

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Reports No. 50-237/89003(DRSS); 50-249/89003(DRSS)

Docket Nos. 50-237; 50-249

Licenses No. DPR-19; DPR-25

Licensee: Commonwealth Edison Company  
Post Office Box 767  
Chicago, IL 60690

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

Inspection At: Dresden Site, Morris, Illinois

Inspection Conducted: January 5 through February 3, 1989

Inspector: *D. E. Miller*  
D. E. Miller

2/10/89  
Date

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

2/21/89  
Date

Inspection Summary

Inspection on January 5 through February 3, 1989 (Reports No. 50-237/89003(DRSS);  
No. 50-249/89003(DRSS))

Areas Inspected: Routine unannounced inspection of the licensee's radiation protection program during outage including external exposure control and personal dosimetry, internal exposure control and assessment, control of radioactive materials and contamination, and personal contamination events (IP 83750). Also, reviewed was an internal contamination event (IP 92701), and allegations (IP 92701).

Results: Overall, the radiation protection program during outage is adequate. Some implementation problems continue to occur, but the licensee generally responds positively and prospects are for continued improvement in the radiation protection program. No violations were identified. Some program weaknesses were noted by the inspector and discussed with the licensee.

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## DETAILS

### 1. Persons Contacted

- \*J. Brunner, Assistant Superintendent, Technical Services
- E. Eenigenburg, Station Manager
- \*R. Falbo, Regulatory Assurance
- L. Jordan, Group Leader, Operations/ALARA; Health Physics Services (HPS)
- \*G. Myrick, Technical Services Health Physicist - CECo
- \*E. Netzel, Quality Assurance Superintendent
- L. Oshier, Group Leader, Technical, HPS
- \*K. Peterman, Regulatory Assurance Supervisor
- \*D. Saccomando, HPS Supervisor
- \*C. Schroeder, Superintendent, Services
- T. Ziakis, Group Leader, Services, HPS

\*D. Jones, NRC, Region III, Project Inspector

\*Denotes those present at the exit meeting.

### 2. General

This inspection was conducted to review the licensee's radiation protection program during a refueling and maintenance outage. Also, review was a radiological event and allegation concerning the licensee's radiation protection program. The inspector toured licensee facilities to review posting, labeling, access controls, and work in progress. No significant problems were identified. Housekeeping was adequate.

### 3. External Exposure Control and Personal Dosimetry (IP 83750)

The inspector reviewed the licensee's external exposure control and personal dosimetry programs, including: changes in facilities, equipment, personnel, and procedures; adequacy of the dosimetry program to meet routine needs; planning and preparation for maintenance and refueling tasks including ALARA considerations; required records, reports, and notifications; effectiveness of management techniques used to implement these programs and experience concerning self-identification and correction of program implementation weaknesses.

The external exposure measurement and control program consists of whole body monitoring using thermoluminescent dosimeters, extremity monitoring using film ring badges, self-reading dosimeters, integrating alarming dosimeters, direct radiation surveys, radiation work permits, administrative dose limits, and a radiation dose recording system.

The licensee's whole body dose received for 1988 was 1,407 person-rem; the goal was 1262 person-rem. According to the licensee, the dose received above the goal resulted because MSIP was not included (or planned) in the goal, and repair of electrical cables/components damaged by overheating of U/2 drywell.

The inspector selectively reviewed direct survey records, radiation work permits, and dosimetry reports for work being performed during this inspection. No significant problems were noted.

No violations or deviation were identified.

4. Internal Exposure Control and Assessment (IP 83750)

The inspector reviewed the licensee's internal exposure control and assessment programs, including: changes in facilities, equipment, personnel, and procedures affecting internal exposure control and personal assessment; determination whether engineering controls, respiratory equipment, and assessment of individual intakes meet regulatory requirements; required records, reports, and notifications; effectiveness of management techniques used to implement these programs; and experience concerning self-identification and correction of program implementation weaknesses.

