

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Report Nos. 50-454/84-58(DRSS); 50-455/84-39(DRSS)

Docket Nos. 50-454; 50-455

Licenses No. CPPR-130; CPPR-131

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

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

Inspection At: Byron Site, Byron, IL

Inspection Conducted: August 7-10, and 23, 1984

Inspectors: *T. Ploski*
T. Ploski

8/31/84
Date

G. Christoffer
G. Christoffer

8-31-84
Date

T. Ploski
for M. Smith

8/31/84
Date

Approved By: *M. Phillips*
M. Phillips, Chief
Emergency Preparedness Section

9/4/84
Date

Inspection Summary

Inspection on August 7-10 and 23, 1984 (Reports No. 50-454/84-58(DRSS); 50-455/84-39(DRSS))

Areas Inspected: Routine, announced follow-up inspection of Open Items Identified during the December 1983 Emergency Preparedness Implementation Appraisal and inspection of the Byron Nuclear Generating Station Assembly/Accountability Drill. The inspection involved 78 inspector-hours onsite by four NRC inspectors and one consultant.

Results: No items of noncompliance or deviations were identified. All Open Items required to be completed by fuel load were closed.

DETAILS

1. Persons Contacted

- *R. Querio, Station Superintendent
- *R. Pleniewicz, Assistant Superintendent, Operations
- *R. Ward, Assistant Superintendent, Administration and Support Services
- *L. Sues, Assistant Superintendent, Maintenance
- *V. Schlosser, Project Manager, Byron
- *J. LaBonte, Quality Assurance Staff
- *K. Weaver, Health Physics Group Leader
- *J. Van Leare, Rad/Chem Supervisor
- *S. Brown, Acting GSEP Coordinator
- *K. Gruber, Quality Assurance Engineer
- *D. Kozin, GSEP Coordinator for Open Items
- *R. Chrzanowski, Security Administrator
- *D. Sible, Quality Assurance Engineer
- *R. Poche, Technical Staff, Compliance
- W. Burkamper, Supervisor, Quality Assurance, Operations
- B. McNeill, General Instructor, Training
- L. Johnson, Quality Assurance Engineer
- D. Herrman, Chemist
- D. St. Clair, Technical Staff Supervisor
- B. Scott, Health Physicist
- A. Selep, Technical Staff, Nuclear Group
- J. Harkness, Technical Staff, Ventilation
- B. Byrne, Construction Staff, Vent Systems
- J. Schrock, Shift Engineer
- R. Hopkins, Shift Engineer
- T. Gierich, Shift Engineer
- J. Barr, Lead Emergency Planner, CECO
- W. Brenner, Lead Emergency Planner, CECO
- C. Bennett, Environmental Health Physicist, CECO
- L. Duchek, Class "A" Model Task Force, CECO
- J. Golden, Supervisor, Emergency Planning, CECO
- L. Butterfield, Technical Services Manager, CECO
- *T. Shannon, Security Supervisor, Wackenhut

*Denotes those attending the exit meeting on August 23, 1984.

2. Licensee Actions on Previously-Identified Items Related to Emergency Preparedness

a. Open Items

- 1) (CLOSED) Nos. 454/83-55-01 and 455/83-38-01: Complete an assembly/accountability drill. The applicant satisfactorily conducted a site assembly/accountability drill to test personnel accountability and site evacuation procedures. This is further discussed in Paragraph 3 below. This item is considered closed.

- 2) (CLOSED) Nos. 454/83-56-02 and 455/83-39-02: Update Procedure BZP 600-A1 to incorporate current emergency response assignments such that those closest to the station are notified first; and provide a copy of the completed and revised procedure to all personnel responsible for implementing it such that a copy of this procedure will be available near the caller's home telephone. The inspectors reviewed Revision 2 of Procedure BZP 600-A1 and Commonwealth Edison Training Data Entry 1.6.3600, "Prioritized Call List and Distribution of BZP 600-A1, Revision 2." The inspectors determined that all call supervisors except one, who was seventh on a list of seven, had received a copy of BZP 600-A1, Revision 2. The applicant committed to train and distribute this procedure to this individual when he returns to work from vacation. A shift augmentation drill to test this procedure has not been conducted as of the date of this inspection. It is recommended that such a drill be conducted in the near future to ensure that this procedure will work satisfactorily. This item is considered closed.
- 3) (OPEN) Nos. 454/83-56-03 and 455/83-39-03: Complete the TSC by making the ventilation system and its associated radiation monitoring system operable. The inspector toured the ventilation system area, examined the continuous air monitor (CAM), and discussed the status of these systems with cognizant applicant personnel. At the time of the inspection, preoperational testing had been completed on the emergency ventilation system with the filters and charcoal bed installed, and corresponding leak rate tests had been completed; however, the system had not yet been turned over to the station from construction, e.g., the test results had not yet been formally accepted. While the CAM had been installed and electrically wired, calibration activities were being delayed because the calibration source had not been received from the vendor. This item remains open pending acceptability of the emergency ventilation system and completion of calibration of the CAM.
- 4) (CLOSED) Nos. 454/83-56-04 and 455/83-39-04: Complete installation, development of procedures, and training on the use of the containment atmosphere sampling system and the methods used for analyzing this sample. The containment air sampling panel (CASP) and the CASP control panel have been completely installed and are operational. The CASP also includes a particulate-iodine-gas partitioning system. These systems are fully operational and a containment air sample was collected in less than one hour. However, a question remains on the heat traced sample lines and whether it can deliver a representative containment air sample under accident conditions. The following procedures have been developed for collection of containment air samples: BZP 380-6, Radiological Precautions for Post-accident Sample Analysis; BZP 380-A7, Post-accident Sample Transport Routes; BZP 380-17, Post-accident Sample Transfer from Primary Sample Room; BZP 380-18, Post-accident Sampling of Containment Atmosphere;

and BCP 800-10, Preparation of Radioiodine Samples for Counting. In addition, procedures AAIS-CCP-002, -003, and -004 have been developed and cover radioactive isotopic analysis of noble gas, particulates, and radioiodine, respectively. BZP 380-18 was functionally evaluated and found to be adequate for collecting a containment air sample within one hour. Training on the CASP post-accident sampling systems was provided to 22 Rad/Chem Technicians and 5 Rad/Chem Foremen. Completion of the Containment Atmosphere Sampling System is also being tracked under Open Item Nos. 454/84-10-07 and 455/84-08-07. Additional concerns with this system are addressed under those open item nos. For the purposes of tracking, this item is considered closed.

- 5) (CLOSED) Nos. 454/83-56-05 and 455/83-39-05: Complete installation, development of procedures, and training on the use of the General Atomics wide range gas monitors and methods for analyzing the corresponding gas, radioiodine, and particulate samples. Two wide range gas monitors (WRGMs) have been completely installed, one for each unit. However, a question remains on the system sample lines and whether they can deliver representative samples under accident conditions. The specifications and capabilities of the systems are described in Section 7.3.3.3 of the Byron Annex of the Generating Stations Emergency Plan (GSEP). The unit one system is fully operational, and a stack grab sample was collected in less than one hour. The design problems associated with disconnecting and transporting the 270 pound lead cask have been deferred. The applicant determined that a 60 second grab sample of the design basis accident source term would result in the dose rate not exceeding 65 mr/hr at contact with the sample cartridge. Thus the shielding of the sample would be unnecessary. The revised procedure incorporates this position by specifying that the sample cartridge be bagged upon removal from the cask and transported to the hot lab in a plastic bucket. This issue is still open, however, since NUREG-0737 specifies a 30 minute sample with 100 μ Ci/cc deposited on the sample. The following procedures have been developed for sample collection and analysis: BZP 380-3, Post-accident Vent Stack Sampling of the Wide Range Gas Monitors; BZP 380-6, Radiological Precautions for Post-accident Sample Analysis; and BCP 800-10, Preparation of Radioiodine Samples for Counting. In addition, procedures AAIS-CCP-002, -003, and -034 have been developed and cover radioactive isotopic analysis of noble gas, particulates, and radioiodine, respectively. Procedure BZP 380-3 has been revised to incorporate the changes in the method for sample transport. This revised procedure was functionally evaluated and found to be adequate for collecting a stack grab sample within one hour. Training on the WRGM and procedure has been provided to all Rad/Chem Technicians. Completion of the Wide Range Gas Monitors is also being tracked under Open Item Nos. 454/84-10-08 and 455/84-08-08. Additional concerns with this system are addressed under those open item nos. For the purposes of tracking this item is considered closed.

