September 21, 1984

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
CAROLINA POWER AND LIGHT COMPANY AND	)	
NORTH CAROLINA EASTERN MUNICIPAL	)	Docket Nos. 50-400 OL
POWER AGENCY	)	50-401 OL
	)	
(Shearon Harris Nuclear Power Plant,	)	
Units 1 and 2)	)	

NRC STAFF TESTIMONY OF ROSS H. ALBRIGHT
CONCERNING JOINT CONTENTION IV

Q1. State your name, position and business address.

A1. Ross H. Albright, Radiation Specialist

Facilities Radiation Protection Section

U. S. Nuclear Regulatory Commission

101 Marietta St. N.W. Suite 2900

Atlanta, GA 30323

Q2. Would you state your professional qualifications?

A2. I have been employed as Radiation Specialist with the U. S. Nuclear Regulatory Commission since November 1981. My duties as a Radiation Specialist are to inspect the radiation protection and radioactive material transportation programs at various licensee facilities in Region II.

June 1979 - October 1981: During this period, I was Radiation Control Supervisor at the Bellefonte Nuclear Plant, TVA, under construction located in Scottsboro, Alabama. In this position, I

was responsible for writing health physics procedures, reviewing work procedures and adding radiological requirements, and supplying health physics coverage for work on or around radioactive materials onsite. I was also involved in writing procurement specifications for portable health physics instruments procured within TVA and for writing the calibration specifications for these instruments.

November 1978 - June 1979: During this period, I was a systems engineer for Ingalls Shipbuilding Company in Pascagoula, Mississippi writing purchase specifications for various system components and performing design calculations for fire sprinkling systems on a naval surface ship.

May 1978 - November 1978: During this period, I was a radiological engineer for Ingalls Shipbuilding Company with primary responsibilities in writing decontamination instructions and performing audits of the radiation control program in the submarine overhaul and refueling program.

February 1978 - May 1978: During this period, I was Health Physicist in the outage unit at Browns Ferry Nuclear Plant, TVA in Decatur, Alabama. My primary responsibilities were to ensure that health physics coverage was available for scheduled outage work and to ensure that adequate radiological controls were in force for the work.

May 1975 - February 1978: During this period, I was a Radiation Control Engineer for Ingalls Shipbuilding Company with primary responsibility for reviewing, adding radiological survey requirements to, and approving submarine refueling work procedures. I completed a six month training program to become a shift health physicist in December 1978. This training included dosimetry aspects of health physics.

I graduated from Mississippi State University in 1975 with a Bachelor of Science Degree in Nuclear Engineering. Since joining the NRC, I have completed courses in PWR Fundamentals, BWR Fundamentals, Reactor Health Physics Technology and Internal Dosimetry.

Q3. What responsibilities do you have relative to the Shearon Harris Nuclear Power Plant or other CP&L facilities?

A3. I have no responsibilities for inspecting the Shearon Harris Plant. I have been responsible for inspecting the radiation protection programs at the Brunswick and H. B. Robinson Nuclear Plants.

Q4. What is the purpose of this testimony?

A4. The purpose of my testimony is to address, on behalf of NRC staff for Joint Contention IV, two questions raised by the Licensing Board, which are: 1) What is the accuracy and precision of the semi-annual calibration of the TLDs and associated equipment. Included in this question is the accuracy and precision of the daily calibration of

equipment. 2) This question has four parts and concerns the performance of TLDs and the TLD program to prevent a) incorrect calibration factors, b) dosimeter variability, c) clerical errors, d) poor calibration for accident doses.

Q5. Does the NRC have regulations which define the accuracy or precision of dosimetry devices such as the TLD or associated equipment?

A5. No, the NRC does not have regulations which specifically define the accuracy or precision that the TLD and its associated equipment must meet. Current regulations require that licensees provide workers personnel dosimetry under specified conditions and that licensees perform evaluations necessary to meet the limits of the regulations. These evaluations include measurement of doses to workers. Thus, although there are no specific criteria for accuracy or precision, the regulations do require licensees to make evaluations to show worker's doses do not exceed regulatory limits.

Q6. Does the NRC require that licensees meet any industry standards which define the accuracy or precision that the TLD or its associated equipment must meet?

A6. The NRC does not require the licensee to meet the performance requirements of any industry standard. However, the NRC has published a proposed rule which would, if approved, make it mandatory for the licensee to use a TLD processor who is accredited by the National Voluntary Laboratory Accreditation Program for Personnel Dosimetry Processors of the National Bureau of Standards

in accordance with accreditation criteria established in 15 CFR Part 7b. This program would be based on recommendations adopted by the Health Physics Society in ANSI N13.11-1983, Criteria for Testing Personnel Dosimetry Performance.

Q7. How does the NRC inspect licensee dosimetry programs?

A7. We assure that the licensee has and uses dosimetry as required by 10 CFR 20. We review the programs licensees have implemented to assure dosimeters give acceptable results. The NRC procedure which was used to inspect licensee programs prior to January 1, 1984, was inspection procedure 83740B, Radiation Protection (Enclosure 7). Dosimetry program inspection performed after about January 1, 1984, were performed in accordance with inspection procedure 83724, External Occupational Exposure Control and Personal Dosimetry (Enclosure 8). Procedure 83724 references NCRP Report No. 57, Instrumentation and Monitoring Methods for Radiation Protection, which states that at the maximum permissible dose (MPD) the accuracy of the dose measurement should be ±30 percent. At lower doses the level of accuracy can decrease significantly such that at 0.25 MPD the accuracy requires measurements to be accurate within a factor of two.

Q8. Have your inspections reviewed quality control programs to assure the accuracy of the TLDs and associated equipment?

A8. RII Inspection Report No. 50-325,324/84-26 (Enclosure 1) details my discussions with CP&L personnel, procedure review, TLD quality control (QC) and TLD reader calibration data.

Q9. Briefly describe the licensee QC test of the TLDs.

A9. Information on this test was gained through discussion with a corporate dosimetry representative, Steve Brown, by review of the licensee's procedures and review of July 1984 data. The QC test for the TLD is performed initially before the TLD is put into service and every six months thereafter. The QC is also performed on the TLD any time the validity of a TLD measured exposure is questioned or after any occurrence which would cause the future use of the TLD to be questioned. A summary of the QC test follows. TLDs are irradiated to 500 mrem with a standard Cs-137 source. The TLDs are then read. To pass the test, the TLD measured exposure must be within ±15 percent of the 500 mrem, if less than 500 TLDs are in the test, or within ±15 percent of the average TLD reading if more than 500 TLDs are in the test. Any TLD to fail the first test must pass two subsequent QC tests with the same acceptance criteria. TLDs which pass the above test are reread to determine residual dose. If the residual dose is less than or equal to 15 mrem, the TLD remains in service, otherwise the TLD is removed from service.

Q10. Briefly describe the semi-annual TLD reader calibration.

A10. Information on this calibration was gained through discussion with a corporate dosimetry representative, Steve Brown, and review of the licensee's records and procedures. This calibration is described in Brunswick plant procedures and in corporate dosimetry procedures. This calibration is discussed in Inspection Report No. 50-325,324/84-26 (Enclosure 1). The calibration is performed by corporate personnel who irradiate several TLDs to specific doses

from a Cs-137 source at the Harris Environmental and Energy Center (HEEC) and then read these TLDs in the TLD reader on the Brunswick site. Data acquired during the TLD reader calibration is used to calculate two conversion coefficients which are used by the TLD reader to convert the number of photons counted, while reading a TLD, to Rem. These conversion coefficients are established during the TLD reader calibration and are entered into the plant TLD reader's programming. Calculation of the conversion coefficients and entering these into the reader programming can be performed manually, or if preferred, the reader will perform the calculations and enter the calculated coefficients into its memory automatically. CP&L uses both methods of TLD reader calibration. The TLD reader calibration is then verified by reading several TLDs irradiated to the specified doses. The acceptance criteria for verification of the TLD reader calibration are that a) The average measurement of each of the four TLD elements in each TLD, when read, must measure within ±10 percent of the irradiated value and b) the percent standard deviation for each of the four TLD elements in each TLD is within ±10 percent of the average reading. In August 1984, I observed a label on the reader at Brunswick which indicated the reader was last calibrated May 1984, therefore, the reader was within the calibration period. I also reviewed the Brunswick TLD reader calibration data for the calibration performed May 26, 1984, and calibration data for a HEEC TLD reader dated May 30, 1984. No negative findings resulted from this review.

Q11. Briefly describe the daily QC of the TLD reader at the plant.

A11. Information about the daily QC was gained through discussion with plant dosimetry personnel, observation of a daily QC, review of the Brunswick procedure and review of daily QC data for the period August 4-22. The daily QC on the TLD reader is discussed in Inspection Report No. 50-325,324/84-26 (Enclosure 1). The daily TLD reader QC is performed by plant personnel reading three TLDs provided by corporate. These TLDs are irradiated to 0.5 rem and 4.0 rem with a calibrated source. Each day before using the TLD reader, the QC TLDs are read. The acceptance criterion for the QC test as contained in the procedure, is that the irradiated TLDs must read out within ±15 percent of the given exposure. If this QC is failed, a second test is performed. If the second test is failed, the TLD reader optics are cleaned, and a third test is performed. If the third test is failed, a TLD reader malfunction is indicated and corporate personnel are called to evaluate the problem. The review of daily TLD reader QC data for the period August 4-22, 1984, did not indicate QCs outside the acceptance criteria. There were no negative findings.

Q12. Does the licensee perform other tests to assure proper functioning of the TLD reader between calibrations?

A12. The information for this answer was gained during discussions with corporate and plant dosimetry personnel, review of the licensees procedure and data for cross checks performed January - August 1984.

The following described test is performed on a monthly frequency and serves as a backup to the daily QC on the TLD reader. The daily QC should indicate a potential problem before the following test. This cross check test is described in corporate procedures. Monthly, the corporate dosimetry personnel irradiate 6 TLDs to various exposures between 30 mrem and 5 rem. These 6 TLDs plus 3 control badges are sent to the plant for reading. The plant personnel do not know the irradiated exposure on the badges before reading these TLDs. After read out, plant personnel return the data from the badges to corporate. Corporate evaluates the data and informs the plant of the results. The acceptance criteria for this cross check is contained in the cross check procedure. No negative findings resulted from this review. This cross check is discussed in Inspection Report Nos. 50-261/83-14 (Enclosure 2) and 50-324,325/84-26 (Enclosure 1).

Q13. Does CP&L at its Brunswick and H. B. Robinson plants use pocket dosimeters for operational dose control and do they have comparison programs as a check on the TLD?

A13. Both the Brunswick and H. B. Robinson plants use pocket dosimeters routinely and have similar pocket dosimeter vs. TLD correlation programs. If an individual's exposure as measured by the two devices does not agree within specified percentages, a personnel dose investigation is initiated which may include requiring a QC on the TLD. Thus, the pocket dosimeter is a further check of the TLD.

Previous reports which contain inspection of this program are 50-261/83-06 (Enclosure 3), 50-324,325/82-03 (Enclosure 4), 50-324,325/82-40 (Enclosure 5), 50-324,325/83-06 (Enclosure 6).

Q14. Have previous inspections of this pocket dosimeter vs. TLD program led you to question the accuracy of the TLD as a dose measuring device?

A14. Previous inspections have indicated that the TLDs are adequate to perform the function for which they are intended.

Q15. Does the licensee have a program to prevent the use of incorrect TLD calibration factors?

A15. The TLD calibration performed initially and every six months thereafter would determine if the manufacturer supplied TLD calibration factor was no longer correct. This calibration factor is coded into the badges and is read by the TLD reader automatically when the TLD is read. This information was gained through discussion with corporate dosimetry representative, Steve Brown and is discussed in Inspection Report No. 50-324/325/84-26 (Enclosure 1).

Q16. Does the licensee have a program to detect dosimeter variability?

A16. There are three programs which could detect TLD variability. These programs are the semi-annual TLD calibration (QC), review of TLD element data after reading, and the pocket dosimeter vs. TLD correlation. The semi-annual TLD QC was discussed in answer to

question 9. Review of data for each TLD element variance after reading will indicate possible TLD variability between TLD QC's. If this review indicates potential variability the TLD QC would be performed. A poor pocket dosimeter vs. TLD correlation as described earlier could require a QC to be performed on the TLD. The QC of the TLD would ultimately indicate variability of the TLD.

Q17. Does the licensee have a program to detect clerical errors?

A17. The following information was gained through discussion with plant dosimetry personnel and by observation of exposure data processing as discussed in Inspection Report No. 50-324,325/84-26 (Enclosure 1).