The licensee's program for controlling internal exposures includes use of protective clothing, respirators and equipment, and control of surface and airborne radioactivity. A selected review was made of air sample survey results, radiation work permits, and engineering controls for work performed during this inspection. No significant problems were noted. An internal exposure event is discussed in Section 7.

Whole body count data was selectively reviewed for counts performed during the third and fourth calendar quarters of 1988 on company and contractor personnel. Several followup counts were performed on persons who showed elevated initial counts. Followup counting was adequate to verify that the 40 MPC-hour control measure was not exceeded.

5. Control of Radioactive Materials and Contamination (IP 83750)

The inspector reviewed the licensee's program for control of radioactive materials and contamination, including: adequacy of supply, maintenance, and calibration of contamination survey and monitoring equipment; effectiveness of survey methods, practices, equipment, and procedures; adequacy of review and dissemination of survey data; and effectiveness of methods of control of radioactive and contaminated materials.

Several contamination control improvement initiatives are discussed in Inspection Reports No. 50-237/87036; No. 50-249/87035. Implementation of these initiatives, along with other improvements, has apparently resulted in reduced personal contamination incidents. (Section 6)

During this inspection, several tours of radiological controlled areas were made to review handling practices for radioactive materials. Also reviewed were specific matters described in Section 6 and 7. During the tours, the inspector identified the machine shop as having a high potential for loss of control of contamination and for contamination spread.

Portions of the machine shop are designated as radiologically controlled areas (RCAs); surrounding and/or near the RCAs are areas designated as clean areas. All access routes to the machine shop are through clean areas; therefore, contaminated items must be transported through clean areas to reach machine shop RCAs. Within the machine shop, smoking, drinking, and eating is permitted in areas adjacent to designated RCAs. Employees leaving areas adjacent to machine shop RCAs are not required to whole body frisk; only portal monitors at the guard house are passed through when leaving the station. The present mixed use of the machine shop and the radiological potentials posed by such use were discussed with the licensee during the inspection and at the exit meeting.

No violations or deviations were identified.

6. Personal Contamination Events (IP 83750)

As previously discussed in Inspection Reports No. 50-237/88009(DRSS); 50-249/88011(DRSS), early in 1987 the licensee formed a committee composed of several station managers and supervisors to review personal contamination events and develop an action plan aimed at reducing the number of such events. The comprehensive plan that resulted consisted of more than 50 action items. The action items have been completed or are in progress. The number of personal contamination events meeting the industry reporting standard was 1,768 in 1986, 874 in 1987, and 534 in 1988; the numbers indicate reduction in the number of events over a two year period. The licensee believes that further reductions could result from continued implementation of the established action items and implementation of further action items when identified.

No violations or deviations were identified.

7. Internal Contamination Event

Summary

On December 30, 1988, one Dresden mechanical maintenance man and two CECO mobile maintenance persons were working on the 2-220-62B feedwater check valve in the Unit 2 "X" area (steam tunnel). The valve had previously failed leak rate testing, had its seating surfaces cleaned, and again failed the test. The crew in question was assigned to remove and replace the valve internals. The inside of the valve was highly contaminated (about  $1E6$  dpm/100  $cm^2$ ), but the crew was not knowledgeable concerning the high contamination levels; the crew did not wear respiratory protection equipment or rubber outer protective clothing as is the norm for such work; several personnel errors resulted in the lack of use of proper protective clothing/equipment. The workers became externally contaminated while performing the work and were found to also have nasal contamination. The workers were showered, then whole body counted; all showed internal contamination with one person showing significant quantities. The workers were restricted from further work in contaminated areas. The licensee began an investigation and the NRC was

informed of the potential overexposure of one worker. The internal contamination identified within the workers was essentially all eliminated from their bodies within five days, indicating that the material never entered the lung but traveled through the workers' gastrointestinal tracts; this was verified by urine and fecal samples collected from the person who displayed significant quantities during whole body counting; total dose to this individual from the material passing through his body was calculated by the licensee to be less than 50 mrem.

