

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report Nos. 50-373/92006(DRSS); 50-374/92006(DRSS)

Docket Nos. 50-373; 50-374

License Nos. NPF-11; NPF-18

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

Facility Name: LaSalle County Station, Units 1 and 2

Inspection At: LaSalle County Station, Marseilles, Illinois

Inspection Conducted: February 13 & 14; 18-21, 1992

Inspectors: P. L. Loudon
P. L. Loudon
Radiation Specialist

3/6/92
Date

R. A. Paul
R. A. Paul
Senior Radiation Specialist

3/6/92
Date

Approved By: William Snell
William Snell, Chief
Radiological Controls Section

3/6/92
Date

Inspection Summary

Inspection on February 13 & 14; 18-21, 1992 (Report Nos. 50-373/92006(DRSS); 50-374/92006(DRSS))

Areas Inspected: Routine unannounced inspection of the licensee's radiation protection program (IP 83750) including, training and qualifications, external and internal exposure control, outage planning and scheduling, control of radioactive materials and contamination, surveys, and monitoring, and As Low As Reasonably Achievable (ALARA) program initiatives. Additionally, several balance of plant and Unit 2 drywell tours, and reviews of previously identified inspector items, were performed.

Results: During the course of the inspection no violations or deviations were identified. However, one non-cited violation was identified which involved insulation workers performing tasks under the wrong Radiation Work Permit (Section 9.). Overall, the Radiation Protection (RP) program appeared to be functioning well and good performance of the ALARA program during the Unit 2 outage (L2R04) was noted.

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DETAILS

1. Persons Contacted

Licensee staff

- * J. Atchley, Operating Engineer
- * J. Borm, Nuclear Quality Programs Engineer
- * D. Carlson, Regulatory Assurance, NRC Coordinator
- * G. Diederich, LaSalle Station Manager
- * H. Hentschel, Assistant Superintendent, Operations
- * D. Hieggelke, Manager, Health Physics Services
- * W. Huntington, Superintendent, Technical Services
- * C. Kelley, Radiation Protection, ALARA Analyst
- * P. Knoll, RP Contamination Control Coordinator
- * J. Lockwood, Supervisor, Regulatory Assurance
- * W. Luett, Radiation Protection, Lead Health Physicist
- * R. Ragan, Administrative Engineer, Corporate
- * R. Raguse, Radiation Protection, Corporate
- * S. Reeder, Site Project Manager, UE&C
- * M. Santic, Assistant Superintendent, Maintenance
- * J. Schmeltz, Superintendent, Production Services
- * J. Steinmetz, Superintendent, Engineering and Construction
- * J. Williams, Nuclear Engineering

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

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- * D. Hills, Senior Resident Inspector
- * C. Phillips, Resident Inspector
- * H. Schumacher, Chief, Radiological Controls and Chemistry Section

Illinois Department of Nuclear Safety

- * J. Roman, Resident Engineer

* Indicates those present at exit meeting on February 21, 1992.

2. General

This inspection was conducted to evaluate the licensee's radiation protection department performance in the areas of training and qualifications, internal and external exposure controls, contamination controls, ALARA initiatives for the L2R04, and general plant/Unit 2 drywell tours.

3. Licensee Action on Previous Inspection Findings (IP 92701)

(Closed) Open Item (50-373/89017-02; 50-374/89017-02): Actions taken to reduce radioactive spills. The licensee has installed new level instrumentation (sludge level and water level indicators) in the URC

Sludge Tank and the Waste Sludge Tank. In addition, engineering expects to install level indicators on the four Phase Separator Tanks and bubblers (gross tank level indicators) on two Floc Tanks, by the end of 1992. The currently installed instruments are functional and are expected to eliminate avoidable spills. This item is closed.

(Closed) Violation (50-373/91008-01; 50-374/91007-01): Inadequate evaluation of radiological hazards. The licensee did not have repetitive problems of this nature during the Unit 2 Refueling Outage. Other inadequate evaluations were noted but are being tracked under a violation issued as a result of Inspection Report 50-373/91028; 50-374/91029. This violation is closed.

