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

AUG 2 7 1985

Report No.: 50-261/85-24

Licensee: Carolina Power and Light Company
P. O. Box 1551
Raleigh, NC 27602

Docket No.: 50-261 License No.: DPR-23

Facility Name: H. B. Robinson

Inspection Conducted: July 29 - August 2, 1985

Inspector: T. R. Collins 8/20/85
T. R. Collins Date Signed

Accompanying Personnel: J. G. Lee

Approved by: for C. M. Hosey, Section Chief 8/20/85
Division of Radiation Safety and Safeguards Date Signed

SUMMARY

Scope: This routine, unannounced inspection entailed 36 inspector-hours onsite during regular hours inspecting the radiation protection program including instruments and equipment used for radiation protection of personnel; posting, labeling, and control of radiological control areas; radiation work permit controls; shipment of radioactive materials, internal and external exposure controls; training and qualifications of personnel; 10 CFR 61 requirements; licensee's program for maintaining radiation exposures as low as reasonable achievable (ALARA), and previously identified inspector followup items.

Results: Two violations - Failure to take suitable airborne radioactivity measurements in the containment seal table room as required by 10 CFR 20.103(a)(3) and failure to follow written procedures as required by Technical Specification 6.5.1.1.1.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

*C. W. Crawford, Acting Plant General Manager
*R. M. Smith, Manager, Environmental and Radiological Control
*D. Baur, Quality Assurance Supervisor
*R. Barnett, Supervisor, Instrumentation and Control
*A. R. Wallace, Director, Onsite Nuclear Safety
*R. Denney, Radiation Control Supervisor
*C. Wright, Senior Specialist Regulatory Compliance
*P. Harding, Radiation Control Project Specialist
B. Ritchie, Radiation Control Forman
M. Crabtree, Radiation Control Foreman
M. Burch, Radiation Control Foreman
J. Petitgout, ALARA Specialist

Other licensee employees contacted included four technicians, three mechanics, two security force members, and six office personnel.

Other Organizations

Institute of Resource Management, Inc.

NRC Resident Inspectors

*H. Krug, Senior Resident Inspector
*H. Whitcomb, Resident Inspector

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on August 2, 1985, with those persons indicated in paragraph 1 above. Two violations were discussed with licensee management. One violation was for failure to follow written procedures as required by Technical Specification 6.5.1.1.1 and the other involved a failure to take an appropriate air sample as required by 10 CFR 20.103(a)(3). Both violations were a result of work performed on the incore detectors in the seal table room of reactor containment. Licensee management took no exceptions. The licensee did not identify as proprietary any of the materials provided to or reviewed by the inspectors during this inspection.

3. Licensee Action on Previous Enforcement Matters

(Closed) Violation (50-261/84-10-04) Labeling of containers with radioactive material labels. The inspector reviewed and verified the corrective actions stated in Carolina Power and Light Company's (CP&L) letter of June 1, 1984.

(Closed) Unresolved Item (50-261/85-09-01) Radiation exposure received by a visitor without completing General Employee Training (GET). The inspector reviewed and verified the corrective actions taken by the licensee which included a procedure revision to DP-001, Dosimetry Issuance, controlling radiation exposure received by each visitor to less than 100 mrem in a year. No violations or deviations were identified.

(Closed) Violation (50-261/85-09-02) Unauthorized entry into high radiation areas $\geq$ 1000 mrem/hr. The inspector reviewed and verified the corrective actions as stated in CP&L's letter of March 29, 1985.

4. Significant Event During Entry to the Seal Table Room (93711)

Through reviews of licensee records and discussions with licensee representatives the inspector determined the following:

a. On the morning of July 16, 1985, two individuals entered the seal table room to do preliminary work on incore detector system using a routine radiation work permit (RWP) 4012. The work was unsuccessful and they exited the area. Subsequently, the licensee determined that a second entry would be made to 1) correct the problem in "C" 5th path incore detector drive system and 2) replace the "D" incore detector. A radiation control (RC) technician was assigned the responsibility for job coverage by the RC foreman and was told that the foreman would be in the area to direct activities. The RC technician looked at previous surveys for the area and noted that general radiation levels around the "C" detector box was 50 mR/hr with smear surveys of 130,000 dpm/100 cm^2. At 1:35 pm six individuals entered the seal table room to change out the "D" incore detector.

An Instrumentation and Control (I&C) foreman and RC foreman were on the scene directing the activities of their personnel. A qualified health physics (HP) technician was there to perform necessary surveillance of the work. When the maintenance personnel opened the cabinet that contained the cable and associated couplings, dose rate measurements revealed 200-300 mR/hr towards the back of reel and about 400 mR/hr general area. Because of concern with the radiation levels, no contamination surveys were taken.

