

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Reports No. 50-295/94008(DRSS); 50-304/94008(DRSS)

Dockets No. 50-295; 50-304

License Nos. DPR-39; DPR-48

Licensee: Commonwealth Edison Company  
Executive Towers West III  
1400 Opus Place, Suite 300  
Downers Grove, IL 60515

Facility Name: Zion Nuclear Generating Station, Units 1 and 2

Inspection At: Zion Station, Zion, Illinois

Inspection Conducted: March 14 through 23, 1994

Inspector: William Snell for  
Patrick L. Loudon  
Radiation Specialist

4/15/94  
Date

Approved By: William Snell  
William G. Snell, Chief  
Radiological Programs Section 2

4/15/94  
Date

Inspection Summary

Inspection on March 14 through 23, 1994 (Reports No. 50-295/94008(DRSS); 50-304/94008(DRSS))

Areas Inspected: Routine, announced inspection of the licensee's radiation protection (RP) program (Inspection Procedure (IP) 83750) during the current dual unit refueling/service water outage. Inspection activities included reviews in the areas of external exposure controls, Revised Part 20 implementation, maintaining occupational exposures as-low-as-reasonably-achievable (ALARA), and general station tours.

Results: One violation of NRC requirements was identified as a result of a radiation protection technician failing to verify dose rates during radiography exposures. A weakness was identified in the contamination control program with respect to an event which led to an individual removing contaminated clothing from the site. Another area which warrants management attention is in the area of interdepartmental "buy-in" to the station ALARA program. This acceptance by all departments is essential if the station is to realize significant exposure reduction in the near term.

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## DETAILS

### 1. Persons Contacted

#### Commonwealth Edison

- \*G. Burris, Electrical Maintenance Staff
- \*T. Cook, Supervisor, Mechanical Maintenance
- \*T. Creekmore, Mechanical Maintenance Staff
- \*K. Depperschmidt, Master, Instrument Maintenance
- \*K. Dickerson, Regulatory Assurance, NRC Coordinator
- \*K. Hansing, Director, Station Quality Verification
- \*S. Hazelrigg, Supervisor, Electrical Maintenance
- \*M. Johnson, Operations Staff
- \*R. Link, Technical Superintendent
- \*K. McEvoy, Lead Radiation Protection Supervisor
- \*H. Neale, Instrument Maintenance Staff
- \*B. Rendall, Training Department
- \*B. Robinson, Lead Operational Health Physicist
- \*R. Schuster, Radiation Protection, ALARA Coordinator
- \*L. Simon, Maintenance Superintendent
- \*W. Stone, Performance Improvement Supervisor
- \*J. Winston, Station Quality Control
- \*D. Wozniak, Superintendent, Operations, Acting Station Manager

The inspector also interviewed other licensee personnel in various departments in the course of the inspection.

#### Nuclear Regulatory Commission

- \*J. D. Smith, Senior Resident Inspector
- \*P. Loughheed, Resident Inspector
- \*M. Miller, Resident Inspector

\*Denotes those present at the Exit Meeting on March 23, 1994.

### 2. External Exposure Controls (IP 83750)

The inspector reviewed a recent event which involved the poor performance of a contract radiation protection technician (CRPT) during radiography job coverage.

On Thursday, February 22, 1994, radiography was performed in the Unit 1 containment outside the missile barrier. The CRPT assigned to the job attended the pre-job briefing, and was specifically asked if he had read and was familiar with the administrative procedure (Zion Administrative Procedure (ZAP) 600-6) used to cover the work activity. The CRPT indicated that he had read the ZAP, and was familiar with it.

The CRPT set up the exclusion area boundaries, was present when the source was first exposed, and performed initial surveys of the

boundaries. The CRPT then told the radiographer to call if he needed further assistance and left the job site.

The ZAP requires that a radiation technician be present any time the source is exposed to verify dose rates are less than 5 mr/hr at the posted boundaries. Additionally, the technician is to verify dose rates after an exposure has been taken to verify the source has been appropriately retracted. While the CRPT was absent from the job site, four exposures were taken without the required verification surveys being performed as required by ZAP-600-06. This is a violation of Technical Specification 6.2.2.A which states, in part, that radiation protection procedures shall be prepared, implemented, and maintained.