(Closed) Violation (50-373/91008-02; 50-374/91007-02): Failure to comply with Radiation Work Permit (RWP) limitations. This violation was issued during the last refueling outage, and no repetitive occurrences of workers deviating from RWP requirements were noted during the current outage. This violation is closed.

(Closed) Open Item (50-373/91022-01; 50-374/91022-01): Job planning and worker performance problems noted with respect to a radwaste tank room cleanup effort. The completion of the radwaste tank room reclamations are under review to avoid similar problems. This item was one of a number discussed at the January 21, 1992 Enforcement Conference. This item is closed.

(Closed) Open Item (50-373/91022-02; 50-374/91022-02): High Radiation Area barrier problems in the area of the Unit 2 steam accumulators. The licensee has modified the fence used as a barrier to more securely control the area. The modification allowed for the fence to be opened like a gate with hinges and angle irons being installed. This item is closed.

4. Training and Qualifications (IP 83750)

The inspectors reviewed the licensee's selection criteria, the education and experience qualifications, and training of contract radiation protection technicians (CRPTs).

Licensee selection and verification of CRPTs are not covered by procedure, however, written guidance providing criteria for calculating hours credited for American National Standards Institute (ANSI) 3.1-1978 qualification is used. Selection includes review of technicians' resumes to determine conformance with ANSI-3.1 criteria for responsible technicians, which is part of the contract requirement, and past performance at other Commonwealth Edison facilities. Telephone interviews are performed for selected candidates (unknown individuals or resume questions), to verify qualifications described on the individual's resume. Additionally, station personnel verify experience and qualifications of CRPTs through discussions with the on-site contract vendor representative. No formal verification is performed by the licensee, however, corporate licensee staff indicated that the development of a formal quality assurance audit of the vendor providing the CRPTs was being considered. The station hired 28 ANSI qualified and

18 "B" level or below technicians for the outage. The inspectors reviewed selected resumes of CRPTs hired for the outage and noted no problems.

After selected technicians arrive on-site they are required to pass a written health physics proficiency exam on nuclear physics theory and practical health physics problem solving. The tests are selected from a bank of 500 questions generated by the corporate office. One of the tests was reviewed by the inspectors and found to be moderately difficult with many questions not requiring problem solving. Following successful completion of the proficiency exam each technician is required to complete several days of licensee procedure training, health physics equipment and application training, and site specific training. An exam is given at the end of this training and appeared to be of good quality. Persons not meeting ANSI experience criteria are assigned duties commensurate with their training and experience and the licensee's program requirements.

The inspectors noted the use of extensive mock-up training for higher dose jobs. In particular, mock-up training with respect to the Local Power Range Monitor (LPRM) connector work resulted in accomplishing the planned work, and work which was planned for the next Unit 2 outage, in less than half the originally projected dose.

No violations or deviations were identified.

5. External Exposure Control (IP 83750)

The inspectors reviewed selected standing and special Radiation Work Permits (RWPs) for appropriateness of the radiation protection requirements based on work scope, location, and radiological conditions. No problems were identified.

The inspectors noted good use of the new RWP system's real time dose status information. The ALARA coordinator received frequent updates of the latest dose information for particular jobs underway to track dose performance versus estimates. This timely information was helpful in identifying potential problems with jobs underway.

The licensee used top-reading electronic dosimeters (EDs) for drywell and other higher dose jobs rather than the typically issued front reading EDs to assist in workers reading of the dosimeter. Events detailed in prior inspection reports indicated that difficulty in reading the front reading EDs contributed to the overall event problems. The inspectors also observed the use of tele-dosimetry for diving operations on the refuel floor and for under vessel work in the drywell. These systems appeared to be working well.

No violations or deviations were identified.