Clerical error is not a source of error in the CP&L dosimetry program due to the independent verification of data entered into the computerized record system. The methods of data entry into the computerized record system are as follows:

TLD calibration factors for each TLD are coded into the TLD badge and are read automatically by the TLD reader during each reading process. Clerical error is therefore not possible when entering each TLDs unique calibration factors into the TLD reader.

The TLD measured exposure is provided from the reader as a hard page record and/or on a computer disk. When data is entered from the hard page record, this record is stamped with an initials block for

the operator performing the initial data entry and a second operator who performs verification of proper data entry. Each operator puts their unique operator number inside the stamp. These plant dosimetry personnel stated that the data entry is checked a third time by another technician before the hard page record is forwarded to corporate dosimetry. Hard page records are forwarded to corporate for permanent storage. At corporate another review of these records against the information entered into the computer is performed and documented by this operator's unique number being stamped on the record. A review of these hard page records ready for permanent storage indicated the operator number of the two documented verifications at the plant and the one at corporate. These TLD exposure records may be entered into the computer record system directly from the computer connected to the TLD reader. When this automatic method is used the manual system is not used and clerical error is not possible.

Q18. Does the licensee calibrate TLDs for accident doses?

A18. This information was gained from discussion with corporate dosimetry representative, Steve Brown. The TLDs are not calibrated for doses above 3 rem. In the event that accident doses must be determined, a special TLD calibration would be performed, after the exposure, to ensure the linearity of the TLD reading in the necessary accident dose range. There would also be a mock up of the exposure incident to calculate the accident dose. The NRC considers the above described methods of determining accident doses as acceptable and

appropriate. Calibration of dosimetry for accident doses is not part of the routine inspection program.

Q19. What are your conclusions as to CP&L's ability to have an acceptable program for monitoring occupational doses at the Shearon Harris facility.

A19. Based on my inspection of the programs implemented at H. B. Robinson and Brunswick, which I found to be acceptable in terms of the guidance provided in NRC inspection procedures, I have no reason to believe that CP&L cannot develop and implement an acceptable program at the Shearon Harris plant.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W.
ATLANTA, GEORGIA 30303

ENCLOSURE 1

SEP 20 1984

Carolina Power and Light Company
ATTN: Mr. E. E. Utley
Executive Vice President
Power Supply and Engineering
and Construction
411 Fayetteville Street
Raleigh, NC 27602

Gentlemen:

SUBJECT: REPORT NOS. 50-324/84-26 AND 50-325/84-26

On August 21-24 and September 13, 1984, NRC inspected activities authorized by NRC Operating License Nos. DPR-71 and DPR-62 for your Brunswick facility. At the conclusion of the inspection, the findings were discussed with those members of your staff identified in the enclosed inspection report.

Areas examined during the inspection are identified in the report. Within these areas, the inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observation of activities in progress.

Within the scope of the inspection, no violations or deviations were identified.

In accordance with 10 CFR 2.790(a), a copy of this letter and enclosure will be placed in the NRC Public Document Room unless you notify this office by telephone within 10 days of the date of this letter and submit written application to withhold information contained therein within 30 days of the date of this letter. Such application must be consistent with the requirements of 2.790(b)(1).

Should you have any questions concerning this letter, please contact us.

Sincerely,

Stephen P. Weise for

David M. Verrelli, Chief
Reactor Projects Branch 1
Division of Reactor Projects

Enclosure:
Inspection Report Nos. 50-324/84-26
and 50-325/84-26

cc w/encl:
P. W. Howe, Vice President
Brunswick Nuclear Project
C. R. Dietz, Plant Gereral Manager

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W.
ATLANTA, GEORGIA 30303

SEP 20 1984

Report Nos.: 50-325/84-26 and 50-324/84-26

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: August 21-24 and September 13, 1984

Inspector: R. H. Albright 9-20-84
R. H. Albright Date Signed

Approved by: G. R. Jenkins 9/20/84
G. R. Jenkins, Section Chief Date Signed
Division of Radiation Safety and Safeguards

SUMMARY

Scope: This routine, unannounced inspection involved 22 inspector-hours at the Brunswick site in the areas of training and qualification, external exposure control and personal dosimetry, internal exposure control, surveys, monitoring, and control of radioactive material, solid waste and inspector followup items. An additional 6 inspector hours at the Harris Environmental and Energy Center (HEEC) involved the personnel thermoluminescent dosimeter (TLD) quality control (QC) program administered by the HEEC for all CP&L TLD users.

Results: No violations or deviations were identified.

REPORT DETAILS

1. Licensee Employees Contacted

**S. Brown, Project Specialist - Health Physics
*A. G. Cheatam, Manager, Environmental and Radiation Control
**S. Croslin, Technical Specialist - Health Physics
*C. R. Dietz, Plant General Manager
*K. E. Enzor, Director, Regulatory Compliance
*M. D. Hill, Manager, Technical and Administrative Support
**J. A. Padgett, Director - Health Physics
*J. F. Terry, Project Specialist ALARA
*L. F. Tripp, Radiation Control Supervisor
C. Barnhill, Radiation Control Foreman
J. Davis, Environmental and Chemistry
B. Failor, Radiation Control Foreman
T. Priest, Radiation Control Foreman
H. Shaver, Planning and Scheduling

Other licensee employees contacted included technicians, and mechanics and two Chem Nuclear Systems Inc. employees.

NRC Resident Inspectors

*D. Myers, Senior Resident Inspector

*Attended exit interview at the Brunswick site
**Attended exit interview at the HEEC

2. Exit Interview

The inspection scope and findings for Brunswick were summarized on August 24, 1984, with those persons indicated in paragraph 1 above. The inspection scope and findings for HEEC were summarized on September 13, 1984, with those persons indicated in paragraph 1 above.

3. Licensee Action on Previous Enforcement Matters

Not inspected.

4. Training and Qualification (83723)

Technical Specification 6.3.1 requires that each member of the facility staff meet or exceed the minimum qualification of ANSI N18.1-1971 for comparable positions.

Paragraph 4.3.2 of ANSI N18.1 states that supervisors not requiring a license shall have a minimum of four years experience in the craft or discipline supervised. The inspector reviewed the experience and training records for two newly appointed Radiation Control Foremen and discussed radiological control activities related to the new positions with the appointees.

10 CFR 19.12 requires 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 procedures 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.

During tours of the plant, the inspector interviewed workers to assess their knowledge and understanding of radiation protection requirements.

No violations or deviations were identified.

5. External Exposure Control and Personal Dosimetry (83724)

The inspector discussed with HEEC personnel the quality control program for the sources used to irradiate TLDs for the TLD QC, the daily TLD reader QC and the monthly blind cross check programs. Source documentation from the manufacturer dated January 3, 1980, indicated the two Cs-137 sources in the irradiator to be 12 curies and 130 curies. The radiation fields from the two sources are calibrated on a six month frequency using calibrated instruments with calibrations traceable to NBS. The inspector reviewed documentation for the instruments which are used to calibrate the radiation fields of the sources. The instruments were within their annual calibration frequency. The latest calibrations of the 12 and 130 curie sources dated April 4, 1984, were reviewed.

The inspector discussed the TLD QC program with licensee representatives at the HEEC site. The HEEC representative stated that TLD's are QC tested upon receipt from the manufacturer and are retested on a six month frequency thereafter. This TLD QC test is described in corporate dosimetry procedure RC-PD-18, Quality Control Testing of TLDs. This test requires the TLD to be irradiated to 500 mrem and then read. If less than 500 TLDs are tested the individual TLDs must respond to within ±15 percent of the 500 mrem. If more than 500 TLDs are in the test each TLD must respond to within ±15 percent of the average TLD response. Any TLDs outside the required ±15 percent acceptable response band must be retested. If a TLD failed the first test, it must be retested two times and pass both subsequent tests. If a TLD fails either of the two successive tests, it is removed from service. TLDs remaining in service after the above tests are reread to determine residual dose. If the residual dose is greater than 15 mrem the TLD is removed from service. TLD exposure data since the previous TLD QC is reviewed for any TLDs removed from service during the QC. This review determines if any changes to personnel exposure data must be made. The inspector reviewed and

discussed TLD QC data for July 1984, with HEEC personnel. The inspector reviewed the personnel exposure reviews required for four TLDs removed from service after the July, 1984 TLD QC.

Plant TLD readers are calibrated on a six month frequency using procedure E and RC-0413, Calibration of Panasonic D-710 Automatic TLD reader. The inspector observed a calibration label on the plant TLD reader which indicated the reader was last calibrated May 1984. For the TLD reader calibration, corporate personnel expose several TLDs to 0.5 rem and 2.0 rem. These TLD's are used to establish new conversion coefficients which are entered into the TLD reader's programming. The TLD reader uses the conversion coefficients to convert photons counted while reading the TLD to rem. After the new coefficients are established, the TLD reader calibration is verified by reading several badges irradiated to the following exposures: a) 0.25 rem, b) 0.50 rem, c) 1.00 rem, d) 2.00 rem, e) 3.00 rem. The acceptance criteria for the verification test are: a) the average reading for each element is ±10 percent of the irradiated value and b) the percent standard deviation for each element is ± 10 percent of the average reading. The inspector reviewed data from the most recent Brunswick TLD reader calibration on May 26, 1984, and the most recent HEEC TLD reader calibration on August 16, 1984.

After reading TLD badges each month, the TLDs are returned to the HEEC for annealing or QC testing if the six month QC is due. At the end of the month, the badges are returned to the plant for change out. Included with the monthly batch of personnel badges sent to the plant from HEEC are a set of spiked badges for use as a blind cross check. The cross check badges include 6 badges irradiated to different values between 30 mrem and 5 rem and 3 unirradiated control badges. The plant dosimetry section reads the cross check badges and sends the data to the HEEC where the data is evaluated as a check on the proper functioning of the plant TLD reader. The acceptance criteria for this cross check is that the average bias plus standard deviation are less than 0.3. This test is described in HEEC dosimetry procedure RC-PD-2, TLD Reader Intercomparison and Performance Testing. The inspector reviewed the Brunswick cross check date for January - August, 1984. All TLD cross checks performed by Brunswick for the period January - August, 1984 were acceptable.

Also included in the monthly batch of badges received from corporate are badges with the following exposures: a) background b) 0.5 rem, and c) 4.0 rem. Each day before using the TLD reader a QC is run to ensure proper operation of the reader before beginning to read TLDs and to indicate that TLD readings since the previous QC are valid. The TLD has 4 elements containing TL material. In order to pass the QC, two specified elements must indicate within ±15 percent of the irradiated value. The inspector discussed with plant personnel and HEEC personnel what actions would be taken if the reader failed the QC. If failure of the QC is determined to be a problem with the TLD reader, HEEC dosimetry personnel are called in to evaluate subsequent actions. The inspector reviewed the Brunswick TLD reader QCs for the period August 4-22, 1984 and the HEEC TLD reader QCs for

the period September 4-13, 1984. No TLD reader QC failures were indicated for these periods. The inspector, during inspection at HEEC, reviewed an investigation of abnormal TLD reader operation for H. B. Robinson during February, 1984. A failed daily QC resulted in a review of TLD data since the previous TLD reader QC. This review resulted in exposure adjustment for personnel whose TLDs were read over the previous 24 hours. This will be inspected during the next H. B. Robinson inspection.

The inspector discussed the TLD exposure recording system with dosimetry personnel at the Brunswick and HEEC sites. TLDs are normally read at the plant using the automatic TLD reader, but a manual reader is available. Both readers produce a hard page record of the TLD measured exposure and/or the data is recorded on a disc by a computer connected to the TLD reader. The inspector discussed with Brunswick dosimetry personnel the method of recording exposures from the hard page record to the respective computerized personnel exposure records and observed one technician enter a record and a second technician then verify the entry. The technicians indicate who made the initial record entry and the entry verification by putting their unique operator numbers inside a stamp on the hard page record. Licensee personnel stated that a third plant technician verified the computer record entries prior to the hard page record being sent to HEEC dosimetry. When the hard page record is received at HEEC another technician verifies that the data was properly entered into the computer. This technician documents this verification by entering a unique operator number on the hard page record. Several hard page records were reviewed at the HEEC. These records showed three operator numbers which indicated the initial record entry and entry verification at the plant and the entry verification performed at HEEC. If several records are to have TLD exposure entries, the record entries will be made by direct transfer from the computer connected to the TLD reader, to the main records computer.

No violations or deviations were identified.

