UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W.
ATLANTA, GEORGIA 30323

JUL 24 1985

Report Nos.: 50-325/85-17 and 50-324/85-17

Licensee: Carolina Power and Light Company
411 Fayetteville Street
Raleigh, NC 27602

Docket Nos.: 50-325 and 50-324 License Nos.: DPR-71 and DPR-62

Facility Name: Brunswick 1 and 2

Inspection Conducted: June 24-28, 1985

Inspector: W. T. Cooper 7-18-85 Date Signed

Approved by: C. M. Hosey, Section Chief 7/18/85 Date Signed
Division of Radiation Safety and Safeguards

SUMMARY

Scope: This routine, unannounced inspection entailed 52 inspector-hours at the site, in the areas of organization and management controls, external exposure control and personnel dosimetry, internal exposure control, surveys, monitoring and control of radioactive materials, program to maintain radiation exposures as low as reasonably achievable (ALARA), and solid waste. The inspector also reviewed the licensee's evaluation of erroneous thermoluminescent dosimeter (TLD) readings caused by exposure to hydrogen sulfide.

One violation for failure to have adequate procedures as required by technical specification 6.8.1 to determine prior to shipment that a package of waste contained not more than 1% free standing water.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

*P. Howe, Vice President, Brunswick Nuclear Project
*A. Cheatham, Manager, Environmental and Radiation Control
*C. Dietz, General Manager, Brunswick Steam Electric Plant
E. Bishop, Assistant to General Manager
*K. Enzor, Director, Regulatory Compliance
*J. O'Sullivan, Manager, Maintenance
*J. McKee, Quality Control Supervisor
*W. Dorman, Quality Assurance Supervisor
*L. Jones, Director Quality Assurance/Quality Control
*M. Jones, Acting Director - Onsite Nuclear Safety
*R. Poulk, Jr., Senior Regulatory Specialist
*M. Pastva, Jr., Regulatory Technician
*J. Kiser, Radiation Control Project Specialist
*L. Tripp, Radiation Control Supervisor
G. Worley, Radiation Control Foreman
C. Barnhill, Radiation Control Foreman
T. Sherrill, Radiation Control Foreman
B. Conn, Radiation Control Foreman
T. Priest, Radiation Control Foreman
B. Failor, Radiation Control Foreman
P. Gallagher, Radiation Control Specialist
R. Queener, Principle Specialist - Radiation Control
J. Terry, Mechanical Maintenance Foreman

Other licensee employees contacted included three construction craftsmen, seven technicians, one operator, two security force members, and eight office personnel.

Nuclear Regulatory Commission (NRC)

P. Fredrickson, Section Chief, RII

NRC Resident Inspectors

*W. Ruland, Senior Resident Inspector
*L. Garner, Resident Inspector
*T. Hicks, Resident Inspector

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on June 28, 1985, with those persons indicated in paragraph 1 above. An apparent violation involving the shipment of a High Integrity Container to a disposal site when it contained free-standing water (paragraph 9) was discussed in detail. Licensee management acknowledged the apparent violation.

The licensee did not identify as proprietary any of the materials provided to or reviewed by the inspector during this inspection.

3. Licensee Action on Previous Enforcement Matters

(Closed) Violation (50-325/83-23-02) Breach of Container Integrity. The inspector reviewed and verified the corrective action as stated in CP&L's letter of September 23, 1983 and Supplemental response dated December 7, 1983.

4. Organizations and Management Controls (83722)

Technical Specification 6.2 describes the licensee's organization.

The inspector reviewed the licensee's organization, staffing level and lines of authority as they related to radiation protection, radioactive material control and plant chemistry, and verified that the licensee had not made organizational changes which would adversely affect the ability to control radiation exposures, radioactive material or plant chemistry.

No violations or deviations were identified.

5. External Exposure Control and Personal Dosimetry (83724)

10 CFR 20.101 specifies the applicable radiation does standards. The inspector reviewed the computer printouts (NRC Form 5 equivalent) for the period 1984-1985 and verified that the radiation doses recorded for selected plant personnel were well within the quarterly limits of 20.101(a).

10 CFR 20.101(b)(3) requires the licensee to determine an individual's accumulated occupational dose to the whole body on an NRC Form 4 or equivalent record prior to permitting the individual to exceed the limits of 20.101(a). The inspector reviewed selected occupational exposure histories for individuals who exceeded the values in 10 CFR 20.101(a). The exposure histories were being completed and maintained as required by 10 CFR 20.102.