6. Internal Exposure Controls (IP 83750)

The inspectors selectively reviewed the results of the licensee's whole body counting and internal dose assessment efforts. The licensee's engineering controls to prevent the generation and spread of airborne

radioactive contamination appear to be effective. No intake events had occurred exceeding the 40 MPC-hour control measure. One minor intake occurred during the outage period in the range of a fraction of an MPC-hour.

No violations or deviations were identified.

7. Control of Radioactive Materials and Contamination, Surveys, and Monitoring (IP 83750)

The inspectors reviewed a selected group of surveys for proper documentation and supervisory review, no problem were identified.

The contaminated area of the station had increased to approximately fifty percent during the outage. Most of the increase was due to partitioning off part of the Unit 1 reactor building which was used as the access point for entry into the Unit 2 drywell, and other general area work associated with L2R04. Thirty-nine Personnel Contamination Events (PCEs) had been recorded for 1992. The inspectors reviewed the events and discussed with cognizant licensee staff the details of particular events and the manner in which the PCEs were reviewed. The station PCE Reduction Committee meets regularly to review each event and discuss lessons learned and propose recommendations to assist workers in the future. The station PCE goal for 1992 was 295.

The inspectors noted the addition of a recirculating glove box installed on the refuel floor. The device was being used to decontaminate items from the vessel and fuel pool before being released or reinstalled. This addition assisted in the turn around time for items to be decontaminated and limited contaminated material to the confines of the refuel floor.

No violations or deviations were identified.

8. Maintaining Occupational Exposures ALARA (IP 83750)

The inspectors reviewed the ALARA program's performance and initiatives implemented during L2R04. There had been no major changes in the overall station ALARA management program since the last inspection. The primary ALARA group is made up of radiation protection department personnel and includes an ALARA coordinator, several ALARA analysts who are assigned reactor and radwaste building responsibilities, and others (including contractors during outages) assigned to the electrical and mechanical maintenance departments. In addition to the radiation protection department personnel, the site contractor staffs three ALARA persons before and during outage activities, and one ALARA specialist who performs ALARA reviews for system design changes and is permanently assigned to site engineering. These individuals review jobs with station planning and work groups to provide ALARA considerations during the early planning stages of all workscope. The inspectors noted that the station had made considerable progress in this area. Although there is no formal training requirement for the ALARA staff, personnel attend special contractor training courses, participate in team assessments, and attend the radiation protection continuing training course. All personnel appeared qualified for their positions.

Improvement has also been made in restricting the scope of outage work to planned activities and performing only necessary emergent work. To assist in job scheduling, the licensee established a centralized work coordination center which was described in Inspection Report 50-373/91028; 50-374/91029. Licensee staff indicated that the center provided better communications between departments and helped to streamline overall daily activities.

The total station dose for the year at the time of the inspection was 418 person-rem, with 393 person-rem attributed to L2R04. This figure was about 69 person-rem above the estimated goal for this timeframe. The additional dose was mainly a result of higher than anticipated dose rates in the drywell, particularly under the vessel. Higher dose rates were also encountered in the Residual Heat Removal (RHR) system and slightly higher dose rates were measured in the Reactor Coolant System (RCS) loops.

In an attempt to avoid pressure and temperature transients which would break free crud buildup on the core and distribute it throughout the RCS, the station employed a soft shutdown technique for this outage. The plant was successfully shutdown using this procedure however, as mentioned above, dose rates were still higher than prior outages. A Dose Reduction Task Force team was established to investigate the problem in attempts to determine the actual source of the higher dose rates, particularly with respect to the under vessel area and the RHR system. Initial speculation attributed some of the loss of the soft shutdown's effectiveness to a hard scram which occurred in October 1991, and most likely distributed crud throughout the RCS. The inspectors attended the kickoff meeting of the task force whose members were from station management, station radiation protection, station technical staff, and corporate radiation protection. The format of the initial meeting was a brainstorming session to discuss the problem and possible ways of definitively identifying and eliminating the source of the higher dose rates. As a result of the meeting an investigative survey was performed of the under vessel area and indicated that the apparent main contributor of the dose rates in that area was from the sump. Further studies and efforts were still pending at the conclusion of the inspection.

