

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-155/91018(DRSS)

Docket No. 50-155

License No. DPR-6

Licensee: Consumers Power Company
212 West Michigan Avenue
Jackson, MI 49201

Facility Name: Big Rock Point Nuclear Plant

Inspection At: Big Rock Point Site, Charlevoix, Michigan

Inspection Conducted: September 16-20, 1991

Inspectors: *M. Kunowski*
M. Kunowski

10-8-91
Date

N. Shah
N. Shah

10-8-91
Date

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

10-8-91
Date

Inspection Summary

Inspection on September 16-20, 1991 (Report No. 50-155/91018(DRSS))

Areas Inspected: Routine unannounced inspection of the licensee's radiation protection program (Inspection Procedure (IP) 83750), the gaseous radwaste program (IP 84750), and the solid radwaste and transportation program (IP 86750), including training and qualifications, effluent reports, and internal exposure control. In addition, several previous inspection items were reviewed.

Results: No violations or deviations were identified. The licensee is adequately implementing the programs reviewed during the inspection. The volume of radwaste stored onsite has been significantly reduced, resulting in enough space for several years of interim storage. The licensee appears to adequately assess dose from liquid and gaseous effluents; however, the stack flow rate value used for calculating doses from gaseous effluents has not been verified in approximately 10 years. The inspectors also identified a possible unmonitored release path for radioactive materials involving the showering of potentially contaminated individuals in a building located outside the protected area.

DETAILS

1. Persons Contacted

- *J. Beer, Chemistry and Radiation Protection Supervisor
- *T. P. Popa, ALARA Coordinator
- *R. Alexander, Technical Engineer
- *G. Withrow, Engineering Superintendent
- *D. Burdette, Senior Health Physicist
- *R. Garrett, Radiation Protection Supervisor
- T. A. Hancock, General Engineer

The inspector also interviewed other licensee personnel.

*Denotes those present at the plant exit interview on September 20, 1991.

2. Licensee Action on Previous Inspection Findings

(Closed) Open Item No. 50-155/91010-01(DRSS): Discrepancies in liquid effluent doses in Semi-Annual Effluent Reports. The licensee has submitted corrected dose values for the 1986-1990 Semi-Annual Effluent Reports, and is currently revising its procedure for determining dose from liquid effluents. Additional corrective actions include submittal of an industry event report and a review of the gaseous effluent procedures; these actions are scheduled for completion by December 31, 1991. Based on the inspectors' review of completed and planned corrective actions this item is considered closed.

(Closed) Unresolved Item No. 50-155/91010-03(DRSS): Review licensee's investigation of a spill during disassembly of a check valve. The spill occurred because of an adjacent, improperly seated isolation valve. The investigation concluded that the decision not to use a catchment was in keeping with past contamination control practices on the refueling deck where the spill occurred. Unless it is known that long-term leakage may occur, catchments are not routinely used on the deck. Instead, the deck is routinely decontaminated during work to control contamination. In this instance, the deck was promptly decontaminated after this spill and no personnel were contaminated. During a previous repair of the check valve in March 1989, minor leakage of several drops per hour from the isolation valve was encountered; however, the volume involved was so small as to not warrant additional compensatory actions in preparation for the most recent repair.

During the previous inspection, the inspectors also raised the concern that the disc of the isolation valve was incorrectly assumed to have seated properly, despite the obvious water hammer damage to adjoining pipe. Although discussions with NRC and licensee personnel indicated that water hammer may not necessarily result in damage to inline valves, in this instance, the licensee would have been prudent to assume that the isolation valve was damaged and had not seated properly. Nonetheless, because the volume of water that spilled was small and there were no personnel contaminations or significant exposure problems associated with the spill and the cleanup, this item is closed.

3. Audits and Appraisals (IPs 83750 and 84750)

The inspectors reviewed collected quality assurance (QA) audit and surveillance reports from 1990 and 1991 to date. The licensee's QA audit/surveillance program appeared to conduct an adequate assessment of technical performance, compliance with technical specification requirements, and personnel training/qualifications relating to the subject area. The station's responses to findings were adequate.