Upon exiting the area the individuals discovered facial and nasal contamination on their person. The individuals were immediately taken to dosimetry for whole body counting. Preliminary results indicated that they all had inhaled radioactive contamination and that the maximum exposed individual contained 80% of a maximum permissible organ

burden in the upper gastrointestinal (GI) tract. A more complete analysis of this individual on 7/17 revealed the following activities:

Isotopic	% MPOB lung	% MPOB lower torso	microcuries lower torso
Mn-54	-0-	28	333
Co-58	1.0	37.21	335
Co-60	3.0	165.82	498
I-133	-0-	10	31

b. Technical Specification 6.5.1.1.1 requires that written procedures be established, implemented and maintained covering applicable procedures recommended in Appendix A of Regulatory Guide 1.33, Rev. 2, February 1978. Appendix A Regulatory Guide 1.33 states that the licensee should have radiation protection procedures governing a radiation work permit system, and respiratory protection.

Plant Programs Procedure PLP-16, Radiation Work Permit (RWP) Program, required an RWP to be written for a specific task. Health Physics Procedure HP-006, Section 5.6, Control of Internal Dose, required that respiratory protection or stay times be utilized to maintain internal exposures "As Low As Reasonably Achievable" (ALARA). The inspector reviewed Radiation Work Permit (RWP) 4012, surveys, qualifications of the personnel performing the work and training of the individuals involved. A review of the RWP revealed that a general (non specific RWP) RWP was used to control the activities of the work.

Failure to use a specific RWP for the seal table work as required by Plant Procedure PLP-16 was identified as an apparent violation of TS 6.5.1.1.1 (50-261/85-24-02).

Discussions with licensee representatives indicated that there were no contamination surveys taken inside the detector cabinet prior to the work. Post event followup surveys revealed contamination levels in excess of 2 million dpm per 100 cm^2. An analysis of these levels prior to the work would have indicated that respiratory protection should be considered to maintain exposures ALARA. Failure to use respiratory protection or stay times to maintain internal exposures ALARA was identified as another example of an apparent violation of Technical Specification 6.5.1.1.1 (50-261/85-24-02).

c. 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 in this part, and (2) are reasonable under the circumstances to evaluate the extent of radiation hazards that may be present. 10 CFR 20.201(a) defines "survey" as an evaluation of the radiation hazards incident to the production, use, release, disposal, or presence of radioactive materials or other sources of radiation under a specific set of conditions. When appropriate, such evaluation

includes a physical survey of the location of materials and equipment, and measurements of levels of radiation or concentrations of radioactive material present.

10 CFR 20.103(a)(3) requires the licensee to use suitable measurements of concentrations of radioactive material in air for detecting and evaluating airborne radioactivity in restricted areas.

The inspector reviewed the airborne radioactivity survey records and noted there were no airborne radioactivity measurements taken in the breathing zone of the workers either before, during or after the detector replacements.

Failure to make appropriate airborne radioactivity surveys to evaluate the hazard present was identified as an apparent violation of 10 CFR 20.201(b). (50-261/85-24-01)

The inspector reviewed the results of the analysis performed for the positive counts that were related to the seal table incident. The inspector discussed the assessments and corrective actions with the supervisor of the Instrumentation and Control technicians that had positive counts. The inspector also reviewed the MPC-hours for the seal table incident and discussed action taken for all staff receiving greater than 40 MPC-hrs in one week. The inspector had no further questions.

5. Training and Qualifications (83723)

a. Basic Radiation Protection Training

The licensee was required by 10 CFR 19.12 to provide basic radiation protection training to workers. Regulatory Guides 8.27, 8.29, and 8.13, outline topics that should be included in such training. Chapters 12 and 13 of the FSAR contain further commitments regarding training. The inspector discussed the initial and refresher general employee radiation protection training (GET) with the Training Supervisor. The inspector attended GET training sessions for selected topics. The inspector reviewed the GET training records for selected workers to determine if records reflected adequate completion of GET initial and refresher training.

b. Radiation Protection and Chemistry Technician Qualification

The licensee was required by Technical Specification 6.3 to qualify radiation protection and chemistry technicians in accordance with ANSI N18.1. The inspector reviewed the training records for selected technicians to assure all topics were completed. The inspector discussed, with one radiation protection technician, the qualification program and assignments to assure that they had not been assigned to work independently and had been qualified for assigned tasks.

c. Radiation Protection and Chemistry Foreman Qualifications

Technical Specification 6.4 required radiation protection and chemistry supervisory staff have four years experience in their specialty. The inspector discussed, with one foreman from the radiation protection department, his training and experience and selected duties and responsibilities of the position. The inspector reviewed the records of this individual's experience.

No violations or deviations were identified.

