forgotten, resulting in this event.

Failure to control the drain valve status is also in noncompliance with Quality Procedure 3-52 of the CECO Quality Assurance Manual, which implements the requirements Criterion XIV of 10 CFR 50, Appendix B. Quality Procedure 3-52 requires that the Shift Engineer take appropriate action and remove equipment from service, and when satisfactory, clear the outage and declare the system and components operable.

Although the impact of this event was of minor significance, failure to implement outage control procedures is a matter of safety concern, and has the potential for causing significant safety violations. Corrective actions should address measures for controlling the status of equipment which is changed after an outage is initiated in addition to indoctrination of personnel involved in the implementation of outage control procedures. (50-249/80-02-01)

Tours of Unit 3 reactor buildings and turbine buildings were conducted to observe plant equipment conditions, including potential fire hazards, fluid leaks, and excessive vibrations and to verify that maintenance requests had been initiated for equipment in need of maintenance. The inspector by observation and direct interview verified that the physical security plan was being implemented in accordance with the station security plan.

The inspector observed plant housekeeping/cleanliness conditions and verified implementation of radiation protection controls. During the period of January 1-30, 1981, the inspector walked down the accessible portions of the Unit 3 LPCI and Core Spray systems to verify operability. The inspector also witnessed portions of the radioactive waste system controls associated with radwaste shipments and barreling.

These reviews and observations were conducted to verify that facility operations were in conformance with the requirements established under technical specifications, 10 CFR, and administrative procedures.

One item of noncompliance was identified.

3. Monthly Maintenance Observation

Station maintenance activities of safety related systems and components listed below were observed/reviewed to ascertain that they were conducted in accordance with approved procedures, regulatory guides and industry codes or standards and in conformance with technical specifications.

The following items were considered during this review: the limiting conditions for operation were met while components or systems were removed from service; approvals were obtained prior to initiating the work; activities were accomplished using approved procedures and were inspected as applicable; functional testing and/or calibrations were performed prior to returning components or systems to service; quality control records were maintained; activities were accomplished by qualified personnel; parts and materials used were properly certified; radiological controls were implemented; and fire prevention controls were implemented.

Work requests were reviewed to determine status of outstanding jobs and to assure that priority is assigned to safety related equipment maintenance which may affect system performance.

The following maintenance activities were observed/reviewed:

3A Reactor Feed Pump

Following completion of maintenance on the 3A Reactor Feed Pump, the inspector verified that this system had been returned to service properly.

No items of noncompliance were identified, except as identified in par graph 2.

4. Monthly Surveillance Observation

The inspector observed technical specifications required surveillance testing on the Unit 3 drywell Hi pressure trip for HPCI, LPCI, and CS and verified that testing was performed in accordance with adequate procedures, that test instrumentation was calibrated, that limiting conditions for operation were met, that removal and restoration of the affected components were accomplished, that test results conformed with technical specifications and procedure requirements and were reviewed by personnel other than the individual directing

the test, and that any deficiencies identified during the testing were properly reviewed and resolved by appropriate management personnel.

The inspector also witnessed portions of the following test activities: Unit 3 LPCI operability; Unit 2 Feedwater Instrument calibration, APRM Calibration, APRM flow biased system calibration, HPCI Turbine Trip on Low Reactor Pressure Isolation.

No items of noncompliance were identified.

5. Plant Trips

Following the plant trips on Unit 3 on January 1 and 4, 1981, the inspector ascertained the status of the reactor and safety systems by observation of control room indicators and discussions with licensee personnel concerning plant parameters and emergency system status. The inspector verified the establishment of proper communications and reviewed the corrective actions taken by the licensee.

All systems responded as expected, and the plant was returned to operation on January 2 and 5, 1981.

No items of noncompliance were identified.

6. Surveillance

The inspector observed technical specifications required surveillance testing (other than calibrations and checks) on the Unit 2 isolation condenser, reactor mode switch scram circuit sensor test, Scram Discharge Volume Continuous Monitoring System test and verified that testing was performed in accordance with technically adequate procedures, that results were in conformance with technical specifications and procedure requirements and were reviewed by personnel other than the individual directing the test, and that any deficiencies identified during testing were properly reviewed and resolved by appropriate management personnel.

