

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Reports No. 50-454/86034(DRSS); 50-455/86029(DRSS)

Docket Nos. 50-454; 50-455

Licenses No. NPF-37; CPPR-131

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

Facility Name: Byron Nuclear Power Station, Units 1 and 2

Inspection At: Byron Site, Byron, IL

Inspection Conducted: September 8-19, 1982

Inspector: *W. B. Grant* *for* W. B. Grant

10-7-86
Date

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

10-7-86
Date

Inspection Summary

Inspection on September 8-19, 1986 (Reports No. 50-454/86034(DRSS);
50-455/86029(DRSS))

Areas Inspected: Routine, unannounced inspection of the radiation protection and solid radwaste programs including: organization and management controls; training and qualifications; exposure controls; control of radioactive material and contamination; surveys and monitoring; ALARA activities; allegation follow-ups; Unit 2 preoperational testing; solid radwaste shipments; I&E Information Notices; and status of previous inspection findings.

Results: No violations or deviations were identified.

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DETAILS

1. Persons Contacted

- M. Bailey, Technical Staff
- *W. Bielasco, Station Health Physicist
- W. Bowman, Health Physics Consultant (ALARA)
- *W. Burkamper, Quality Assurance Supervisor
- L. Bushman, ALARA Coordinator
- R. Campbell, Technical Staff
- *A. Chernick, Compliance Supervisor
- J. Cook, Regulatory Staff
- R. Flahive, Radiation/Chemistry Supervisor
- D. Goldsmith, Health Physics Group Leader
- *T. Joyce, Assistant Superintendent Technical Services
- J. Langan, Regulatory Staff
- *J. Pausche, Regulatory Group Leader
- *R. Querio, Station Manager
- A. Slawinski, Technical Staff
- S. Sober, Health Physics Group Leader
- *J. Snyder, Quality Assurance Inspector

- *C. Brockman, NRC Resident Inspector

*Denotes those attending the exit meeting.

The inspector also contacted members of the training services, radiation/chemistry, and engineering staff during this inspection.

2. General

This inspection, which began at 10:00 a.m., on September 8, 1986, was conducted to examine the routine radiation protection and solid radwaste programs, the results of the increased management involvement in the radiological control program, and the preoperational status of Unit. 2.

3. (Closed) Open Item (455/83006-01): Concerning review of the location of area monitors to assure that each is properly located to serve its intended function. This activity has been completed for all monitors involved with Unit 2. All the area monitors appear to be properly located.

(Closed) Open Items (454/85022-09; 455/85020-01): Include a whole body count to MPC-hour conversion determination in the internal exposure control program. Standard Radiation Protection Procedure No. SRP 1340-2, Revision 0, August 1986, concerning this subject has been written and is in the review process.

(Closed) Open Item (454/85022-12): Concerning procedures for alteration review and communication with operations personnel. A Deviation Report (DVR) was written concerning the inadvertent venting of the boric acid evaporators. The DVR was placed in Required Reading Program to alert the control room operators of the need to improve communications with radwaste operators when venting to the waste gas system.

(Closed) Open Item (455/85041-02): Concerning Unit 2 cross contamination from Unit 1 systems. An expanded routine survey programs of potential contaminated areas was implemented. Startup test personnel have been instructed to notify the Rad/Chem department of any test or work activities with crossover systems that may introduce contamination potentials. The inspector reviewed this program and no problems were identified.

4. Organization and Management Control

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

Since the last radiation protection inspection the following organizational and personnel changes were made:

- The Station Health Physicist (SHP) was transferred to Nuclear Services Health Physics.
- A Staff Health Physicist (HP) from Quad Cities Nuclear Power Station was promoted to SHP.
- The Health Physics Group was reorganized. The duty HP, Lead Foreman, HP Group Leader-Operational Programs, and the HP Group Leader-Support Services now report directly to the SHP.
- A Health Physics Foreman was transferred to the TLD program.
- An RCT was assigned as Acting Foreman.

The new Station Health Physicist (SHP) was appointed Radiation Protection Manager (RPM). The SHP's qualifications for RPM were reviewed and he appears to meet or exceed the ANSI N18.1-1971 qualification required by Technical Specification No. 6.3.1. The licensee continues to have regularly scheduled meetings between the RPM and the Station Manager.

Two audits of the radiation/chemistry program have been conducted during 1986 by the onsite QA department since the last radiation protection inspection. Corrective action was taken on the only finding. No problems were noted.