6. Audits of the Dosimetry Program (83724)

The inspector reviewed two 1984 audits of the CP&L dosimetry program. One audit by the CP&L Corporate Health Physics Staff was issued March 22, 1984, and included review of procedures, methods of TLD/pocket dosimeter issuance, the monthly TLD exchange process, operation of the TLD reader, QC program, multi-badging, neutron dose determination, use and handling of dosimetry devices, TLD calibration, and dosimetry records. The audit indentified deficiencies in the H. B. Robinson dosimetry program. Corrective actions for the above audit findings will be reviewed during the next NRC Region II inspection at H. B. Robinson. The second audit was performed by an independent assessor representing the National Bureau of Standards National Voluntary Laboratory Accreditation Program (NVLAP). This audit reviewed various aspects of the TLD program. No programmatic deficiencies were identified during the audit.

No violations or deviations were identified.

7. Internal Exposure Control (83725)

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 several consecutive days as far below 40 MPC-hours as is reasonably achievable. By review of records and discussions with licensee representatives, the inspector evaluated the licensee's MPC-hour control program.

No violations or deviations were identified.

8. 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 observed personnel using the personnel frisker (RM-14 with HP-210 pancake probe) to perform contamination surveys of themselves prior to exiting the controlled area.

The licensee uses Radiation Control personnel at controlled area exits located at the protected area portal, turbine building breezeway, and radwaste building. These personnel ensure that personnel frisk properly and keep records of personnel found to be contaminated while frisking at the respective exit point.

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.

The inspector reviewed selected manifests prepared for waste shipments made during the period June - July 1984 to verify that a tracking system was being used to ensure that shipments arrived at the intended destination without undue delay.

Technical Specification 3/4.11.3 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 contractor personnel who provide resin dewatering and solidification services to the plant. The vendor PCP is used to ensure that solidified resins shipped to a burial facility comply with burial facility license requirements and 10 CFR Part 61. The inspector reviewed documentation for July 1984 which indicated that test samples had solidified properly and met the requirements of the PCP. The inspector discussed the method of sampling resin waste so that a representative sample was obtained.

No violations or deviations were identified.

10. Inspector Followup Items (92701)

a. (Closed) Inspector Followup Item (IFI) (324/84-02-01). This item concerned the need for certain post accident sampling valves in containment to be administratively controlled open. The inspector reviewed licensee valve lineup procedures which require these valves to be left open.

b. (Closed) IFI (324/84-02-02) This item concerned the need for the licensee to determine a correction factor for a post accident sample system rotameter used to determine flow rate of containment atmosphere samples through filters. The inspector reviewed a licensee procedure which established a correction factor curve for the rotameter.

c. (Closed) IFI (325/83-18-01) This item concerned the subtraction of higher than normal background exposures from personal TLD exposures. The inspector reviewed a licensee evaluation of the cause for the control badges to read higher than normal and the action to be taken if background badges read greater than 50 mrem.

d. (Closed) IFI (325/83-38-01) This item concerned the need for special dosimetry surveillance to ensure that personnel on high dose jobs were not tampering with their dosimetry. The inspector reviewed procedure E&RC-0460 Appendix C which established the surveillance and records of the surveillance for the period February - April 1984. No cases of TLD tampering were revealed.

ENCLOSURE 2

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA ST., N.W., SUITE 3100
ATLANTA, GEORGIA 30303

June 13, 1983

Carolina Power and Light Company
ATTN: Mr. E. E. Utley
Executive Vice President
411 Fayetteville Street
Raleigh, NC 27602

Gentlemen:

SUBJECT: REPORT NO. 50-261/83-14

This refers to the routine safety inspection conducted by Mr. R. H. Albright of this office on May 3 - 6, 1983, of activities authorized by NRC License No. DPR-23 for the H. B. Robinson facility and to the discussion of our findings held with Mr. R. B. Starkey, Plant General Manager, at the conclusion of the inspection.

Areas examined during the inspection and our findings are discussed in the enclosed inspection report. Within these areas, the inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observations by the inspector.

Within the scope of this inspection, no violations or deviations were disclosed.

In accordance with 10 CFR 2.790(a), a copy of this letter and the enclosure will be placed in the NRC's Public Document Room unless you notify this office, by telephone, within ten days of the date of this letter and submit written application to withhold information contained therein within thirty days of the date of this letter. Such application must be consistent with the requirements of 10 CFR 2.790(b)(1).

Should you have any questions concerning this letter, we will be glad to discuss them with you.

Sincerely,

D. M. Verrelli, Chief
Project Branch 1
Division of Project and
Resident Programs

Enclosure: (See Page 2)

Enclosure:
Inspection Report No. 50-261/83-14

cc w/encl:
R. B. Starkey, Jr., Plant General Manager

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA ST., N.W., SUITE 3100
ATLANTA, GEORGIA 30303

Report No.: 50-261/83-14

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

Docket No.: 50-261

License No.: DPR-23

Facility Name: H. B. Robinson

Inspection at H. B. Robinson site near Hartsville, South Carolina

Inspector: _____ 6-7-83
R. H. Albright Date Signed

Approved by: _____ 6/9/83
K. P. Barr, Section Chief Date Signed
Operational Programs Branch
Division of Engineering and Operational Programs

SUMMARY

Inspection on May 3-6, 1983

Areas Inspected

This routine, unannounced inspection involved 25 inspector-hours on site in the areas of respiratory protection, surveys, external exposure control, radiation work permits, and posting labeling and control.

Results

Of the areas inspected, no violations or deviations were identified.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

*R. B. Starkey, Plant General Manager
*J. Curley, Manager, Technical Support
*W. Crawford, Manager, Operations and Maintenance
*F. Gilman, Project Specialist Regulatory Compliance
*R. Connally, Assistant to Plant General Manager
*J. Young, Director QA/QC
*C. Wright, Specialist Regulatory Compliance
*S. Crocker, Manager, Environmental and Radiation Control
*G. Hudson, Project Specialist Radiation Control
W. Ritchie, Radiation Control Foreman
R. Denny, Radiation Control Foreman
D. Weaver, Radiation Control Foreman
W. MacCready, Radiation Control Supervisor

Other licensee employees contacted included four technicians, four mechanics, and four office personnel.

NRC Resident Inspector

*S. Weise, Senior Resident Inspector

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on May 6, 1983, with those persons indicated in paragraph 1 above.

3. Licensee Action on Previous Enforcement Matters

Not inspected.

4. Unresolved Items

Unresolved items were not identified during this inspection.

5. Inspector Followup Items

(Closed) (IFI 81-07-07) This item concerned the need for a TLD QA performance test program. The licensee currently reads TLDs onsite. The Harris Environmental and Energy Center (HEEC) calibrates the TLDs periodically and monthly sends test badges for the plant to read. The HEEC evaluates the TLD test results and notifies the plant of the results. The inspector determined this to be an adequate TLD QA program and had no further questions.

(Closed) (IFI 81-07-28) This item concerned the need for the licensee to obtain additional beta survey instruments and conduct beta surveys. An adequate number of calibrated beta survey instruments are available onsite. The inspector reviewed a beta survey performed in conjunction with the steam generator outage. The inspector had no further questions.

(Closed) (IFI 81-07-44) This item concerned the need for the licensee to establish a dedicated equipment decontamination area. The licensee uses the hot machine shop for equipment decontamination. The area and the decontamination equipment in the area appear to be adequate. The inspector had no further questions.

(Open) (IFI 82-34-01) This item concerned a finding by the inspectors that during the first six months of 1982 approximately 48 percent of the personnel whole body counted at termination of employment exhibited body burdens between 0.1 and 5.4 percent. A further review of this data indicates that the majority of the terminations, approximately 40 percent, had body burdens in the range 0.1 to 0.9 percent and the remaining 8 percent of those terminations had body burdens greater than 1 percent. The whole body counter LLD will be considered when this item is followed up further by the inspector. A review of this data against the lower limit of detection for selected isotopes indicates that approximately 30% of the low level body burdens at termination are below the lower limit of detection for the equipment. This results in only 8 percent of the terminating body counts being in the detectable range instead of 48 percent. This error in the review occurred because the equipment prints positive whole body counts even when they are below the LLD for the equipment. The licensee evaluated a group of 400 terminating whole body counts and found 32.8 percent indicating body burdens up to 0.8 percent. The licensee pointed out that their program meets ANSI N348-1978 requirements for investigating high body burdens. The inspector stated that the body burdens detected did not require investigations regarding personnel exposure; however, the body burdens were possibly indicating problems in the respiratory protection program. The licensee has recently started using a quantitative respirator fit test which may have an effect on the program. This item will be reviewed further during a future inspection.

6. Respiratory Protection Program

The inspector participated in the classroom portion of respirator training. Due to the outage and the large number of personnel coming onsite, the respirator training was administered by a contractor using a plant approved lesson plan. The training was adequate and required passing a test at the end of the class. Allotted class time was approximately 45 minutes. The inspector had no further questions.

The inspector also observed fit testing of four outage personnel. The licensee performs quantitative fit testing. Personnel who operate the equipment have received training in the operation of the equipment. The inspector found the operator to be knowledgeable of respirator fit requirements and proficient in the operation of the equipment and interpretation of results. The inspector had no further questions.

The inspector discussed the 10 CFR 20.103 and Appendix A requirements for the use of bubble hoods with the health physics foreman responsible for the respiratory protection program. Air supplied bubble hoods will be used during steam generator jumping. The inspector reviewed the calibration records for manifold pressure gauges which are used to ensure proper flow to the hoods. The inspector also checked the manifolds in use to ensure that the pressure gauges were calibrated. The inspector had no further questions.

The inspector determined that the licensee is meeting the 40 MPC-hr control measure and MPC-hr record requirements of 10 CFR 20.103 through discussion with licensee personnel and by review of selected bioassay results. No violations or deviations were identified.

The inspector determined by discussion and observation that the licensee makes use of engineering controls such as ventilation and containments to reduce airborne radioactivity concentrations and limit the need for respiratory protection as required by 10 CFR 20.103. The inspector also noted that a dedicated decontamination crew keeps routinely entered areas decontaminated as low as possible. No violations or deviations were identified.

7. Health Physics Surveys

The inspector discussed with the Health Physics Supervisor the health physics controls over work performed on the secondary side of the plant subsequent to the steam generator tube leaks. A survey program is in effect to survey areas on the secondary side on a monthly and a quarterly basis. A survey is not made when opening secondary side equipment. During radiation surveys of the secondary side, when a radiation level above 0.25 mR/hr is detected on equipment, the equipment is labeled with a radiation label notifying personnel to contact the radiation control unit before opening the system. The survey also includes a contamination survey of the turbine building floor. The inspector made independent surveys at selected points of the secondary system including where the system was open.

These surveys did not indicate additional areas that should be marked as contaminated other than those presently marked. The inspector also reviewed feedwater isotopic analyses on April 15 and April 22. These records did not indicate the presence of activity above background.

The licensee's current survey and control philosophy toward the secondary side work appears to be adequate. The inspector had no further questions.

8. External Exposure Control

During tours of the plant, the inspector observed personnel wearing dosimetry devices. The inspector reviewed exposure files for selected personnel to verify that the requirements of 10 CFR 20.101 and 20.102 were met. Additional controls through the use of a "chit" system to allow sign in on an RWP also serve to ensure that the 10 CFR 20 requirements are met. No violations or deviations were identified.

9. Posting, Labeling, and Control

During tours of the plant radiation control area including the containment, the inspector reviewed the posting of selected plant areas for compliance with 10 CFR 20, technical specifications, and plant procedures. Compliance was reviewed by observation and independent surveys of these selected areas.

The inspector observed that high radiation area posting inside containment was well defined by posting and barriers.

No violations or deviations were identified.

10. Radiation Work Permits

The inspector reviewed current radiation work permits (RWP) for radiological controls adequate for the work to be performed, conditions, and location of the work. Adherence to RWP requirements by personnel were observed during tours of the plant.

No violations or deviations were identified.

ENCLOSURE 3

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA ST., N.W., SUITE 3100
ATLANTA, GEORGIA 30303

April 1, 1983

Carolina Power and Light Company
ATTN: Mr. E. E. Utley
Executive Vice President
411 Fayetteville Street
Raleigh, NC 27602

Gentlemen:

SUBJECT: REPORT NO. 50-261/83-06

This refers to the routine safety inspection conducted by Mr. R. H. Albright of this office on March 7-11, 1983, of activities authorized by NRC License No. DPR-23 for the H. B. Robinson facility and to the discussion of our findings held with Mr. J. Curley, Manager, Technical Support, at the conclusion of the inspection.

Areas examined during the inspection and our findings are discussed in the enclosed inspection report. Within these areas, the inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observations by the inspector.

Within the scope of this inspection, no violations or deviations were disclosed.

We have examined actions you have taken with regard to previously identified enforcement matters. These are discussed in the enclosed inspection report.

In accordance with 10 CFR 2.790(a), a copy of this letter and the enclosure will be placed in the NRC's Public Document Room unless you notify this office, by telephone, within ten days of the date of this letter and submit written application to withhold information contained therein within thirty days of the date of this letter. Such application must be consistent with the requirements of 10 CFR 2.790(b)(1).

