

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Reports No. 50-373/94004(DRSS)  
50-374/94004(DRSS)

Docket Nos. 50-373; 50-374

License Nos. NPF-11; NPF-18

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

Facility Name: LaSalle County Station, Units 1 and 2

Inspection At: LaSalle County Station, Marseilles, Illinois

Inspection Conducted: February 14 through March 4, 1994

Inspector: Patrick L. Loudon 3/21/94  
Patrick L. Loudon Date  
Radiation Specialist

Reviewed By: John A. Grobe 3/21/94  
for William Snell, Chief Date  
Radiological Programs Section 2

Approved By: John A. Grobe 3/21/94  
John A. Grobe, Acting Chief Date  
Reactor Programs Branch

Inspection Summary

Inspection on February 14 through March 4, 1994  
(Report No. 50-373/94004(DRSS);50-374/94004(DRSS))

Areas Inspected: Routine inspection of the licensee's radiation protection program which included reviews of audits and appraisals, planning and scheduling for the Unit 1 refueling outage, As-Low-As-Reasonably-Achievable (ALARA) group activities for the outage, and radiological events.

Results: Two apparent violations were identified. One involves the apparent deliberate contamination of female radiation workers' clothing, and the second involves the failure to perform an adequate evaluation of radiological hazards incident to workers during the collection of a radioactive waste sample. These apparent violations will be the topic of an Enforcement Conference scheduled for April 5, 1994. Additionally, the inspection identified potential problems with respect to chemistry technicians not performing required surveys of routine low dose samples.

Weaknesses in work monitoring with respect to accumulated doses were illustrated in a limit switch replacement job which resulted in more than twice the estimated dose being expended to complete the task. The station does not currently have an aggressive monitoring program of work in progress to identify activities which are accumulating dose above estimates. In an effort to address this weakness, the station has created a Unit health

physicist position. The Unit health physicist will be responsible for all work activities and others conditions associated with his Unit. The inspector noted more involvement from other work groups with the cognizant Unit health physicist in completing necessary work packages for the upcoming Unit 1 outage than has been observed during past outages.

## DETAILS

### 1. Persons Contacted

#### Licensee staff

#\*J. Arnould, Regulatory Assurance  
#\*J. Bell, Supervisor, Maintenance Support Staff  
\*G. Benes, Corporate Licensing Administrator  
\*D. Bowman, Station Quality Verification, ISEG  
\*D. Burgess, Supervisor, Electrical Maintenance  
#\*M. Cray, Master, Instrument Maintenance  
\*M. Dougherty, Superintendent, Site Construction  
\*D. Farr, Superintendent, Technical Services  
# M. Freidmann, Operational Lead Health Physicist  
\*K. Goodwin, Radiation Protection Technician  
#\*S. Harmon, Supervisor, Training Department  
# R. Hynes, Station Quality Verification, ISEG  
#\*K. Kociuba, Master Electrician  
\*J. Lewis, Radiation Protection Improvements Manager  
# J. Lockwood, Supervisor, Regulatory Assurance  
#\*E. Martin, Director, Station Quality Verification  
# G. Masters, Superintendent, Long Range Work Control  
# J. McIntyre, Superintendent, Station Quality Verification  
#\*E. McVey, Regulatory Assurance NRC Coordinator  
#\*T. Nauman, Master, Mechanical Maintenance  
#\*P. Nottingham, Supervisor, Chemistry Department  
#\*L. Oshier, Health Physics Services Supervisor  
#\*D. Ray, Station Manager  
#\*M. Santic, Superintendent, Maintenance Department  
#\*C. Sargent, Superintendent, Site Services  
#\*J. Schmeltz, Superintendent, Operations  
# V. Settergren, Supervisor, Human Resources  
# R. Shields, Unit 1 Outage Planner  
# C. Silich, Supervisor, Quality Control  
\*E. Worley, Radiation Protection Technician

#### Nuclear Regulatory Commission

\*D. Hills, Senior Resident Inspector  
# C. Phillips, Resident Inspector  
# W. Snell, Chief, Radiological Programs Section 2

#### Illinois Department of Nuclear Safety

# R. Zuffa, Resident Inspector

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

\*Indicates those present at the exit meeting on February 18, 1994.

#Indicates those present at the exit meeting on March 4, 1994.