Presented below are brief discussions of the results of the licensee's investigation of this event and the inspector's review of the licensee's investigation. The inspector independently verified portions of the licensee's investigation results, and interviewed the worker who displayed the larger internal contamination. Also summarized below is licensee corrective actions.

### Investigation Conclusions

The licensee concluded that the following matters contributed to the event's occurrence.

- The feedwater check valves were misidentified on radiation surveys for RWPs, there were RWPs for nonexistent valves, and an ALARA review was not required for elevated contamination levels.
- Lack of attention to detail by the mechanical maintenance foreman (MMF), the mechanical maintenance (MM) man, the shift supervisor, and the RWP originators; they did not identify existence of problems with the RWPs (as written) when they signed the RWPs.
- The Dresden MM man, who was the most knowledgeable person on the crew (concerning the check valves in "X" area) made several errors in judgement including erroneously determining that the RWP did not require rubber gear and respirators, not contacting a RPT before pulling the internals from the valve, and permitting his face to contact portions of a chainfall used to pull the valve internals. This man also failed to properly respond to whole body frisker alarms when leaving the controlled area.
- Inadequate crew briefing prior to work during this period; also, inadequate shift turnovers between MMFs.

### Corrective Actions

As a result of the licensee's investigation, the following corrective actions were taken or planned.

#### a. Immediate

- The workers were removed from radiation work until internal contamination was investigated and found to decrease to essentially zero.

- All persons entering the plant were given written notice of the event and were reminded of their responsibilities concerning RWP and frisking compliance.
- Special tailgate meeting with station and PACS personnel were conducted to discuss the event.
- Feedwater check and other active RWPs were reviewed by outage directors and RP personnel to determine accuracy, adequacy, and status.
- Crew members who worked on feedwater check valves on December 29-30, 1988, were whole body counted; no persons other than the subject individuals were found to have internal contamination.

b. Longer Term

- The Dresden MM person was given intensive retraining concerning radiation work permit practices and frisking requirements, he was counseled on proper methods of performing check valve work, and was disciplined for nonconformance to RP program requirements.
- The mobile MM persons were counseled on the RWP program, frisking, and adherence to RP requirements.
- Several potential improvement items are being investigated by the licensee including major alteration of the RWP system, requiring ALARA reviews for jobs with high contamination potential, strengthening requirements for crew briefings, and including this event in continuing training modules.

Inspectors Review

Through review of records, discussions with plant personnel, and examination of the licensee's report of this event, the inspector concluded that the licensee's investigation was adequate, thorough, conducted by qualified personnel, and the corrective actions completed and planned are mostly adequate and proper.

One additional matter which appeared needed to prevent reoccurrence was alteration of the maintenance procedure for feedwater check valves to include health physics precautions and hold points to assure proper surveys are performed, and protective equipment worn. This matter was discussed with the licensee during the inspection and at the exit meeting. (Open Item 237/89003-01; 249/89003-01)

This incident is considered licensee identified and corrected in accordance with 10 CFR Part 2.

8. Allegation Followup (AMS No. RIII-88-A-0178)

On December 14, 1988, an NRC representative received a telephone call at the NRC Resident Office at Dresden Station from an individual who expressed concerns about the health physics program at Dresden Station.

During this inspection, the inspector attempted to contact the alleged to obtain more specific information about his concerns; the alleged was found to be working out-of-state and his new phone number and address were unavailable. The inspector reviewed licensee procedures and standards, interviewed licensee and contractor personnel, and observed work and equipment to determine the validity and consequences of the concerns expressed by the alleged. The allegations are described and discussed below.

Allegation

There are no health physics technicians (HPTs) at the personnel contamination monitors (PCMs) on the midnight shift; the PCMs are located at the reactor building trackway.

Discussion

The licensee has no procedure or policy that requires having a HPT near the monitors at all times, nor is there a regulatory requirement to do so. The licensee stations a HPT near the monitors during the day shift when there is the greatest use of the monitors. At other times, persons who alarm the monitors are to follow posted instructions.