Should you have any questions concerning this letter, we will be glad to discuss them with you.

Sincerely,

D. M. Verrelli, Chief
Project Branch 1
Division of Project and
Resident Programs

Enclosure: (See Page 2)

Enclosure:
Inspection Report No. 50-261/83-06

cc w/encl:
R. B. Starkey, Jr., Plant General Manager

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA ST., N.W., SUITE 3100
ATLANTA, GEORGIA 30303

Report No: 50-261/83-06

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

Docket No: 50-261

License No: DPR-23

Facility Name: H. B. Robinson

Inspection at H. B. Robinson site near Hartsville, South Carolina

Inspector: _____ 3/25/83
P. H. Albright Date Signed

Approved by: _____ 3/25/83
for K. P. Barr, Section Chief Date Signed
Operational Programs Branch
Division of Engineering and Operational Programs

SUMMARY

Inspection on March 7 - 11, 1983

Areas Inspected

This routine, unannounced inspection involved thirty-three inspector-hours on site in the areas of radioactive effluents, external exposure control, solid radwaste, and preplanning for the 1984 steam generator outage.

Results

Of the four areas inspected, no violations or deviations were identified.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

R. B. Starkey, Plant General Manager
*J. Curley, Manager, Technical Support
*J. Young, Director, Quality Assurance and Quality Control
*S. Crocker, Manager, Environmental and Radiation Control
*W. MacCready, Radiation Control Supervisor
*S. Brown, Project Specialist - Health Physics
*C. Wright, Regulatory Compliance Specialist
M. Crabtree, Radiation Control Foreman
W. Ritchie, Radiation Control Foreman

Other licensee employees contacted included two technicians and three office personnel.

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on March 11, 1983, with those persons indicated in paragraph 1 above.

3. Licensee Action on Previous Enforcement Matters

(Open) Violation (82-34-07). The violation concerned three examples of high radiation area violations for a ladder providing access to a locked high radiation area, the use of a padlock on a high radiation area, and an individual exiting a high radiation area without an instrument. The inspector observed that the high radiation area which could be entered using the ladder is now controlled by a locked door and a rapid egress lock is now required to be used to lock all high radiation areas. The area in question controlled with a padlock now has a rapid egress lock. The inspector determined by discussion that personnel are being required to have an instrument with them while in a high radiation area. This item will remain open for further review by the inspector.

4. Unresolved Items

Unresolved items were not identified during this inspection.

5. Inspector Followup Items

(Closed)(IFI 81-07-19) This item concerned the need to include a description of engineering controls which could be utilized in order to keep airborne contamination levels down and therefore decrease the number of personnel who have to wear respirators. The inspector reviewed the current lesson plan

for respiratory protection training and observed that the lesson plan requires the discussion of various engineering controls which can be utilized in the respiratory protection program. The inspector had no further questions.

(Closed)(IFI 82-31-07) This item concerned I.E. Notice 82-49 which described potential problems with underestimating radioactive gaseous effluents due to pressure differences between the plant vent and the sampling system. The licensee measured the pressure drop between the plant vent and the sampling system and incorporated a correction factor into their procedure for calibrating the sampling system. The inspector had no further questions.

(Closed)(IFI-82-25-02) This item concerned an inspection where the inspector found two radiological barriers down and questioned licensee control of these areas. The inspector has not identified additional problems in barrier or posting control during subsequent inspections. The inspector had no further questions.

(Closed)(IFI 82-34-09) This item concerned a soil sample which was analyzed by the licensee and the NRC in the Region II counting laboratory. The licensee's analysis was significantly higher than the Region II results. The Region II Independent Measurements section recently made an inspection of the licensee isotopic analysis program including comparative counting of samples and found no problems. The previous difference in the soil sample analysis appears to have been the result of a non-uniform sample and possible settling of the sample contents during transportation to the Region II office. The inspector had no further questions.

6. External Exposure Control

a. The inspector reviewed the licensee's program for external exposure control, including review of records, observation of control practices and discussions with licensee personnel. Specific areas reviewed were (1) personnel monitoring requirements of 10 CFR 20.202(a), (2) permissable doses of 10 CFR 20.101(a), (3) extended permissable doses of 10 CFR 20.101(b), (4) exposure history requirements of 10 CFR 20.102, and (5) the exposure reports sent to an individual and the NRC upon termination of work at a facility. The inspector selectively reviewed exposure history files for both licensee and temporary personnel and verified that exposure histories and authorizations were on file for personnel who were authorized to receive extended exposure and that exposure records were being maintained. Exposure reports required at termination of employment are completed by the Harris Environmental and Energy Center (HEEC). The licensee provided the inspector with copies of termination reports for selected individuals. The inspector had no further questions.

b. The licensee has recently changed to routine use of 1R range pocket dosimeters for exposure control. The incremental divisions for this dosimeter are 50 mR. In assessing daily exposures the licensee conservatively estimates exposure in 25 mR increments. The inspector expressed concern that the use of this dosimeter would increase inaccuracies between the pocket dosimeter and TLD for low exposures and possibly would not show agreement of the two instruments of ±25 percent over a series of low exposures. A licensee representative from the HEEC stated that a computer study of pocket dosimeter totals vs. TLD measurements is currently in progress for evaluation of current procedures for investigating TLD vs. pocket dosimeter differences. The inspector stated that the results of the computer study will be reviewed during a future inspection (83-06-01).

The inspector reviewed procedure HP-9.5, Personnel Exposure Investigation. This procedure requires an exposure investigation only after either the pocket dosimeter or TLD accumulates 500 mrem and their totals disagree by 25 percent or more. The inspector found the common practice to be that the TLD is read before the pocket dosimeter (PD) totals reach 500 mrem. The result of this practice is that exposure investigations are rarely done except for high exposure jobs. The purpose of the TLD vs. PD investigation is to indicate dosimetry problems in between QC checks on these instruments which may indicate misuse of the instruments. The current practice of reading the TLD before PD totals exceed 500 mrem appears to defeat the purpose of the investigation except in extreme cases. Since the TLD vs. PD totals are now under computer study the adequacy of the current dosimetry investigation procedure will be reviewed during a future inspection (83-06-02).

7. Gaseous Radioactive Effluents

The inspector reviewed with licensee personnel the method used to compile information for the semi-annual effluent and waste report. The sources of information used for the report and effluent instrument calibration were also reviewed. There is currently an inspector followup item in the area of gaseous effluent instrumentation (83-03-03). A licensee representative stated that the comparison of calculated effluent concentration to an actual sample of the effluent will not be complete until approximately the end of April 1983, when sample containers and a calibration standard are received. The inspector had no additional questions in the compilation of the report.

8. Solid Radioactive Waste

The licensee is preparing to solidify reactor coolant filters for shipment to a waste burial facility. The inspector reviewed the safety evaluation and special procedures SP-463 and SP-464 for the placement of filters in a liner and subsequent solidification. The inspector discussed the procedures with the responsible RC foreman who stated that the procedure would be initially tested with low level filters. The inspector had no further questions.

9. Preplanning for the 1984 Steam Generator Outage

The inspector discussed preplanning for the 1984 steam generator (SG) replacement outage with a cognizant licensee representative. The inspector found that the licensee has sent key personnel to review the way a SG replacement outage is being conducted at an other facility. The inspector had concern for the outage preparation in the areas of air sampling, adequate numbers of instruments, shielding, containments, and an adequate number of HP personnel. The inspector found that planning for the outage in the health physics area is still in the initial stages. The progression of planning will be followed closely in subsequent inspections.

10. Tour Of The Facility

The inspector toured Units 1 and 2 to perform independent surveys and to ensure compliance with 10 CFR 20 and plant procedures. These independent surveys verified that all areas surveyed were properly posted. The inspector also noted that the licensee has continued placing emphasis on good housekeeping and on decontamination of the facility.

ENCLOSURE 4

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA ST., N.W., SUITE 3100
ATLANTA, GEORGIA 30303

MAR 0 2 1982

Carolina Power and Light Company
ATTN: Mr. J. A. Jones, Senior Executive
Vice President and Chief
Operating Officer
411 Fayetteville Street
Raleigh, NC 27602

Gentlemen:

Subject: Report Nos. 50-324/82-03 and 50-325/82-03

This refers to the routine safety inspection conducted by Mr. J. R. Wray of this office on January 25-29, 1982, of activities authorized by NRC Operating License Nos. DPR-71 and DPR-62 for the Brunswick facility. Our preliminary findings were discussed with Mr. C. R. Dietz, General Manager, at the conclusion of the inspection.

Areas examined during the inspection and our findings are discussed in the enclosed inspection report. Within these areas, the inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observations by the inspectors.

During the inspection, it was found that certain activities under your license appear to violate NRC requirements. This and references to pertinent requirements are listed in the Notice of Violation enclosed herewith as Appendix A. Elements to be included in your response are delineated in Appendix A.

In accordance with 10 CFR 2.790(a), a copy of this letter and the enclosures will be placed in the NRC's Public Document Room unless you notify this office, by telephone, within ten days of the date of this letter and submit written application to withhold information contained therein within thirty days of the date of this letter. Such application must be consistent with the requirements of 2.790(b)(1).

The responses directed by this letter and the enclosures are not subject to the clearance procedures of the Office of Management and Budget as required by the Paperwork Reduction Act of 1980, PL 96-511.

Should you have any questions concerning this letter, we will be glad to discuss them with you.

Sincerely,

F. S. Cantrell, Acting Chief
Reactor Projects Branch 1
Division of Resident and
Reactor Project Inspection

Enclosures:
1. Appendix A, Notice of Violation
2. Inspection Report Nos. 50-324/82-03 and 50-325/82-03

cc w/encl:
C. R. Dietz, Plant Manager

APPENDIX A

NOTICE OF VIOLATION

Carolina Power and Light Company
Brunswick 1 and 2

Docket Nos. 50-325 & 50-324
License Nos. DPR-71 & DPR-62

As a result of the inspection conducted on January 25-29, 1982, and in accordance with the Interim Enforcement Policy, 45 FR 66754 (October 7, 1980), the following violation was identified.

Technical Specification 6.11 states that written procedures shall be prepared consistent with the requirements of 10 CFR Part 20 and shall be approved, maintained and adhered to for all operations involving personnel radiation exposure.

Contrary to the above, procedures involving personnel radiation exposure were not adhered to in that:

1. On January 19, 1982, an individual was issued a respirator without documentation in his exposure file indicating that he had received practical training in the wearing of a respirator as required by procedure RC&T-0220, paragraph 8.3.2.

2. During January, 1982, five individuals entered the Unit 2 drywell while the reactor was critical and did not have a specific RWP for their drywell entry as required by paragraph 8 of procedure RC&T-0261. These individuals were signed in on a 7-day standing RWP for routine inspections and operations.

This is a Severity Level V Violation (Supplement IV.E.1).

Pursuant to the provisions of 10 CFR 2.201, you are hereby required to submit to this office within thirty days of the date of this Notice, a written statement or explanation in reply, including: (1) admission or denial of the alleged violation; (2) the reasons for the violation if admitted; (3) the corrective steps which have been taken and the results achieved; (4) corrective steps which will be taken to avoid further violations; and (5) the date when full compliance will be achieved. Consideration may be given to extending your response time for good cause shown. Under the authority of Section 182 of the Atomic Energy Act of 1954, as amended, this response shall be submitted under oath or affirmation.

Date: MAR 0 2 1982

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA ST., N.W., SUITE 3100
ATLANTA, GEORGIA 30303

Report Nos. 50-325/82-03 and 50-324/82-03

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

Facility Name: Brunswick Steam Electric Plant

Docket Nos. 50-325 and 50-324

License Nos. DPR-71 and DPR-62

Inspection at Brunswick site near Southport, NC

Inspectors: John R Wray — 2/22/82
J. R. Wray — Date Signed

John R Wray — 2/22/82
for R. H. Albright — Date Signed

Approved by: [signature] — 2/22/82
K. P. Barr, Section Chief — Date Signed
Technical Inspection Branch
Engineering and Technical Inspection Division

SUMMARY

Inspection on January 25-29, 1982

Areas Inspected

This routine, unannounced inspection involved 64 inspector-hours on site in the areas of internal and external exposure control, respiratory protection, personnel contamination control, radwaste shipping and gaseous waste discharges.

Results

Of the six areas inspected, no violations or deviations were identified in five areas; one violation was found in one area (failure to follow procedures - paragraphs 6 and 8).

