

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Reports No. 50-456/84-24; 50-457/84-23

Docket Nos. 50-456; 50-457

Licenses No. CPPR-132; CPPR-133

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

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

Inspection At: Braidwood Site, Braidwood, IL

Inspection Conducted: August 21-23, 1984

*W. B. Grant*  
Inspectors: W. B. Grant

*Charles F. Gill*  
C. F. Gill

*L. R. Greger*

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

*9/6/84*  
Date

*9/6/84*  
Date

*9/6/84*  
Date

Inspection Summary

Inspection on August 21-23, 1984 (Reports No. 50-456/84-24(DRSS), 50-457/84-23(DRSS))

Areas Inspected: Routine, announced inspection of preoperational radiation protection program for Units 1 and 2. The inspection included organization and management control, training and qualifications, radiation protection procedures, facilities and equipment, and status of certain NUREG-0737 items. The inspection involved 44 inspector-hours on site by two NRC inspectors.  
Results: No violations or deviations were identified.

## DETAILS

### 1. Persons Contacted

- \*W. Betourne, QA Braidwood
- T. Chubb, Instructor, Production Training Center
- \*J. Gudac, Braidwood Superintendent
- J. Johnson, Health Physics Engineering Assistant
- \*T. Keith, Station Health Physicist
- \*L. Kiine, Licensing and Compliance
- \*F. Krowzach, Rad/Chem Supervisor
- J. McIntyre, Chemistry Foreman
- \*D. O'Brien, Assistant Superintendent, Administrative and Support Services
- C. Ross, Chemist
- D. Shamlin, Health Physics Foreman
- \*G. Wagner, PWR Operations Manager, NSD
- \*J. Williams, QA Braidwood
  
- L. McGregor, NRC Senior Resident Inspector

\*Denotes those present at the exit meeting.

### 2. General

This inspection, which began at 11:00 a.m. on August 21, 1984, was conducted to examine the radiation protection and radwaste programs. It included tours of Unit 1 and Unit 2 containment, radwaste/service building, auxiliary building, turbine building, and CECo production training center.

### 3. Organization and Management Controls

The inspectors reviewed the licensee's organization and management controls for the radiation protection and radwaste programs including: responsibilities, authorities, and staffing. The licensee has filled an additional health physicist position and an additional chemist position. The health physicist has a masters degree in health physics from Georgia Institute of Technology and has about two years experience as a health physicist with Bechtel National, Inc. The chemist transferred from the corporate CECo technical staff and has a bachelors degree in chemical engineering from Northwestern University.

### 4. Training and Qualifications

The inspectors reviewed the training and qualifications aspects of the licensee's radiation protection and radwaste programs, including: training responsibilities, policies, goals, programs and methods; qualifications of radiation protection/chemistry personnel; and the adequacy of the training for employees.

Six RCTs have completed the 14-week RCT training course at the CECO production training center and are currently at LaSalle for 10 weeks of on-the-job training (OJT). Another six RCTs are currently enrolled in the RCT training course and are scheduled to get OJT at Dresden upon completion of the course. The implementation of the licensees technician qualification card program is in development and will be reviewed during future inspections. (456/84-10-01; 457/84-10-01)

A chemist and a radiation protection foreman completed the PWR indoctrination course which includes two weeks of familiarization with PWR Systems and the PWR simulator.

The inspectors attended a portion of a training session on operation of the Sentry high radiation sampling system (HRSS). The training was conducted at the CECO Production Training Center. The classroom and laboratory were of adequate size and the laboratory contained a full size, working mock-up of the Sentry HRSS. This gives students hands-on experience with the system. The classroom and laboratory presentations were well prepared and of good quality.

A review of the new radiation protection foremen's qualifications revealed that they meet or exceed the selection criteria for supervisors not requiring NRC licenses in Section 4.3.2 of ANSI 3.1-1978.

No violations or deviations were identified.

5. Radiation Protection Procedures

The inspectors reviewed the following rad/chem procedures to determine if they are consistent with 10 CFR, FSAR commitments, and good health physics practices.

BWRP-1000-1, Revision 0, CECO Radiation Protection Standards  
BWRP-1350-1, Revision 1, Calibration and Operation of Portable Instruments for Sampling Airborne Radioactivity Areas  
BWRP-1350-2, Revision 0, Operation and Use of Teledyne Oxygen Analyzer Model 320 B/RC  
BWRP-1350-3, Revision 0, Operation and Use of MSA Model 2A Explosion meters  
BWRP-1350-6, Revision 0, Operation and Use of the Draeger Multi-Gas Detector  
BWRP-1350-8, Revision 1, Operation and Calibration of CGS-100 Portable Gas Detector  
BWRP-1400A1, Revision 0, Area and Material Decontamination  
BWRP-1480-1, Revision 0, Contamination Surveys  
BWAP-200-A4-10, Position Description, Health Physics Foreman  
BWAP-200-A4-11, Position Description, Station Health Physicist  
BWAP-200-A4-12, Position Description, Health Physicist  
BWAP-200-A4-13, Position Description, Health Physicist Engineering Assistant

About 98% of the rad/chem procedures have been written and 124 of an estimated 200 procedures have been approved. No problems were identified.

6. Facilities and Equipment

The inspector reviewed the facilities and equipment used by the licensee for radiation protection activities to determine whether they are as described in the FSAR and are adequate to support the radiation protection program.

The rad/chem office space and the low-level chemistry lab are fully occupied. The chemistry hot lab and counting room are complete and equipment is being installed.