6. Organization and Management Controls (83722)

a. Organization

The licensee was required by Technical Specification 6.2 to implement the plant organization specified in Figure 6.2-2. The responsibilities, authorities, and other management controls were further outlined in Chapters 12 and 13 of the FSAR. Technical Specification 6.5.1.6 specified the members of the Plant Nuclear Safety Committee (PNSC) and outlined its functions and authorities. Regulatory Guide 8.8 specifies certain functions and responsibilities to be assigned to the Radiation Protection Manager and radiation protection responsibilities to be assigned to line management.

The inspector reviewed recent changes to the plant organization, to determine their effect on plant radiological controls, by examining the resulting changes to administrative procedures and position descriptions and discussing the changes with the Manager of Environmental and Radiological Control.

The inspector discussed with a radiation protection foreman, the type, methods of, and degree of interaction between plant groups. The inspector discussed with the Manager of Environmental and Radiological Control (E&RC) and a Radiological Control Foreman, how frequently they toured the plant and radiation control areas.

b. Staffing

Technical Specification 6.2.3 specified mimimum plant staffing. FSAR Chapters 12 and 13 also outlined further details on staffing. The inspector discussed authorized staffing levels vs. actual on-board staffing separately with the Manager of E&RC. The inspector examined shift staffing for the dayshift on July 31, 1985, to determine if it met minimum criteria for radiation protection.

No violations or deviations were identified.

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

The licensee was required by 10 CFR 20.201(b) 20.403, and 20.401 to perform surveys to show compliance with regulatory limits and to maintain records of such surveys. Chapter 12 of the FSAR further outlines survey methods and instrumentation. Technical Specification 6.5.1.1 required the licensee to follow written procedures. Radiological control procedures further outlined survey methods and frequencies.

a. Surveys

The inspector observed, during plant tours, surveys being performed by the radiation protection staff. The inspector reviewed selected Radiation Work Permits (RWP) to determine if adequate controls were specified. The inspector discussed the controls and monitoring with the radiation protection technician assigned and one worker for each task.

During plant tours, the inspector observed radiation level and contamination survey results outside selected cubicles. The inspector performed independent radiation level surveys of selected areas and compared them to licensee survey results. The inspector reviewed selected survey records for the month of July 1985 and discussed with licensee representatives methods used to disseminate survey results. The inspector assured that all locked high radiation areas outside containment were locked as required by Technical Specification.

b. Frisking

During tours of the plant, the inspector observed the exit of workers and movement of material from contamination control to clean areas to determine if proper frisking was performed by workers and that proper direct and removable contamination surveys were performed on materials.

c. Instrumentation

During plant tours, the inspector observed the use of survey instruments by plant staff and compared plant survey meter results with results of surveys made by the inspector. The inspector examined calibration stickers on radiation protection instruments in use by licensee staff and stored in the radiation protection laboratory. The inspector discussed with radiation protection technicians the methods for doing instrument source checks prior to each use and calibration methods.

d. Release of Materials for Unrestricted Use

The inspector discussed with a radiation protection technician the program for survey-out of items from contaminated areas and reviewed the procedures for such release. The inspector observed release

surveys performed by radiation protection technicians, and documentation of results. During tours of plant areas, the inspector observed posting of containers and performed independent surveys to determine if containers of radioactive material were properly identified.

No violations or deviations were identified.

8. Facilities and Equipment (83727)

FSAR Chapters 1 and 12 specified plant layout and radiation protection facilities and equipment. During plant tours, the inspector observed the operation of the contaminated clothing laundry, the flow of traffic thru change rooms, the use of temporary shielding and the use of glove bags, and ventilated containment enclosures.

No violations or deviations were identified.

9. Audits

The licensee was required by Technical Specification 6.5 to perform audits of radiological controls and chemistry operations. The inspector reviewed audits of the radiation protection operations for the year of 1985, the responses to these audits, and the status of selective corrective actions resulting from the audits. The inspector discussed the results of these audits with licensee representatives. These audits identified several items needing corrective action. Corrective action had been initiated for all items. The audits were conducted using staff members with technical backgrounds in radiological controls.

No violations or deviations were identified.

10. Tranportation (86721) and Solid Radwaste (84722)

The licensee was required by 10 CFR 71.5 to prepare shipments of radioactive material in accordance with DOT regulations. The inspector observed the preparation of a shipment of solidified oil and dry active waste and discussed the shipment with the shipping supervisor, clerk, and radiation protection technician. The inspector reviewed the procedure under which the shipment was made and the resulting documentation. The inspector made confirmatory radiation level measurements of the shipment.

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. The inspector reviewed the following plant procedure for the packaging, classifying, and tracking of radioactive waste shipped to low-level waste burial facilities:

HPP-201, Shipment of Radioactive Materials

The inspector reviewed the methods used by the licensee to assure that waste was properly classified, met the waste forms and characteristics required by 10 CFR 61 and met the disposal site license conditions and discussed the use of these methods with licensee representatives.

