

U.S. NUCLEAR REGULATORY COMMISSION
REGION III

Report Nos. 50-456/92019(DRSS); 50-457/92019(DRSS)

Docket Nos. 50-456; 50-457

License Nos. NPF-72; NPF-77

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

Facility Name: Braidwood Station, Units 1 and 2

Inspection At: Braidwood Site, Braidwood, Illinois

Inspection Conducted: August 24-26, 1992

Inspectors: *M. Schumacher for*
R. A. Paul
Senior Radiation Specialist

9-3-92

Date

Madh Shah
N. Shah
Radiation Specialist

9-3-92

Date

Approved By: *M. Schumacher*
M. C. Schumacher, Chief
Radiological Controls Section 1

9-3-92

Date

Inspection Summary

Inspection on August 24-26, 1992 (Report Nos. 50-456/92019(DRSS); 50-457/92019(DRSS))

Areas Inspected: Routine announced inspection of the licensee's radiation protection program (IP 83750) including ALARA efforts, internal dose assessment, training and qualifications, organization and control of radioactive materials and contamination. Items identified in previous inspections were also reviewed.

Results: The licensee's radiation protection (RP) program appears to be good with no violations identified. Improved communications between work groups and increased source term and dose reduction efforts have enhanced the ALARA program. The addition of a degreed health physicist further strengthens RP staff qualifications and the selection process for contract radiation protection technicians is well implemented. A weakness in the licensee's evaluation of increased gaseous activity for 1991 was identified.

DETAILS

1. Persons Contacted

- +K. Kofron, Plant Manager
- +J. Lewand, Regulatory Assurance
- +E. Roche, Health Physics Supervisor and Radiation Protection Manager (RPM)
- +D. E. O'Brien, Technical Superintendent
- +P. Zolan, Operating Experience Coordinator, Regulatory Assurance
- +T. Jacobson, NQP
 - R. Koback, Lead health Physicist, Operations Group
 - M. Sayers, ALARA Analyst
 - J. Neuhoff, Health Physicist
 - R. L. Thacker, Lead Health Physicist, Technical Group

- +Rick Roton, Resident Inspector, NRC

- +Attended the exit meeting on August 26, 1992.

The inspectors also interviewed other licensee personnel during the course of the inspection.

2. Licensee Action on Previous Inspection Findings (IP 84750)

(Closed) Open Item 50-456/92006-02(DRSS); 50-457/92006-02(DRSS):
Licensee agreed to evaluate liquid effluent data to determine if large increase in Fe-55 from 1990 to 1991 is erroneous. Commonwealth Edison's corporate nuclear chemistry services reviewed quarterly liquid effluent release data from 1990-1991 and compared Fe-55 totals to other corrosion product isotopes. While Fe-55 activity did increase a factor of 5.8 during this period, similar increases were observed for Co-58 (1.39), Mn-54 (4.81) and Co-60 (4.27). Further trending of the data indicated an increasing trend among all corrosion product isotopes which is not uncommon during the early years of PWR operation. The inspectors reviewed the results of the chemistry analysis and agrees with the conclusions. This item is considered closed.

(Closed) Inspection Follow-up Item 50-456/92012-01(DRSS); 50-457/92012-01(DRSS): Licensee to evaluate reason for increase in gaseous effluent activity from 1991 to 1992. The licensee's original assumption was that the increase in gaseous activity was due to a change in release sample size rather than operational events. However, upon further evaluation prompted by inspector concerns, it was determined that this change occurred in 1989 well before the increase in gaseous activity. The licensee concluded that the increase resulted from operational events including valve leakage, instrument air line leakage, and possibly a May 1991 crudburst. The inspectors agreed with the licensee's conclusions but were concerned over the timeliness in identifying operational events as the root cause. This matter was discussed with licensee representatives during the course of the inspection.

3. Changes in Organization and Training and Qualifications of Personnel (IP 83750)

The inspectors reviewed selection of contractor radiation protection technicians (CRPTs) and changes in the health physics organization since the last inspection.

An individual with limited work experience, but a degreed health physicist, has been hired as a duty health physicist by the licensee. The individual is receiving on-the-job (OJT) training under the guidance of senior radiation protection (RP) staff and is developing the RP manual (section 5). An inspector reviewed the individual's progress and the OJT program; no problems were identified.