The licensee's review of the event revealed that the CRPT was aware of his responsibilities but failed to performed his task as required. The licensee took disciplinary action shortly after their review. Even though the licensee identified this event, the actions taken by the CRPT was determined to be a willful action to not follow the governing procedure. Therefore, no enforcement discretion can be applied to this event in accordance with the NRC Enforcement Policy. (Violation 50-295/94008-01; 50-304/94008-01)

One violation of NRC requirements was identified.

3. Contamination Control (IP 83750)

The inspector reviewed an event which occurred during the inspection period which involved the discovery of contamination on a worker's clothing offsite.

On Wednesday, March 16, 1994, at approximately 9:00 a.m., two RP individuals notified the inspector of an unusual contamination event which had occurred over the midnight shift. A worker (station laborer/deconner) had reported onsite, and prior to going to his assigned work location, stopped by the RP office for a whole body count. Apparently, the individual had been receiving spurious alarms at the gatehouse while attempting to leave the plant. The whole body count indicated Cobalt-60. Followup whole body counts isolated the source to be on the individual's pants. A 70,000 dpm/100cm<sup>2</sup> (1,167 Bq/100cm<sup>2</sup>) particle was found lodged inside the worker's pant pocket. Direct readings outside the pants were in the 1,500 dpm/100cm<sup>2</sup> (25 Bq/100cm<sup>2</sup>) range. The particle was removed and the worker was allowed to complete his normal duties for the remainder of the shift.

Upon learning of this event the following morning, the Contamination Control Coordinator requested permission from the worker to survey his other work clothes and hotel room. The worker agreed, and RP staff informed the inspector of their plans and that they would provide an update on their findings.

Later that morning, the RP representatives came to the Resident Inspectors office and informed the inspector that they had detected

contamination on some of the individual's clothing; however, a dispute occurred during the surveys which resulted in the station RP individuals being asked to leave the worker's room. The contaminated clothing was left with the worker. The Resident Inspector contacted the worker at his residence to discuss the cause of the problem and to offer assistance. The worker agreed to allow the licensee to continue their surveys as long as NRC representatives were in attendance.

The inspector was accompanied by a region based Project Engineer to the worker's motel room and monitored the completion of the surveys. Three articles of clothing were found to be contaminated. The levels were as follows:

Bib-overalls	11,300 dpm/100cm <sup>2</sup> (188 Bq/100cm <sup>2</sup> )	inside by label
T-Shirt	24,000 dpm/100cm <sup>2</sup> (400 Bq/100cm <sup>2</sup> )	lower right side
Flannel Jacket	500-700 dpm/100cm <sup>2</sup> (8.3-11.7 Bq/100cm <sup>2</sup> )	broad area on front

No contamination was detected within the worker's motel room or in his vehicle. The contaminated articles were bagged, labeled, and taken back to the station.

The licensee took immediate corrective actions to determine the cause of the contamination not being detected previously. Initial actions included:

Verification of all gatehouse monitor calibrations and source check data.

Interview of the midnight shift work crew to attempt to ascertain any other facts or problems surrounding this event.

Survey of the station laborers' break area to verify no further contamination spread.

Results of the interviews with other workers on the midnight shift indicated that they were aware of the one worker's problems with exiting the plant but that they themselves were not encountering such problems. These interviews also revealed that a situation which occurred on the previous Sunday midnight shift may have been the origin of the clothing getting offsite.

Two RPTs (#1 & #2) stated that on Sunday March 13, 1994, on day shift, the same deconner was having trouble getting a "clear" indication from the whole body friskers when he attempted to leave the radiologically controlled area. The deconner was contaminated on the back of his neck. The worker took a shower, dressed, and received a "clear" indication from the whole body frisker.

The deconner received two alarms at the gatehouse when he attempted to leave the site. RPT #2 was sent out to investigate the alarms. RPT #2 did a quick survey of the individual's clothes but could not locate any contamination. The deconner alarmed the gatehouse monitors again and was requested to return to the decontamination room.

RPT #1 met the deconner at the decontamination room. The deconner entered a whole body frisker and did not receive an alarm. RPT #2 then contacted his supervisor for direction. It was concluded that the deconner should remove his clothes, put on a paper suit, bag his clothing, and proceed to the gatehouse.

The deconner was met at the gatehouse by RPT #2. The RPT instructed the deconner to pass through the gatehouse monitor several times while carrying the bagged clothing. He did this and received no alarms. RPT #2 told the deconner he was free to go home.

The inspector discussed this event with the deconner, and other than a few general questions, the deconner did not appear concerned. However, the deconner subsequently contacted the news media explaining his experience at the station.

At this time the licensee had not conducted a full evaluation of the job site in which the deconner placed his personal clothing. A teleconference was held between NRC Region III management and station management regarding this event. It was agreed following this conversation that the licensee would conduct a more thorough evaluation of the job site and perform whole body counts of other deconners. The results of this review were not available at the conclusion of the inspection. The final evaluation of the event will be reviewed during future inspections. (Inspection Followup Item 50-295/94008-02; 50-304/94008-02)

While this event did not involve a violation of NRC requirements, weaknesses in the handling of the individual's clothing were discussed with station management. The procedure governing the decontaminating of a worker and release of clothing did not provide the RPT clear guidance on the best way to resolve the problem. Additionally, the RP department did not take proactive steps to alleviate the escalated situation which developed and led to the deconner contacting the news media. This event along with the recent high number of low level contaminations recorded at the station suggest that the station's contamination control program may not be adequately addressing these low level accumulations of contamination.

No violations of NRC requirements were identified. One Inspection Followup Item was initiated.

#### 4. Revised Part 20 Implementation

The inspector reviewed the licensee's implementation of the Revised Part 20, particularly with respect to the evaluation of respirator usage. The inspector interviewed several workers who expressed concerns that

the respirator program at the station was being inadequately implemented. Most workers felt that they should have input into the decision making process and that the parameters used to determine the need for a respirator were not realistic.

The inspector reviewed the station's procedure for respirator decision making and found that it used a detailed flow chart which included the use of a twenty percent respirator in-efficiency factor for most jobs. This factor is within the accepted percentages used in other industries.

The inspector concluded that the licensee's program was meeting regulatory requirements. However, the program appeared oriented toward the removal of as many respirators as possible, as opposed to objectively evaluating the appropriate control measures.

No violations of NRC requirements were identified.

5. Maintaining Occupational Exposures ALARA (IP 83750)

The inspector attended a Station ALARA Committee (SAC) meeting during the course of the inspection. It was clear throughout the course of the meeting that other station departments did not have an understanding of the ALARA efforts at the station; and, that overall buy-in by these departments was lacking. The station is currently in the lowest quartile for pressurized water reactors in the country for station dose, and, the weaknesses observed during this meeting substantiate the need for more interdepartmental involvement in the overall station effort to reduce personnel exposures.

Source Term Reduction (STR) efforts were continuing. The STR Task Force has completed its assessment of the various efforts which the station may pursue to reduce dose rates in the plant. An action plan was being developed and is scheduled to be completed by April 30, 1994. The results of the task force's efforts will be presented to NRC management and staff at a May 3, 1994 meeting to be held at Zion Station.

No violations of NRC requirements were identified.

6. Plant Tours

The inspector conducted several plant tours during the course of the inspection. Worker adherence to radiation protection procedures, calibration of meters, and posting and labeling requirements were reviewed during these tours. No problems were noted during these tours and all instruments and meters reviewed were in current calibration.

No violations of NRC requirements were identified.

7. Exit Meeting

The scope and findings of the inspection were discussed with licensee representatives (Section 1) at the conclusion of the inspection on March 23, 1994. Licensee representatives did not identify any documents or processes reviewed during the inspection as proprietary. Specific items discussed during the exit meeting are summarized below.

- The offsite contaminated clothing incident.
- The need for reviewing the current contamination control methods.
- The SAC meeting results and the challenge to the station to enhance interdepartmental activity and responsibility for the station's ALARA program.
- The evaluation of the Revised Part 20 respirator implementation.