The inspector reviewed Radiation Occurrence Reports (ROR) for 1986 through August. There were 13 RORs written during this period. Corrective action on 12 of them have been completed; one is still being investigated. Disciplinary action was taken for three RORs to date. No significant problems were noted.

No violations or deviations were identified.

5. Training and Qualification

The inspector reviewed the training and qualifications aspects of the licensee's radiation protection, and radwaste programs, including: changes in responsibilities, policies, goals, and methods; qualification of newly hired or promoted radiation protection personnel; and provision of appropriate radiation protection and radwaste training for station personnel. Also reviewed, were management techniques used to implement these programs and experience concerning self-identification and correction program implementation weaknesses.

Licensee personnel training records were selectively reviewed. All newly hired radiation/chemistry technicians (RCTs) have completed a reactor systems course as part of their initial qualification training. This training course was developed to broaden the RCTs overall knowledge of plant systems. All RCTs will complete an annual reactor systems course as part of their requalification training.

No violations or deviations were identified.

6. Radiation Protection Procedures

The inspection reviewed the following health physics procedures to determine if they are consistent with 10 CFR, FSAR commitments, and good health physics practices. No problems were noted.

BRP 1100-T2, Revision 3, Routine Weekly Survey checklist

BRP 1100-T3, Revision 2, Routine Monthly/Quarterly Survey checklist

BRP 1100-T7, Revision 0, Effluent and Waste disposal Semiannual Report
for Gaseous Effluents - Summation of all
Releases

BRP 1150-3, Revision 0, Preparation of the Semiannual Effluent Report and
Annual Radiological Environmental Report

BRP 1170-1, Revision 5, Administration Controls for Health Physics
Instrumentation

BRP 1200-T5, Revision 3, Radiation Exposure Investigation Report

BRP 1200-T34, Revision 1, Badge Registration Form

BRP 1220-1, Revision 6, Film/TLD Badge Issuance

BRP 1220-3, Revision 5, Quality test and Issuance of Electronic Personnel
dosimeters

BRP 1250-2, Revision 3, Film Badge/TLD Spiking

BRP 1260-4, Revision 1, Calibration and Use of Eberline RM-16 RD17A
Radiation Monitor

BRP 1260-5, Revision 2, Calibration and Use of High Level Exposure Probes

BRP 1260-6, Revision 1, Calibration and Use of Eberline EC4-5/DAI-5
Radiation Monitor

BRP 1270-6, Revision 0, Certification of DCA multiple dosimeter
calibrator to NBS traceability

BRP 1280-13, Revision 1, Tritium grab sampling from general atomic
process radiation monitor

BRP 1300-A9, Revision 3, Respiratory requirements for airborne
radioactivity areas

BRP 1300-T16, Revision 2, Air sample activity data sheet

BRP 1300-T17, Revision 2, Atmospheric tritium calculation forms

BRP 1300-T20, Revision 1, Self-contained breathing apparatus spare
cylinder checklist

BRP 1300-T23, Revision 0, Daily log for MS-2

BRP 1300-T24, Revision 0, CHI square worksheet for MS-2

BRP 1310-3, Revision 4, Operation and use of self contained breathing
apparatus

BRP 1310-4, Revision 4, Inspection of self contained breathing apparatus

BRP 1340-4, Revision 0, Action levels for indirect urinalysis results
from acute and chronic intake

BRP 1350-1, Revision 4, Calibration and operation of portable instruments
for sampling airborne radioactivity areas

BRP 1350-9, Revision 0, Operation and calibration of the MS-2 portable
beta-gamma counter

BRP 1360-1, Revision 3, Air sampling of suspected and known airborne
radioactivity area

BRP 1380-2, Revision 2, Atmospheric tritium Analysis

BRP 1400-T3, Revision 2, Radiation/Contamination survey

BRP 1400-T12, Revision 1, Uniform contamination survey

BRP 1460-5, Revision 0, Operation and use of the Eberline Model
No. 212076 laundry monitor

BRP 1470-2, Revision 2, Area and equipment decontamination

BRP 1500-T3, Revision 4, Radioactive material shipment form

BRP 1500-T6, Revision 1, Radioactive waste box survey worksheet

BRP 1620-2, Revision 2, Radiological controls for steam generator work

BRP 1740-1, Revision 1, Radiation protection practices during accident conditions

BRP 1740-2, Revision 4, Field operations of the Eberline SAM-2 stabilized assay meter

BRP 1750-2, Revision 1, Determination of compliance with 10 CFR 20 airborne release limits

BRP 1750-3, Revision 1, Determination of compliance with 10 CFR 50, Appendix I, design objectives for liquid releases

BRP 1750-4, Revision 1, Determination of compliance with 10 CFR 50, Appendix I, design objectives for gaseous releases

BRP 1900-A1, Revision 1, Radiation protection training for escorted visitors

7. External Exposure Control and Personal Dosimetry

The inspector reviewed the licensee's external exposure control and personal dosimetry programs, including: changes in facilities, equipment, personnel, and procedures; adequacy of the dosimetry program to meet routine and emergency needs; planning and preparation for maintenance and refueling tasks including ALARA considerations; required records, reports, and notifications; effectiveness of management techniques used to implement these programs, and experience concerning self identification and correction of program implementation weaknesses.