One senior radiation protection technician (RPT) was upgraded and reassigned to dosimetry and 2 new junior RPTs were added. A total of 9 RPTs were upgraded from junior to senior level, including 3 temporary upgr , for the upcoming outage. There are now 31 RPTs including 24 seniors.

Licensee selection and verification of CRPTs are covered by station policy and corporate written guidance (NSRP Guidance 1700-1), in accordance with American National Standards Institute (ANSI) 3.1-1978. Selection includes review of technicians' resumes against ANSI-3.1-1978 criteria and past performance at other Commonwealth Edison facilities. Qualifications of selected candidates are verified through interviews with other plants and on-site contract vendor representatives. No formal vendor audits are currently performed but a program is in the planning stages. The station has hired technicians for the upcoming outage from two different vendors. Most of these technicians are seniors and will be used for difficult and higher dose producing jobs. The inspectors reviewed selected resumes of CRPTs hired for the planned outage and discussed several of them with licensee representatives. All of the technicians selected were well experienced and met ANSI-3.1-1978 criteria.

The station requires CRPTs to pass written health physics proficiency exams covering nuclear physics theory and practical health physics problem solving. The test is generated from a bank of questions provided by the corporate office, which have been reviewed by NRC inspectors at other CECO stations and found to be reasonably difficult with a good mix of theoretical and practical information. After passing the exam, each technician completes additional training in licensee procedures, health physics equipment and application, and site specific requirements. Examinations are given for each subject and successful completion is required.

No violations or deviations were identified.

4. External Exposure Control (IP 83750)

The inspectors reviewed the radiation work permit (RWP) program, radiological postings and personnel exposure.

So far in 1992, approximately 24 person-rem has been accrued compared with the target of 40 person-rem. The accrued dose included 3 person-rem from at power entries into both unit containments to repair leaks from valves and the Unit 1 steam generator manway (section 5). These activities were a continuation of previous valve work described in inspection reports 50-456/92012(DRSS) and 50-457/92012(DRSS) and had not been expected by the licensee in the 1992 dose goal.

Radiation Work Permits (RWPs) are generated in accordance with BwAP 575-11 "Radiation Work Permit Program" and BwRP 1140-1 "Writing Radiation Work Permits." Selected RWPs were reviewed for appropriateness of the radiation protection requirements based on work scope, location and radiological conditions. In general, radiological controls information was clearly presented and both ALARA reviews and current radiological surveys were attached. Expired RWPs are filed and used for future job planning (section 5). The inspectors observed workers adhering to RWP requirements and discussed these requirements with workers at the job site.

The inspectors confirmed licensee radiological postings by independent dose rate measurements and observed workers adhering to dosimetry requirements.

No violations or deviations were identified.

5. Maintaining Occupational Exposure ALARA (IP 83750)

BWAP 700-1 "ALARA Policy Procedure" describes the station ALARA policy and establishes the station ALARA committee. Composed of upper management with the plant manager as chairman, the committee has responsibility over establishing station ALARA goals, reviewing station radiological performance and allocating plant resources to maintain exposures ALARA. Radiation Protection has primary responsibility for implementing ALARA programs through the ALARA Analyst who performs pre and post job reviews, maintains job history files and assists in RWP development (section 4). Additional support for outages has been obtained through contractor ALARA specialists, as is the case in the upcoming outage where the prime contractor has provided an ALARA assessment of planned steam generator tubing activities.

Discussions with licensee staff indicated that communication between work groups to implement the ALARA program is improving. A review of departmental goals and monthly dose reports indicated that exposure is below the non-outage goal and that management attention towards ALARA is increasing. Increased use of information from other plants and past lessons learned was apparent from documentation in job history files. A review of job history and RWP files for several at power containment entries (section 4) identified good use of ALARA controls.

