

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Reports No. 50-373/85025(DRSS); 50-374/85026(DRSS)

Docket Nos. 50-373; 50-374

Licenses No. NPF-11; NPF-18

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

Facility Name: LaSalle County Station, Units 1 and 2

Inspection At: LaSalle County Station, Marseilles, Illinois

Inspection Conducted: August 5-9 and 12-13, 1985

Inspector: R. A. Paul *R. A. Paul*

9/3/85
Date

Approved By: *L. R. Greger*
L. R. Greger, Chief
Facilities Radiation Protection
Section

9/3/85
Date

Inspection Summary

Inspection on August 5-9 and 12-13, 1985 (Reports No. 50-373/85025(DRSS); 50-374/85026(DRSS))

Areas Inspected: Routine, unannounced inspection of solid radioactive waste system including handling, packaging and treatment of waste; transportation activities; preparations for Unit 1 refueling outage; an unplanned release of offgas noble gas activity into the offgas filter building; and the circumstances surrounding barrels containing radioactive material found in the licensee's onsite dump. The inspection involved 58 inspector-hours onsite by one NRC inspector.

Results: No violations were identified in four of the six areas inspected. Two violations were identified in two areas (failure to control radioactive material on an offsite location - Section 7, and failure to make a survey to determine compliance with 10 CFR 20.103 - Section 8).

DETAILS

1. Persons Contacted

- *L. Aldrich, Lead Health Physicist
- *D. Berkman, Assistant Superintendent, Technical Services
- *R. Bishop, Superintendent, Services
- *S. Davis, Radwaste Coordinator
- *D. Hieggelke, ALARA Coordinator
- *K. Jeisy, Station QA Supervisor
- *F. Lawless, Rad/Chem Supervisor
- *J. Lewis, Health Physics Coordinator
- *G. Myriek, NSHP - Health Physicist
- *C. Sargent, Production Supervisor

M. Jordan, NRC Senior Resident Inspector

The inspector also contacted other licensee personnel.

*Denotes those present at the exit meeting.

2. General

This inspection which began at 9:30 a.m. on August 5, 1985, was conducted to examine the licensee's solid radwaste activities, transportation program, and health physics preparation for the Unit 1 refueling outage. Also reviewed were past inspection findings, circumstances surrounding an unplanned offgas release into the offgas filter building and waste drums containing radioactive material found on the onsite dump. Several tours of the Units 2/3 reactor, turbine, and radwaste buildings were made. With the exception of the turbine building basement, housekeeping was generally good.

3. Licensee Action on Previous Inspection Findings

(Closed) Noncompliance (373/85014-01A; 374/85014-01A and 373/85014-01C; 374/85014-01C): Failure to wear personal dosimeters on the front part of the body at or above waist level, and failure to follow procedural requirements concerning proper hand and shoe frisking in accordance with procedural requirements. First line supervisors have received additional training in their responsibilities for ensuring that workers observe proper radiological practices and adherence to radiological protection requirements. The inspector did not observe any persons not adhering to procedural requirements during this inspection.

(Open) Noncompliance (373/85014-01B; 374/85014-01B and 373/84-31-01; 374/84-38-01): Failure to make a personal contamination whole body frisk after exiting from a step-off pad in accordance with procedural requirements and inadequate numbers of friskers and frisker booths to meet the procedural requirement. The licensee has ordered 45 more friskers and is currently installing 16 portable frisking booths to

allow whole body frisking to be completed at or near the step-off pad areas. The licensee has committed to accomplish this by the beginning of the Unit 1 refueling outage scheduled for September/October, 1985.

4. Organization and Management Controls

The inspectors reviewed the licensee's organization and management controls for radiation protection and chemistry, including changes in the organizational structure and staffing, effectiveness of procedures and other management techniques used to implement the program, experience concerning self-identification and correction of program implementation weaknesses, and effectiveness of audits of the program.