The inspector reviewed exposure results for 1986 to date; no exposures exceeding NRC limits were identified. Approximately 2800 individuals are currently whole body film badged with some of these individuals also having extremity and multiple badging. The licensee has reduced the number of people requiring film badges from a December 1985 high of 3700. This reduction effort is continuing. The total dose for 1986 through August was about 54 person-rems. This period included two short maintenance outages of 2-3 weeks duration each.

The HP staff reviews daily exposure updates to identify individuals approaching their limit, and to contact the appropriate work supervisor and access control personnel when limits are approached. Updates are maintained at access control. No problem were noted.

No violations or deviations were identified.

8. Internal Exposure Control

The inspector reviewed the licensee's internal exposure control and assessment program, including: changes in facilities, equipment, personnel, respiratory protection training, and procedures affecting internal exposure control and personal assessment; determination whether engineering control, respiratory equipment, and assessment of individual intakes meet regulatory requirement; planning and preparation for maintenance and refueling tasks including ALARA considerations; required records, reports, and notifications; effectiveness of management techniques used to implement these programs; and experience concerning self identification and correction of program implementation weaknesses.

Whole Body Count (WBC) results from March 1986, to date, were received. No results approaching the 40 MPC-hour evaluation level were noted. Reports generated by the WBC contractor are reviewed by the HPs to assure abnormalities and results exceeding the license's investigation level are identified. Calibration data of the standup Canberra Fast scan WBC indicated no problems; nor have daily check source readings (Co-60 and Cs-137) identified instrument drift or abnormalities.

The WBC computer converts Maximum Permissible Body Burdens (MPBB) to MPC-hours when the prescribed investigation level (3% MPBB for a single isotope; 5% MPBB total) is reached. The conversion has been proceduralized and will be included in CECO's Standard Radiation Protection Procedures (SRP).

Air sample data for 1986 to date were selectively reviewed; no problems were noted. During plant tours, filtered auxiliary ventilation systems were observed in use in various cubicles where maintenance work was on going.

No violations or deviations were identified.

9. Control of Radioactive Materials and Contamination, Surveys and Monitoring

The inspector reviewed the licensee's program for control of radioactive materials and contamination, including: change in instrumentation, equipment, and procedures; effectiveness of survey methods, practices, equipment and procedures; adequacy of review and dissemination of survey data; effectiveness of methods of control of radioactive and contaminated materials; management techniques used to implement the program; and experience concerning self identification and correction of program implementation weaknesses.

The inspector reviewed records of routine and special radiation and contamination surveys conducted since April 1986. All surveys, routine and special, are reviewed by an HP foreman for completeness and any unusual conditions. No problem were noted.

The inspector selectively reviewed survey instrument, portal monitor and an sampler calibration records. Instruments, monitors, and samplers appeared to be calibrated in accordance with procedures. Calibration

ranges reflected applicable ranges encountered in the field. Responses were within tolerance levels. A computer tracking system is used to identify instruments and samplers requiring calibration within the upcoming month. No problems were noted.

The active RWPs were selectively reviewed. RWPs contained current survey information. Approvals and ALARA reviews were included where required. Administrative exposure limits are used.

Personnel contamination reports (PCR) were reviewed for 1986 to date. Personnel contaminations have not been extensive, 36 have been recorded in 1986 through August. PCRs are tracked. Beta dose equivalents are estimated for skin exposure.

On September 15, 1986, the license installed Nuclear Enterprises IPM-7, whole body friskers (Portal Monitors) at the exits from the Auxiliary Building on the 401' and 426' elevations. The monitors require a front and back frisk of about 20 seconds each. The time delays and some minor instrument problems appeared to cause backups during high egress times such as break time and lunch time. No other problems were noted.