The licensee recently reorganized its audit organization, eliminating the quality control (QC) department and increasing the duties of the QA department. Each individual department will perform the traditional QC functions through "Peer Review" with the department head or designee acting as the QC supervisor. In QA, special assessment teams will be developed composed of QA specialists from different functional areas at Big Rock Point and Palisades. Currently, the licensee is developing the QA assessment program and is awaiting NRC approval for implementing the "Peer Review" process.

No violations or deviations were identified.

4. Solid Radioactive Waste (IP 86750 and Temporary Instruction 260C/002)

The inspectors reviewed the licensee's plans for interim storage of solid radioactive waste (radwaste), and toured the interim storage facility. As of November 1990, the licensee was banned from shipping waste to the three low-level radwaste burial sites.

Solid radwaste is stored in the licensee's radwaste complex located just outside of the protected area, and in large underground tanks within the protected area. The radwaste complex consists of three buildings: the main storage building, which contains concrete vaults for high integrity containers, and which is used for the storage of dry active waste, irradiated components, and filter media; and two smaller buildings used to store mixed and hazardous wastes. The large underground tanks located inside the licensee's protected area are used to store spent resin. Prior to being denied access to the burial sites, the licensee significantly reduced the volume of radwaste onsite (see Inspection Report 50-155/91010), thereby providing sufficient storage capacity for several years. The radwaste complex appeared adequate to safely store the waste.

No violations or deviations were identified.

5. Training and Qualifications (IP 83750)

The inspectors reviewed the licensee's program for training and qualification of Radiation Protection Technicians (RPTs). Included in this review, was a discussion of Information Notice 83-61 and its supplement 1 concerning incore radiation hazards from traversing incore probes (TIPs).

All RPTs attend approximately 3 months of courses at the corporate training center covering health physics and power plant fundamentals. Following this initial training, the RPTs are assigned to Big Rock Point

where they are trained and evaluated on various RPT tasks, and receive refresher and industry event training. Big Rock Point does not incorporate a TIP system; however, the station does inform their technicians of the topics covered in Information Notice 88-63 and its supplement 1 during industry events training. The training department is currently developing an expanded systems course for RPTs, at the request of the technicians and radiation protection management.

No violations or deviations were identified.

6. Internal Exposure Control (IP 83750)

The inspectors reviewed implementation of the licensee's internal exposure control program, including ALARA considerations. No major problems were identified. A review of records and a discussion with licensee representatives indicated that for 1990 and 1991, to date, no worker had been exposed to airborne radioactivity approaching the 520 MPC-hour regulatory limit or the 40 MPC-hour control level. A review of air sample data and a recent calibration of the whole-body counter (WBC) also identified no major problems; however, the inspectors noted that the identification number of air samplers used to take air samples was not recorded on surveys. This was discussed with the licensee, who agreed that it would be a good practice to include that information.

During a review of the whole-body count (WBC) data and procedure RP-38, "Whole Body Counting and Evaluation," Revision 11, the inspectors identified a potential unmonitored release path, in that workers who were potentially externally contaminated as indicated by a WBC were given a shower in the annex building, outside the protected area. The drain from this shower is connected to the licensee's septic system, a normally unmonitored system. Mitigating the health and safety concern of an unmonitored release is the fact that the activity involved would likely involve only several nanocuries to several tens of nanocuries because workers who shower in the annex have already showered in the protected area and passed through a whole-body contamination monitor in the protected area without alarming it. Although a review of WBC records by the inspectors did not identify any instances where radioactive material may have been showered off, the licensee acknowledged that a potential release path existed. A review of this practice by the licensee in 1986 determined that any activity released via this route would amount to a very small fraction of the limits in 10 CFR 20.303 for releases to sanitary sewer systems. However, as discussed in Information Notice 88-22, 10 CFR 20.303 would not be applicable to these releases. This matter was discussed with the licensee, who agreed to cease using the annex building shower for decontaminating potentially externally contaminated workers. This matter will be reviewed during future inspections.

No violations or deviations were identified.

7. Gaseous Effluents (IP 84750)

The inspectors reviewed the licensee's gaseous radwaste effluent program, including: compliance of releases with regulatory requirements; adequacy of required records, reports, and notifications; and assessment of dose.

Radioactive gases are released through the plant off-gas stack to provide for adequate dispersion of radioactive materials to the environs. Gases from air ejector offgas, gland seal condenser, and the containment, radwaste area, turbine, and service buildings are routed to the stack for monitoring and release. The air ejector and gland seal condenser effluents pass through 30-minute and 90-second holdup lines, respectively, to allow for the decay of Nitrogen-16 and other short lived fission gases.