2. Audits and Appraisals

The inspector discussed and reviewed efforts planned by the Station Quality Verification (SQV) Department to review radiological control activities during the Unit 1 refueling outage (L1R06). SQV will perform in the field reviews as an enhancement to their normal review efforts, similar to the field reviews performed during the fall Unit 2 outage. Additionally, the department is seeking to enhance its staff with a radiological assessor to perform broad scope reviews of the station's radiological controls performance. Another item noted during discussions with cognizant staff included the planned review of the SQV department's effectiveness by a peer SQV group comprised of individuals from other Commonwealth stations. Overall, the SQV department is continuing to aggressively monitor the resolution of Business Development Team (BDT) findings and is increasing staffing in key areas of need.

No violations of NRC requirements were identified.

3. Planning and Scheduling for Upcoming Unit 1 Outage

The inspector reviewed the station's planning activities for L1R06. The planning group had recently visited several corporations to assess various work control and monitoring techniques and to ascertain which techniques could be incorporated into the station's day to day operations. Based on these visits, the station will establish a new work control center during L1R06 which is planned to help facilitate work activities during the outage. Key individuals from various work groups will be located in the work control center to facilitate work group needs and help resolve any emergent problems. This is a new effort for the station and will be reviewed during the outage.

Many work packages were still being reviewed during the inspection and planning staff indicated that they were behind in planning compared to normal scheduling for L1R06. The potential radiological consequences of being behind on work package reviews will be closely monitored as the outage progresses.

No violations of NRC requirements were identified.

4. ALARA Involvement for Unit 1 Outage

a. Chemical Decontamination Work

The inspector reviewed the licensee's planning for chemical decontamination of the recirculation system during L1R06. The inspector interviewed the project manager and system engineer for the chemical decontamination activities during the course of the inspection.

The station plans to use low oxidation-state metal ion (LOMI) decontamination process for the removal of oxidation layers in the

recirculation system piping. A decontamination factor of 3.0 is anticipated.

Overall, the inspector found the planning for the evolution to be well thought out, and key individuals involved with the process were experienced with chemical decontamination activities.

b. Outage Goals and Special Initiatives

The inspector discussed outage goals with the Unit 1 health physicist and the ALARA coordinator during the course of the inspection.

The dose estimate for the outage was about 500 person-rem (5.0 person-Sieverts (Sv)). Major contributors to the exposure estimate included extensive in-service-inspection activities, motor operated valve work, feedwater valve work, and miscellaneous valve maintenance.

As an enhancement to the overall operation of the radiation protection department compared to previous outages, a Unit health physicist position has been added. This individual will have oversight over all radiological work occurring in his assigned unit. The effectiveness of this position will be further evaluated during future inspections.

No violations of NRC requirements were identified.

5. Radiological Occurrences

a. Limit Switch Repairs on the "RE" Sump

The inspector reviewed a job recently performed which involved the replacement of a level indicator in the "RE" sump in the under vessel area of Unit 2.

The job was covered by radiation work permit #94-40261A, and was to be completed in approximately 4.0 work hours at a dose expenditure of 1.8 person-rem (0.018 person-Sieverts). Due to complications encountered during the installation and setting of the limit switches, the job was actually performed in approximately 200 hours at a dose cost of 4.1 person-rem (0.041 person-Sieverts).

Based on interviews with the system engineer, electrical maintenance, and radiation protection personnel involved, there appeared to be a lack of a review to determine the best "course of action" while the job was being accomplished with respect to dose control. There additionally was no radiological hold point established to require work to be stopped from an exposure perspective.

The inspector discussed this job at the Exit meeting (Section 6) to highlight the lack of radiation protection "stop-work" reviews and to present the problems that such minor tasks, without the appropriate radiation protection holds, could have on overall exposure goals during the Unit 1 outage.

b. Results of Contaminated Radiation Worker Clothing Investigation

The inspector discussed the final results of the licensee's investigation into the apparent deliberate contamination of two female radiation worker's clothing which occurred in November 1993. The following is a description of the events:

On Thursday, November 18, 1993, a female Radiation Protection Technician (RPT) performed work on the Refuel Floor (RFF) within the radiologically controlled area (RCA) at LaSalle Station. Prior to entering the RFF, the RPT changed from her personal clothing into modesty garments and protective clothing (PCs).

The change rooms for the RFF are two small rooms (on the Unit 2 side) which are commonly shared by both male and female workers and are accessible to anyone who may gain access to either of the Unit Reactor Buildings.