The licensee also performed wet lifts of the dryer and separator during vessel disassembly. A vendor provided special lifting mechanism was used to move the dryer and separator from the vessel to the holding pit while completely submerged in water. This method eliminated the need to provide constant spraying of the components while in transit, and the refuel floor did not require airborne contamination controls. While the wet lifts were successful, total dose savings was not realized due to high dose rates from the water used to flood up the holding pit. However, lessons learned from this initial effort were being evaluated and planned to be employed during re-assembly and for future outages. Overall, licensee staff indicated that the procedure went smoothly and that future wet lifts, utilizing lesson learned, should realize an overall dose savings.

The licensee also performed a decontamination of 21 LPRM flanges during the outage. The vendor provided "brush-and-flush" service which was effective in reducing dose rates on the flanges from an average 90 R/hr to 2.5 R/hr. This reduction assisted in reducing doses to workers performing LPRM connector maintenance and installation later in the outage.

Other ALARA efforts included reactor cavity and dryer/separator pit vacuuming, which removed an estimated 25 curies of radioactivity, use of underwater robots, and low dose waiting and dressout areas. The addition of ALARA staff personnel interfacing directly with the Mechanical Maintenance department assisted in the timely production of work requests and RWPs. However licensee staff did indicate that some problems still existed with obtaining contractor historical and lessons learned files, especially with respect to the construction work groups. In all, the additional efforts to provide better interfaces between departments were improvements from previous outages.

During previous inspections several hot spot postings were noted on drains and piping in the reactor buildings. The inspectors observed that many of these postings still existed in these buildings, which continue to contribute to the general area radiation levels. This matter has been discussed with the licensee on prior occasions, with the licensee responding that the modifications to install hydrolaze ports for non-safety and safety related systems required extensive engineering reviews. This matter was revisited with the licensee at the exit meeting, who indicated the reviews had been delayed over the past several years due to other higher priority work. The inspectors discussed the impact the hot piping had on the ability to place whole body friskers in these areas. The licensee acknowledged the inspectors comments.

No violations or deviation were identified.

9. Radiological Occurrences (IP 83750)

The inspectors reviewed radiological occurrence reports for the year to date. Two of the reports were evaluated in detail by the inspectors.

The first event occurred on January 8, 1992 which involved a contract insulation work crew performing work on the Reactor Water Cleanup System (RWCU) F004 valve. This event was briefly discussed in a recent Resident Inspectors report (IR 50-373/910025(DRP); 50-374/910025(DRP)). According to the event chronology, the insulators reported to the contractor radiation protection trailer to begin the insulation removal on the RWCU valve. Through a miscommunication, the workers signed in on an incorrect RWP which was for work in the outboard main steam isolation valve room (a valve whose designator was also F004). The workers reached their job site, could not gain access to the RWCU room with the key they were issued, and called the radiation protection desk to request the appropriate key. Subsequent conversations led to the workers being given the high radiation key necessary to access the RWCU room. The workers entered the room and removed the insulation from the valve. It was not discovered that the workers were in the room until the job was completed and another individual requested that the RWP be

activated so the work (which had already been completed) could begin. The insulation crew was immediately denied further access to the radiologically controlled area (RCA) until an investigation was completed. The investigation revealed that the RWP the workers signed in under described radiation and contamination rates in the range of less than 1 mR/hr and less than 1,000 dpm/100 square centimeters respectively. The rates in the area where the work was actually performed were between 300 and 700 mR/hr and contamination levels as high as 30,000 dpm/100 square centimeters.

Apparent root causes for the events included, the work being performed without a completed job package, communication problems between the insulators and the RP department, and failure of the workers to appropriately respond to noted changes in radiological conditions.

