



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

May 12, 1987

Report No.: 50-261/87-12

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: April 27 - May 1, 1987

Inspector: *R. J. Walker*
C. H. Bassett

5/5/87
Date Signed

Accompanying Personnel: H. Bermudez

Approved by: *R. J. Walker*
C. H. Hosey, Section Chief
Division of Radiation Safety and Safeguards

5/5/87
Date Signed

SUMMARY

Scope: This was a routine unannounced inspection in the area of radiation protection including: organization and management; training and qualification; external exposure control; internal exposure control; control of radioactive material; the program for maintaining exposures as low as reasonably achievable (ALARA); previous enforcement and inspector followup items; and IE Information Notice followup.

Results: No violations or deviations were identified.

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REPORT DETAILS

1. Persons Contacted

Licensee Employees

*G. P. Beatty, Vice President, Robinson Nuclear Plant
*J. M. Carley, Acting Plant General Manager
*R. M. Smith, Manager, Environmental Radiation Control
*E. M. Harris, Director, Onsite Nuclear Safety
*J. J. Niemi, Acting Director, Quality Assurance
*D. Sayre, Acting Director, Regulatory Compliance
P. C. Harding, Project Specialist, Radiation Control
D. S. Crocker, Supervisor, Radiological Control
D. L. Weaver, Foreman, Radiation Control
J. W. Sawyer, Foreman, Radiation Control
D. F. Boan, Foreman, Radiation Control
B. H. Snipes, Project Specialist, Training
R. A. Hammond, ALARA Specialist
A. H. Shepard, Regulatory Compliance
S. A. Brown, Principal Specialist, Corporate Health Physics
R. R. Andrews, Senior Specialist, Corporate Health Physics

Other license employees contacted included technicians, operators security office members and office personnel.

U. S. Nuclear Regulatory Commission

*H. P. Krug, Senior Resident Inspector
*R. M. Latta, Resident Inspector

*Attended exit interview

2. Exit Interview

The inspection scope and finding were summarized on May 1, 1987, with those indicated in Paragraph 1 above. The inspector described the areas inspected and discussed in detail the inspection findings. The licensee acknowledged the findings and took no exceptions. The licensee did not identify as proprietary any of the material provided to or reviewed by the inspector during this inspection.

3. Licensee Action on Previous Enforcement Matters (92702)

(Closed) Violation (50-261/86-20-01) Failure to provide adequate procedures for control of radioactive material and respirator fit testing. The inspector reviewed the licensee's response dated October 16, 1986, and verified that the corrective actions specified therein had been implemented.

4. Organization and Management Controls (83722)

A. Organization

The licensee was required by Technical Specification (TS) 6.2.3 to implement the facility organization specified in TS Figure 6.2.2. The responsibilities, authority, and other management controls necessary for establishing and maintaining a health physics program for the facility were outlined in Chapters 12 and 13 of the Final Safety Analysis Report (FSAR). TS 6.5.1.6 specified the composition of the Plant Nuclear Safety Committee (PNSC) and outlined its functions and authorities. Regulatory Guide 8.8 also specified certain functions and responsibilities to be assigned to the Radiation Protection Manager (RPM) and radiation protection responsibilities to be assigned to line management.

The inspector reviewed the plant organization with the RPM to determine the degree of support received from other members of management and the lines of authority and communication. It appeared that the support required to implement and maintain an effective radiation protection program was in place.

B. Staffing

Technical Specification 6.2.3 specified the minimum staffing for the plant. FSAR Chapters 12 and 13 further outlined details on staffing. The inspector reviewed the radiation control organization with the RPM. The licensee had completed a proposed functional reorganization of the radiation control group and was evaluating performance and awaiting formal management approval of the proposal. According to the licensee, the reorganization was initiated to improve communications and make crew size more manageable by reducing the number of personnel reporting to one supervisor.

The subjects of the attrition rate, use of contractor health physics technicians, personnel qualifications and actual versus authorized staffing levels were also discussed. At the time of the inspection, 38 health physics technical positions were authorized; 3 were not filled. In addition, due to the outage that was in progress, there were approximately 100 additional personnel onsite assisting in radiation control including supervisors, technicians, and decontamination workers.