REPORT DETAILS

1. Persons Contacted

Licensee Employees

*C. R. Dietz, General Manager
*R. E. Morgan, Plant Operations Manager
*G. J. Oliver, Environmental and Radiation Control Manage.
L. F. Tripp, Radiation Control Supervisor
R. F. Queener, Project Specialist, Radiation Control
R. D. Pasteur, Environmental and Chemistry Supervisor
J. B. Cook, RC&T Foreman
B. Failor, RC&T Foreman
J. Henderson, RC&T Foreman
*R. White, QA/QC Specialist
*D. E. Novotny, Regulatory Compliance, Senior Specialist
R. M. Poulk, Regulatory Specialist

NRC Resident Inspector

*L. W. Garner

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on January 29, 1982, with those persons indicated in paragraph 1 above. The General Manager acknowledged the violation but stated, with regard to the drywell entry procedure citation, that the radiological conditions of the drywell had been established by RC&T personnel during an initial entry and that additional protection would not have been afforded by a special drywell entry RWP. The inspector stated that the drywell entry procedure requires a separate RWP for each entry into the drywell when the reactor is critical to assure appropriate health physics control and that the 7-day standing RWP did not satisfy this requirement. The General Manager also acknowledged the inspector's concerns regarding the licensee's personnel contamination control program. He stated that a frisker station surveillance program will be established to ensure proper whole body frisking when leaving protective clothing required areas and that names of personnel found to be contaminated at various frisking stations will be recorded and compared to the personnel decontamination log to ensure that all contaminated individuals report for decontamination promptly.

3. Licensee Action on Previous Inspection Findings

Not inspected.

4. Unresolved Items

Unresolved items were not identified during this inspection.

5. Licensee Action on Previous Inspector Followup Items

(Closed) (80-45-07): Develop programs for adequate beta dosimetry and skin dose assessments. The licensee is using a state of the art beta-gamma dosimetry system. The licensee has also developed a program to assess skin dose when personnel are contaminated. The beta dosimetry system and the beta skin dose assessment program appear to be adequate for beta exposure assessment.

(Closed) (80-45-12): Establish firm requirements for when a whole body count is required. The inspector reviewed the revised whole body counting procedure and found it to have sufficient detail to describe when whole body counting is required.

(Closed) (80-45-13): Provide regulated power to the whole body counter and reduce background variations. The licensee has installed a regulated power supply for the whole body counter. In addition personnel have been instructed not to conduct whole body counts when the background is high enough to interfere with the counting. The inspector observed the alarming instrument in the whole body counting room used to determine high background.

(Closed) (80-45-14): Provide onsite availability and evaluation of whole body count data. Whole body count data is now maintained onsite in individual dosimetry files and is available for evaluation of the respiratory program effectiveness. The inspector had no further questions.

6. External Exposure Control

The inspectors reviewed procedures and records in order to determine the adequacy of the licensee external exposure control program. Review of exposure records for the first three quarters of 1981 revealed numerous errors in the birthdates and one record indicated that an individual accumulated 3.108 rem during the first quarter of 1981. The inspector reviewed this individual's dosimetry file with a licensee representative in order to determine the discrepancy and found that the individual's previous quarter offsite exposure of 1.554 rem had been entered into the data base twice. No violations or deviations of NRC exposure limits or regulations were found.

The dosimetry files of the five highest exposures in 1981 were reviewed. This review indicated that an investigation, as required by plant procedures, was conducted anytime the thermoluminescent dosimeter (TLD) and pocket dosimeter (PD) totals differed by greater than 25% and either dosimeter had accumulated more than 500 mrem since the last TLD reading. For the above circumstances, the procedure required that a QA check be

performed on the TLD. If this check indicated that the TLD was within specifications, the pocket dosimeter totals were generally discarded. Only in some cases, as determined by a Radiation Control and Test (RC&T) foreman, was there an investigation by interview, Radiation Work Permit (RWP) review or comparison of doses with fellow workers. The inspector expressed concern that some TLDs are read several times per month and the comparison investigation for TLD and pocket dosimeter totals is not required when either the TLD or pocket dosimeter reads less than 500 mR. This could lead to an underestimation of actual exposure. The inspector stated that a more thorough investigation of PD/TLD differences greater than 25% should be conducted when either the PD or TLD reads greater than 500 mR in one month. The inspector reviewed preliminary changes to procedures which will require a more detailed PD/TLD investigation and stated that these procedures will be reviewed at a later date (50-324/82-03-01 and 50-325/82-03-01).

The inspector requested the dosimetry section to provide a list of personnel who had been credited with neutron exposure during January 1982. The neutron exposures during January 1982 were the result of Unit 2 drywell entries with the reactor critical. Initial drywell entries after shutdown and drywell entries with the reactor critical are made under procedure RC&T-0261. This procedure requires that a RWP will be initiated for the above types of drywell entires. The inspector reviewed RWP's for January 1982 and found that 5 of 8 individuals who received neutron exposure during January 1982 were not signed in on a RWP written specifically for drywell entry when the reactor was critical. A licensee representative investigated and found that these five individuals were signed in on a 7-day, standing RWP for routine inspection and operation. A review of the standing RWP indicated that neutron surveys were not applicable; therefore, the standing RWP was not satisfactory when there was a potential for neutron exposure. The General Manager disagreed and stated that the radiological conditions of the drywell had been established by RC&T personnel during an initial entry and that additional protection would not have been afforded by a special drywell entry RWP. It is the inspector's position that this entry into the drywell with the reactor critical in order to check for leaks is not a routine operation.

Technical Sepcification 6.11 requires that procedures for personnel radiation protection shall be prepared consistent with the requirements of 10 CFR Part 20 and shall be approved, maintained and adhered to for all operations involving personnel radiation exposure. The inspector stated that entering the drywell under a standing RWP with the reactor critical is a failure to follow procedure RC&T-0261, paragraph 8 in violation of Technical Specification 6.11 (50-324/82-03-02 and 50-325/82-03-02).

The standing RWP should only be valid for areas where radiological conditions are known and do not have a high potential for change. The licensee should define areas where the radiological conditions have demonstrated the potential to become airborne, significantly change radiation levels, to change conditions due to the work going on in an area or areas where a health physics technician is required in order to assess the hazards

prior to an entry. In the above types of areas, the 7-day standing RWP should be invalid (50-324/82-03-03 and 50-325/82-03-03).

The inspector found RWP's written for drywell entry with the reactor critical and compared the names on the RWP's with those individuals who had been credited with neutron exposure. Two individuals out of 6 checked had not been credited with neutron exposure. A licensee representative located the record of the neutron exposure calculation but the record had not been routed to the dosimetry section. The licensee prepared procedure revisions as corrective action. The inspector reviewed the preliminary revision and stated that it appears to be adequate. This item will be followed up after PNSC review (50-324/82-03-04 and 50-325/82-03-04).

The inspectors reviewed the 7-day standing RWP sign-in sheet and found it to be inadequate because the sheet does not include space for the date or the name of the area entered. The lack of specific information on the RWP greatly reduces the value of the RWP for exposure control or investigative purposes. The 7-day standing RWP sign-in sheet should be revised to show the date and area entered (50-324/82-03-05 and 50-325/82-03-05).

7. Internal Exposure Control

The inspectors reviewed procedures and records in order to determine the adequacy of the licensee's internal exposure control program. A computer listing of whole body count results for the first three quarters of 1981 and selected whole body counts for January 1982 indicated that no worker was internally exposed to levels of radioactivity in excess of the regulatory limits in 10 CFR 20.103. The inspector had no further questions.

8. Respiratory Protection

The inspectors compared the licensee's respiratory protection program to the internal exposure program and found no discrepancies. Respiratory protection is prescribed for any job which has a potential for creating airborne contamination. A RC&T foreman must give approval for anyone to enter an area of greater than .25 MPC without respiratory protection. The licensee appeared to be successfully controlling MPC-hrs to less than 2 hours per day and 10 hours per week.

The inspector reviewed the dosimetry files of 12 personnel who signed in on RWP's requiring respiratory protection. One individual's file was incomplete and indicated that he had not received respirator practical fit training as required by procedure RC&T-0220, paragraph 8.3. Based on interviews and record reviews the licensee and the inspector determined that the individual had received the proper training. The inspector stated, however, that not documenting respirator practical fit training in the individual's official record prior to the respirator being issued was failure to follow procedure RC&T-0220, paragraph 8.3. This is another example of failure to follow procedures in violation of Technical Specification 6.11 (50-324/82-03-02 and 50-325/82-03-02).

9. Radioactive Waste Shipments

a. The inspector reviewed the shipping documents for radwaste shipment 82-027, 12 dumpsters containing non-compacted trash. The inspectors made an independent radiation survey at contact and six feet from the sides of the truck, as well as in the cab of the truck, and found no readings above DOT limits. A review of the records for this shipment indicated the same results. The inspector had no further questions.

b. The inspector reviewed the shipping documents for radwaste shipment 82-025, 170 cubic feet of dewatered resin in a Type B 14-195H cask. The shipment contained 10.165 curies. Radiation and contamination surveys indicated no values greater than NRC or DOT limits. The inspector had no further questions.

c. The inspector, accompanied by licensee representatives opened six containers of compacted trash packaged and ready for shipment. No freestanding liquid was evident. No radiological problems were encountered.

10. Gaseous Waste Discharges

Effective December 24, 1981, the Brunswick site Environmental Technical Specifications were amended which altered the method whereby radioactive waste discharges of noble gases are determined to be in compliance with regulatory objectives. The inspector discussed with licensee representatives the procedures and systems established to ensure that releases of radioactive noble gases do not exceed the new limit. The new equations have been programmed into a computer and continuously plotting release data makes available an adequate amount of information so that no release limits can be approached without sufficient warning. The inspector reviewed release data since December 12, 1981, which indicated that all radioactive gaseous releases were within technical specification limits. No violations or deviations were found.

11. Personnel Contamination Control

a. On September 4, 1981, the licensee notified Region II (letter No. 81-1449) that it was suspending the requirement for periodic whole body frisking at the exits of the radiation control area in favor of tandom use of a newly acquired G-M detector hand and foot monitor and a a liquid scintillation portal monitor. The inspector reviewed data generated by the licensee which indicated that the new hand and foot monitors are detecting hand and foot contamination which was missed by personnel whole body performed frisks at the breezeway and radwaste building exit.

The licensee conducted experiments which indicated sensitivity levels of approximately 7000 dpm per hand and 16000 dpm per foot for the hand and foot monitor based on 16 second counts. Licensee representatives stated that the RM-14/HP-210 frisker provided sensitivities of approximately 15,000 dpm for a small spot of contamination in comparable background and frisking speed (10-12 cm/sec). The licensee also stated that if the activity were evenly distributed, the frisker could reliably detect approximately 25,000 dpm per 100 sq. cm. Licensee data also indicated that the liquid scintillation portal monitor could reliably detect approximately 1.0E+06 dpm gamma if evenly distributed over the entire body surface.

The inspector stated that each instrument used to survey personnel for contamination has a specific purpose. While the new hand and foot monitor and scintillation portal monitor have proven useful, they do not perform as efficient a whole body survey as an adequate RM-14/HP-210 scan for spot contamination. Proper use of all three instruments should ensure that no individual could leave the plant contaminated above station limits . The inspector stated that prior to letter No. 81-1449, the Health Physics department maintained control of personnel whole body frisking with the RM-14/HP-210 instrument at the radiation control area exits. At present, proper whole body frisking is not controlled at each dress out area. The inspector stated that the new portal monitor and hand and foot monitor provide confidence in the contamination control program only when proper whole body frisks are performed when leaving a contaminated area. The General Manager stated that a program will be established to periodically audit dress out areas for proper frisking techniques (50-324/82-03-06 and 50-325/82-03-06).

b. The inspector reviewed decontamination logs for January 5 and 6, 1982, and compared them to contamination cases identified and logged at the radiation control area exits. Many workers found to be contaminated at the plant exit did not appear on decontamination records. It is understood and acknowledged by most plant workers that the facility has a Rb-88 problem and that if contaminated with Rb-88, waiting approximately one hour for decay will eliminate the hazard. The lack of correlation between contamination instances and decontamination entries seems to imply that many workers assume their contamination is Rb-88 and wait one hour some place other than the decontamination area. The inspector expressed concern that such a mindset on the part of plant employees may mask cases of real contamination and, unknowingly, workers may track this contamination into undesirable locations (e.g., lunch room, lavatories, offices, etc.). The General Manager stated that a program will be established to record names of individuals found to be contaminated at the breezeway and radwaste loading dock exits and that these names will be routinely compared to decontamination logs to ensure timely reporting of contaminated individuals for decontamination (50-324/82-03-07 and 50-325/82-03-07).