Had the workers signed in under the appropriate RWP, dosimetry placement would have been different, RP coverage would have been provided, and proper pre-job briefings would have been performed. As a result of the error, the licensee took immediate corrective actions by discussing the event with each insulation work shift and required the completion of job packages, work scope details, and proper plant locations prior to any work being initiated.

This event was a violation of Technical Specification 6.2.B, which requires radiological procedures to be established and followed. However, the inspectors noted that this appeared to be a unique occurrence and will not be subject to enforcement action because the licensee's efforts in identifying and correcting the violation meet the criteria specified in Section V.G of the Enforcement Policy.

A second event, which occurred on January 28, 1992, involved a Radiation Protection Technician (RPT) performing surveys under the reactor vessel and retrieving cameras located in the sump below the vessel. The RPT entered the area with his ED alarm set points at 200 mrem dose and 1,000 mR/hr dose rate. The technician entered the sump area to retrieve the cameras, noted his ED alarming for dose rate, but continued to complete his task, which required an additional few minutes. The RPT exited the RCA and reported the occurrence to the RP Foreman. The RPT's ED read 295 mrem, and the highest dose rate encountered was 3,820 mR/hr. The licensee immediately counseled the RPT and took disciplinary actions.

The inspectors noted that this event was similar to those discussed during an enforcement conference held at the Region III Offices on January 21, 1992, from which a Notice of Violation was issued. The inspectors indicated to the licensee that this event was a continuing example of such problems with radiation worker and RPT performance discussed at the above conference. The licensee's response to the violation was still pending at the time of the inspection, therefore, corrective actions were not fully in-place.

No violations or deviations were identified. One non-cited violation was issued for performing work under the wrong RWP.

10. Surveillances and General Tours (IP 83750)

The inspectors made several tours of the RCA during the course of the inspection. The following items were presented to licensee management and discussed at the exit meeting.

The inspectors observed diving activities into the dryer/separator pit to accomplish welding on the dryer. The inspectors noted good coordination between the diver and the RPTs, and the use of robot cameras and tele-dosimetry. Overall the job appeared to go well as planned.

During tours of Unit 2 the inspectors observed good coordination of work activities at the RP control desks and the drywell coordinators were knowledgeable of all work being performed at the time. The drywell in general was not cluttered and low dose areas were designated throughout.

The inspectors accompanied a shift operator on his routine reactor building, turbine building, and auxiliary building rounds. To gain access to the areas required for the rounds, one dressout in full protective clothing (PC), and three dressouts in minimal PCs (booties and gloves) had to be performed. The inspectors noted that the operator appeared to be knowledgeable of radiological conditions in the various areas and followed good RP practices. The impact of the contaminated areas appeared to be minimal as an impediment to the operator's shiftly routine rounds.

The inspectors noted through observations of personnel exiting contaminated areas that some individuals did not perform the required whole body frisk before donning their personal clothing. Subsequent discussions with licensee RP staff indicated that the observed occurrences were not unique events. During the inspection a PCE was recorded of an individual who alarmed a main RCA access point whole body frisker. The investigation of the event indicated that the individual did not frisk prior to donning his personal clothing after leaving a contaminated area. Additional poor radiation worker practices observed were an individual improperly wearing a respirator (over the PC hood breaching the face seal), and one individual passing through the main RCA access/egress point without frisking. The inspectors discussed these events at the exit meeting and indicated to licensee management that concerns with radiation worker practices had been discussed in the past and such matters needed proper management attention to be resolved.

No violations or deviations were identified.

11. Exit Meeting

The scope and findings of the inspection were discussed with licensee representatives (Section 1) at the conclusion of the inspection on February 21, 1992. The inspectors discussed the non-cited violation for work performed under the wrong RWP (Section 9), the good performance of the ALARA program throughout the outage, and observations based on plant tours. Licensee representatives did not identify any documents or processes reviewed during the inspection as proprietary.