- 6) (CLOSED) Nos. 454/83-56-06 and 455/83-39-06: Complete installation, development of procedures, and training on the use of the General Atomics station blowdown monitor and sampler. The General Atomics station blowdown monitor was fully operational and a liquid effluent sample was collected in less than one hour. A minor design problem with the sample discharge outlet was resolved by attaching a flexible tube to the outlet. The following procedures have been developed for this system: BZP 380-4, Post-accident Sampling of Station Blowdown Monitor; BZP 380-6, Radiological Precautions for Post-accident Sample Analysis; and BCP 800-8, Dilution Criteria for Post-accident Isotopic Analysis. In addition, procedures AA15-CCP-0001, -0051, -0052, and -1007 have been developed and cover radionuclide analysis of liquid samples, gross alpha activity, gross beta activity, and liquid release samples, respectively. Procedure BZP 380-4 was functionally evaluated and found to be adequate for collecting a station blowdown (liquid effluent) grab sample within one hour. Training on the station blowdown monitor and Procedure BZP 380-4 was provided to all Rad/Chem Technicians. The training covered revisions to the sampling procedure and hands-on training with the station blowdown monitor. Based on the above, this item is considered closed.
- 7) (CLOSED) Nos. 454/83-56-08 and 455/83-39-08: Complete calibration and installation of the containment high range monitor, General Atomics RM-11 System, and all other process or area radiation monitors used for emergency classifications or accident assessment. The inspectors reviewed the NRC Open Item tracking system and found that all of the concerns addressed by this open item were included in several other open items. The containment high range radiation monitor is also tracked under Open Item Nos. 454/84-10-09 and 455/84-08-09. Completion of the area radiation monitoring system is also tracked under Open Items No. 454/84-10-05, 454/84-10-10, 455/84-08-05 and 455/84-08-10. Completion of the RM-11 system and other process monitors is also tracked under Open Item Nos. 454/84-10-06 and 455/84-08-06. Since these open items will normally be reviewed under the above listing of open item numbers, for the purposes of tracking, Open Item Nos. 454/83-56-08 and 455/83-39-08 are considered closed.
- 8) (CLOSED) Nos. 454/83-56-09 and 455/83-39-09: Complete installation of non-radiological process monitors used for emergency classifications or accident assessment. The inspectors examined the instrumentation readouts for all of the non-radiological process monitors used for emergency classifications or accident assessment. All instrumentation specified in the FSAR had been installed and was calibrated. The only EAL which is not directly observable from installed instrumentation in the Control Room or adjacent Auxiliary Electrical Room is the one associated with the Rock River level. This river level is determined once during each shift by an Equipment Attendant. This item is considered closed.

- 9) (CLOSED) Nos. 454/83-56-11 and 455/83-39-11: Develop a procedure for the Acting Station Director which includes all of his responsibilities, and conduct training of all potential Acting Station Directors after the procedure is issued. The applicant has developed Procedure BZP 310-5, Revision 1, for the Acting Station Director. This procedure addressed all of the actions he was required to implement. Training of all Acting Station Directors had been completed during early August 1984, and the inspectors conducted several walkthroughs with Shift Engineers (Acting Station Directors). These walkthroughs indicated that the Shift Engineers had been trained and were capable of implementing the procedure with no observed difficulties. This item is considered closed.
- 10) (CLOSED) Nos. 454/83-56-12 and 455/83-39-12: Complete installation, testing, and calibration of the associated equipment and completion of procedures for the use and operability of the computerized "Class A" model. The applicant has developed a dose assessment model, which they refer to as the "Class C" model. This model is operational in the Technical Support Center and Emergency Operations Facility. Walkthroughs were conducted with station and corporate personnel who would be required to use the model during the Byron Emergency Preparedness Implementation Appraisal and routine inspections conducted for the applicant's other nuclear generating sites. These walkthroughs demonstrated that applicant personnel were capable of performing dose assessments. The applicant has determined that all protective action recommendations which may be issued prior to the activation of the TSC or EOF will be based on a flow chart similar to one presented in IE Information Notice 83-28. The inspectors reviewed the flow chart and found that it was acceptable. This item is considered closed.
- 11) (OPEN) Nos. 454/83-56-13 and 455/83-39-13: Develop a procedure to determine radioiodine concentrations in the field as low as 1 E-07 uci/cc for the equipment currently available to field teams. The applicant has developed a procedure, BRP 1740-2, Revision 2, "Field Operations of the Eberline SAM-2 Stabilized Assay Meter," which addressed field determinations of radioiodine. The procedure appeared to be acceptable in that it specified the maximum background for determining radioiodine concentrations. The inspectors verified that the minimum background value specified in the procedure was appropriate for all onsite field team kits. However, the inspectors determined during a walkthrough of the procedure that the SAM-2 was set up to simultaneously perform background subtraction in conjunction with sample counting. The result is that if an ambient background of 1,000,000 counts per minute were present with no increased iodine activity, the instrument would provide a readout of approximately 0, implying that little radioactivity were present when in fact this was not the case. As a result, the background limitation specified in the procedure was meaningless, and could result in a grossly

inaccurate estimate of the iodine concentration, since the Minimum Detectable Activity (MDA) could be substantially larger than the net count results obtained with the instrument. As a result, the procedure as written does not conform with the instrument operating instructions to allow determination of radioiodine in the field to any set MDA value. This item remains open pending a further revision of the procedure to match the operating methods of the instrument such that an acceptable MDA can be obtained for all counts.

- 12) (CLOSED) Nos. 454/83-56-14 and 455/83-39-14: Develop and implement communication check procedures. The inspectors reviewed Procedure BZP 500-1 and associated checklist BZP 500-T1, and observed the August communications check from the Technical Support Center. The procedure and checklist addressed all communications drills specified in Section 8.3.2.1 of the generic GSEP, and the requirements of Section IV.E.9 of Appendix E to 10 CFR Part 50. However, a discrepancy was noted between the procedure and checklist with regards to the quarterly check to the State of Wisconsin. The checklist includes this required communications check, but it is not addressed in the procedure. Further, the procedure specifies that the responsible party for its completion is the Operations Director. This title is an emergency organization title which is not functional during day-to-day operations. Since the communications checks are part of the program to maintain the emergency preparedness program, they should be under the responsibility of someone in the day-to-day organization, such as the GSEP Coordinator. This item is considered closed.