A source term and dose reduction action plan for 1992 has been developed by the ALARA committee. Licensee efforts include planned use of remote radiation monitoring devices for the upcoming outage, identifying and flushing hot spots, early boration during shutdown prior to the outage and reviewing non-outage repetitive tasks to determine areas of significant dose reduction. The licensee also conducted an "ALARA

Awareness Day" to instruct workers in good ALARA practices and is developing a radiation protection (RP) manual to assist workers in understanding RP practices and policies (section 3). A video tape summarizing concepts discussed during the "ALARA Awareness Day" has been incorporated in the Nuclear General Employee Training (NGET) program. Progress continued on the reactor coolant and radwaste filter downsizing project (inspection reports 50-456/91025(DRSS) and 50-457/91025(DRSS)), with all reactor coolant filters now being 1-micron pore size. The licensee is considering further reducing all filters to 0.45 micron pore size absolute.

Approximately 182 person-rem was received during the last unit 1 outage and an anticipated 208 person-rem is expected for the upcoming unit 1 outage owing to more dose intensive work. Major outage activities include steam generator tube eddy current testing and tube plugging, ISI, valve modifications, refueling and support activities. Job exposure estimates for routine outage activities closely parallel actual dose received during the previous outage and the licensee expects that ALARA and source reduction efforts to date should allow them to maintain their 1992 exposure goal.

No violations or deviations were identified.

6. Internal Exposure Control (IP 73750)

The inspectors selective review of recent whole-body count (WBC) results indicated no results exceeding the 40 MPC-hour control measure. The licensee uses two "FASTSCAN" whole body counters. The inspectors selectively reviewed relevant WBC and calibration procedures, the WBC facility and equipment, recent calibration results and discussed the WBC program with cognizant health physics personnel. As part of a pilot program, the licensee recently performed their own calibration of one of the counters using the vendor manual. Normally, calibrations are performed by the vendor. The program was successful and the licensee is considering permanently performing in house calibrations. While no concerns were identified, the inspector discussed the merit of establishing good quality controls for the program.

The inspectors reviewed an employee intake of cobalt-58 and -60. The licensee's assessment of MPC-hours and dose was performed using the ICRP-30 methodology and were found in agreement with those of the inspector.

Observation of work preparations and a review of procedures and air sampling data indicate that the use of respiratory equipment has been properly assessed. The respirator cleaning, issuance and storage facility appeared to be well maintained and RPTs demonstrated knowledge of the respirator program through interviews with the inspectors. A bar code system is scheduled for implementation to assist in respirator issuance and inventory.

No violations or deviations were identified.

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

The inspectors reviewed records and calibration data for the whole body friskers and gamma portal monitors. Calibrations are performed quarterly and after replacement of detectors. Calibrations and daily quality control checks appeared to be performed in accordance with licensee procedures. However, the daily check source used does not truly verify the alarm set points established during calibration because it is several orders of magnitude greater than the trip setting. The licensee has purchased new calibration standards and a check source with about the same strength as the trip setting, which will more accurately verify the alarm set points.

BWRP 1610-1 "Control and Inventory of Radioactive Sources" and BWRP 1610-2 "Leak Testing of Radioactive Sources" describe the radioactive source control program. Sources greater than one millicurie are stored in locked cabinets in the calibration and chemistry hot lab facilities under controlled access. Source inventories and leak testing are performed semi-annually. The inspectors noted that the storage facilities were well maintained and that inventories and leak testing were conducted in accordance with procedures. As with respirators (section 6), a bar code system will be used for source inventory.

Through tours of the facility and examination of records, the inspectors verified that portable instrumentation was maintained and calibrated in accordance with licensee procedures. Based on interviews with RPTs, it appears that the licensee's staff understands the calibration and maintenance program.

No violations or deviations were identified.

8. Inspection Follow-up Items

Inspection follow-up items (IFI) are matters which have been discussed with the licensee, will be reviewed further by the inspector and which involve some action on the part of the NRC, licensee or both. Inspection follow-up items disclosed during the inspection are discussed in section 2.

9. Exit Interview

The scope and findings of the inspection were reviewed with licensee representatives (section 1) at the conclusion of the inspection on August 26, 1992. The licensee did not identify any documents as proprietary. No violations of NRC requirements were identified during this inspection. The following matters were specifically discussed by the inspectors:

- a. Increase in Fe-55 activity contained in liquid effluents for 1991 (section 2)
- b. Increase in total gaseous activity released for 1991 (section 2)

- c. Selection of contractor radiation protection technicians (section 3)
- d. Source term and dose reduction program (section 5)
- e. Onsite calibration of whole body counter (section 6)