10 CFR 20.202 requires each licensee to supply appropriate personnel monitoring equipment to specific individuals and require the use of such equipment.

During tours of the plant, the inspector observed workers wearing appropriate personnel monitoring devices.

Technical Specification 6.8 requires the licensee to have written radiation protection procedures, including the use of radiation work permits.

The inspector reviewed selected active RWPs for appropriateness of the radiation protection requirements based on work scope, location, and conditions. During tours of the plant, the inspector observed the adherence of plant workers to the RWP requirements and discussed the RWP requirements with plant workers at the job site.

The inspector discussed the planning and preparation for the Unit 1 outage with licensee representatives. Specific areas discussed included increased staffing, special training, equipment and supplies, health physics involvement in outage planning, licensee control over contractor health physics technicians, and dose reduction methods to be employed.

10 CFR 20.203 specifies the posting, labeling and control requirements for radiation areas, high radiation areas, airborne radioactivity areas and radioactive material. Additional requirements for control of high radiation areas are contained in Technical Specification 6.12.

During tours of the plant, the inspector reviewed the licensee's posting and control of radiation areas, high radiation areas, airborne radioactivity areas, contamination areas, radioactive material areas and the labeling of radioactive material.

No violations or deviations were identified.

6. Internal Exposure Control (83725)

10 CFR 20.103(a) establishes the limits for exposure of individuals to concentrations of radioactive material in air in restricted areas. This section also requires that suitable measurements of concentrations of radioactive materials in air be performed to detect and evaluate the airborne radioactivity in restricted areas and that appropriate bioassays be performed to detect and assess individual intakes of radioactivity.

The inspector reviewed selected results of general in-plant air samples taken during June 1985, and the results of air samples taken to support work authorized by specific radiation work permits.

The inspector reviewed selected results of bioassays (whole body counts) and the licensee's assessment of individual intakes of radioactive material performed during the period January - June, 1985.

10 CFR 20.103(b) requires the licensee to use process or other engineering controls, to the extent practicable, to limit concentrations of radioactive material in air to levels below that specified in Part 20, Appendix B, Table I, Column 1 or limit concentrations, when averaged over the number of hours in any week during which individuals are in the area, to less than 25 percent of the specified concentrations.

The use of process and engineering controls to limit airborne radioactivity concentrations in the plant was discussed with licensee representatives and the use of such controls was observed during tours of the plant.

10 CFR 20.103(b) requires that when it is impracticable to apply process or engineering controls to limit concentrations of radioactive material in air below 25% of the concentrations specified in Appendix B, Table 1, Column 1, other precautionary measures should be used to maintain the intake of radioactive material by any individual within seven consecutive days as far below 40 MPC-hours as is reasonably achievable. By review of records, observations and discussions with licensee representatives, the inspector evaluated the licensee's respiratory protection program, including MPC-hour controls, quality of breathing air, and the issue, use, decontamination, repair and storage of respirators.

No violations or deviations were identified.

7. Surveys, Monitoring, and Control of Radioactive Material (83726)

10 CFR 20.201(b) requires each licensee to make or cause to be made such surveys as (1) may be necessary for the licensee to comply with the regulations and (2) are reasonable under the circumstances to evaluate the extent of radiation hazards that may be present.

The inspector reviewed selected records of radiation and contamination surveys performed during June 1985, and discussed the survey results with licensee representatives.

During tours of the plant the inspector observed health physics technicians performing radiation and contamination surveys.

The inspector observed personnel using the personnel frisker (RM-14/RM-16 with HP210 pancake probe) to perform contamination surveys of themselves prior to exiting the controlled area.

No violations or deviations were identified.

8. ALARA Program (83728)

10 CFR 20.1(c) states that persons engaged in activities under licenses issued by the NRC should make every reasonable effort to maintain radiation exposure as low as reasonably achievable (ALARA). The recommended elements of an ALARA program are contained in Regulatory Guide 8.8, Information Relevant to Ensuring that Occupational Radiation Exposure at Nuclear Power Stations will be ALARA, and Regulatory Guide 8.10, Operating Philosophy for Maintaining Occupational Radiation Exposure ALARA.

The inspector reviewed the plant procedures which establish the program for keeping occupational exposures ALARA and discussed the administrative aspects of the program with licensee representatives.