C. Controls

The inspector reviewed the licensee's Radiation Safety Violation reports for 1987. The system of identifying radiological/safety violations appeared to be functioning as intended and problems were being identified, corrected and investigated as required. The system also allowed the licensee to track the different types of radiological problems that occurred and identify possible trends.

No violations or deviations were identified.

5. Training and Qualifications (83723)

A. Contractor Radiation Control Technician Training

Technical Specification 6.3.1 required that each member of the facility staff meet or exceed the minimum qualification of ANSI N18.1-1971 for comparable positions. Paragraph 4.5.2 of ANSI N18.1-1971 stated that technicians in responsible positions shall have a minimum of two years of working experience in their speciality.

The inspector discussed with licensee representatives the training and qualification requirements for contractor health physics technicians working at the station. Subjects discussed included relevant work experience and education, site-specific training, specialized training and degree of responsibility associated with the qualifications. The inspector further discussed radiological controls for specific jobs with various contractor technicians and observed their work during implementation of radiological control for selected activities. Based on the above discussion and observations, the inspector determined that the contract health physics technicians met the ANSI N18.1-1971 standard.

B. General Employee Training

10 CFR 19.12 required the licensee to instruct all individuals working in or frequenting any portion of the restricted area in the health protection problems associated with exposure to radioactive material or radiation, in precautions or procedure to minimize exposures, and in the purpose and functions of protective devices employed, applicable provisions of Commission regulations, individual responsibilities and the availability of radiation exposure data.

The inspector reviewed the Respiratory Protection and General Employee Training Programs in terms of content, goals, policies and methods. The inspector also reviewed lesson plans for these programs.

The General Employee Training Program consisted of two required levels. Level I concerned plant indoctrination and Level II Radiation Protection. The Respiratory Protection Course provided classroom instruction for persons who were likely to wear respirators. The fit test portion of the Respiratory Protection Program was provided by the site Radiation Control organization.

The inspector reviewed selected personnel training records and compared them against personnel contamination reports and the 1987 Radiation Safety violations. The inspector noted that some new employees who received marginal grades or who initially failed and

then passed the General Employee Training (GET) Course were involved in contamination events or radiation safety violations shortly thereafter. Through discussions with the RPM, it was noted that there currently was no special retraining program established for new personnel who may need additional training. The RPM stated that the merits and feasibility of such a retraining program would be considered.

No violations or deviations were identified.

6. External Exposure Control and Dosimetry (83724)

a. Use of Dosimeters and Postings

The licensee was required by 10 CFR 19.13, 20.101, 20.102, 20.201(b), 20.202, 20.401, 20.403, 20.405, 20.407 and 20.408 to maintain workers' doses below specified levels and keep records of and make reports of exposures. The licensee was also required by 10 CFR 20.203 and TS 6.13 to post specified areas and control access to plant areas. FSAR Chapter 12 also contained commitments regarding dosimetry and dose control.

During observation of work in the plant, the inspector noted the wearing of thermoluminescent dosimeters (TLDs) and self-reading pocket dosimeters (SRPDs) by workers as required. During plant tours, the inspector also observed the posting of areas and made independent radiation measurements using NRC equipment to assure proper postings. The inspector checked the security of the locks at four locked high radiation areas and observed posted survey results.

b. Dosimetry Results and Administrative Controls

The inspector reviewed the Form NRC-5 equivalent printout showing exposures through April 25, 1987, and verified that the radiation doses recorded for plant and contractor personnel were within the limits of 10 CFR 20.101. The licensee had approximately 1700 individuals badged at the facility and only one had received exposure in excess of 2000 millirem (mr). To ensure the quarterly limit of 2500 mr was not exceeded, the licensee required consecutively higher tiers of supervision to approve dose extensions with the Plant General Manager having approval authority for whole body exposure up to three rem during a calendar quarter.

c. Radiation Work Permits (RWPs)

The licensee used general RWPs to cover work of ongoing nature such as surveillance tours and operations inspections. Specific work was governed by special RWPs which were requested to control jobs of shorter duration. One individual per shift was assigned to prepare and follow RWPs. The inspector reviewed selected general and special RWPs posted at the entrance to the radiation control area (RCA) to

verify they complied with regulatory requirements and contained sufficient guidance.

No violations or deviations were identified.