10. Solid Radioactive Waste

The inspector reviewed the licensee's solid radioactive waste management program, including: determination whether changes to equipment and procedures were in accordance with 10 CFR 50.59; adequacy of implementing procedures to properly classify and characterize waste, prepare manifests, and mark packages; overall performance of the process control and quality assurance programs; adequacy of required records, reports, and notifications; and experience concerning identification and correction of programmatic weaknesses.

Solid radwaste records were reviewed for 1986 to date. Radwaste shipments totaled about 7600 cubic feet and contained about 43 curies. No problems were noted.

The licensee uses a contracted mobile solidification service for the packaging of spent resins as radwaste. All other solid dry active waste (DAW) is sorted in a HEPA filtered hood, and designated as compressible, noncompressible, combustible, noncombustible, or wet waste. The combustible material, which must contain no vinyls, is set aside for volume reduction (VR) when that system becomes operational. According to the licensee, 55-gallon drums of combustible DAW are in storage for VR. The wet DAW is dried and stored for VR if it is combustible. Noncombustibles and noncompressibles are packaged and shipped to a licensed burial site.

No violations or deviations were identified.

11. I&E Information Notice

IE Notice No. 86-22: Underresponse of Radiation Survey instrument to High Radiation Fields. Byron does not have any Eberline ESP-1 instruments discussed in this notice.

No violations or deviations were identified.

12. Unit 2 Preoperational Tests

The inspector reviewed portions of three preoperational tests of radiation monitors exclusive to Unit 2 operations.

AR 2.60.61 Area Radiation Monitoring Loop 1. The test was completed in August 1986. Test discrepancies have been completed or are in the process of being corrected.

PR 2.60.64 Process Radiation Monitoring Loop 4-gross failed fuel liquid radiation monitor. Test results were reviewed; no problems were noted. Test discrepancies have been or are being corrected.

PR 2.6065 Process Radiation Monitoring, Loop 5, containing seven process monitors. Test results were reviewed; no problems were noted. Test discrepancies have been or are being completed.

No violations or deviations were identified.

13. Maintaining Occupational Exposures ALARA

The inspector reviewed the licensee's program for maintaining occupational exposures ALARA, including: changes in ALARA policy and procedures; worker awareness and involvement in the ALARA program; establishment of goals and objectives, and effectiveness in meeting them. Also reviewed were management techniques used to implement the program and experience concerning self identification and correction of program implementation weaknesses.

The ALARA group consists of the ALARA coordinator and a consultant health physicist. A representative of the ALARA group attends outage planning meetings preparing for the upcoming February 1986 outage. The station ALARA committee meets quarterly to discuss ALARA goals and activities, and the refueling outage preoperations. The inspector reviewed minutes of the ALARA committee for 1986. No problems were noted.

No violations or deviations were identified.

14. Blowdown Line Leak

On April 11, 1986, the licensee reported a leak from the blowdown line going to the Rock River. A leak developed in the 3 1/2 mile line near the river and saturated the ground at the leak site. Since the blowdown line is occasionally used to discharge liquid radwaste, soil removed while repairing the pipe was sampled and sent to a contractor for analysis. The analysis showed the soil contained no detectable radioactivity.

No violations or deviations were identified.

15. Allegation

(Closed) Allegation: Radiation protection at Byron Station (AMS No. RIII 85-A-0188). This allegation concerning denial of lead shielding requested by a welder was reviewed onsite on April 16, 1986. The welder was denied the use of a lead blanket for shielding a pipe reading 8 mR/hr on which he was going to sit. RCTs reportedly informed the welder it would take two days to do a stress analysis on the pipe before they would be allowed to put a lead blanket on it, and that 8mR/hr was not enough radiation to justify the effort.

According to radiation protection management personnel the use of the temporary shielding would require a stress analysis as would the addition of other weight, such as scaffolding, to piping. Radiation protection management stated that the RCTs should have; however, more fully explained shielding requirements and ALARA to the welder, and that their failure to do so was discussed with RCTs.

The inspector discussed ALARA, pipe stress requirements, and the RCT's apparent insensitivity to the welder's request with the allegor, who appeared to be satisfied with the information. Although the allegation that lead shielding requested by a welder was not provided was substantiated, there are no regulatory requirements necessitating the provision of such shielding under the circumstances which existed. The major problem appeared to be the insensitivity of the RCTs to the welder's request; this problem has been addressed by the licensee.

This allegation is considered closed.

16. Exit Meeting

The inspector met with licensee representatives (denoted in Section 1) at the conclusion of the inspection. The scope and findings of the inspector were summarized. The inspector also discussed the likely information content of the inspection report with regard to documents and processes reviewed during the inspection. The licensee identified no such documents/processes as proprietary.