Technical Specification 6.5.1.1 requires the licensee to prepare waste for burial in accordance with a Process Control Program (PCP). The inspector discussed the provisions of the PCP with licensee representatives and during tours of the plant, observed the processing, control and storage of solid waste. The inspector reviewed selected manifests prepared for waste shipments made during the period July 1985 to verify that a tracking system was being used to insure that shipments arrived at the intended destination without undue delay.

No violations or deviations were identified.

11. External Occupational Dose Control and Personal Dosimetery (83724)

During plant tours, the inspector checked the security of the locks at several locked high radiation areas and observed posting of survey results.

a. Use of Dosimeters and Controls

The licensee was required by 10 CFR 20.202, 20.201(b), 20.101, 20.102, 20.104, 20.402, 20.403, 20.405, 19.13, 20.407, and 20.408 to maintain worker's doses below specified levels and keep records of and make reports of doses. The licensee was required by 10 CFR 20.203 and Technical Specification 6.13 to post and control access to plant areas. FSAR Chapter 12 also contained commitments regarding dosimetry and dose controls. During observation of work in the plant, the inspector observed the wearing of TLDs and pocket dosimeters by workers. Also the inspector observed the posting of areas and made independent measurements of dose to assure proper posting.

b. Dosimetry Results

The inspector reviewed the TLD results for 1984 and for the first two quarters of 1985.

No violations or deviations were identified.

12. Internal Exposure Control and Assessment (83725)

The licensee was required by 10 CFR 20.103, 20.201(b), 20.401, 20.403, and 20.405 to control uptakes of radioactive material, assess such uptakes, and keep records of and make reports of such uptakes. FSAR Chapter 12 also includes commitments regarding internal exposure control and assessment. The inspector observed operation of whole body counter and discussed its operation and results with the counter operator.

No violations or deviations were identified.

13. Maintaining Occupational Doses ALARA (83728)

10 CFR 20.1(c) specifies that licensees should implement programs to keep workers' doses ALARA. FSAR Chapter 12 also contains licensee commitments regarding worker ALARA actions.

a. Worker and Supervisor Actions

The inspector discussed dose control measures with five workers on the job and one maintenance supervisor to determine their degrees of involvement in dose reduction. The inspector discussed with selected supervisors their actions to reduce individual and collective doses, concentrating particularly on staff members with highest doses. The inspector also discussed these actions to set dose goals for tasks, methods used to reduce doses, and techniques used to monitor performance against goals.

b. ALARA Procedure Changes

The inspector reviewed recent changes to administrative procedures that implemented the elements of ALARA. The inspector discussed these changes with the Manager of E&RC and the ALARA Coordinator.

c. ALARA Reviews

The inspector reviewed the ALARA committee minutes during 1985 and discussed resulting actions with the Manager of Environmental and Radiation Control (E&RC) and the ALARA Coordinator. The inspector noted that a number of outstanding engineering items had been carried on the ALARA action list for several years. A licensee representative stated that a recent organization and management change should improve this situation.

d. ALARA Reports

The inspector reviewed the ALARA man-rem projection for 1985 and discussed the results with the ALARA Coordinator and Manager of E&RC. The goal for 1985 is 375 man-rems. The total cumulative dose to date for 1985 was 205 man-rems. This represents 55% of the 1985 goal. The inspector reviewed the following plant goals and noted the current status of these goals for 1985:

Goal	Current status as of 7/26/85	% of Goal for 1985
15,000 ft^3 of Radioactive waste	11,575.5 ft^3	77.17%
7,500 square feet of contaminated areas	9652 ft^2	129%
Less than 500 contaminated events	243 events (40 skin and 210 clothing)	48.6%

No violations or deviations were identified.

14. Previously Inspector Identified Items (92701)

(Closed) Inspector Follow-up Item (IFI) 50-261/84-14-02 Formalize contract health physics (HP) technicians training program. The inspector reviewed the licensee's procedure ERC-12, Contract Health Physics Personnel Training and Qualification Program which formalizes the training and qualification of contract HP Technicians to assure personnel meet ANSI N18.1, 1971 requirements.

(Closed) IFI 50-261/84-05-02 ANSI N18.1, 1971 qualifications of contract health physics technicians. Corrective actions as stated above addresses this issue.

15. IE Information Notices (92717)

The following IE Information Notices were reviewed to ensure their receipt and review by appropriate licensee management:

IN-84-75, Defective Detector Tubes Model No. 71623 for Eberline Analog Teletector Model 6112B.

IN-85-06, Contamination of Breathing Air Systems

IN-85-46, Clarification of several aspects of removable radioactive surface contamination limits for transport packages

IN-85-48, Respirator users notice: Defective self-contained breathing apparatus air cylinders