7. Internal Exposure Control and Assessment (83725)

a. Intake Assessment

10 CFR 20.103(a) established limits for exposure of individuals to concentrations of radioactive materials in air in restricted areas. 20.103(a) also required 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 calendar year 1987 and the results of air samples taken in support of refueling outage work authorized by special RWPs. The inspector also reviewed selected results of whole body counts and the licensee's assessment of individual intakes of radioactive material performed during calendar year 1987. There was one instance in which a worker received greater than 40 maximum permissible concentration-hours (MPC-hrs) in one week and two instances in which workers received greater than 10 MPC-hrs in one week. Two of the three intakes resulted from possible ingestion of radioactive material and the third from an unanticipated airborne concentration exceeding the protection factor of an assigned respirator. The licensee's evaluations, assessments and immediate corrective actions appeared to be adequate and complied with regulatory requirements.

b. Process and Engineering Controls

The licensee was required by 10 CFR 20.103(b) to use process or other engineering controls, to the extent practicable, to limit concentrations of radioactive material in air to levels below those specified in Part 20, Appendix B, Table I, Column 1, or limit concentrations, when averaged over the number of hours in a 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 was observed during tours of the plant.

c. Respiratory Maintenance and Fit Testing

Through discussions with licensee representatives it was noted that after use, respirators were cleaned in a washing and drying facility located in the Environmental and Radiation Control building. The clean respirators were then surveyed, inspected, tested and packaged for use. Respirators were issued only after a worker presented a card to the radiation control (RC) technician issuing the devices which indicated that the worker had received the required training, had been properly fit tested and had had a medical evaluation. The inspector reviewed this procedure of issuing respirators with workers and RC technicians to ensure it was followed.

The inspector observed the operation of the licensee's fit test booth and reviewed selected records of recent fit tests. Corn oil mist was used to provide the challenge atmosphere inside the fit test booth and a specially adapted respirator mask indicated any in-leakage. Three tasks or actions were required to be performed by an individual during a fit test. An acceptable fit test required a person to achieve a performance factor of greater than or equal to 60 on the overall test. The performance factor was calculated by dividing the ambient corn oil mist concentration in the booth by the concentration inside the mask.

No violations or deviations were identified.

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

a. Surveys

The licensee was required by 10 CFR 20.201(b) and 20.401 to perform surveys and to maintain records of such surveys necessary to show compliance with regulatory limits. Survey methods and instrumentation were outlined in FSAR Chapter 12, while TS 6.5 and 6.11 provided requirements for adherence to written procedures.

During plant tours, the inspector examined radiation levels and contamination survey results outside selected rooms and cubicles. The inspector performed independent radiation level surveys of selected areas and compared them with licensee survey results. Through discussions with the licensee, the inspector noted that as of December 31, 1986, the licensee maintained approximately 2,400 square feet of the RCA under contamination controls. As of March 31, 1987, the total square footage of contaminated areas had climbed to approximately 4,000 square feet, mostly due to the outage.

b. Frisking

During tours of the plant, the inspector observed the exit of workers and movement of materials from the RCA to the clean areas to

determine if proper frisking was performed by workers and proper fixed and transferable contamination surveys were being performed on materials. The inspector determined that frisking and material release surveys were adequate.

c. Instrumentation

During tours of the facility, the inspector observed the use of survey instruments by radiation control personnel. The inspector examined calibration stickers on radiation protection instruments in use and at various storage locations. Instrument use appeared to be in accordance with standard practice and all instruments examined had been calibrated.

d. Caution Signs, Labels and Controls

10 CFR 20.203(f) required that each container of licensed radioactive material bear a durable, clearly visible label identifying the contents when quantities of radioactive material exceeded those specified in Appendix C. During plant tours, the inspector verified that containers of radioactive material were labeled as required and that proper controls were established.

No violations or deviations were identified.

9. Program for Maintaining Exposures As Low As Reasonable Achievable (ALARA) (83728)

a. Outage Activities

The inspector discussed various aspects of the licensee's ALARA Program pertaining to the current outage with licensee representatives. The estimated exposure for the outage was 355.5 man-rem. As of April 29, 1987, with slightly over 50% of the work completed, 234.9 man-rem had been received.

The most dose-intense task that had been completed as of April 29, 1987, was the reactor head disassembly which resulted in 16.6 man-rem. In-service Inspections, at 90% completion, had resulted in less accumulated dose than anticipated at 17.4 man-rem as compared to a projection of 30 man-rem. It was also noted that a control rod drive mechanism (CRDM) weld leak had resulted in unforeseen and unscheduled work which accounted for 30 of the 234 man-rem total for the outage to date.

b. Goals and Objectives

The licensee indicated that the man-rem goal for 1986 had been 450 while actual accumulated exposure totaled 539 man-rem. Among reasons given for exceeding the goal was underestimation of scheduled 1986 Refueling Outage exposure by 58 man-rem and a forced outage in

August 1986 which accounted for approximately 32 man-rem. The goal for 1987 was set at 450 man-rem and as of April 30, 1987, approximately 290 man-rem had been expended.

c. Personnel Contaminations

As of the week ending April 24, 1987, there had been 123 personnel contaminations, of which 73 were skin contaminations. This compares favorably with the data from the site's 1986 outage in which, by the same period into the outage, there had been 173 personnel contaminations, of which 96 were skin contaminations.

The inspector reviewed selected contamination reports and reviewed the actions specified to preclude recurrence.

No violations or deviations were identified.

10. Followup on IE Bulletins (92703)

(Closed) BUL (50-261/78-BU-07) - IE Bulletin 78-07 required licensees to review their respiratory protection programs to determine whether or not the use of air-line, supplied-air respirators operated in the demand mode was permitted. The licensee's response dated August 14, 1978, indicated that the respiratory protection procedures did not allow the use of such respirators in the demand mode. The inspector reviewed the current procedure, HPP-111, Use of Respirators, Revision 4, April 20, 1987, and verified that air-supplied respirators were still only to be used in the positive or pressure demand (i.e., always positive pressure) mode.

11. IE Information Notices (IEN) (92717)

The inspector determined that the following NRC Information Notices had been received by the licensee, reviewed for applicability, distributed to appropriate personnel and that actions, as appropriate, were taken or scheduled.

- a. IEN 85-06: Contamination of Breathing Air Systems
- b. IEN 85-43: Radiography Events at Power Reactors
- c. IEN 85-46: Clarification of Several Aspects of Removable Radioactive Surface Contamination Limits for Transport Packages
- d. IEN 85-48: Respirator Users Notice: Defective Self-Contained Breathing Apparatus Air Cylinders
- e. IEN 85-60: Defective Negative-pressure, Air-purifying Full Facepiece Respirators

- f. IEN 85-81: Problems Resulting in Erroneously High Reading with Panasonic 800 Series Thermoluminescent Dosimeters
 - g. IEN 85-87: Hazards of Inerting Atmospheres
 - h. IEN 85-92: Surveys of Wastes Before Disposal from Nuclear Reactor Facilities
 - i. IEN 85-97: Jail Term for Former Contractor Employee Who Intentionally Falsified Welding Inspection Records
 - j. IEN 86-20: Low-Level Radioactive Waste Scaling Factors, 10 CFR Part 61
 - k. IEN 86-22: Underresponse of Radiation Survey Instrument to High Radiation Fields
 - l. IEN 86-23: Excessive Skin Exposure Due to Contamination with Hot Particles
 - m. IEN 86-24: Respirator Users Notice: Increased Inspection Frequency for Certain Self-contained Breathing Apparatus Air Cylinders
 - n. IEN 86-41: Evaluation of Questionable Exposure Readings of Licensee Personnel Dosimeters
 - o. IEN 86-42: Improper Maintenance of Radiation Monitoring Systems
 - p. IEN 86-43: Problems with Silver Zeolite Sampling of Airborne Radioiodine
 - q. IEN 86-44: Failure to Follow Procedures When Working in High Radiation Areas
 - r. IEN 86-46: Improper Cleaning and Decontamination of Respiratory Protection Equipment
 - s. IEN 86-103: Respirator Coupling Nut Assembly Failures
 - t. IEN 86-107: Entry Into PWR Cavity with Retractable Incore Detector Thimbles Withdrawn
12. Inspector Followup Items (IFI) (92701)

(Closed) IFI (50-261/86-20-02) Action levels for Whole Body Counts. The inspector reviewed with the licensee their requirements for whole body counts. The action level in plant procedures had been revised to state that any facial contamination required a whole body count to be performed.