12. Strontium-90 Source Incident

a. The inspectors investigated an incident which occurred in December 1981 when a 20 millicurie Sr-90 portable instrument calibration source arrived at the Brunswick site warehouse. Warehouse personnel notified RC&T personnel that a source had been received. A RC&T technician was dispatched to do a receipt survey on the package. 10 CFR 20.205(c)(1) specifies that a survey must be performed as soon as practicable after receipt of greater than 50 millicuries of Transport Group II, Type A material. Therefore, a survey upon receipt of this package did not appear to be required. The technician used a gamma scintillation instrument to survey the package and obtained readings of 1.15 mR/hr on contact with the box. The package was opened and a thin metal can containing the source was removed. The source container was stored in an unoccupied area for five days prior to RC&T personnel retrieving the source from the warehouse. At that time, a radiation survey performed with an ionization chamber instrument yielded readings of 15 R/hr beta/gamma on contact with the source container. The licensee conducted an investigation and assigned doses based on survey results and stay time records to the exposed, unmonitored personnel. Warehouse personnel, who are outside the protected area, are not required to be monitored pursuant to 10 CFR 20.202(a). The inspectors performed an independent radiation survey using an NRC ionization chamber instrument. Survey data obtained compared favorably with licensee results. The inspectors stated that the doses assigned to the exposed warehouse personnel appeared to be appropriate. No personnel overexposures occurred.

b. Based on discussions with another licensee who had received an identical source from the same manufacturer, the licensee determined that the source was incorrectly packaged, labeled and shipped. For the other licensee, the identical source was shipped in a plexiglass container in order to shield the betas and prevent bremsstrahlung generation. The inspectors agreed that the source appeared to be packaged improperly causing unnecessary radiation exposures. Region III is investigating the shipment with the manufacturer at their home plant. The inspectors reviewed the licensee's evaluation of the incident and stated that it appeared to be adequate. No violations or deviations were found pursuant to Carolina Power and Light Company in this area.

ENCLOSURE 5

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA ST., N.W., SUITE 3100
ATLANTA, GEORGIA 30303

November 2, 1982

Carolina Power and Light Company
ATTN: Mr. E. E. Utley
Executive Vice President
411 Fayetteville Street
Raleigh, NC 27602

Gentlemen:

Subject: Report Nos. 50-325/82-40 and 50-324/82-40

This refers to the routine safety inspection conducted by Mr. R. H. Albright of this office on October 12-15, 1982, of activities authorized by NRC Operating License Nos. DPR-62 and DPR-71 for the Brunswick facility. Our preliminary findings were discussed with Mr. C. R. Dietz, Plant Manager, at the conclusion of the inspection.

Areas examined during the inspection and our findings are discussed in the enclosed inspection report. Within these areas, the inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observations by the inspector.

During the inspection, it was found that certain activities under your license appear to violate NRC requirements. This item and references to pertinent requirements are listed in the Notice of Violation enclosed herewith as Appendix A. Elements to be included in your response are delineated in Appendix A.

In accordance with 10 CFR 2.790(a), a copy of this letter and the enclosures will be placed in the NRC's Public Document Room unless you notify this office, by telephone, within ten days of the date of this letter and submit written application to withhold information contained therein within thirty days of the date of this letter. Such application must be consistent with the requirements of 2.790(b)(1).

The responses directed by this letter and the enclosures are not subject to the clearance procedures of the Office of Management and Budget as required by the Paperwork Reduction Act of 1980, PL 96-511.

Should you have any questions concerning this letter, we will be glad to discuss them with you.

Sincerely,

D. M. Verrelli, Chief
Project Branch 1
Division of Project and
Resident Programs

Enclosures (See Page 2)

Enclosures:
1. Appendix A, Notice of Violation
2. Inspection Report Nos. 50-325/82 and 50-324/82-40

cc w/encls:
C. R. Dietz, Plant Manager

APPENDIX A

NOTICE OF VIOLATION

Carolina Power and Light Company
Brunswick 1 and 2

Docket Nos. 50-325 and 50-324
License Nos. DPR-67 and DPR-71

As a result of the inspection conducted on October 12-15, 1982, and in accordance with the NRC Enforcement Policy, 47 FR 9987 (March 9, 1982), the following violations were identified.

Technical Specification 3.5.1.C of Appendix B requires that sampling and analyses of liquid radioactive waste shall be performed in accordance with Table 3.5-1.

Contrary to the above, analyses of liquid radioactive waste were not performed in accordance with Table 3.5-1 in that the monthly composite samples for July 1981, February 1982, April 1982, July 1982, and August 1982 did not meet the required minimum detectable concentration for Sr-89. In addition, the composite sample analysis for Sr-90 did not meet the minimum detectable concentration for February 1982 and August 1982.

This is a Severity Level V Violation (Supplement IV).

Pursuant to the provisions of 10 CFR 2.201, you are hereby required to submit to this office within thirty days of the date of this Notice, a written statement or explanation in reply, including: (1) admission or denial of the alleged violations; (2) the reasons for the violations if admitted; (3) the corrective steps which have been taken and the results achieved; (4) corrective steps which will be taken to avoid further violations; and (5) the date when full compliance will be achieved. Consideration may be given to extending your response time for good cause shown.

Date: Novmeber 2, 1982

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA ST., N.W., SUITE 3100
ATLANTA, GEORGIA 30303
November 2, 1982

Report Nos. 50-325/82-14 and 50-324/82-40

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

Facility Name: Brunswick

Docket Nos. 50-325 and 50-324

License Nos. DPR-62 and DPR-71

Inspection at Brunswick site near Southport, North Carolina

Inspector: _____ 10/29/82
R. H. Albright Date Signed

Approved by: _____ 10/29/82
K. P. Barr, Section Chief Date Signed
Technical Inspection Branch
Division of Engineering and Technical Programs

SUMMARY

Inspection on October 12-15, 1982

Areas Inspected

This routine, unannounced inspection involved 28 inspector-hours on site in the areas of reactor coolant water quality, radioactive effluent release procedures, liquid effluent sampling and analysis, external radiation exposure records, RWPs and surveys.

Results

Of the five areas inspected, no violations or deviations were identified in four areas; one apparent violation was found in one area.

REPORT DETAILS

1. Persons Contacted

   Licensee Employees

   *P. W. Howe, Vice President Brunswick Nuclear Project
   *C. R. Dietz, Plant Manager
   *A. G. Cheatam, Environmental and Radiation Control Manager
   *L. F. Tripp, Radiation Control Supervisor
   *R. M. Poulk, Regulatory Specialist
   C. Robertson, Environmental and Chemistry Supervisor
   *M. Millinor, Environmental and Chemistry Foreman
   H. Shaver, Radiation Control Foreman
   T. Priest, Radiation Control Foreman
   R. F. Queener, Project Specialst Radiation Control

   Other licensee employees contacted included five technicians.

   NRC Resident Inspector

   *D. Myers, Senior Resident Inspector

   *Attended exit interview

2. Exit Interview

   The inspection scope and findings were summarized on October 15, 1982, with those persons indicated in paragraph 1 above. The inspector discussed the technical specification violation with plant management personnel. The plant manager acknowledged the violation.

3. Licensee Action on Previous Enforcement Matters

   Not inspected.

4. Unresolved Items

   Unresolved items were not identified during this inspection.

5. Reactor Coolant Water Quality

   The inspector selectively reviewed records of reactor coolant sampling during 1982, compared the records to the requirement of Technical Specification 3.4.5 and discussed the reactor coolant sampling program with a licensee representative. The reactor coolant sampling records reviewed included microcuries/gram Dose Equivalent I-131, 100/$\bar{E}$ microcuries/gram,

gross activity determination, isotopic analysis for I-131, I-133 and I-135, and isotopic analysis of an off-gas sample including quantitative measurements for Xe-133, Xe-135 and Kr-88. The sampling and analysis frequency shown in the records met the minimum sampling frequency specified in Technical Specification Appendix B Table 3.5.-1. In general the reactor coolant sampling and analysis frequencies performed by the licensee are more frequent than required.

On occasions when the reactor coolant specific activity required more frequent sampling and analysis per Technical Specification 3.45, the records indicate that the increased frequency was met.

No violations or deviations were identified.

6. Radioactive Effluent Release Procedures

The inspector reviewed procedures for liquid and gaseous releases and calibration of liquid and gaseous monitors. The calibration data for the latest calibration of a reactor building vent monitor was also reviewed. Procedure E&RC-2010 requires the amount of weekly liquid composite to be a minimum of 500 ml. The procedure states that the weekly composite is normally accumulated at the rate of 25 ml per 1000 gallons of liquid effluent. The weekly composite samples are then used to make the monthly composite sample. At the 25 ml per 1000 gallons rate, the minimum weekly sample of 500 ml would be proportional to other weeks of the month only if a minimum of 20,000 gallons is released each week. If significantly less than 20,000 gallons were released during one week of the month, as was the case during the week of this inspection, the monthly composite sample for this case would not be proportional to the quantity of liquid waste discharged as stated in the notes to Table 3.5-1 of Technical Specification Appendix B. During weeks when greater than 20,000 gallons of effluent are released, proportionality of the composite sample is satisfactory.

The supervisor environmental and chemistry acknowledged the concern and stated that the procedure E and RC-2010 would be revised. The procedure revision will be reviewed during a future inspection (82-40-01).

7. Liquid Effluent Sampling and Analysis

Appendix B Technical Specification 3.1.1.C requires sampling and analysis of liquid radioactive waste to be performed in accordance with Table 3.5-1.

The inspector determined through discussions with licensee representatives and review of liquid radioactive waste discharge records that the type and frequency of analysis requirements specified in Table 3.5-1 were being met by the licensee.

These records were also reviewed to ensure that the licensee was meeting or able to meet minimum detectable activity requirements of Table 3.5-1. Table 3.5-1 requires that the monthly liquid radwaste composite sample be analyzed for Sr-89 with a minimum detectable activity of 5×10^{-8} microcuries/ml. The analyses for Sr-89 and Sr-90 are performed by a group at the Harris Environmental and Energy Center (HEEC). On the following occasions the records listed the analyses for Sr-89 as less than MDA but the stated MDA did not meet the Technical Specification Table 3.5-1 requirement of 5×10^{-8} µc/ml: July 1981, less than MDA - 1.32×10^{-7} µc/ml; February 1982, less than MDA - 2.5×10^{-6} µc/ml; July 1982, less than MDA-8.8×10^{-8} µc/ml; and August 1982, less than MDA - 3×10^{-7} µc/ml. Table 3.5-1 requires that a Sr-90 analysis be performed on a quarterly composite sample. However, the licensee required this analysis monthly. On the following occasions the records listed the analyses for Sr-90 as less than MDA and the stated MDA did not meet the Technical Specification Table 3.5-1 requirement of 5×10^{-8} µc/ml: February 1982 less than MDA - 1.4×10^{-6} µc/ml; and August 1982, less than MDA - 1.9×10^{-7} µc/ml. The inspector stated that this is a violation of Appendix B Technical Specification 3.5.1.C which requires that sampling and analyses of liquid radioactive waste shall be performed in accordance with Table 3.5-1 in that, for the above stated months, the analyses for Sr-89 and Sr-90 were recorded as less than MDA. However, the MDA required by Table 3.5-1 was not met (82-40-02). This violation indicates inadequate review of results as well as a potentially deficient quality assurance interface between the plant and HEEC. This area will be examined during a future inspection (82-40-03).

After the inspector identified the above MDA violation for liquid radioactive effluents, the results of gaseous effluent samples for MDAs stated in Appendix B Technical Specification Table 3.5-2 were examined. No violation for the MDA values for gaseous samples was identified.

8. External Radiation Exposure Records

The inspector reviewed the radiation exposure files for eleven individuals. The records were examined for a current NRC-Form 4, exposure totals, as well as TLD and dosimeter investigation records when required. Errors in posting pocket dosimeter readings were identified when the inspector questioned why a dosimeter and TLD investigation was not performed when it appeared to be required by procedure E and PRC 0200, "Control of Personnel Exposure to Ionizing Radiation." E and RC 0200 requires that a TLD and dosimeter investigation be performed when either the sum of the pocket dosimeter readings, for the period of exposure since the last TLD reading, or the TLD reading exceeds 500 mrem and the difference between the TLD and pocket dosimeter totals exceeds 25% of the TLD reading. By a review of one individual's pocket dosimeter totals, the investigation should have been performed on three dates - April 29, 1982, May 29, 1982 and June 26, 1982. The individual's file contained an investigation for June 26, 1982, but no

investigation record existed for March 29, 1982 or May 29, 1982. A licensee representative stated that the clerks who post dosimeter and TLD totals to the exposure records were relied upon in the past to flag the requirement for an investigation. The licensee made a more in-depth investigation of this individual's exposure file by going back to the individual's access control card for the periods in question. The access control card contains dosimeter readings for each time an individual signs in on a RWP. This investigation revealed math errors in adding dosimeter readings. When these corrections were made to the exposure file, no investigation was required.