According to the licensee's investigation, the RPT removed her personal clothing and neatly folded and stacked them on a bench in the change room with her hard hat on top of the stack. She entered the RFF and performed her duties for about 2.5 hours. She exited the RFF and entered a personnel whole body frisker which is at the base of the stairs descending from the RFF. She had removed her PCs before exiting the RFF and was wearing modesty garments when she entered the whole body frisker, and received a "clear" indication on that monitor. She went to the change room and removed her modesty garments and put on her personal clothing. While dressing, she noticed a brown smudge mark on the inside of her pants but at the time thought nothing of it. She then proceeded to the RCA exit point where workers again enter a whole body frisker before exiting the RCA. At this point she received an alarm which indicated that she was contaminated on the rear area of her body. She proceeded to the decontamination room and discovered that the inside of her pants in the area of the smudge measured 25K dpm/100cm<sup>2</sup> (416.67 Bq/100cm<sup>2</sup>). She subsequently measured her underwear and it exhibited 4K dpm/100cm<sup>2</sup> (66.67 Bq/100cm<sup>2</sup>). Her skin did not display any contamination. She washed the contaminated areas of her clothing and exited the RCA.

An investigation was initiated to determine how the contamination found its way onto her clothing and she was

interviewed by Human Resources management to ascertain the possibility of sexual harassment.

During the initial stages of the investigation, a female Fuel Handler (FH) came forward with a description of a similar event which had occurred about a week before the RPT's, and also involved the FH's personal clothing.

On November 13, 1993, the female FH was working on the RFF and had removed her personal clothing and placed them in the change room similar to that of the RPT's. She performed her tasks on the RFF and exited through the whole body frisker by the change room and received a "clear" indication. She too donned her personal clothing and attempted to exit the RCA. She received an alarm while exiting, and the monitor indicated contamination on the rear part of her body. She reported to an RPT in the area and he measured the contamination to be 5K dpm/100cm<sup>2</sup> (83.33 Bq/100cm<sup>2</sup>). She did have some cross contamination to her skin but all indication of contamination was removed. The 5K contamination level is at the lower limit of detectability in which the monitors are calibrated.

The licensee referred the RPT involved in the November 18, 1993, event to Human Resources to discuss possible sexual harassment. Upon learning of the second occurrence of what appeared to be a deliberate attempt to contaminate female radiation workers, the licensee expanded their review which included a formal investigation performed by corporate security staff. This investigation included interviews of thirty-six people who were known to be on the RFF during the times of the two contamination events.

The results of the interviews were inconclusive as to a potential perpetrator.

The licensee also set up a camera to observe entries into the change room between December 8 and December 22, 1993, but this surveillance revealed no unusual activities.

The licensee has subsequently re-opened their investigation as of March 3, 1994, to resolve some technical specifics regarding these events. Licensee staff also indicated that they would notify the Region of the results of these reviews.

The inspector reviewed the incident during a routine inspection in November, however; the event was not pursued until the licensee's formal investigation was completed. Throughout the course of the investigation, the Regional Office has been in contact with the licensee on developments into these events.

Although an individual or individuals who perpetrated the contamination of the FH and RPT's clothing could not be conclusively identified, it is the licensee's belief that the contaminations were the result of intentional acts. The NRC Regional Office of Investigations (OI) performed evaluation interviews with the females involved and have reviewed the licensee's investigation. OI found the investigation adequate and agree with the conclusions.

These events represent unauthorized use of NRC licensed materials and the apparent violation of License Conditions Number 2.B.3 and 2.B.4 which authorizes the licensee, in part, to receive, possess, and use at any time, any byproduct, source, and special nuclear material, as necessary to perform reactor instrumentation and radiation monitoring equipment calibrations, and as fission detectors, pursuant to the Atomic Energy Act of 1954, as amended, and 10 CFR 30, 40, and 70. (Apparent Violation 50-373/94004-01;50-374/94004-01)

c. Radioactive Waste Sample Event

The inspector also reviewed another radiological occurrence which occurred during the inspection period. A description of the events surrounding this event are detailed below.

During the afternoon shift on February 22, 1994, a Radioactive Liquid Waste supervisor requested a sample from the 2WZ01T (Chemical Waste Collection) tank prior to performing processing in accordance with station procedures.