Counting room equipment being installed includes: two EG&G Ortec model 7050 multi-channel analyzers with high purity germanium detectors, three Canberra alpha/beta proportional counting systems, and two Packard tricarb liquid scintillation counters. This equipment is being set-up and calibrated by licensee and vendor personnel.

The licensee has placed orders for portable radiation survey meters, direct reading personal dosimeters, air sampling equipment, self-contained breathing equipment, and for some anti-c clothing. According to a licensee representative, almost all of the equipment and supplies which have been budgeted will be ordered this year.

No violations or deviations were identified.

7. Status of Certain NUREG-0737 Action Items

The inspectors reviewed the status of the post-accident sampling system, high range noble gas effluent monitors, accident range iodine and particulate effluent sampling system, and containment high range radiation monitors. The only instruments of this type which are in place are the modified Sentry high radiation sampling system (HRSS) and the General Atomic wide range gas monitors (GA WRGM). The HRSS and GA WRGM are not powered and do not have the sample lines installed. The HRSS is protected by a plastic wrap and the GA WRGM units have their packing crates rebuilt around them for protection during the current phase of construction.

The significance for the Braidwood station of the generic aspects of Byron Open Items on the above delineated systems (Section 8 of Inspection Report Nos. 50-454/84-33; 50-455/84-26 and 50-454/84-54; 50-455/84-37) was discussed with the licensee at the exit meeting. The licensee was encouraged to closely follow the resolution of these Byron Open Items.

8. Filter Housing Drain Systems

The status of the HVAC filter housing drain systems was reviewed.

A licensee representative told the inspectors that only the post-LOCA purge system filter housing was known to have the drain lines and associated check valves installed. During the inspection of the housing, it was noted that the drain line check valves were installed so

that two housing doors could not be fully opened and were a different make and model than those reportedly installed in each Byron filter housing drain system. The licensee representative stated that the valves would be moved so that the housing doors could be properly opened. As reported in Inspection Report No. 50-454/84-54; 50-455/84-37, Byron's filter housing drain line water check valve type reportedly is designed to provide an air tight barrier for filter housings under negative pressure. At the exit meeting, the inspectors requested that the licensee obtain adequate documentation on the water check valves used, if different than those used at Byron, to determine if they are suitable for their intended purpose. The post-LOCA purge system poses an additional problem because its filter housing is under positive pressure and therefore, check valves provide an unfiltered leakage pathway. The post-LOCA purge system filter housing drain system configuration may require modification such that all unplugged drains are individually valved, sealed, or otherwise protected to prevent bypassing of contaminated air around filters or adsorbers.

The significance for the Braidwood station of the generic aspects of Byron Open Item 454/84-33-01; 455/84-26-01 on the subject of filter housing drain systems was discussed with the licensee at the exit meeting. The licensee was encouraged to closely follow the resolution of this Byron Open Item so that Braidwood could take early actions to correct any problems.

Licensee progress in addressing inspector concerns in this area will be reviewed during a future inspection. (Open Item 456/84-24-01; 457/84-23-01)

9. Drain Systems for Instrument Racks and for Valve Stem Leak-Off

A cursory review was made of the instrument rack and valve stem leak-off systems for potential contamination problems.

The large number of instrument racks throughout the plant which do not have hard piped drain systems present potential spillage and/or airborne problems from contaminated liquids in the instrument lines. Such problems could occur from performance of surveillance activities, calibrations, venting, draining and removing instruments from service, etc.. At the exit meeting, the inspectors discussed the need to ensure that each worker is properly trained in dealing with the radiation hazards of the installed instrument rack drains if these drains are not hard piped to the radwaste system. Proper worker training and review of work activities should be pursued by the licensee to ensure exposure and contamination problems are minimized for these systems. Licensee progress in addressing this concern will be reviewed during a future inspection. (Open Item 456/84-24-02; 457/84-23-02)

A similar potential for radioactive surface and airborne contamination exists from valve stem leakage if the leakage is not collected. A number of valve stem leak-off drain pathways in the Chemical and Volume Control and Safety Injection Systems were traced by the inspectors during a plant tour. All valves examined had drain lines which appeared to be properly attached to the valve stems and to be properly routed. A

cursory review of the P&IDs for the valve leak-off drain pathways for the Boron Thermal Regeneration, Safety Injection, Residual Heat Removal, and Chemical and Volume Control Systems did not reveal any apparent design problems.

#### 10. Exit Meeting

The inspectors met with licensee representatives (denoted in Section 1) at the conclusion of the inspection on August 23, 1984. The inspectors summarized the scope and findings of the inspection. In response to certain matters discussed by the inspectors, the licensee:

- a. Acknowledged the inspector's recommendations that the licensee should carefully review Byron Open Item resolutions for certain NUREG-0737 post-accident systems and the HVAC filter housing drain systems. (Sections 7 and 8)
- b. Acknowledged the inspector concerns that HVAC filter housing drain system water check valves for Braidwood did not appear to be the same type as those generically installed at Byron. (Section 8)
- c. Acknowledged the inspector observations that the installed post-LOCA purge system filter housing drain system restricted housing door opening due to inappropriate drain line valve placements and did not preclude filter bypass through the drain lines. (Section 8)
- d. Acknowledged inspector concerns with the lack of hard piping to the radwaste drain system for instrument racks installed to monitor systems which potentially contain radioactive liquid. (Section 9)