In another individual's file, the TLD was read on July 2, 1982, as 0.0 mrem. The pocket dosimeter total for this period as indicated in the individual's exposure record was 144 mrem. While the pocket dosimeter total of 144 mrem did not meet the procedure guidelines for requiring an investigation, a comparison of exposures on the TLD and pocket dosimeter of the type described should have raised questions. The licensee investigated this record using this individual's access control card when the inspector brought the record to their attention. The result of the licensee investigation was that one dosimeter reading of 100 mrem should have been posted to pocket dosimeter totals associated with the following TLD period. The inspector reviewed the result of these record changes and found that the pocket dosimeter totals and TLD readings compared better for these two periods than prior to the corrections.

The inspector stated that the errors stated above indicated a lack of administrative controls in the dosimetry records areas. The Manager E and RC stated that the plant is changing to a computer system for these records and that these types of problems will be flagged when the computer system is fully operational . The inspector stated that the 500 mrem level for requiring an exposure investigation appeared to be high and should be evaluated. Also, the procedure allows that, during an investigation, all dosimeter readings less than 20 mrem may be dropped in order to bring the TLD and dosimeter totals into closer agreement. The inspector stated that this practice should be evaluated. The Manager E and RC acknowledged this concern and stated that an evaluation of the 500 mrem investigation level and the allowance to delete dosimeter readings below 20 mrem would be performed. This will be reviewed in a future inspection (82-40-04).

The inspector reviewed pocket dosimeter and TLD investigations in exposure files. The investigation in one file stopped when the individual stated that on one occasion he noticed that his pocket dosimeter read higher than others on his work crew. The inspector stated that this investigation should be taken further by reviewing the dosimeter readings for individuals who had worked with this individual. The inspector requested that this investigation be taken further. The Manager E and RC agreed. This investigation will be reviewed during a future inspection (82-40-05).

9. RWOs and Surveys

The inspector selectively reviewed RWPs written during October, 1982, for the identified health physics requirements and requested to see the surveys associated with the RWPs. Some difficulty was found in correlating surveys to RWPs, however, adequate surveys were produced. RWPs are now written and printed out on a computer. When RWPs were written by hand, the survey numbers associated with the RWP were written on the RWP. Radiation Control personnel have requested that this ability be added to the RWP computer program. The Manager E and RC stated that the survey numbers would be hand written onto the RWP hard page copy until the capability is added to the computer program. This will be examined during a future inspection (82-40-06).

10. Tour of Radiation Control Area

The inspector toured the Unit 2 reactor building. During tours, the inspectors 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 observed.

ENCLOSURE 6

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA ST., N.W., SUITE 3100
ATLANTA, GEORGIA 30303

February 14, 1983

Carolina Power and Light Company
ATTN: Mr. E. E. Utley
Executive Vice President
411 Fayetteville Street
Raleigh, NC 27602

Gentlemen:

SUBJECT: REPORT NOS. 50-324/83-06 AND 50-325/83-06

This refers to the special safety inspection conducted by Mr. W. W. Peery of this office during September 28, 1982 to January 17, 1983, of activities authorized by NRC License Nos. DPR-71 and DPR-62 for the Brunswick facility and to the discussion of our findings held with Mr. J. L. Harness, Manager of Plant Operations, at the conclusion of the inspection.

Areas examined during the inspection and our findings are discussed in the enclosed inspection report. Within these areas, the inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observations by the inspector.

Within the scope of this inspection, no violations or deviations were disclosed.

In accordance with 10 CFR 2.790(a), a copy of this letter and the enclosure will be placed in the NRC's Public Document Room unless you notify this office, by telephone, within ten days of the date of this letter and submit written application to withhold information contained therein within thirty days of the date of this letter. Such application must be consistent with the requirements of 10 CFR 2.790(b)(1).

Should you have any questions cr erning this letter, we will be glad to discuss them with you.

Sincerely,

D. M. Verrelli, Chief
Project Branch 1
Division of Project and
Resident Programs

Enclosure: (See Page 2)

Enclosure:
Inspection Report Nos. 50-324/83-06
and 50-325/83-06

cc w/encl:
C. R. Dietz, Plant Manager

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA ST., N.W. SUITE 3100
ATLANTA, GEORGIA 30303

Report Nos.: 50-325/83-06 and 50-324/83-06

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 at Brunswick site near Southport, North Carolina

Inspector: W. W. Peery — 2/3/83 Date Signed

Accompanying Personnel: L. Williamson
R. Burch

Approved by: K. P. Barr, Section Chief — 2/3/83 Date Signed
Operational Program Branch
Division of Engineering and Operational Programs

SUMMARY

Inspection during the period of September 28, 1982 to January 17, 1983.

Areas Inspected

This routine, unannounced inspection involved fifty-six inspector-hours on site in the area of personnel exposures.

Results

In the area inspected, no violations or deviations were identified.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

C. Dietz, General Manager
J. Harness, Manager of Plant Operations
A. G. Cheatham, Manager, E&RC
J. Henderson, RC&T, Foreman

Other licensee employees contacted included 12 construction craftsmen, two technicians.

NRC Resident Inspectors

D. Meyers, Senior Resident Inspector
L. Garner, Resident Inspector

2. Exit Interview

The inspection scope and findings were summarized by telephone on January 17, 1983, with Mr. J. L. Harness, Manager of Plant Operations.

3. Licensee Action on Previous Enforcement Matters

Not inspected.

4. Unresolved Items

Unresolved items were not identified during this inspection.

5. Allegation

The NRC was informed that personnel of a contractor at the Brunswick plant had been tampering with thermoluminescent and direct reading dosimeters to maintain their recorded dosages lower than their actual exposures. It was alleged that the tampering was done so that personnel would not be terminated if their exposures neared or exceeded administrative limits. This inspection effort was made in support of an investigation of the matter by the Office of Investigation NRC Headquarters. Numerous contractor employees were interviewed by the investigators.

6. Record Review

The personnel exposure records of contractor personnel alleged to have been involved in the tampering were reviewed. Radiation Work Permits involving these personnel were also reviewed and comparisons made with the personnel exposure records. The exposures of licensee personnel working in or near the same areas occupied by contractor personnel were also

compared. Although several instances were found of discrepancies (i.e., exceeded ±25%) between TLD and dosimeter readings for the contractor personnel, a conclusive determination could not be made that the discrepancies resulted from tampering with the personnel monitoring devices. Comparisons of contractor personnel exposure records and information contained in Radiation Work Permits did not reveal discrepancies in number or magnitude to support a contention of tampering with the personnel monitoring devices. Information contained in Radiation Work Permits pertaining to radiation dose rates, stay times and net dosimeter readings was used to compare licensee and contractor personnel exposures after work in the same areas and no unusual discrepancies were noted. The reviews of records revealed that some direct reading dosimeters have been lost or damaged and isolated cases of lost TLDs; however, the number of lost monitoring devices is no greater than experienced at other plants.

7. Failure to Follow Procedures

Technical Specification 6.11 states that procedures for personnel radiation protection shall be prepared and adhered to for all operations involving personnel radiation exposure. Brunswick Steam Electric Plant, Procedure E&RC-0200, Control of Personnel Exposure to Ionizing Radiation, Appendix N, paragraph 9, states that the control point will read the individual's dosimeter and enter the final dosimeter reading on his/her Access Control Card. A licensee representative stated that it had been recognized that on some occasions the Health Physics Technician at the control points had not been personally making the final reading of dosimeters but accepting and recording the reading furnished by the individual who had worn the dosimeter. The licensee representative stated that all Health Physics Technicians have been given specific instructions to personally read each dosimeter as individuals exit the control point and this was confirmed with Health Physics and Plant Management. In questioning Health Physics Technicians at control points, the inspector was informed that the dosimeters are being read by the technician. The inspector informed management that although licensee internal procedures were apparently violated, licensee actions met all of the tests stated in NRC Enforcement Policy which would allow a decision not to issue a Notice of Violation. The licensee was informed on January 17, 1983, that a Notice of Violation would not be issued in this case.

8. Conclusion

Information developed during the investigation and this concurrent inspection effort did not support a positive conclusion that tampering with personnel monitoring devices had in fact occurred as alleged, although circumstantial evidence indicated the possibility that tampering may have occurred. There was no indication that the licensee had any knowledge of the alleged tampering.

ENCLOSURE 7

Radiation Protection
Operation - Once Per Year
Procedure No: 83740B
Issue Date: 3/31/76

SECTION I

INSPECTION OBJECTIVES

To assure compliance with regulatory requirements related to radiation protection and to evaluate the adequacy of the health physics operation.

SECTION II

INSPECTION REQUIREMENTS

1. Qualifications

   Review any changes and additions to the radiation protection organization since the last inspection to verify that qualification requirements of the technical specifications (or FSAR) have been met.

2. Licensee Audits

   Determine whether the internal audit program is being conducted in accordance with technical specification (or FSAR) and procedural requirements.

3. Training

   Determine whether changes in the training program are consistent with technical specification (or FSAR) requirements. Verify that the program is being conducted in accordance with 10 CFR 19.12, technical specification (or FSAR) and procedural requirements.

4. Radiological Protection Procedures

   Determine whether changes in the radiological protection procedures are consistent with regulations and technical specification (or FSAR) requirements.

5. Instruments and Equipment

   Verify that the monitoring instruments and equipment are operable, have the proper alarm setting and are calibrated in accordance with technical specifications and procedures.

6. Exposure Control

a. External exposure

Determine compliance with the following regulatory requirements:

1. 10 CFR 20.202a (personnel monitoring)
2. 10 CFR 20.101a (permissible doses)
3. 10 CFR 20.101b (extended permissible doses)
4. 10 CFR 20.104a (exposure of minors)
5. 10 CFR 20.102 (exposure history)
6. 10 CFR 20.401a (exposure records)

b. Internal exposure

Determine compliance with the following regulatory requirements.

1. 10 CFR 20.103(a)(1) and (a)(2) (internal exposure limits).
2. 10 CFR 20.103(a)(3) (air sampling and bioassay program).
3. 10 CFR 20.103(b)(1) (use of engineering controls).
4. 10 CFR 20.103(b)(2) (40-hour control measure and evaluations).
5. 10 CFR 20.103 (c) and:
   a. Reg Guide 8.15, section C.4.b. (training program).
   b. Reg Guide 8.15, section C.4.c. (fitting and operational testing program).
   c. Reg Guide 8.15, section C.4.d. (maintenance program)
   d. Reg Guide 8.15, section C.4.e. (controls on issuance, use and return).
   e. Reg Guide 8.15, section C.8 (technical requirements).

7. Posting, Labeling and Control

a. Posting and Labeling

Determine compliance with the following regulatory requirements and licensee procedures:

1. 10 CFR 20.203b (radiation area)

2. 10 CFR 20.203c (high radiation area)

3. 10 CFR 20.203d (airborne radioactivity area)

4. 10 CFR 20.203e (radioactive materials area)

5. 10 CFR 20.203f (container labeling)

6. Other posting or labeling requirements specified in procedures.

b. Control

Determine compliance with the following regulatory requirements, technical specifications and procedures:

1. 10 CFR 20.203c (high radiation area)

2. 10 CFR 20.207 (storage area)

3. Use of Radiological Work Permits

4. Control of radiologically contaminated areas and equipment

5. Other control measures for radioactive or contaminated area and equipment required by procedures.

c. Posting of Notices

Determine compliance with 10 CFR 19.11.

8. Surveys

a. Determine compliance with the following regulations:

1. 10 CFR 20.201b (surveys)

2. 10 CFR 20.401b (records of surveys)

b. Verify compliance with technical specification requirements for leak tests of radioactive sources.

9. Notifications and Reports

a. To the NRC

Determine compliance with the following regulatory requirements and technical specifications:

1. 10 CFR 20.402 (loss or theft of material)

2. 10 CFR 20.403 (incidents)

3. 10 CFR 20.405 (overexposures)

4. 10 CFR 20.408 (termination report)

5. Other radiation protection reports required by the technical specifications.

b. To the Individual

Determine compliance with 10 CFR 19.13.

SECTION III

INSPECTION GUIDANCE

1. Qualifications

Review records of all new or newly assigned personnel in the radiation protection organization to verify qualifications.

2. Licensee Audits

Review all reports and documentation of audits performed in areas relating to the radiation protection program which have been conducted since the last inspection. Evaluate in terms of the following:

a. frequency

b. scope

c. follow-up actions

3. Training

a. Review all changes made in the training program since the last inspection.

b. Select representative records for at least two individuals for each type or category of training provided to verify that the training was received and that the program requirements were met in terms of the following:

1. scope of training

2. new personnel training

3. refresher courses

4. documentation

4. Radiological Protection Procedures

Review all changes to the radiological protection procedures which have been implemented since the last inspection.