The inspectors' review of radioactive effluent sampling and analysis records and the semi-annual effluent reports for 1990 and 1991 to date, did not identify any noncompliance with technical specification requirements. The inspectors compared the licensee's gaseous effluent dose assessment which uses the computer code GASPAN against manual calculations based on the licensee's Offsite Dose Calculation Manual and obtained comparable results.

In a previous inspection (Inspection Report 50-155/90003), it was identified that the licensee used "none" in its semi-annual effluent reports to quantify isotopes not seen above the lower limit of detection (LLD) of the analysis equipment. Regulatory Guide 1.21 recommends other methods of presentation. The licensee has since modified this practice, and now uses "LLD" to indicate isotopes not detected.

No violations or deviations were identified.

8. Effluent Control Instrumentation (IP 84750)

The inspectors reviewed channel calibration methodology, records of calibrations and functional tests, and surveillance for the gaseous effluent control monitors. Included in the review was a tour of the air ejector offgas and stack normal range noble gas monitors. Continuous monitoring of the air ejector offgas radioactivity for noble gas fission products is performed prior to stack release to indicate possible fuel element rupture. The stack radioactive gaseous effluent monitoring system (RGEM) receives an isokinetic sample of the plant gaseous effluent and monitors for particulate/radioiodine using a sodium iodide (NaI) gamma detector, and noble gas activity via a scintillation chamber beta detector. The stack RGEM operates during normal and accident conditions; however, during abnormally high levels of activity in the effluent, the system bypasses the normal range detectors, obtains a grab sample, and switches to a high range ionization chamber gamma detector and a high range intrinsic germanium detector for noble gas and particulate/radioiodine filter activities, respectively.

The licensee appears to maintain the gaseous effluent monitors in accordance with their technical specifications, and is exceeding surveillance requirements for the stack high range monitors. Included

in this review, was an examination of the licensee's assessment of stack air flow. The design basis for the stack uses a minimum value of 30,000 cfm for effluent releases. A review of the stack system design did not identify any method by which the licensee could quantify stack flow without manually taking actual measurements at the stack. According to the licensee, stack flow was originally determined in 1962 and last verified in 1982. Although the licensee is required by Technical Specification 13.1.3 (Footnote h of Table 13-3) to determine the ratio of the stack radiation monitor sample flow to the stack flow rate, no frequency is specified for the determination. The inspectors were concerned that the lack of a recent verification of stack flow may result in an inaccurate dose assessment. Licensee representatives stated they would review the problem of determining stack flow. This matter was discussed with the licensee during the inspection, and will be reviewed during future inspections (Open Item 50-155/91018-01(DRSS)).

No violations or deviations were identified.

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

The inspectors reviewed the licensee's progress on a modification of several interfaces in the sphere of the demineralized water system with several contaminated systems or components (the fuel pool heat exchanger, the reactor cleanup system, and the shield tank fill line). In the past several years, in contrast to most of the 1980's, low level activity has been occasionally detected in the demineralized water system during routine (monthly) sampling. The sampling has been performed since mid-1978 when the system was first contaminated (Inspection Report No. 50-155/78-65). Progress is adequate and the modification is scheduled to be completed by the end of 1991.

No violations or deviations were identified.

10. Tours (IPs 83750, 84750, and 86750)

The inspectors toured the sphere, the solid radioactive waste storage building, and outdoor areas. In addition, independent dose rate measurements were made in the radwaste storage building and outdoor areas. No problems with postings, amount of radwaste storage space, and control of radiologically controlled areas were identified. The inspectors observed one minor example of poor radiological work practice which was promptly corrected by the licensee.

No violations or deviations were identified.

11. Exit Meeting

The inspectors met with licensee representatives (denoted in section 1) at the conclusion of the inspection on September 20, 1991 to discuss the scope and findings of the inspection. The licensee did not identify any documents as proprietary. The following matters were specifically discussed by the inspectors:

- a. Dose Discrepancies in Semi-Annual Effluent Reports (Section 2),
- b. Determination of stack flow rate (Section 8),
- c. Inappropriate use of 10 CFR 20.303 (Section 6).