



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

JUL 16 1985

Report Nos.: 50-325/85-12 and 50-324/85-12

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

Docket Nos.: 50-325 and 50-324

License Nos.: DPR-71 and DPR-62

Facility Name: Brunswick 1 and 2

Inspection Conducted: June 17-21, 1985

Inspector: P. Stoddart  
P. Stoddart

7/12/85  
Date Signed

Accompanying Personnel: S. Adamovitz

Approved by: D. M. Collins  
D. M. Collins, Branch Chief  
Emergency Preparedness and Radiological  
Protection Branch  
Division of Radiation Safety and Safeguards

7-13-85  
Date Signed

SUMMARY

Scope: This routine, unannounced inspection involved 65 inspector-hours on site in the areas of liquid and gaseous radwaste management and radiological environmental protection programs.

Results: No violations or deviations were identified.

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## REPORT DETAILS

### 1. Persons Contacted

#### Licensee Employees

C. R. Dietz, Plant Manager  
\*P. W. Howe, Vice President, Brunswick Nuclear Project  
\*A. G. Cheatham, Manager, Environmental and Radiation Control  
\*E. A. Bishop, Assistant to General Manager  
\*R. M. Poulk, Senior Regulatory Specialist  
\*J. W. Davis, Project Specialist  
\*J. W. Gurganious, Foreman, Environmental and Radiation Control  
\*L. E. Jones, Director, Quality Assurance and Quality Control  
W. A. Nurnberger, Foreman, Environmental and Radiation Control  
M. L. Millinor, Foreman, Environmental and Radiation Control  
K. E. Enzor, Director, Regulatory Compliance  
J. Price, Technician, Environmental and Radiation Control  
K. W. Payne, Specialist, Environmental and Radiation Control  
S. L. Watson, Specialist, Environmental and Radiation Control  
J. A. Kaham, Specialist, Environmental and Radiation Control  
K. Palmeter, Shift Foreman, Operations  
B. McFeaters, Meteorological Supervisor, CP&L Corporate Office

#### NRC Resident Inspector

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

\*Attended exit interview

### 2. Exit Interview

The inspection scope and findings were summarized on June 21, 1985, with those persons indicated in paragraph 1 above. The licensee did not identify as proprietary any of the materials provided to or reviewed by the inspectors during this inspection.

### 3. Licensee Action on Previous Enforcement Matters

Not inspected.

### 4. Audits and Appraisals (84723, 84724)

Technical Specifications 6.5.5.1 and 6.5.5.2 require the licensee's corporate Performance Evaluation Unit (PEU) to perform periodic audits including: the Environmental Monitoring Program and results (once each 12 months); the Offsite Dose Calculation Manual (ODCM) (once each 24 months); the Process Control Program (PCP) (once each 24 months); and,

the Quality Assurance Program to meet Regulatory Guides 1.21 and 4.1 (once each 12 months).

The inspector reviewed audits QAA-XX 21-85-02, April 26, 1985, and QAA-21-34, August 29, 1984. The inspector discussed the audits with licensee personnel and reviewed corrective actions taken by the licensee. Corrective actions had been taken promptly to resolve items of concern.

No violations or deviations were identified.

5. Major Changes to Plant Radwaste Treatment Systems (84723, 84724)

The inspector discussed plant radwaste treatment systems with plant personnel and toured portions of the liquid and gaseous radwaste systems accompanied by licensee personnel. The inspector also reviewed the Semi-Annual Effluent Release Reports for January - June 1984 and July - December 1984 which, under the guidance in Regulatory Guide 1.21, should contain reports of major changes to plant radwaste systems. On the basis of the above, the inspector determined that no major changes had been made to plant radwaste treatment systems.

No violations or deviations were identified.

6. Procedure Reviews (84723, 84724)

Technical Specification 6.8 requires the licensee to prepare, approve, and adhere to procedures including, under the category of radiation control, procedures covering liquid and gaseous radwaste management and radiological environmental monitoring programs. The inspector reviewed the following procedures:

E&RC (Environmental and Radiation Control)-0515, Rev. 001, March 19, 1985, "Review of Process Control Program (PCP)".

E&RC-1000, Rev. 4, June 10, 1985, "Sampling and Analysis Schedule for Technical Specifications - Related Radioactive and Nonradioactive Chemistry".

E&RC-1005, Rev. 002, December 10, 1984, "Collection of Routine and Nonroutine Samples".

E&RC-1033, Rev. 000, July 10, 1984, "Operation/Calibration of Combination Combustibles/Oxygen Air Sampler, MSA Model Minigard II".