Finding

The allegation/concern was substantiated. However, no licensee procedure or policy, or regulatory requirement, was violated.

Allegation

The alleged became contaminated and waited for one-half hour outside the locked decontamination room after calling the HPTs from the phone near the decon room door. No HPT showed up, and a CECO supervisor let the alleged into the decon room where the alleged decontaminated himself and left without seeing a HPT.

Discussion

No specifics concerning this event were related to the NRC. The inspector reviewed personnel decontamination room logs, personal contamination records, and discussed the allegation with several licensee personnel. The inspector noted that the alleged's name appeared in contamination logs and records several times during his employment. The personnel decontamination room, which is not continuously manned, is located adjacent to the HP/RWP service room. The normal practice is for someone with hand or shoe contamination to cover the contaminated area

with plastic to confine the contamination and then go to the personnel decontamination room and use the phone to request HP assistance. There may be some reasonable time delay between the call and arrival of a RPT to assist the contaminated person. During review of this allegation, the inspector could not determine who the CECO supervisor was or find anyone who was acknowledgeable of this incident. The inspector found no evidence to indicate that a continuing problem with HP response to requests for personal decontamination assistance exists.

#### Finding

The inspector was unable to substantiate or refute the allegation. The licensee's program for, and implementation of, responding to requests for personnel decontamination assistance appears adequate.

#### Allegation

There is an overall lax attitude toward radiation protection by the HPs at Dresden.

#### Discussion

This allegation was general and attempts to contact the allexer to further define the concern were not successful. However, the NRCs inspection policy/program is to review the licensees' health physics program on a periodic basis for overall adequacy; these reviews are performed by resident and regional based inspectors. The results of these ongoing reviews indicate that Dresden Station's health physics program is adequate.

#### Finding

The allegation could not be substantiated or refuted because it was too general to permit specific review.

#### Allegation

The current practice of checking-out and returning respirators may spread contamination through the plant if the mask and container bag become contaminated.

#### Discussion

The current practice is to check out the respirator in a bag. The respirator is to be returned in the same bag after use. The mask users employ several methods of keeping the bag clean while the mask is in use; there is no standard method. During discussions with licensee representatives, the inspector was told that contaminated outer surfaces on respirator bags upon their return had not been a pervasive problem, but such incidents occasionally occur. It appears that a standardized method of handling respirator bags needs to be established and related to respirator wearers to assure that the outer surface of respirator bags remain clean. This matter was discussed with licensee representatives during the inspection and at the exit meeting.

### Finding

The allegation was substantiated. However, no licensee procedure or regulatory requirement was violated. Establishment of standardized handling methods and training of respirator users concerning these methods should reduce potential for contamination spread from contaminated respirator bags. This matter was discussed with the licensee.

### Allegation

At the Unit 2 drywell bullpen area, HPs do not help the workers bag out tools and check them for contamination. It is left up to the workers to check their tools for contamination when taking them out of the area.

### Discussion

It is the contractor's responsibility to bag out tools at the drywell and take them to a trackway or other designated area for survey by a licensee RPT. Some contractors provide a "tool runner" to help their employees bag out tools when leaving the drywell; this makes the job easier. In some instances, contractors are permitted to decontaminate their tools at a designated place. However, final checkout for contamination must be done by a licensee RPT. The inspector determined through discussion and observation that tool runners were not being provided for all work groups at the drywell on backshifts during the period in question. Also, noted was the contractor RPTs do help people bag out tools when an RPT is available to do so.

### Finding

The allegation was substantiated. However, no licensee procedure or regulatory requirement violation was identified.

### Allegation

The ALARA decon room for tools keeps sporadic hours on midnight shift.

### Discussion

Personnel who work in the tool decontamination room also have facility decontamination duties. The licensee does not intend/require that the tool decontamination room be manned at all times.

### Finding

The allegation was substantiated. However, no licensee procedure or policy, or regulatory requirement was violated.