On January 3, 1981, the resident inspectors were on site to observe the Unit 2 reactor shut down for a lengthy refueling outage and numerous maintenance items to be conducted. As part of the shutdown procedure, the five year surveillance test was conducted on the Isolation Condenser. Due to the extremely cold weather conditions, water emitted from the condenser vent froze upon contact with the ground. The frozen residue showed contamination levels in excess of the Technical Specification gross beta limit of 100 pCi/l over an area of about 100 X 50 yards inside and outside the protected area. This initial result was reported to the NRC via ENS phone and directly to the SRI. Further evaluation by the licensee for specific isotopes showed the levels to be within the requirements of 10 CFR 20. The cause of the contamination was from a history of filling the condenser with contaminated demineralized water.

The Region III Emergency Response Center was activated and a press release was made by the NRC which created considerable news media interest. Three radiation specialist inspectors were dispatched from Region III to the site to evaluate the licensee counting techniques. The results of their findings are addressed in a separate inspection report.

No items of noncompliance were identified.

7. Calib

The inspector reviewed calibration procedures, selected records of calibration, records of use of portable calibration instruments, and verified conformance with technical specifications and use of technically adequate procedures. He also selected several instrument testing devices used for local leak rate testing and verified that calibration frequency was met, that accuracy was verified as prescribed by internal procedures or specifications, that accuracy was traceable to National Bureau of Standards or other independent testing organizations, and that storage and control of the selected devices were in accordance with internal procedures or specifications.

No items of noncompliance were identified.

8. Refueling Activities

The inspector verified that prior to the handling of fuel in the core, all surveillance testing required by the technical specifications and licensee's procedures had been completed; verified that during the outage the periodic testing of refueling related equipment was performed as required by technical specifications; observed three shifts of the fuel removal operations and verified the activities were performed in accordance with the technical specifications and approved procedures; verified that containment integrity was maintained as required by technical specifications; verified that good housekeeping was maintained on the refueling area; and, verified that staffing during defueling was in accordance with technical specifications and approved procedures.

On January 13, 1981, while defueling Unit 2 about 25,000 gallons of water were allowed to discharge into the partially drained torus from the combined reactor cavity, fuel pool, and separator/dryer storage pit via 2B electromatic relief (S/R) valve. The S/R valve was inadvertently opened manually inside the drywell by an unknown person. Alert operators and prompt corrective action detected and corrected the problem quickly. The result was a reduction of 16" to 25" in the pool levels. To prevent recurrence, the operating levers on the S/R valves were wired to prevent opening and blank flanges were placed in the S/R valve blow-down lines. Although this event is not considered an item of noncompliance, it is of concern to the NRC in that there exists a potential for injury to persons in the torus or creating abnormal radiation levels

on the refuel floor while handling fuel. The master computer refuel outage list shows that S/R blow down blank flanges and main stream line plugs should be installed, but this is not part of a formal (DOSR) procedure. Due to the scheduling of work to be performed during this outage, and problems encountered upon removal of S/R valve blank flanges in the past, the licensee decided not to use them. The inspector feels they should be installed during such an outage to prevent similar occurrences. This matter was discussed with the station superintendent and members of the licensee's staff at exit interviews on January 16 and 30, 1981, and the licensee agreed to review the use of blank flanges and main steam line plugs. This matter is considered unresolved. (50-273/81-03-01)

No items of noncompliance were identified.

9. Maintenance - Refueling

The inspector verified maintenance procedures including administrative approvals for removing and return of systems to service; hold points for inspection/audit and signoff by QA or other licensee personnel; provisions for operational testing following maintenance; provisions for special authorization and fire watch responsibilities for activities involving welding, open flame, and other ignition sources; reviews of material certifications; provisions for assuring LCO requirements were met during repair; provisions for housekeeping during and following maintenance; and responsibilities for reporting defects to management.

The inspector observed the maintenance activities listed below and verified work was accomplished in accordance with approved procedures and by qualified personnel.

Unit 2 Feed Sparger Removal
Unit 2 Fuel Sipping
Unit 2 CRD Removal and Replacement

No items of noncompliance were identified.

10. Inspection During Long Term Shutdown

The inspector observed control room operations, reviewed applicable logs and conducted discussions with control room operators during the period of January 1-30, 1981. The inspector verified surveillance tests required during the shutdown were accomplished, reviewed tagout records, and verified applicability of containment integrity. Tours of Unit 1 and 2 accessible areas, including exterior areas were made to make independent assessments of equipment conditions, plant conditions, radiological controls, safety, and adherence to regulatory requirements and to verify that maintenance requests had been initiated for equipment in need of maintenance. The inspector observed plant housekeeping/cleanliness conditions, including potential fire hazards, and verified implementation of radiation protection controls. The

inspector by observation and direct interview verified that the physical security plan was being implemented in accordance with the station security plan. The inspector reviewed the licensee's jumper/bypass controls to verify there were no conflicts with technical specifications and verified the implementation of radioactive waste system controls. The inspector witnessed portions of the radioactive waste systems controls associated with radwaste shipments and barreling.

No items of noncompliance were identified.

11. Survey to Determine Existence of Adequate Emergency Procedures for Coping with ATWS Events at Power Operating Reactors (TI 2515/46)

TI 2515/46, requested that inspectors review the following:

(1) Licensee emergency procedures that address:

Failure to scram when required.
Failure to complete scram when initiated automatically or manually.
Inability to move or drive control rods.
Failure to automatically scram when a parameter exceeds its trip value.
Criteria for use of Standby Liquid Control System (SBLC).
Reactor Scram.
Anticipated transient without scram.

(2) Authorities and responsibilities of operators governing the use of the Standby Liquid Control System (SBLC).

The inspector reviewed the procedures and interviewed several operators and verified that the items listed above are addressed and meet or exceed the requirements of IE Bulletin 80-17, Action No. 4. The procedures also give the operators authority to activate the SBLC system and the key to activate SBLC is located on the "5" panels just above the SBLC control switch.

This review pertains to Dresden Units 2 and 3 only. Dresden Unit 1 is in a long term shutdown for chemical cleaning and back fit modifications. These questions will be reviewed prior to startup of Unit 1 which is not expected until 1983.

12. Licensee Plans for Coping with Strikes

The inspector reviewed plans of station and security management personnel with respect to implementing an emergency (backup) guard force if there had been a strike by the normal guard force. The strike appeared eminent as a result of contract voting results and subsequent negotiations between the guard force and Burns Security (Security Contractors). The inspector reviewed licensee plans to contend with disruption of normal plant access, notification of local law enforcement, alternate means of entering the plant, meeting minimum guard force

requirements, etc. Since the strike did not come about, the contingency plan was not used.

No items of noncompliance were identified.

13. Alleged 300,000 - 400,000 Gallon Water Loss

On January 21, 1981, a regional inspector followed up on licensee actions and studies performed in regard to allegations that 300,000 to 400,000 gallons of low level radioactive water were released from the Dresden Station during August, 1980. Based upon: (a) the results of this inspection; (b) earlier inspections in regard to this matter; (c) a review of the licensee's routine and special environmental sampling; (d) NRC Region III confirmatory environmental samples; and; (e) the special tests, inspections and analysis conducted by the station staff, it was concluded that, the mechanism for the release of the bulk of this water was evaporative in nature, and therefore, did not result in the transport of nonvolatile radioisotopes from the station in the form of water.* Furthermore, a small amount of water which leaked to the environment via a LPCI Heat Exchanger during the period in question was separately evaluated and the results of the release were separately analyzed as has been the case for other small, low activity releases of this nature.

The inspector believes it is reasonable to accept the licensee's hypothesis that a large evaporative water loss has been occurring during normal station operation, and that it has been masked by previously unmetered inputs to the station water inventory, including leaks from the nonradioactive heating steam system into station drains and surface water leakage into floor drains. The results of the evaporative water loss study conducted by a licensee contractor support the hypothesis that large quantities of water do evaporate from the station, and that the quantity of water evaporated is largely dependent upon unit operability and the presence of minor steam leaks in an operating unit.

The alleged leak was first noticed when the heating boiler was taken out of service for an extended outage, removing the heating steam system as an unmetered input to the station water inventory, thereby causing evaporative losses to produce a decreasing trend in the inventory. Following return of the heating boiler to service the decreasing trend in the station water inventory continued. This condition is not unexpected since numerous leaks in the heating steam system were repaired during the outage.

The above analyses and observations, in addition to the negative results obtained from routine environmental samples taken prior to, during, and

*Such evaporative losses leave the station via ventilation systems which are monitored for radioactivity content.

after the alleged release and the negative results obtained from special environmental samples collected and analyzed by the licensee and Region III, support the conclusion that a large release of low level radioactive water to the environment did not occur.

Closeout of Open Item 010/80-15-01, 237/80-18-01 and 249/80-22-01 (Alleged Water Loss).

The following resolutions of licensee commitments documented in Inspection Report No. 50-010/80-15; 50-237/80-18; 50-249/80-22 were obtained during this inspection. The item numbers correspond to those listed in the inspection report.

- (1) This commitment has been accomplished along with item 2.
- (2) The inventory which originally resulted in the allegations has been expanded to include numerous tanks which were not originally addressed. Overall accuracy of the inventory appears improved, although difficulty has been encountered during the first two weeks of January, 1981 because of large water movements between fuel pools, reactor cavity, and the hotwell for the current Unit 2 refueling. The licensee intends to continue with the station water inventory. These actions close the licensee's commitments for items 1 and 2.
- (3) The inspector reviewed results of the study, techniques employed, and overall accuracy of the results by studying the licensee's reports and interviewing licensee and consultant personnel involved in the evaporative water loss study. As a result of the inspection, the inspector is satisfied that it is appropriate to assume that the majority of the indicated water loss resulted from evaporative losses resulting from steam leaks and surface evaporation from open tanks and basins. It is also reasonable to assume that the evaporative losses were more or less balanced by unmonitored inputs to the water inventory, especially water leaks into drain collecting systems from the process heating system. The licensee's commitment for item 3 is closed.
- (4) The inspector interviewed licensee personnel involved in this effort and reviewed random samples of work representative of the effort. The results of the walkdowns were negative, in that no apparent leakage paths were identified. Licensee requirements for this commitment are closed, except for the action described under item 6 below.
- (5) The inspector interviewed station management and training personnel and observed the procedures and training material developed to fulfill this commitment. As a result of the licensee's review, approximately 70 valves which could cause an unmonitored release if not properly controlled have lead seals placed on them. A

monthly surveillance procedure has been initiated to verify that the valves have not been operated, and training of personnel has been conducted to ensure awareness of the significance of the valve sealing program. Immediate licensee action in response to this commitment appears adequate, and item 5 is closed.

- (6) The inspector interviewed the training personnel responsible for this commitment and reviewed appropriate training materials and records of completed training. At the time of the inspection all but six individuals who require the training had received it; these individuals were unavailable because of scheduling considerations. Provisions have been made to train these personnel by March 1, 1981. Licensee response to this commitment appears to be adequate, and item 6 is closed.
- (7) This item is discussed in Paragraph 14 below.
- (8) The licensee has prepared and approved monthly surveillance Procedure DTS 1500-2 and has included the procedure in the surveillance program. The procedure has been completed for all four LPCI Heat Exchangers at the station and appears to work satisfactorily. The licensee has fulfilled the commitment, and item 8 is closed.
- (9) The licensee has evaluated the feasibility of conducting this activity and has determined that the results would not benefit water inventory efforts because of the lack of and/or inaccuracy of metering on some flow paths communicating with the condensate storage tanks. Taking into account the results of other licensee efforts to monitor and detect potential release paths, the benefit to be gained from pursuing this activity is questionable. No further action in regard to this item is planned by the licensee, and item 9 is closed.
- (10) A supervisor employed by the licensee is assigned to supervise and monitor the work performed by each construction group performing work at the site. This action appears to be adequate, and item 10 is closed.
- (11) This commitment has been completed by the licensee's reports of November 14, 1980 and January 11, 1981, and by this inspection.

No items of noncompliance were identified.

14. Closeout of Open Item 010/80-15-02, 237/80-18-02; and 249/80-22-02
(Alleged Water Loss)

In a letter dated December 22, 1980, the licensee stated that ground water around the plant would be monitored by sampling four wells in the area. The Region III office has recommended that this be made a

technical specification requirement by NRC licensing. The NRC will periodically review this monitoring data during routine inspections.

No items of noncompliance were identified.

15. Exit Interview

The inspector met with licensee representatives (denoted in Paragraph 1) throughout the month and at the conclusion of the inspection on January 30, 1981, and summarized the scope and findings of the inspection activities. The licensee acknowledged the findings of the inspection.