E&RC-1210, Rev. 009, May 23, 1984, "Determination of Radioiodine".

E&RC-1214, Rev. 003, February 15, 1985, "Monthly Source Check of Process Radiation Monitors".

E&RC-1220, Rev. 002, October 19, 1984, "Determination of 100/E-Bar uCi/gm".

E&RC-1221, Rev. 004, October 8, 1984, "Sampling and Analysis Procedure for Routine SJAE Offgas Analysis".

E&RC-1225, Rev. 003, June 10, 1985, "AOG (Augmented Offgas) Sampling System".

E&RC-1230, Rev. 003, March 27, 1985, "Tritium Analysis of Liquids".

E&RC-1241, Rev. 000, May 23, 1984, "Collection and Preparation Procedure for Routine Reactor Coolant Samples for Gross Activity Determination".

E&RC-1271, Rev. 003, May 10, 1985, "Determination of the Lower Limit of Detection for Counting Systems".

E&RC-1500, Rev. 007, December 27, 1984, "Analysis of PASS Samples in the Laboratory".

E&RC-1502, Rev. 001, November 23, 1983, "Emergency Sampling of Reactor and Turbine Building Ventilation Monitors".

E&RC-1503, Rev. 001, November 23, 1983, "Emergency Sampling of Stack Monitors".

E&RC-1504, Rev. 001, February 3, 1984, "Post Accident Analysis by Ion Chromatography".

E&RC-1505, Rev. 007, June 3, 1985, "Operation Procedure for Post Accident Sampling Stations".

E&RC-1700, Rev. 003, October 30, 1984, "Verification of Analytical Performance".

E&RC-2002, Rev. 005, April 30, 1985, "Sampling of Radioactive Airborne Effluent Releases".

E&RC-2003, Rev. 002, May 30, 1985, "Reporting of Radioactive Airborne Effluent Releases".

E&RC-2009, Rev. 002, May 8, 1985, "Radioactive Liquid Effluent Releases and Reports".

E&RC-2011, Rev. 000, May 17, 1985, "10 CFR 20 Compliance Determination During Nonroutine Service Water Releases".

E&RC-2016, Rev. 001, May 14, 1985, "Sampling and Analysis of Drywell Purges".

E&RC-2020, Rev. 006, June 6, 1985, "Setpoint Determinations for Gaseous Radiation Monitors".

E&RC-2021, Rev. 001, October 8, 1984, "Determinations of Service Water Effluent Radiation Monitor Setpoints".

E&RC-2025, Rev. 002, February 11, 1985, "Operation of GA Technologies Radiation Monitors".

E&RC-2026, Rev. 001, February 15, 1985, "Routine Surveillance of General Atomic Technologies Radiation Monitors".

E&RC-2027, Rev. 000, February 15, 1985, "Performance Testing Wide Range Gas Monitor Mid/High Range Channels".

E&RC-2175, Rev. 001, May 9, 1984, "Offsite Dose Calculation Manual (ODCM) Software Package Instructions and Documentation".

E&RC-2201, Rev. 010, February 8, 1985, "Calibration/Operation of ND 6600 Multichannel Analyzer".

E&RC-2204, Rev. 001, "Calibration and Operation of the Tennelec NaI Well Counter".

E&RC-3101, Rev. 002, May 30, 1985, "Radiological Effluent Technical Specifications Monitoring Program".

E&RC-3102, Rev. 000, January 4, 1985, "Analysis of Radiological Environmental Monitoring Technical Specification Samples".

E&RC-3105, Rev. 2, May 11, 1983, "Calibration of Bendix Environmental Air Sampler".

E&RC-3220, Rev. 2, March 1, 1985, "Reporting Out-of-Spec NPDES Conditions".

E&RC-4000, Rev. 4, October 31, 1984, "Formats, Approvals, and Revisions for E&RC Procedures".

Brunswick Plant Operating Manual, Vol. 1, Book I, Administrative Procedures, Rev. 94, May 7, 1985:

- Section 1.0 Purpose and Scope
- Section 2.0 Organization and Responsibility
- Section 5.1 Operating Manual - Description
- Section 5.2 Use of Procedures
- Section 5.3 Departure and Deviation from Established Procedures
- Section 5.6 Procedure Review

Brunswick Plant Offsite Dose Calculation Manual - Process Control Program, Rev. 1

- Section 4.0 Radiological Environmental Monitoring Program
- Section 5.0 Interlaboratory Comparison Program



E&RC-3291, Rev. 002, May 29, 1985, "Storm Drain Stabilization Pond".