The Rad/Chem Department consists of three sections: Radiation Protection, ALARA, and Chemistry. Each section has a lead professional who reports to the Rad/Chem Supervisor. The Rad/Chem Supervisor reports to an Assistant Superintendent who reports to the Services Superintendent who in turn reports to the Plant Manager. Reporting to the lead professional are three health physicists and four engineering assistants. Reporting to the lead chemistry professional are three chemists and two engineering assistants. Reporting to the Health Physics Coordinator-Operational are six rad foremen and 35 rad/chem technicians (RCTs) who perform chemistry and health physics functions. Reporting to the ALARA coordinator are two engineering assistants.

All foremen meet the "Supervisors Not Requiring NRC Licenses" qualifications specified in Section 4.3.2 of ANSI N18.1-1971. Additionally, one EA will be promoted to foreman when he meets the training and ANSI requirements. With the exception of fifteen RCTs, all RCTs meet the technician qualifications specified in Section 4.5.2 of ANSI N18.1-1971. The fifteen RCT's work under supervision and perform only functions for which they are presently qualified.

Neither the foreman staff nor the RCT staff has significant refueling outage experience. The licensee intends to hire experienced contract radiation chemistry technicians (senior technicians) and supervisory personnel for the upcoming refueling outage to cover contractor work activities. The contracting of these persons should considerably strengthen the licensee's control and surveillance activities during the outage.

During a previous inspection (Reports No. 50-373/85014; 50-374/85014) it was noted that the lack of experienced health physicists appears to have impacted negatively on the licensee's radiation protection program. This matter was reviewed during this inspection to determine if the licensee had taken any steps to permanently strengthen the health physics experience level, especially for the upcoming refueling outage (October 1985). Based on conversations with licensee corporate and plant staff personnel, it appears the licensee will implement a plan to strengthen the staff by the start of the refueling outage. This matter was discussed at the exit meeting.

5. Solid Radioactive Waste

The inspectors reviewed the licensee's solid radioactive waste management program, including: determination whether changes to equipment have reduced effectiveness of the systems; adequacy of the system to prevent and collect spillage; adequacy of test program of solid waste system; adequacy of monitoring system to determine valid radiation measurements; adequacy of required records and procedures; and experience and training concerning operation of the solid waste systems. The inspector made several tours of the radwaste area, visited the radwaste solidification control room, spoke to a radwaste operator and electrical maintenance man concerning operator training and maintenance problems and the maintenance surveillance program, reviewed the solidification and barreling system with a radwaste foreman, and observed radwaste truck loading operations. The Process Control Program for the solidification and packaging of waste was also reviewed (LAP 200-6), it appeared the program was used to meet the Technical Specification requirements of 3/4.11.3 - Solid Radioactive Waste.

Solid radioactive waste consists of spent resins, filter sludge, evaporator bottoms, and dry active waste (DAW). The DAW is placed into 55-gallon steel drums and compacted. The compactor has a ventilation and filter system, and all persons compacting the material are required to wear half-face respirators.

Liquid wastes consisting of resins, filter sludge, and evaporator bottoms are solidified using a Stock Equipment cement solidification system. The system consists of a drum preparation station, drumming station, radwaste building bridge crane, storage area, and provisions for a remote radiation readout. Programmed amounts of waste and cement are added to drums through a bung hole in the nonremovable top of the drum. After the drum is tumbled, more waste and cement can be added and the drum retumbled to promote uniform mixing and solidification. Measurements are made to determine drum radiation levels, curie content, and contamination levels.

During a previous inspection (Report No. 373/85014; 374/85015), it was noted that although the radwaste facility had installed a shielded facility to reduce personal exposures while surveying, it was not being used because the licensee had not installed the remote readout system for which the system was designed. This issue was raised by the inspector as an ALARA concern. During this inspection the licensee indicated that the hardware and detectors for the remote monitoring system had been ordered and will be installed in the near future. This matter will be reviewed at a future inspection. (373/85025-04; 374/85026-04)

The inspector discussed radwaste operations and radwaste training with a radwaste operator (B operator) and foreman. The operator was trained and appeared well versed in the operations of the Stock Solidification System. The foreman stated that the radwaste foremen provide periodic training to the operators in procedures and equipment operation, and that each operator receives formal and on-the-job (OJT) training. The licensee is reviewing whether more OJT and formal training with equipment and procedures is necessary.

The inspector reviewed the problems with the Stock Solidification System identified by the licensee and the subsequent solution to these problems by members of CECO and the Stock Company. Some of the actions taken to correct these problems include the hiring of a person with considerable experience in the Stock System, an inspection program of incoming drums, certain system modifications, and a routine preventive maintenance program to identify, correct, and upgrade the equipment used in the system.

The inspector reviewed the use of LaSalle Operating Procedure 1520.3 "Calculation of Curie Content of Non-Routine Radioactive Shipping Containers," to determine curie content for a Stock system 55-gallon drum of radwaste. It appears the calculational method used in the procedure is valid. The inspector also reviewed the licensee's use of LRP 1520-6, Revision 4, "Curie Content of Common Radiation Shipping Containers," which contains tables of curie content as a function of direct measurements for a variety of shipping containers. These tables are based on the calculational method of LRP 1520-3. The procedure does not incorporate the calculational method to determine curie content for certain beta emitters. The licensee acknowledged that a procedure is required and stated one would be developed which specifies how the calculations for the beta emitters are made. This matter will be reviewed at a future inspection. (373/85025-05; 374/85026-05)

The licensee has periodically experienced a problem with standing water in drums containing spent resins which were produced in the "B" radwaste decant tank. The matter was investigated by the electrical maintenance department who determined there was a problem with the sludge level indication system. A circuit control board was replaced which they thought would correct the problem. However, the problem was not corrected and the licensee has stopped producing spent resin drums produced by the "B" decant tank for shipment. Another work request has been recently submitted for investigation and correction of the problem. This matter will be reviewed at a future inspection (50-373/85025-01; 50-374/85026-01).

6. Transportation Activities

The inspector reviewed the licensee's transportation activities, including: verification that clearly defined management authorities and responsibilities exist; verification that an acceptable training program is in place for persons involved in transport activities; determination whether procurement, selection, preparation and delivery of packages is in compliance with NRC and DOT regulations and the licensee's quality assurance program; determination whether receipt of and periodic maintenance of packages are in compliance with NRC and DOT regulations; adequacy of required records, reports, shipment documentation and notification; and experience concerning identification and correction of programmatic weaknesses.

Shipments of low specific activity (LSA) waste to licensed burial sites are the major transportation activity. Contaminated solid trash (paper, plastic, wood, metal, discarded clothing, etc.) is either packaged in

55-gallon steel drums and compacted or packaged in large metal boxes if the materials are not compactible. New DOT Specification 17-H drums are used which meet the DOT 7-A performance specification. Liquid wastes consisting of resins, filter sludge, and evaporator bottoms are solidified using a Stock Equipment Company cement solidification system. Records of radioactive shipments made during 1985 to date were selectively reviewed for compliance with 49 CFR 172-173 and 10 CFR 71. Quality assurance surveillance of these shipments were also reviewed. The information on the shipping papers appear to satisfy NRC, DOT, and burial site requirements.

It was noted during a previous inspection (Report No. 373/84013; 374/84014) that the licensee's radwaste procedures (LRP 1520-1 through LRP 1520-8) had been revised to comply with the requirements of 10 CFR 20.311 and 10 CFR 61 applicable to low-level radwaste classification form and stabilization, however, there was no procedure for preparing manifests and labeling packages. The licensee has since implemented procedure (LAP 100-16) which addresses preparing of manifests and labeling packages.