During tours of the plant, the inspector interviewed workers to determine their knowledge of the ALARA program and their direct involvement in the program.

The inspector discussed the ALARA goals and objectives for the current year with licensee representatives and reviewed the man-rem estimates and results for the current year.

As of June 23 the actual collective exposure for calendar year 1985 was 1211 man-rem which represented 48 percent of the estimated exposure for the year.

As of June 27, 1985, the average man-rem per outage day for the Unit 1 outage was 14 man-rem per day.

No violations or deviations were identified.

9. Solid Waste (84722)

10 CFR 20.311 requires a licensee who transfers radioactive waste to a land disposal facility to prepare all waste so that the waste is classified in accordance with 10 CFR 61.55 and meets the waste characteristics requirements of 10 CFR 61.56. It further establishes specific requirements for conducting a quality control program and for maintaining a manifest tracking system for all shipments. 10 CFR 61.56(a)(3) requires that packaged solid waste contain as little free standing liquid as is reasonably achievable but in no case exceed 1% of the volume.

Technical Specification 6.8.1 requires written procedures to be established, implemented and maintained covering the activities referenced in the applicable procedures recommended in Appendix A of Regulatory Guide 1.33, November 1972.

Regulatory Guide 1.33(7)(b) recommends procedures for Solid Waste Systems.

Licensee Procedure E&RC-0535, Control of Radwaste Operations Process Liners Prior to Shipment, and MI-16-550, CFD Filters, were written to detail the removal and shipment of CFD filters.

On June 7, 1985, the licensee made shipment number 0685-075-S to the Chem-Nuclear Systems (CNS) Barnwell Disposal Site. The shipment consisted of dewatered condensate filter demineralizers (CFDs) packaged in a type 14-195-H-1 high integrity containers (HIC). As the container was being unloaded from the carrier's vehicle, the South Carolina Department of Health and Environmental Control site representative requested that the HIC be punctured to determine if any free standing water was present. The liner was subsequently punctured and approximately eight gallons of water was drained from the HIC. This was less than the one percent by waste volume limit for liquid in the HIC. The licensee was immediately notified that the HIC contained water and the Environmental and Radiation Control Manager and a Radiation Control Supervisor were dispatched to the Barnwell site.

Through discussions with licensee representatives, the inspector determined that the HIC was a foam-filled type in which approximately two inches of foam was sprayed onto the interior surfaces of the HIC. The foam serves to pad the interior of the liner to prevent a container breach which might be caused by a sharp object loaded in the container. Also, the dewatering system has been removed from this type of HIC that if dewatering should become necessary, a dewatering system would have to be improvised by the licensee. Licensee procedures E&RC-0535, Control of Radwaste Operations Process Liners Prior to Shipment, and MI-16-550, CFD Filters, detail liner use and removal of CFD filters respectively. Neither procedure requires an inspection of the HIC internals to ensure compliance with the requirements of 10 CFR 61.56(a)(3).

Failure to have adequate procedures in place to inspect the HIC prior to shipment to insure it contained as little free-standing liquid as reasonably achievable as required by 10 CFR 61.56(a)(3) was identified as an apparent violation of Technical Specification 6.8.1 (50-324, 325/85-17-01).

As of June 21, 1985, the total quantity of radwaste shipped by the licensee was 25,219.5 ft.^{3}. The total volume shipped during 1984 was 48,474.1 ft.^{3}.

10. Inspector Followup Items (92701)

a. (Closed) Inspector followup Item (IFI) 50-325/80-03-04 Longterm onsite storage of radwaste. Through discussions with licensee representatives, the inspector determined that the licensee was not engaging in long-term onsite storage of radwaste.

b. (Closed) IFI 50-325/83-23-01 Review changes to shipping papers.

The inspector reviewed changes made to shipping papers to include the curie content of the shipment in the basic description and to identify each page of shipping papers such that a reviewer could determine the record was complete. The inspector had no further questions.

c. (Closed) IFI 50-325/83-31-01 Calibration of Hand Held Instrumentation.

The inspector reviewed instrument calibration procedures and found that the licensee requires each instrument's calibration to be verified at 20%, 50% and 80% on each scale. The inspector had no further questions.

11. I.E. Information Notices (92717)

The following IE Information Notice was reviewed to ensure its receipt and review by appropriate licensee management:

IN-84-75: Calibration Problems - Eberline Instrument Model 6112B Analog Teletectors.