A chemical technician (CT) went to the sample panel located on the 663' elevation of the turbine building to collect the sample. While attempting to collect the sample the CT found the sample line to be "plugged" and requested a Radioactive Waste (RW) supervisor and a "B" operator to clear the line.

The RW supervisor and "B" operator received a key from a CT in the chemistry "hot" laboratory and asked that if they get the line cleared whether he would like them to go ahead and collect the sample for him. The CT indicated it would be okay to do so. The RW supervisor and "B" operator then proceeded to the sample panel, back-flushed the line with station water and collected the sample in the labeled 250 ml bottle which the CT had left at the panel. The two individuals did not have a survey meter at the time they collected the sample. They also were not wearing extremity dosimeters during the sample collection.

The RW supervisor cleaned off the bottle and placed it in a rubber glove and gave it to the "B" operator to take to the chemistry laboratory. While waiting outside the entrance to the chemistry laboratory area, another operator noticed that the nearby whole body friskers were in alarm and summoned a passing radiation



protection technician (RPT) to look into the cause of the alarms. The individuals believed that a "hot" laundry hamper had passed by and caused the alarms, however, after further review the RPT determined that the sample the "B" operator was carrying was the source of the radiation field causing the alarms. The RPT obtained a survey meter and determined the sample to be reading 2.5 rem/hour (0.025 Sv/hr) at a distance of 2 inches. The sample was immediately taken to the chemistry laboratory and appropriately stored.

An initial investigation was conducted by the licensee to understand the circumstances surrounding the event and to determine the extremity exposures the two workers received during the sample collection. The RW supervisor was assigned 392 mrem (3.29 mSv) extremity dose and the "B" operator received 208 mrem (2.08 mSv) extremity dose. Whole body doses for the individuals were assigned as read by their electronic dosimeters of 4 mrem (40 micro-Sv) and 8 mrem (80 micro-Sv), respectively. The inspector's independent review of the licensee's assessment agreed with the licensee's dose determinations.

Immediate corrective actions included a communication to the CTs that they are the only authorized individuals who may pull process samples and procedures require that they have a survey meter with them when pulling samples to verify dose rates from collected samples.

The inspector and the Chief of Region III Radiological Programs Section 2 conducted interviews with several individuals involved with the event and the following conclusions were drawn from these interviews.

1. The RW supervisor and "B" operator were performing the sample collection with the intent to "help-out" the CT in the spirit of teamwork. The RW supervisor indicated that infrequently RW staff do this to assist the CT during busy analysis periods.
2. CTs do not always use survey meters when pulling samples from RW tanks which routinely do not exhibit radiation dose rates greater than 25 mrem/hour (250 micro-Sv/hr). This particular tank normally produces samples no greater than 20 mrem/hour (200 micro-Sv/hr).
3. CTs have allowed RW staff to pull samples in the past but were not aware that the operators were not qualified to perform this task.

4. An evolution which occurred earlier in the day, which led to the higher than normal dose rates in the Chemical Collection Tank was not communicated to the afternoon RW supervisor or the CT when they came on shift.

The inspector determined that this event was an apparent violation of 10 CFR 20.1501(a)(2)(i) and (iii), which state in part, that the licensee shall make or cause to be made such surveys which are reasonable under the circumstances to evaluate the extent of radiation levels; and the potential radiological hazards present (Apparent Violation 50-373/94004-02;50-374/94004-02).

Another problem identified during the review of the event was the apparent routine practice of the CTs not using survey meters and failing to determine dose rates of collected samples.

Two apparent violations of NRC requirements were identified: (1) the inappropriate use of licensed material; and (2) failure to perform surveys to determine the radiation hazard incident to radiation workers.

#### 6. Exit Meeting

The scope and findings of the inspection were discussed with licensee representatives (Section 1) at the conclusion of the inspection on February 18 and March 4, 1994. Licensee representatives did not identify any documents or processes reviewed during the inspection as proprietary. Specific items discussed at the meetings were as follows:

- The observations of the inspector with respect to L1R06 outage preparation and chemical decontamination activities.
- The observed lack of radiological hold points observed upon a review of the "RE" sump work.
- The apparent violations involving the apparent willful contamination of female radiation workers' clothing, and, the failure to perform an adequate evaluation of radiological hazards associate with the collection of a radiological waste sample.
- The additional concern of the CTs apparent complacent attitude toward performing required surveys when collecting samples.