7. Release of Contaminated Material to an Uncontrolled Area

As the result of a QA survey request, the licensee identified two 55-gallon drums with internal contamination in the unrestricted onsite scrap material storage area on August 2, 1985. The external radiation readings on the surface of the drums ranged from less than 1 mR/hr at 2 inches to 2.7 mR/hr at 2 inches. No contamination was present on the outside of the drums. The drums were then transferred from the unrestricted area to a controlled area. As a result of follow-up surveys of the area performed on August 8-9, 1985, five more internally contaminated drums, and a patch of contaminated ground (about 10 ft²) were identified. No other contaminated material was found. The external radiation readings on these drums ranged from less than 0.1 mR/hr to 0.5 mR/hr; no external contamination was found on the drums. The dose rate on the contaminated area of ground read 1.5 mR/hr. The drums and the contaminated ground were transferred to a controlled area.

The dump site was closed on August 5, 1985, and the survey of the entire dump was completed by August 9, 1985. The dump had been used for disposal of site construction material and certain nonradioactive debris subsequent to plant operation. The licensee indicated that the site had apparently also been used occasionally by the public for disposal. The existence of the licensed radioactive material in an unrestricted area without being secured from unauthorized removal or under constant surveillance and immediate control of the licensee is a violation of 10 CFR 20.207 requirements.

The licensee investigated the release of radioactive material and found that the drums were traceable to radwaste and were apparently disposed of because of capping problems. The "Unconditional Release Program" procedure (LAP-900-26) had been violated, and weaknesses in the unconditional release program were identified. The inspector concurs in the evaluation, and indicated to the licensee that additional attention should be given to emphasizing the need for better surveys for material being unconditionally released.

To correct and strengthen this program the licensee is currently reviewing the unconditional release procedure and program, and has instructed the Security Department that, except for defined vehicles, no vehicles transporting station material will be allowed to exit without an unconditional release from Rad/Chem. This matter was discussed at the exit interview and will be reviewed at a future inspection. (373/85025-02); 374/85026-02)

One violation was identified.

8. Release of Radioactive Noble Gases in the Offgas Filter Building

On August 7, 1985, an RCT and several maintenance persons entered the offgas filter building to remove an offgas prefilter housing cover. The cover was to be removed to allow workers to replace the Unit 2A offgas prefilter media. As the cover was being removed, the RCT noted an increased response on his survey meter. The cover was then set back into place; the cover was off for about 6 minutes. The maintenance men and the RCT immediately exited the area and found themselves to be contaminated with what they assumed to be short-lived noble gas daughter products (cesium-138 and rubidium-88) from the suspected noble gas release.

The licensee did not post or restrict the building at this time. Other maintenance and security personnel who were not involved in the job were later contaminated when they entered the offgas building. After RAD/CHEM became aware of these subsequent personal contamination incidents they assessed the problem and realized the system was still leaking; the entrances to the area were then restricted and posted. This occurred approximately one hour after the initial release. At about the same time, maintenance personnel were instructed to return to the area to replace the bolts and to seal the filter housing cover; this action stopped the leak. However, these workers were not issued protective clothing or respirators before re-entering the building. Personal clothing, skin, and hair contamination ranged from 5000 dpm per 17 cm² to 120,000 dpm per 17 cm². No steps were taken to decontaminate the personnel; the noble gas daughter products were allowed to decay. Whole body counts were later performed on each person, no activity was detected.

The licensee's review of the incident indicated the following: (1) The valves to the Unit 2A offgas prefilter were isolated several days before the filters were to be replaced, which was sufficient to allow noble gas trapped on the filter to decay. (2) An air sample was taken after the prefilter system was isolated and the day before the housing cover was removed. No radionuclides were detected, therefore, it was assumed the system was not leaking. This assumption was made even though the cover was bolted down. (3) Because employees who subsequently entered the building through two different entrances (before it was restricted) were contaminated, an evaluation was made to determine if an unmonitored release occurred. Smoke tests verified that under the same operating condition as existed during the initial release, the air flowed from the

point of release into the offgas building, then to the main stack. (4) Noble gas was present in air samples taken on the 2A offgas prefilter test taps the day after the release, indicating that the closed prefilter isolation valves were leaking and causing a constant source of fresh noble gas which was released after the cover was removed.

Preliminary actions taken by the licensee to prevent recurrence follows: (1) The prefilter cover was bolted down, the shield plug replaced and bolted down, and the filter will not be replaced until the unit is shutdown. (2) The work procedure will be revised to include requirements for sampling the prefilter cavity for noble gas to verify that the isolation valves are not leaking and that the system is isolated. (3) ALARA check lists will be revised to include a reminder to individuals working on offgas systems to take special precautions when the offgas system is operating.

The inspector's review of the incident identified two significant weaknesses in the licensee's handling of this incident: (1) The licensee assumed that the release was terminated when the workers reset the cover after the release occurred. As a result, further building entries were not restricted, nor were air samples taken to determine the airborne concentrations in the building. Because the building was not posted and restricted, other workers were allowed to enter and became contaminated. (2) Workers were allowed to re-enter the building, about one hour after the initial release, to secure the cover without first evaluating airborne radioactivity levels; nor were protective clothing and respirators worn. The use of protective clothing and respirators would have eliminated further personal clothing and skin contamination. (3) The method of personal decontamination for all workers was to allow the radioactivity to decay. Personal decontamination methods were not used although according to the licensee's survey sheets for each individual, contamination levels on clothing ranged up to 120,000 dpm per 17 cm². The survey sheets indicated contamination levels for each persons clothing, but not for their face or hair. The licensee stated that it was assumed that their skin and hair contamination was approximately fifty percent of the levels indicated for their clothing.

The practice of allowing skin and clothing contamination to decay in lieu of employing decontamination procedures is not considered good health physics or ALARA practices. The failure to take air samples before entering the area to identify airborne concentrations is a violation of 10 CFR 20.201(b), which requires that an evaluation or survey be conducted to ensure compliance with the limits specified in 10 CFR 20.103. These matters were discussed at the exit interview and will be reviewed at a future inspection. (373/85025-03; 374/85026-03)

One violation was identified.

9. Rad/Chem Preparation for the Unit 1 Refueling Outage

Based on discussions with members of RAD/CHEM it appears that sufficient preparation is being made for the upcoming Unit 1 refueling outage. It appears RAD/CHEM has been, and will continue to be, involved in preplanning

meetings and aware of the major radiation jobs. Attention has been given to access controls; most efficient use of RCT and contractor manpower; respirator distribution and collection; surveillance of RWP outage work activities; use of mock ups; portal monitor, frisker, and frisker booth locations; the internal and external dosimetry program; and the involvement of the ALARA coordinators group to aid in exposure reduction. Daily work schedules will be used as a mechanism to control RAD/CHEM work priorities and activities.

No violations or deviations were identified.

10. Exit Meeting

The inspector met with licensee representatives (denoted in Section 1) at the conclusion of the inspection on August 13, 1985. Further discussions were held by telephone on August 23 and 26, 1985. The inspectors summarized the scope and findings of the inspection. The inspector also discussed the likely information content of the inspection report with regard to documents or processes reviewed by the inspector during the inspection. The licensee did not identify any such documents/processes as proprietary. The response to certain items discussed by the inspector, the licensee:

- a. Acknowledged the violations. (Sections 7 and 8)
- b. Stated that more persons with refueling experience will be in the health physics program at the start of the upcoming refueling outage. (Section 4)
- c. Acknowledged the comments concerning the need to strengthen the Unconditional Release Program. (Section 7)
- d. Acknowledged the comments concerning the practice of allowing skin and clothing contamination to decay in lieu of employing decontamination procedures as not being good health physics or ALARA practice, and stated this practice will be reviewed.