b. Safety Evaluation Report Items

- 1) (OPEN) Nos. 454/84-00-01 and 455/84-00-01: Applicant's evacuation time study must be clarified, and amended if necessary, to reflect employment-center shutdown times. The applicant has not yet submitted this study to the NRC Regional office for review, hence this item remains open.
- 2) (OPEN) Nos. 454/84-00-02 and 455/84-00-02: Applicant's evacuation time study must be modified to reflect realistic time estimates under adverse weather conditions. Conservatism may remain in the study provided that they are clearly identified as such and quantified. The applicant has not yet submitted this study to the NRC Regional office for review, hence this item remains open.
- 3) (OPEN) Nos. 454/84-00-03 and 455/84-00-03: Applicant shall provide information to the emergency planning officials, particularly the Illinois Department of Nuclear Safety, which realistically reflects the average sheltering values of the

structures in the Byron plume exposure pathway EPZ. The applicant has not yet submitted documentation to the NRC Regional office indicating that this item has been completed, hence it remains open.

c. Improvement Items

The inspectors reviewed the applicant's actions on the following items summarized in Appendix B to the Emergency Preparedness Appraisal (EPIA) (Report Nos. 50-454/83-56 and 50-455/83-39): 8, 9, 10, 11, 17, 18, 22, 24, 25, 34, 36, 39, 41, 45, 47, and 48. The inspectors determined that adequate measures had been completed.

3. Site Assembly/Accountability and Evacuation Drill

The inspectors observed the response by the applicant organization during a scheduled assembly/accountability and evacuation drill, which was conducted on August 23, 1984. This drill consisted of activating the TSC, followed by sounding of the assembly/evacuation alarm and accounting for all personnel remaining onsite using appropriate procedures. The drill began at 1000 with the activation of the TSC. Although a decision was made subsequently to assemble personnel, the siren was not sounded for five minutes. When the siren was sounded, it could not be heard on the fourth floor of the Service Building. Unless all personnel ceased their conversations, subsequent announcements over the PA system were also inaudible on the fourth floor of the Service Building. The Rad/Chem Director determined habitability of assembly areas, and using current meteorological conditions, determined the appropriate evacuation route. Personnel reported to their designated assembly areas; however, on one occasion the inspector noted an individual talking on the telephone in the Service Building lobby. This individual was later observed at an Assembly Area card reader. Adequate security personnel monitored the use of the GSEP card readers in the assembly areas. Applicant personnel implemented their procedures correctly. However, security personnel responsible for notifying areas within the Owner Controlled Area were using a telephone listing different from that in the procedure (BZP 310-4, Rev. 2). Security was using phone numbers provided on a letter dated August 2, 1984. The names of the missing persons (4 visitors) were identified approximately 24 minutes after the decision to assemble had been made. Since all personnel had not been accounted for, two two-man search teams were dispatched from the Operational Support Center. Team members entered and scanned unlocked work areas and restrooms and attempted to open various locked doors. Team members were generally unaggressive in attempting to contact missing personnel in that they typically did not raise their voices to call out to persons or knock on locked doors. While search and rescue operations were being implemented, announcements were made over the PA system requesting that the four missing individuals contact Security. Late in the drill, one team encountered an individual scanning bulletin board outside of the assembly area. The team did not escort this individual back inside the assembly area. The whereabouts of all personnel onsite was determined and completed approximately 41 minutes after the decision to assemble personnel had been made. The drill was terminated at 1200 with approximately 3,500 onsite personnel accounted for.

Based on the above findings, this portion of the applicant's program is acceptable; however, the following items should be considered for improvement:

- Section 5.c of BZP 310-4 should be revised to include all appropriate telephone numbers.
- Audibility of the Public Address system and assembly/evacuation siren needs to be improved on the fourth floor of the Service Building.
- Additional training should be provided to personnel to ensure that they report promptly to their assembly area upon hearing the siren and remain in the assembly area after they are accounted for until further instructed.
- Additional training should be provided to search and rescue team personnel to be more aggressive in their searches.

4. Exit Interview

The inspectors met with applicant representatives denoted in Paragraph 1 on August 23, 1984, to present the preliminary findings regarding the status of emergency preparedness related open items. The inspectors summarized the scope and findings of the inspection, namely, that all Open Items related to fuel load had been closed.