E&RC-4200, Rev. 003, May 15, 1985, "Determination of Compliance to 40 CFR 190".

All of the above procedures and instructions had been reviewed and approved by the appropriate management, as provided in the specification.

No violations or deviations were identified.

7. Reactor Coolant Chemistry and Radiochemistry (79501, 79502, 84723, 84724)

Technical Specifications 3/4.4.4 and 3/4.4.5, and Tables 3.4.4-1 and 4.4.5-1 establish sampling and analysis requirements for reactor coolant, including chloride concentration, conductivity, pH, gross activity determination, isotopic analysis for dose-equivalent iodine-131, and E-Bar determinations.

The inspector toured the chemical and radiochemical laboratory facilities and sampling stations, accompanied by licensee representatives. The inspector discussed sampling and analysis procedures and practices with laboratory personnel and reviewed selected logs and analysis record packages for the period of August 1, 1984 through June 1, 1985.

No violations or deviations were identified.

8. Radioactive Liquid Wastes and Liquid Effluent Treatment Systems (84723)

Technical Specifications 3/4.11.1.1 through 3/4.11.1.4 define the operating requirements, radioactive effluent limits, and surveillance requirements for the liquid radwaste treatment system.

The inspector toured the liquid radwaste treatment facilities accompanied by a licensee representative and discussed operational and maintenance experience with licensee personnel. The inspector also reviewed sampling and analytical procedures and instructions and reviewed selected logs and completed surveillance packages for liquid radwaste effluent releases for the period August 1, 1984 through June 1, 1985.

No violations or deviations were identified.

9. Radioactive Gaseous Wastes and Gaseous Effluent Treatment Systems (84724)

Technical Specifications 3/4.11.2.1 through 3/4.11.2.8 define the operating requirements, radioactive gaseous effluent release limits and surveillance requirements for the gaseous radwaste treatment systems.

The inspector, accompanied by licensee representatives, toured the gaseous radwaste treatment systems and discussed operation and maintenance experience with licensee personnel. The inspector reviewed selected sampling and analytical logs and completed surveillance packages for the period of August 1, 1984 through June 1, 1985.

No violations or deviations were identified.

10. Radioactive Liquid and Gaseous Effluent Monitoring (84723, 84724)

Technical Specifications 3/4.3.5.8 and 3/4.3.5.9 define the operating and surveillance requirements for monitoring of radioactive liquid and gaseous effluent streams. Technical Specification surveillance requirements 4.11.1.1, 4.11.1.4, 4.11.2.1, 4.11.2.7, and 4.11.2.8 define the sampling and analysis requirements for radioactive liquid and gaseous effluent streams.

The inspector, accompanied by licensee representatives, toured the effluent monitoring locations and sampling stations and discussed operation, maintenance, sampling, and analysis with licensee personnel. The inspector also reviewed selected liquid effluent release permits and logs and records of liquid and gaseous effluents for the period of August 1, 1984 through June 1, 1985. Instrumentation maintenance and calibration records for the period of August 1, 1984 through June 1, 1985, were also reviewed.

No violations or deviations were identified.

11. Engineered Safety Feature (ESF) High Efficiency Particulate Air (HEPA) Filter and Charcoal Adsorption Systems (84724)

Technical Specifications 3/4.6.6.1 and 3/4.7.2 define the operating and surveillance requirements for ESF HEPA filter and charcoal adsorption systems. The inspector toured the ESF and non-ESF filter/adsorption system installations accompanied by a licensee representative. The inspector discussed operation, testing, and maintenance of the systems with licensee personnel. The inspector reviewed selected logs and records of in-place DOP leak tests of HEPA filter banks, in-place leak tests of charcoal adsorber banks, and methyl iodide retention efficiency laboratory tests of system charcoal.

No violations or deviations were identified.

12. Records Retention (84723, 84724)

Technical Specification 6.10 requires the licensee to retain records of gaseous and liquid radioactive material released to the environment for the duration of the operating licensee. The inspector verified from searches of selected records of liquid and gaseous radioactive effluent releases made during the period from August 1, 1984 through June 1, 1985, that the records required by the Technical Specification were retained in terms of frequency and content and were accessible for recall and review.

No violations or deviations were identified.

13. Independent Inspection (92706)

Technical Specification 6.8.3.c provides for the establishment, implementation, and maintenance of a post accident sampling program. The

inspector toured the post accident sampling system (PASS) stations for reactor coolant, gaseous effluents and containment atmosphere, accompanied by licensee representatives. The inspector discussed PASS operation and maintenance experience with licensee personnel. