### U.S. NUCLEAR REGULATORY COMMISSION

## REGION 111

Report Nos. 50-454/92003(DRSS); 50-455/92003(DRSS)

Dockets No. 50-454; 50-455

Licenses No. NPF-37; NFF-66

Licensee: Commonwealth Edison Company P. O. Box 767 Chicago, IL 60690

Facility Name: Byron Station, Units 1 and 2

Inspection At: Byron Site, Byron, Illinois

Inspection Conducted: February 3-7, 1992

Inspector: T. J. Kozak

2/21/92 Date

2/21/22 Date

Approved By: William Snell, Chief Radiological Controls Section

## Inspection Summary

Inspection on February 3-7, 1992 (Report Nos. 50-454/92003(DRSS); 50-455/92003(DRSS))

Areas Inspected: Routine, unannounced inspection of the radiation protection program including: organization, management controls, and training; audits and appraisals; external exposure control; control of radioactive materials, contamination, and surveys; maintaining occupational exposures ALARA; liquid radioactive waste, solid radioactive waste; and transportation of radwaste (IP 83750, 84750, 86750).

<u>Results:</u> The licensee's radiation protection program appears to be effective in controlling radiological work and in protecting the public health and safety. Strengths were continued good management support of the radiation protection program as evidenced by radiation protection's integral role in outage planning and development of new ALARA initiatives. A previously identified concern of a relatively high number of personnel contamination events was addressed through a recently implemented program which should be effective in reducing the number of events. No violations or open items were identified.

## DETAILS

#### 1. Persons Contacted

- \*S. Andrews, Corporate Health Physicist
- \*S. Barrett, Radiation Protection Supervisor
- \*C. Bontyes, Nuclear Quality Programs Inspector
- \*D. Brindle, Regulatory Assurance Supervisor
- \*M. Burgess, Technical Superintendent
- \*L. Bushman, ALARA/Operations Lead Health Physicist
- \*R. Colglazier, Regulatory Assurance
- \*D. Herrmann, Radioactive Waste Staff
- \*R. Hopkins, Radioactive Waste Coordinator
- R. Munson, ALARA/Operations
- \*F. Rescek, Corporate Radiation Protection Director
- \*D. Robinson, Onsite Nuclear Safety Administrator
- \*S. Sober, Lead, Health Physics Technical

\*C. Brown, Resident Inspector

The inspector also interviewed other licensee and contractor personnel during the course of the inspection.

\*Denotes those present at the exit meeting on February 7, 1992.

# 2. General

This inspection was conducted to review aspects of the licensee's radiation protection program during preparations for a Unit 2 refueling outage. The inspection included tours of radiologically controlled areas, the auxiliary building, and radwaste facilities, observations of licensee activities, review of representative records, and discussions with licensee personnel.

# 3. Organization, Management Controls and Training (IP 83750, 84750)

The inspector reviewed the licensee's organization and management controls for the radiation protection program, including: organizational structure, staffing, delineation of authority, management techniques used to implement the program and experience concerning self-identification and correction of program implementation weaknesses.

The organization of the Radiation Protection Department (RP) remained essentially the same as reported in the previous RP inspection (Inspection Report Nos. 50-454/91023; 50-455/91023(DRSS)). One member of the ALARA group was recently reassigned to another position within the company. The licensee was recruiting to fill the vacated position at the time of this inspection. The staff appeared to meet appropriate qualifications and to be capable to implement the requirements of the radiation protection program. The licensee planned to augment its radiation protection technician staff by the addition of approximately 60 contract radiation protection technicians (CRPTs) for the upcoming Unit 2 refueling outage. The CRPT vendor was required to provide resumes to the licensee which were certified to meet ANSI 3.1 - 1978 qualification requirements. The licensee randomly picked about ten percent of the resumes to independently verify that they accurately represented the CRPTs' work experience. Once the CRPTs arrive onsite, their training will include the normal NGET training, a one day theory course and test followed by a three day station procedure course and test. CRPTs who have successfully completed the theory course at a CECo site or the procedural course at the Byron station within the past year are exempted from these training requirements. The tests will be reviewed during a future inspection to verify that they adequately challenge CRPTs' knowledge.

No violations or deviations were identified.

## 4. Audits, Surveillances and Self-Assessments (IP 83750, 84750)

The inspector reviewed the results of Quality Assurance audits and surveillances conducted by the licensee since the last inspection. The inspector also reviewed the extent and thoroughness of the audits and surveillances.

Nuclear Quality Programs (NQP) was responsible for onsite auditing of activities at Byron Station using both audits and surveillances to accomplish this responsibility. The inspector reviewed the results of surveillances conducted of radiation protection activities since the last inspection. No major findings were identified. NQP conducted an audit of each CECo station's maintenance, operations, and radiation protection programs during August and September 1991 and issued the results in the Nuclear Operating Stations Comparative Audit Report. The report described the three programs at each site and then developed a model program for each discipline which was basically a compilation of the best points at each site. The assessment of the Byron Radiation Protection Program indicated that personnel attitudes and interactions with other groups were very positive. Byron did not have all aspects of the model program, such as computerized access control, but was in the process of developing them. The inspector will review how the licensee applies the results of this audit during a future inspection.

No violations or deviations were identified.

#### 5. External Exposure Control (IP 83750)

The inspector reviewed the licensee's external exposure control and personal dosimetry program, including: changes in the program, use of dosimetry to determine whether requirements were met, planning and preparation for maintenance and refueling outage tasks including ALARA considerations, and required records, reports and notifications. There were no major changes to the external exposure control program since the previous radiation protection inspection. The inspector verified that the licensee had current NVLAP accreditation in all required areas for reading TLDs. The inspector observed dosimetry issuing procedures for extremity monitors, alarming dosimeters, and normal access to radiologically controlled areas; no problems were noted. The inspector also observed the process for authorizing extensions to administrative exposure control limits. Each extension required a complete review of the job's radiological conditions, the worker's current dose, and the approval of the Lead ALARA/Operations Health Physicist. It appeared that the licensee was effectively using their low administrative limits as an ALARA tool and that there was good external exposure control. Reviews of the licensee's exposure records for 1991 indicated that there were no personnel exposures greater than 10 CFR 20.101 limits.

Planning activities for the upcoming Unit 2 refueling outage were reviewed during the course of this inspection. Observations indicated that radiation protection was actively involved in the planning process. Radiation work permit (RWP) requests were submitted to the ALARA Analyst who then initiated the RWPs. The requests consisted of a task list which was generally effective in describing job steps such that proper radiological requirements for various evolutions could be developed. Previous work experience was incorporated into the RWPs through manual retrieval of information stored in job history files. The inspector noted through a selective review of RWPs and work procedures that there was little use of hold points to ensure completion of required radiological work steps. Licensee representatives indicated that the use of hold points was being investigated and that a system for incorporating them into work documents was being developed.

No violations or deviations were identified.

### 6. Control of Radioactive Material, Contamination and Surveys (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 radioactive and contaminated material controls.

The inspector randomly checked radiation and contamination monitoring devices in the field to ensure operability and proper calibrations; no problems were noted. Contamination control practices routinely included engineering controls to prevent the spread of contamination during job execution. The licensee recently completed maintenance and repair of equipment in the fuel transfer canal. This job was performed while the canal was drained rather than using divers. This highly contaminated area presented significant contamination control challenges. The licensee chose to use a stripable coating throughout the canal to contain contamination during the job resulting in a significant reduction in respirator use. Observations of portions of the coating removal process did not reveal any problems and indications were that significant decontamination of the canal surfaces was realized. Surveys of the area were adequately reviewed and were readily available at the controlled area access point.

There were 258 personnel contamination events (PCEs) in 1991. The licensee recently began grouping events into general categories in an attempt to identify major cluses of the PCEs. All 1991 PCEs were assigned a cause code and those categories which contributed to the majority of events were identified. Corrective actions were in the process of being developed to address the major causes. It appears that the licensee should be able to systematically reduce the number of events through effective implementation of this program. Developments in this area will be reviewed during figure inspections.

No violations or deviations were identified.

7. Alintaining Occupational Exposures ALARA (IP 83750)

When inspector reviewed the licensee's program for maintaining wpational exposures ALARA, including: changes in ALARA policy and precedures, and their implementation; worker awareness and involvement in tas ALARA program; and establishment of goals and objectives, and effectiveness in meeting them.

There were no significant changes in the station's ALARA policy or procedures. Review of the minutes from the December 1991 ALARA Committee meeting indicated that active participation was still being received from all departments. The licensee is considering the implementation of an ALARA incentive program which was discussed at the meeting. It appeared that this proposal was still in the information gathering stage. Other items on the agenda included discussions about a permanent tool issue station and the early boration process which was used during shutdown for the previous Unit 1 refueling outage and was planned for use again during the upcoming Unit 2 outage. Results indicating whether or not a dose savings was realized using this process were not yet published at the time of this inspection.

The licensee continued to be aggressive in developing ALARA initiatives in an effort to reduce overall station dose. A video imaging system was recently purchased which, once established, should be helpful during job planning stages and briefings. A new area-based in service inspection schedule including quality assurance requirements and installation/removal of scaffolding and insulation was recently developed which should reduce dose through the elimination of rework associated with this job.

The total station dose for 1991 was slightly above the yearly goal but was still low at 267.848 person-rem. Participation in establishing 1992 dose goals was received from all work groups. The total station projection for 1992 is 205.069 person-rem of which 159.647 person-rem was projected for the Unit 2 refueling outage.

No violations or deviations were identified.

#### Liquid Radioactive Waste (IP 84750)

The inspector reviewed the licensee's liquid radioactive waste management program, including: liquid radioactive waste flowpaths, liquid radioactive waste effluents for compliance with regulatory requirements, adequacy of required records, reports, and notifications, and experience concerning identification and correction of programmatic weaknesses.

The licensee used the liquid radwaste processing system (WX system) and the boric acid system (AB system) to process radioactive liquid prior to release. Liquid from the floor drain system (WF system) and the equipment drain system (WE system) was routed to the WX system inlet header. It was then sent through one of two roughing demineralizers. through an associated filter, and routed to radwaste monitor tank A. From monitor tank A, the liquid was directed through two portable polishing demineralizers, a filter, and back to monitor tank A. Water was then send to a WX system polishing demineralizer, a filter and to monitor tank B where it was analyzed. If the water was acceptable for release, it was normally routed to liquid release tank OWXOIT and then discharged. If further processing was needed prior to release, the water was normally routed liquid release tank OWX26T and then to the regenerative waste drain tank. From this tank, the water was routed back to the WX system inlet header and followed the previously described path until acceptable for release. Excess primary coolant generated during boration or dilution operations was routed to the AB system inlet header, to one of two feed demineralizers, an associated filter, and to one of two 125,000 gallon hold up tanks. This liquid was then sent to one of two AB monitor tanks, analyzed, and, if needed, recirculated through a concentrate demineralizer until acceptable for release. Once acceptable for release, the liquid was routed to liquid release tank OWXOIT and then discharged. Liquid radwaste processing operations were verified to be as described in the Updated Safety Analysis Report.

Radioactive liquid waste discharges were controlled via liquid release permit procedure BCP 400T50 and, when approved, were routed through a remotely operated control valve set to trip on indication of high activity from the effluent monitor. The setpoint on the effluent monitor was calculated using a formula in the Off Site Dose Calculation Manual and the trip function was verified to be operational prior to initiating each discharge. The inspector reviewed discharge records for the past year and compared them to the information provided in the mid-year Semiannual Effluent Release Report to ensure consistency. No problems were noted and activity discharged was well within regulatory requirements.

