UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W., SUITE 2900
ATLANTA, GEORGIA 30323-0199

February 2, 1995

Report No.: 50-261/95-02

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

Docket No.: 50-261 Licensee No.: DRP-23

Facility Name: H. B. Robinson

Inspection Conducted: January 9-12, 1995

Inspector: B. A. Parker 01/27/95
Date Signed

Approved by: William G Rankin 1/31/95
W. H. Rankin, Chief Date Signed
Facilities Radiation Protection Section
Radiological Protection and Emergency Preparedness Branch
Division of Radiation Safety and Safeguards

SUMMARY

Scope:

This routine, announced inspection was conducted in the area of occupational radiation safety and included an examination of: organization and management controls; audits and appraisals; external exposure control; internal exposure control; surveys, monitoring, and control of radioactive materials and contamination; and maintaining occupational exposures as low as reasonably achievable (ALARA).

Results:

Based on interviews with licensee management, supervision, and station personnel, and records review, the radiation protection program continued to be effective in protecting the health and safety of the plant workers and the public. External and internal exposures were maintained within regulatory limits and the licensee's administrative limits. Collective dose reached all-time lows in 1994, and the ALARA program continued to be effective in implementing dose reduction initiatives. No violations or deviations were identified.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

*B. Baum, Manager, Human Resources
*W. Brand, Radiation Control (RC) Supervisor, Environmental & Radiation Control (E&RC)
*M. Burch, RC Supervisor, E&RC
*A. Cheatham, Director, Corporate Health Physics
*S. Collins, RC Supervisor, E&RC
*J. Eaddy, Manager, Environmental and Chemistry
*E. Gardner, RC Supervisor, E&RC
R. Gieger, RC Senior Technician, E&RC
*D. Gudger, Senior Specialist, Regulatory Programs
*J. Harrison, Manager, Radiation Control
*J. Henderson, Principal Specialist, Nuclear Assessment Department (NAD)
*S. Hinnant, Vice President, Robinson Nuclear Plant
*K. Jury, Manager, Licensing and Regulatory Programs
*R. Krich, Manager, Regulatory Affairs
*M. Pearson, Plant General Manager
T. Pilo, RC Senior Specialist, E&RC
W. Ritchie, RC Senior Specialist, E&RC
*G. Walters, Manager, Support Training
*T. Wilkerson, Manager, E&RC
*D. Young, Plant General Manager

Other licensee employees contacted during the inspection included technicians, maintenance personnel and administrative personnel.

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*C. Ogle, Resident Inspector
*W. Rankin, Section Chief, Region II
J. Starefos, Project Engineer, Region II

*Denotes attendance at the exit meeting held on January 12, 1995.

2. Organization and Management Controls (83750)

The inspector reviewed the licensee's organization, staffing levels, and lines of authority as they relate to radiation protection since the last inspection conducted March 7-11, 1994, and documented in NRC Inspection Report (IR) 94-09. On September 6, 1994, the licensee hired a new manager of E&RC. The inspector reviewed the qualifications of the new E&RC Manager, noting that the individual possessed a broad base of knowledge and experience in the field of reactor health physics and exceeded the qualifications required for the position in Technical Specification (TS) 6.3.2. No other significant changes had occurred within the E&RC group and no concerns were noted.

The licensee continued to maintain a staff of approximately 60 technicians, specialists, supervisors and managers in the E&RC group. Approximately two-thirds of the staff worked in RC and reported to the RC Manager, who reported to the E&RC Manager.

At the time of inspection, the unit had been up for approximately 150 days since the last shutdown and was operating at 100 percent power. The next refueling outage (RFO 16) was planned to begin on April 29, 1995, and last for approximately 40 days.

No violations or deviations were identified.

3. Audits and Appraisals (83750)

a. NAD Audits and Observations

TS 6.5.3.2.d requires audits of the facility to be performed by the NAD encompassing conformance of facility operation to the provisions contained within the TS and applicable license conditions at least once per 12 months.

The NAD staff conducted one audit in the radiological protection program area since the last inspection conducted March 7-11, 1994, and documented in IR 94-09. NAD Audit R-ERC-94-02, issued January 12, 1995, was an assessment of the site's radiation protection program and was conducted during the period of November 28 - December 9, 1994. The inspector discussed the scope and findings of the audit with the lead auditor and representatives of the licensee's E&RC staff. The assessment appeared thorough and appropriate in scope to address the principal areas reviewed. The inspector determined that the audit results were reported to appropriate management levels for review.

The audit identified one issue requiring corrective action and a response on the part of E&RC. The issue concerned the proper amount of follow-through on personnel contamination events (PCEs). The audit found a few instances in which clothing PCEs were not followed completely through to the point that skin dose was estimated. The maximum dose calculated after the involved PCEs were reevaluated was 754 millirem to the skin.

The audit report also discussed two strengths in the E&RC program regarding (1) an overall reduction of PCEs in 1994, and (2) a reduction in the amount of condensate dissolved oxygen to minimize the amount of iron transport to the steam generators. Two weaknesses in the E&RC program were identified regarding (1) slow implementation of program improvement items, and (2) computer programs for determining curie content and class of

DOT shipments not being procedurally controlled. A number of items for management consideration were also identified in the audit report. The inspector inquired about the E&RC response to the audit, but since the audit was only recently performed, completion of specific corrective actions associated with each of the findings was not evaluated by the inspector for adequacy. The corrective actions taken to date appeared appropriate for the identified issues.

The inspector also reviewed the results of selected NAD observations of E&RC work/day-to-day activities. The observations identified minor deficiencies/inconsistencies and produced recommendations and changes that assisted the licensee in "fine-tuning" the E&RC program. No significant concerns were identified. Overall, the observation process was considered a program enhancement.

b. E&RC Self Assessment

Licensee procedure PLP-057, "Self Assessment," established a self-assessment program for plant staff with the purpose to involve all levels of the plant staff in achieving higher levels of standards. Units were required to perform at least one self-assessment per quarter. The inspector noted that the E&RC staff conducted approximately 40 self-assessments in 1994. The inspector noted that some meaningful issues requiring attention or corrective actions were being identified in the assessments. No significant concerns were noted.

c. Adverse Condition Reports (ACRs)

The inspector reviewed the E&RC-related Adverse Condition Reports (ACRs), which were generated to document a variety of issues and deficiencies. The E&RC-related issues were assessed and classified by the staff in accordance to the significance of each issue. ARCs were classified as Levels One through Four with the most significant being Level One. All items requiring corrective action were entered into the site's ACR corrective action program. The E&RC staff continued to review all E&RC-related ACRs to trend problems and look for common root causes. Based on the review of E&RC ACRs, no problems or concerns were noted. Most issues were assigned Level Four status, with some Levels Three and Two. No Level One issues were assigned to E&RC. Of those selected ACRs reviewed, all corrective actions assigned/taken were appropriate and no significant adverse trends were identified.

No violations or deviations were identified.

4. External Exposure Control (83750)

a. Whole Body Exposure

10 CFR 20.1201(a) requires each licensee to control the occupational dose to individual adults, except for planned special exposures under 20.1206, to the following dose limits:

(1) An annual limit, which is the more limiting of:

(i) The total effective dose equivalent being equal to 5 rems; or
(ii) The sum of the deep-dose equivalent and the committed dose equivalent to any individual organ or tissue other than the lens of the eye being equal to 50 rems;

(2) The annual limits to the lens of the eye, to the skin, and to the extremities, which are:

(i) An eye dose equivalent of 15 rems; and
(ii) A shallow-dose equivalent of 50 rems to the skin or to any extremity.

The inspector discussed the cumulative whole body exposures for plant and contractor employees. The inspector noted that all whole body exposures assigned since the previous NRC inspection of this area were within 10 CFR Part 20 limits. The typical administrative dose limit was 2,000 millirem utility-acquired administrative dose limit plus the amount of year-to-date incoming dose. In 1994, the licensee granted no dose extensions, and the maximum individual whole body dose for the year was 896 millirem and the maximum skin dose for the year was 2,082 millirem.

No violations or deviations were identified.

b. Personnel Dosimetry

10 CFR 20.1502(a) requires each licensee to monitor occupational exposure to radiation and supply and require the use of individual monitoring devices by:

(1) Adults likely to receive, in one year from sources external to the body, a dose in excess of 10 percent of the limits in 10 CFR 20.1201(a);

(2) Minors and declared pregnant women likely to receive, in one year for sources external to the body, a dose in excess of 10 percent of any of the applicable limits of 10 CFR 20.1207 or 10 CFR 20.1208; and

(3) Individuals entering a high or very high radiation area.

The inspector selectively reviewed the dosimetry program to ensure the licensee was meeting the monitoring requirements of 10 CFR Part 20. During tours of the plant, the inspector observed proper use of thermoluminescent dosimeters (TLDs) and electronic dosimeters (EDs).

Since the last inspection in March 1994, the licensee had completed pilot-testing and had fully implemented the use of EDs. The inspector noted that the licensee was evaluating the use of EDs for official dose and discontinuing the use of TLDs except in certain situations such as multibadging and containment entries at power. The inspector discussed the issue with licensee representatives and the regulatory basis of official dose.

No violations or deviations were identified.

c. High and Very High Radiation Areas

10 CFR 20.1601, 10 CFR 20.1602 and 10 CFR 20.1902 specify the control and posting requirements for high radiation areas and very high radiation areas. In addition, TS 6.13 provides additional requirements for the control of high radiation areas.

The inspector reviewed and discussed with licensee representatives the program for controlling access to high radiation areas (HRAs), locked high radiation areas (LHRAs), and very high radiation areas (VHRAs). Selected areas were inspected during tours for proper postings and access controls, and no concerns were noted. Areas were locked in accordance with licensee procedure. Key control was also reviewed and no concerns were noted. In addition, the spent fuel pool building was toured and the inspector noted that no material was hanging in the pool from the railing.

The inspector noted that in November 1994, TS 6.13 was amended to conform with revised 10 CFR Part 20 language. The new language was consistent with comparable TSs at other sites and allowed individuals to enter HRAs, in part, if they (1) possessed a survey instrument, (2) possessed an ED, or (3) were accompanied by a radiation protection technician who was equipped with a survey instrument. The old TS language only allowed entry into HRAs with a survey instrument. The inspector noted that no licensee procedures had yet been updated to reflect the revised TS 6.13. This issue was addressed in the recent E&RC Audit R-ERC-94-02, discussed in Paragraph 3.a., and the inspector discussed the issue with licensee representatives. The licensee indicated that it planned to revise procedures in the near future to reflect the changes. The revised TS, with appropriate procedural implementation, would simplify the process for entering HRAs while

maintaining adequate access control and potentially reducing the total dose incurred from such entries.

No violations or deviations were identified.

5. Internal Exposure Control (83750)

10 CFR 20.1204(a)(3) requires, in part, that the licensee, as appropriate, use measurements of radioactivity in the body, measurements of radioactivity excreted from the body, or any combination of such measurements as may be necessary for timely detection and assessment of individual intakes of radioactivity by exposed individuals.

10 CFR 20.1701 requires the licensee to use, to the extent practicable, process or other engineering controls to control the concentrations of radioactive material in air.

The inspector reviewed and discussed the licensee's bioassay program in general. Whole body counts were conducted and followed up as necessary, such as annually, at termination, and following certain types of PCEs. In 1994, the licensee had no assignable internal dose. Engineering controls were used as appropriate to eliminate airborne radioactive material, and respirator reduction continued to be emphasized by the licensee, with more reduction planned during RFO 16.

No violations or deviations were identified.

6. Surveys, Monitoring, and Control of Radioactive Material and Contamination (83750)

a. Surveys

10 CFR 20.1501(a) 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 radioactive hazards that may be present.

The inspector reviewed selected records of radiation and contamination surveys performed during 1994, and discussed the survey results with licensee representatives. During tours of the plant, the inspector observed HP technicians performing radiation and contamination surveys. No concerns were identified.

b. Posting and Labeling

10 CFR 20.1904(a) requires the licensee to ensure that each container of licensed material bears a durable, clearly visible label bearing the radiation symbol and the words "Caution, Radioactive Material," or "Danger, Radioactive Material." The label must also provide sufficient information (such as radionuclides present, and the estimate of the quantity of

radioactivity, the kinds of materials and mass enrichment) to permit individuals handling or using the containers, to take precautions to avoid or minimize exposures.

During tours of the plant and selected outside radioactive material storage areas, the inspector noted that the licensee's posting and control of radiation areas, high radiation areas, airborne radioactivity areas, contamination areas, and radioactive material areas was adequate. The inspector also noted radioactive material was properly labeled.

c. Personnel and Area Contamination

During facility tours, the inspector noted that contamination control and general housekeeping practices were excellent. Surface contamination was aggressively being controlled at its source, as evidenced by the low number of catch containments needed throughout the plant (six, as of January 11, 1995), and the low amount of controllable contaminated area (306 square feet, as of January 11, 1995) in the RCA (approximately 87,000 square feet). In fact, approximately 3,300 square feet of the area decontaminated in 1994 was previously considered "unrecoverable" and not included in the area defined as recoverable, contaminated RCA. Reduction of respirator usage and PCEs, and lack of internal dose further indicated that contamination was being effectively controlled.

The inspector reviewed the licensee's PCEs. A total of 54 PCEs were documented for in 1994, and, as of January 11, 1995, no PCEs had occurred in 1995. The inspector selectively reviewed PCEs reports from 1994 and noted no concerns. As mentioned in Paragraph 3.a, the licensee's NAD audit identified a minor problem with calculating skin doses for clothing contaminations. The inspector noted that since the issue was identified, skin contaminations were assessed appropriately. Individuals with facial contamination were whole body counted as required to check for internal dose.

No violations or deviations were identified.

7. Plant Tours and Work Observation

The inspector toured the plant during the inspection and noted no problems in such areas as posting, labeling or access control. Workers in the plant were properly wearing dosimetry and required safety gear. Overall, housekeeping and material condition were excellent as a major decontamination and repainting project continued.

The inspector observed some pre-job briefings given by E&RC for work in the RCA performed during the inspection, and observed one of the jobs as it was conducted. The work observed involved the exchange of the spent fuel pool heat exchanger filters and was covered under radiation work permit (RWP) 95-0135. Prior to draining the filter housing, dose rates were 15-45 millirem per hour (mrem/hr) in the general work area and 800 mrem/hr on contact with the housing. After draindown was accomplished by Operations, the dose rates at the filter housing increased to 50 mrem/hr general area and 1,500 mrem/hr contact. The inspector attended the pre-job briefing and reviewed the controls put in place for the job by E&RC. No major concerns were noted and the job was accomplished without problems. The filters when removed read three to six Roentgen per hour on contact and a total of eight filters were replaced. The total job was accomplished for approximately 0.045 person-rem, the maximum individual dose being 32 mrem. The inspector observed that better control of excess water from the housing was needed as was more practice using the special remote handling tools developed for the job. Overall, the work process and the job itself went well.

The inspector also attended a pre-job briefing for a containment entry at power that was performed on January 12, 1995. The entry was made to verify and repair a problem with a incore detector cable at the seal table. Good coordination between the various departments involved was noted during the briefing. Radiological conditions, contingency plans and E&RC coverage were discussed, as well as industry events involving related type work. The work was performed under RWP 95-0133, which was reviewed by the inspector, and surveys in the seal table area indicated that dose rates were 40 mrem general area and general contamination levels of 20,000 dpm per 100 square centimeters. Access control and other E&RC controls of the job appeared appropriate. At the exit meeting, the licensee informed the inspector that the job had been completed without problems and with minimal dose expenditure.

Overall, the licensee work control process functioned well with good planning, coordination and execution among the plant disciplines.

No violations or deviations were identified.

8. Program for Maintaining Exposures As Low As Reasonably Achievable (ALARA) (83750)

10 CFR 20.1101(b) requires that the licensee shall use, to the extent practicable, procedures and engineering controls based upon sound radiation protection principles to achieve occupational doses and doses to members of the public that are As Low As Reasonably Achievable (ALARA).

Collective dose was down significantly in 1994 at 63 person-rem total, which was the lowest dose in the site's history. No refueling outages were conducted; however, there were two forced outages during the year, one of which was required to address steam generator problems.

The annual goal for 1994 was set at 58 person-rem, but the forced outages caused the dose overrun. The goal for 1995 was set at 172 person-rem which, if met, would be another historic low-dose year for the plant. At the time of the inspection, the licensee had expended approximately 0.8 person-rem of the 1.3 person-rem dose budgeted year-to-date.

The inspector reviewed and discussed the ALARA program in general with licensee representatives and noted that many initiatives to reduce overall dose were underway or planned. Licensee NAD audits had indicated that many of the initiatives developed as part of the plant's Radiation Exposure Reduction Plan were being delayed, but it appeared to the inspector that items were being addressed reasonably as resources allowed. ALARA planning for RFO 16 was on target. Goals of approximately 40 days and 135 person-rem had been set for the upcoming outage, which were very aggressive based on the plant's previous outage experience. If the goals are met, RFO-16 will be the licensee's shortest and lowest dose refueling outage on record.

No violations or deviations were identified.

9. Exit Meeting

At the conclusion of the inspection on January 12, 1995, an exit meeting was held with those licensee representatives denoted in Paragraph 1 of this report. The inspector summarized the scope and findings of the inspection. No violations or deviations were identified and the inspector received no dissenting comments.