### Allegation

While exiting the hot tool room located in the mechanical maintenance (MM) shop, at the step-off-pad the alleged discovered that the frisker did not work; he was told by a CECo MM supervisor (named) to go ahead and frisk himself anyway. This occurred on December 14, 1988.

### Discussion

The inspector visited the MM shop step-off-pad area and interviewed the named CECo MM supervisor. At the time of the visit, the whole body frisker at the step-off-pad was inoperable; a portable hand-held frisker was installed for use pending repair of the whole body frisker; the hand-held frisker was operable. The named CECo MM supervisor recalled no incident such as the one described by the alleged. The supervisor stated that there must have been a misunderstanding; he stated that he knows the importance of proper use of friskers when leaving potentially contaminated areas. The inspector reviewed licensee occurrence reports to determine if similar incidents have been identified and reported; there were none identified.

### Finding

The allegation was not substantiated or refuted. No evidence was found to indicate that improper exit frisking is performed at the MM shop tool room step-off-pad.

### Allegation

The PCMs in the trackway area don't always work, many of them are down (inoperable) and this causes a wait to go through the ones that are working.

### Discussion

The Personal Contamination Monitors (PCMs) are sensitive electronic devices with thin detection windows; these monitors are easily made inoperable by minor abuse. The fact that people may be required to wait to use an operable monitor is a licensee operations/management problem, not a regulatory concern.

### Finding

The allegation was substantiated. However, this is a licensee management problem, not a regulatory concern.

## 9. Allegation Followup (AMS No. RIII-89-008)

On January 20, 1989, an NRC representative received a telephone call at the Dresden Resident Office from an individual who expressed concerns about the health physics program at Dresden Station. The individual, who asked that his name remain confidential, was employed at Dresden as a contractor.

During this inspection, the inspector contacted the alleged by telephone to discuss his concerns and obtain additional information to aid the inspector's review of the concerns. The inspector reviewed licensee procedures and standards, interviewed licensee and contractors personnel, and observed work and equipment to determine the validity and consequences of the concerns expressed by the alleged. The allegations are presented and discussed below.

### Allegation

Contract Radiation Protection Technicians (RPTs) did not appear to know or care when face masks (respiratory protective devices) are required (in the drywell).

### Discussion

During discussions with the alleged by telephone, the inspector learned that the alleged's main concern was about what type of respiratory device was needed, and at what distance, from work involving welding or grinding on contaminated piping, and directions concerning this matter given to workers by contact RPTs in the drywell. According to the licensee, their rule-of-thumb is that persons within 15 feet of someone welding or grinding on contaminated material should wear a full face respirator; at Dresden, the person welding or grinding of contaminated material wears an airline respirator. According to the licensee, the rule-of-thumb is difficult to apply in the drywell, particularly when several jobs are in progress that involve welding and grinding; the rule applies vertically, horizontally, etc. It appears that some judgement is necessary to determine if a respirator should be used on individual jobs and areas within the drywell. According to licensee representatives, there are times when disagreements arise between workers and contractor RPTs concerning when the respirator should be worn. During discussions with licensee and contractor personnel, the inspector gained no insight concerning the alleged's statement that the RPTs did not "care" if respiratory devices were required or not.

### Finding

The allegation was partially substantiated. There could have been times when a contract RPT in the drywell was not sure (did not know) if a respirator was required in a specific case. However, the inspector selectively reviewed records of whole body counting of persons who have worked in the Unit 2 drywell during the current outage. There is no indication that persons working in the drywell were inadequately protected from airborne radioactive materials; no intake greater than the 40 MPC-hour control measure was noted.

It appears, however, that the licensee should assure that contract RPTs are adequately trained in all licensee radiation protection procedures, and that the RPTs adequately communicate the requirements to workers. Also, workers should be provided a station contact (person) who can answer questions and resolve conflicts. This matter was discussed at the exit meeting.

### Allegation

Contract radiation protection technicians did not tour the drywell to monitor activities.

### Discussion

The inspector discussed this allegation with licensee health physics (HP) personnel who oversee/observe performance of contract RPTs and supervisors. The licensee HP personnel, who spend time in the drywell daily observing the radiation protection contractor's work, stated that contract RPTs spend time touring the drywell, but limit the time to the minimum amount necessary to adequately monitor work being performed; the RPTs are to apply ALARA concepts to their work as must all radiation workers.

### Finding

The allegation was not substantiated. There was no indication that contract RPTs did not adequately support work performed in the drywell.

### Allegation

Finger rings (dosimeters) and dosimeters around the worker's head were not required.

### Discussion

During discussion with the allegor by telephone, he stated that when he performed similar work at another CECo station, he was required to wear finger dosimeters and additional whole body dosimeters; here, he was only required to wear the normal whole body dosimetry. The inspectors discussed this matter with the CECo RP foreman who established the dosimetry requirement for this job. The foreman stated that he visited the job site, reviewed the work to be performed, found that the highest expected whole body dose would be to the chest area, and determined that finger dosimetry was not needed because the guidance in Dresden Procedure DRP-1210-4 for extremity dosimetry use would not be exceeded; he considered use of additional dosimetry unnecessary. The inspector found the licensee's assessment/conclusion to be appropriate.

### Finding

The allegation was substantiated, but no licensee procedure, regulatory requirement, or good health physics practice was violated. The licensee properly designated the dosimetry necessary to monitor the workers' dose.

### Allegation

RWPs are poorly developed.

## Discussion

During a discussion with the alleger by telephone, the inspector asked the alleger for some specific information about the alleger's statement that RWPs are poorly developed. The alleger said that RWPs were much more detailed at another nuclear station where he last worked. The alleger did not reference a particular section of the RWP as an example of extent of detail. The inspector selectively reviewed RWPs for contractor drywell work including those signed by the alleger. The RWPs reviewed appeared to contain necessary radiation protection instructions and requirements.

## Finding

The allegation was not substantiated. The RWPs reviewed appeared to comply with licensee procedures and to contain sufficient radiation protection instructions and requirements.

## Allegation

There are loose and uncovered breathing air hose fittings in the drywell.

## Discussion

According to licensee representatives, persons who wear airline respirators are instructed to cover airline hose fittings with the attached rubber cover, if present, or with tape when the fittings are not in use. Contractor and RP personnel who perform routine drywell tours are instructed to remove airlines respirator hoses from the drywell when they are found with uncovered fittings. According to licensee personnel, workers are instructed not to attach respirators to fittings that were left uncovered. The inspector examined a small number of fittings in the drywell and found them properly covered.

## Finding

The allegation was neither substantiated or refuted. There was no evidence that personnel have attached respirators to uncovered (potentially contaminated) fittings. If the alleger found such uncovered fittings in the drywell, he should have removed the hose from the drywell.

## 10. Exit Meeting

The inspector met with licensee representatives (denoted in Section 1) at the conclusion of the inspection on February 3, 1989, to discuss the scope of the inspection and the findings. The inspectors also discussed the likely informational content of the inspection report regarding documents and processes reviewed by the inspector during the inspection. The licensee did not identify any such documents/processes as proprietary. The following matters were discussed specifically by the inspectors:

- a. The present mixed use of the mechanical maintenance shop and the radiological potential posed by such mixed use. The licensee stated that establishment of a "hot" (radiologically) machine shop would be strongly considered as part of planned facilities expansions. (Section 5)
- b. The apparent need to include radiological precautions and hold points in the maintenance procedure for feedwater check valves; the licensee stated that such precautions and hold points would be added. (Section 7)
- c. The apparent need to establish standardized handling methods for respiratory devices and train respiratory device users of the methods. The licensee stated that they will investigate the need. (Section 8)
- d. The apparent need to assure that contract RPTs are adequately trained in station procedures, and that the RCTs adequately communicate the requirements to workers. The licensee stated that the need for enhanced training would be reviewed. (Section 9)