The inspector reviewed progress in the licensee's investigation of the regenerative waste drain tank overpressurization event which was described in a previous inspection report (Inspection Report Nos. 50-454/91029(DRP); 50-455/91029(DRP)) and is being tracked via Open Item 454/91029-01(DRP). The radiological consequences of the event appeared to be minimal. There was no offsite release of radioactive water during the event and the contents of the tank were drained and processed.

Preliminary results of the investigation indicate that the most probable cause of the overpressurization was an inaccurate level indication. The maximum tank level indicated to the operator during the event was 92 percent. Post event calibration of the level indicator showed that its full span was only 92 percent. If this was the case during the event, then the tank was most likely overfilled. However, the level indicator was damaged during the event which may have affected the results of the calibration. The instrument was not on a regular calibration cycle and was last calibrated in 1988. While this does not appear to be a good practice, it did not appear that it was a violation of any licensee or NRC requirements. The licensee's final evaluation and corrective actions will be reviewed during a future inspection.

No violations or deviations were identified.

#### 9. Solid Radioactive Waste (IP 84750)

The inspector reviewed the licensee's solid radioactive waste management program, including: processing and control of solid wastes, adequacy of required records, reports and notifications, performance of process control and quality assurance programs and experience in identification and correction of programmatic weaknesses.

The licensee's solid radioactive waste processing program was verified to be as described in the process control program and the USAR. Dry active waste (DAW) was compressed in drums and then sent to a vendor for supercompaction. The licensee also had a contract with another vendor to process incinerable items.

The licensee uses several initiatives in an effort to reduce resin waste volumes. Spent resin was dewatered using vendor supplied drying equipment. Steam generator blowdown resin lifetime was increased by its reuse in the WX system's roughing demineralizers. Experiments to further increase roughing demineralizer lifetime by adding a polymer to the resin, which may increase the resin's capacity for removing activity, have been conducted and initial indications were that the resin lifetime was increased approximately three to four times. These initiatives not only reduce waste volumes, but also reduce handling time and associated personnel dose.

Most of the licensee's filters were located under plugs on the 401 level of the auxiliary building. Removal of the filters and transfer to the radwaste building was done remotely. The filters were withdrawn into a shielded cask, driven to an underground tunnel, and placed on a cart which was transferred to the radwaste building. The filters were then placed in a cask which was located behind the shielded wall of the waste storage area. This evolution was done such that a minimal amount of dose was expended.

No violations or deviations were identified.

# 10. Transportation of Radwaste (IP 84750, 86750)

The inspector reviewed the licensee's radioactive material and radwaste transportation program, including: adequacy and implementation of written procedures, radioactive materials and radwaste shipments for compliance with NRC and DOT regulations and the licensee's quality assurance program, review of transportation incidents involving licensee shipments (if any), adequacy of required records, reports, shipment documents and notifications and experience concerning identification and correctica of programmatic weaknesses.

The licensee utilized approved procedures for all aspects of waste handling and subsequent preparation for shipment. The license had no transportation incidents during the past year. The inspector reviewed records and surveillances done for all radioactive waste hipments during the past year. No problems were noted. Radwaste infimients to the burial ground in 1991 consisted of 4319.8 cubic feet of resin. The total waste volume buried in 1991, including vendor processed DAW, was 8959.5 cubic feet.

No violations or deviations were noted.

### 11. Exit Interview

The inspector met with licensee representatives (denoted in Section 1) at the conclusion of the inspection on February 7, 1992, to discuss the scope and findings of the inspection.

During the exit interview, the inspector discussed the likely informational content of the inspection report with regard to documents or processes reviewed by the inspector during the inspection. Licensee representatives did not identify any such documents or processes as proprietary. The inspector specifically discussed the following items:

- The personnel contamination event investigation process (Section 6).
- Continued positive developments in the ALARA initiative area (Section 7).
- \* The regenerative waste tank overpressurization event (Section 8).