5. Instruments and Equipment

Select several instruments of each major type to verify operability and proper alarm settings (if appropriate). Review representative

records to assure that the calibration and/or inspection programs are being accomplished as required. Instruments and equipment may include the following:

1. portable survey instruments
2. fixed monitoring equipment
3. constant air monitors
4. portable air samplers
5. film badges or TLD's (QA program for in-house processing)
6. pocket dosimeters

6. Exposure Control

a. External exposure

1. Evaluate the dosimetry equipment, supplies, and requirements for use to determine compliance with the regulations.

2. Review exposure summary reports to determine compliance with the regulations.

3.6 Review exposure summary records to verify compliance with
5. 20.101b limits. Select a sampling of individuals who have current exposures in excess of 20.101a limits and verify that Form NRC-4's were completed prior to exceeding the 20.101a limits.

4. Determine if minors have been permitted to work in restricted areas and, if so, determine compliance with 20.104 a by review of exposure records.

6. Review selected Form NRC-5's to determine compliance with the regulations.

b. Internal exposure

1. During review of exposure evaluations in #4 below, determine compliance with the internal exposure limits.

2. Review selected air sampling and bioassay records and independently verify airborne concentrations as appropriate.

3. By observation, discussion and review of documentation, verify that temporary engineering controls are considered and used to the extent practicable. Evaluation of fixed process and engineering controls will be performed by Licensing, while the inspection program will evaluate the use of temporary engineering controls.

4. Review documentation of evaluations performed as the result of suspected exposures or when the 40 MPC-hour control value was exceeded. Include verification of the following.

   a. Use of proper equipment.

   b. Use of proper protection factors.

   c. Appropriateness of preventative measures instituted following an exposure greater than the 40 MPC-hour control value.

   d. Proper use of 2 and 10 MPC-hour exclusions.

5. a. Determine by review of records and discussions that a training program is conducted and that it is administered in accordance with written procedures.

   b. Determine by review of records, discussions and observations that respirator users are individually fitted for respirators and that respiratory equipment is operationally tested immediately prior to each use.

   c. Determine by review of records, discussions and observations that the maintenance program is conducted according to selected written procedures.

   d. Randomly select several control requirements and determine compliance by review of records, discussions or observation.

   e. Randomly select 2 to 3 technical requirements listed in Reg Guide 8.15, section C.8 and verify by review of records, discussions or observation that they are being met.

General Comment

In the selection and use of respiratory protective equipment, the ALARA statement of 20.103(b)(2) is met by selection of equipment to provide a protection factor greater than the multiple by which peak concentrations are exepcted to exceed the values of Table I, Appendix B, Part 20.

7. Posting, Labeling and Control

   a. Posting and Labeling

1-44 6. Inspect representative areas of each type to verify compliance with the regulations and procedures.

5.& 6. Inspect a sampling of containers to determine compliance with the regulations and procedures.

b. Control

1. Inspect several high radiation areas to verify that access is controlled in accordance with the regulations.

2. Inspect several areas where radioactive material is located or stored in an unrestricted area to determine compliance with the regulations.

3. Review a sampling of RWP's on file and in effect to determine compliance with procedural requirements.

4. Review selected records and inspect representative contaminated areas to determine compliance with procedural requirements for the control of contaminated equipment and areas.

5. Inspect or review representative records pertinent to other control measures required by procedures.

c. Posting of Notices

Inspect to determine that all parts of 19.11 are being complied with.

8. Surveys

a. Select representative schedules and records for review to determine compliance with 20.201 for performance of adequate surveys and 20.401b for maintenace of proper records. Determine specifically that surveys are performed to demonstrate compliance with the following regulations:

1. 10 CFR 20.101 and 20.104 (permissible doses)

Determine that due consideration is given to energy, beta exposure and extremity exposure. Also, determine that neutron surveys are performed.

2. 10 CFR 20.103 and 20.104 (exposure to airborne concentrations) Determine that both particulates and halogens are considered.

3. 10 CFR 20.203 (posted areas)

4. 10 CFR 20.105b (radiation in unrestricted areas)

b. Select representative leak test records for review to verify compliance with technical specification requirements.

9. Notifications and Reports

a. Review representative documentation to determine compliance with each regulatory requirement and technical specification.

b. Select representative cases to determine whether individuals were notified in accordance with 19.13.

General Comments

Confirmatory measurements may be made by use of NRC or licensee instruments. The need for confirmatory measurements is determined by the inspector.

Review of the licensee's HP log book or file on HP problems may be useful to identify areas deserving special attention. Particular attention should be directed towards identifying trends and whether corrective actions were directed toward the cause or merely the symptoms.

If the licensee has documented a commitment to ALARA, implementation of his program should be discussed. Regulatory Guides 8.8 and 8.10 may be discussed in terms of providing useful guidance to the licensee. With regard to implementation of ALARA commitments, citations will not be made for failure to achieve limits that are more restrictive than regulatory requirements (and technical specifications).

ENCLOSURE 8

UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT
Washington, D.C. 20555

INSPECTION AND ENFORCEMENT MANUAL

DQASIP

INSPECTION PROCEDURE 83724

EXTERNAL OCCUPATIONAL EXPOSURE CONTROL AND PERSONAL DOSIMETRY

(MINIMUM AND BASIC)

PROGRAM APPLICABILITY: 2515 and 2525

83724-01 INSPECTION OBJECTIVES

01.01 To determine the adequacy of the licensee's personal dosimetry for external exposure and control of external occupational exposure during normal operations.

01.02 To determine the adequacy of the licensee's personal dosimetry and capability to control the external exposure of onsite emergency workers during accident conditions.

83724-02 INSPECTION REQUIREMENTS

02.01* Audits and Appraisals

Review the results of audits and appraisals performed by or for the licensee since the last inspection and the adequacy of the licensee's commitments and corrective action.

02.02 Changes

Review changes in facilities, equipment, personnel, and procedures that may affect external exposure control and personal dosimetry.

02.03* Planning and Preparation for Outages

Determine whether necessary planning and preparation for maintenance and refueling outages are adequate.

* Minimum inspection program requirements.

02.04 Personal Dosimetry

a.* Determine whether personal dosimetry for external exposure meets requirements.

b. Determine whether personal dosimeters dedicated for emergency use meet regulatory requirements, are operable, maintained, and readily available for all emergency workers.

02.05* Administrative Controls

Determine whether administrative controls of external radiation exposure meet requirements and are designed to maintain exposures ALARA.

02.06 Records, Reports, and Notifications

Determine whether records, reports, and notifications of external exposures meet regulatory requirements.

83724-03 INSPECTION GUIDANCE

03.01 Audits and Appraisals

a. Review reports of required audits since the last inspection. Look particularly for those audits that probe for programmatic weaknesses and assess the quality of the program. Focus upon licensee followup actions for identified deficiencies. Are corrective actions timely and technically acceptable?

Requirements for reviews and audits normally are contained in the technical specifications. Audit teams should include someone with experience or training commensurate with the scope, complexity, or special nature of the activities audited (Regulatory Guide 1.146 and ANSI/ASME N45.2.23-1978, Section 2.2).

b. Review reports of other audits, appraisals, assessments, evaluations (including INPO evaluations), etc., that may provide information on program quality.

* Minimum inspection program requirements.

03.02 Changes

a. By observation and discussion with cognizant management personnel, determine whether changes have adversely affected the licensee's program for control of external exposures. Determine whether changes are in accordance with the requirements of 10 CFR 50.59.

b. By direct observation and discussion, determine whether workers are aware of, and understand, the changes.

03.03 Planning and Preparation for Outages

Review representative records and discuss outage planning with licensee representatives, and observe activities to verify necessary planning and preparations. Examples of areas that may be examined include:

a. Increased health physics staff, including plant's method of ensuring supervisory control over contract technicians.

b. Special training, including use of mockup training.

c. Increased supplies, including clothing, temporary shielding materials, etc.

d. ALARA considerations, including work package review by health physics, dose reduction methods, and radwaste reduction.

e. Adequacy of licensee controls and monitoring of contractor work standards, equipment, and practices.

f. Early involvement of health physics group and knowledge of work to be performed.

03.04 Personal Dosimetry

a. By direct observation, discussion, and review of records, determine whether personal dosimetry is used effectively and in accordance with requirements for monitoring external exposure.

Aspects of personal dosimetry that may be examined include:

1. Improper wearing or use of dosimeters.

2. Exposure records and reports.

3. Use of pocket dosimeters and comparison of their measurement with TLD or film badge results; procedures for investigating overexposures and lost/offscale dosimeters.

4. Special processing of dosimetry devices.

5. Quality assurance of personal dosimetry measurements.

6. Photon, beta, and neutron exposures.

7. Extremity exposures.

8. Timely dissemination of current dose status.

9. Review of workers' dose status by managers.

b. By direct observation, discussion, and record review, determine that personal dosimeters to be used for emergency operations are adequate, properly stored, and maintained. Observe representative samples of equipment; for example, equipment in emergency kits, in the Operational Support Center, or in the Technical Support Center.

03.05 Administrative Controls

By direct observation, discussion, and review of records and procedures, determine whether administrative controls are adequate.

a. Practices and Procedures

Aspects of administrative controls that may be considered include:

1. Planning work to maintain exposures ALARA and within limits.

2. Use of current survey and personal dosimeter data for dose control.

3. Use of control/action levels.

4. Radiation work permit (RWP) program.

5. Controlling access to high exposure areas.

6. Radiation work practices.

7. Management reviews of exposure data trends and discrepancies.

b. Posting and Labeling

While touring the plant, determine by direct observation and radiation measurements of representative areas, whether posting and labeling requirements are met. If convenient, this may be done by accompanying a health physics technician on a routine daily survey.

03.06 Records, Reports, and Notifications

a. Review exposure summary reports to determine compliance with the regulations.

b. Review exposure summary records to verify compliance with 10 CFR 20.101(b) limits. Select a sampling of individuals who have current exposures in excess of 20.101(a) limits and verify that Forms NRC-4 were completed prior to exceeding the 20.101(a) limits. Review exposure records to verify that the licensee is complying with provisions of 10 CFR 20.102 (transient worker rule).

c. Determine if minors have been permitted to work in restricted areas, and if so, determine compliance with 20.104(a) by review of exposure records.

d. Review selected Forms NRC-5 to determine compliance with the regulations.

e. Determine if overexposures of individuals to external radiation have been appropriately reported to NRC (20.403 and 20.405) and to the exposed individual [19.13(d)].

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d. Regulatory Guide 8.3, "Film Badge Performance Criteria."

e. Regulatory Guide 8.4, "Direct Reading and Indirect Reading Pocket Dosimeters."

f. Regulatory Guide 8.7, "Occupational Radiation Exposure Records Systems."

g. Regulatory Guide 8.8, "Information Relevant to Ensuring That Occupational Radiation Exposures at Nuclear Power Stations Will Be As Low As Is Reasonably Achievable."

h. Regulatory Guide 8.10, "Operating Philosophy for Maintaining Occupational Radiation Exposures As Low As Is Reasonably Achievable (Nuclear Power Reactors)."

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y. ANSI/ASME N45.2.23-1978, "Qualification of Quality Assurance Program Audit Personnel for Nuclear Power Plants."

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dd. NRCP Report No. 39, "Basic Radiation Protection Criteria," January 15, 1971.

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gg. IE Information Notice No. 81-26, Part 2, "Placement of Personnel Monitoring Devices for External Radiation Exposure," August 2, 1981 and Supplement 1, July 19, 1982.

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END

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
CAROLINA POWER AND LIGHT COMPANY AND	)	
NORTH CAROLINA EASTERN MUNICIPAL	)	Docket Nos. 50-400 OL
POWER AGENCY	)	50-401 OL
	)	
(Shearon Harris Nuclear Power Plant,	)	
Units 1 and 2)	)	

CERTIFICATE OF SERVICE

I hereby certify that copies of "NRC STAFF TESTIMONY OF JOHN P. CUSIMANO AND SEYMOUR BLOCK CONCERNING JOINT CONTENTION IV" and "NRC STAFF TESTIMONY OF ROSS H. ALBRIGHT CONCERNING JOINT CONTENTION IV" in the above-captioned proceeding have been served on the following by deposit in the United States mail, first class, or, as indicated by an asterisk, through deposit in the Nuclear Regulatory Commission's internal mail system (*), this 21st day of September 1984.

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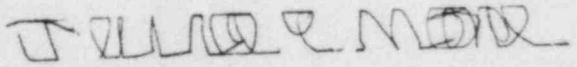

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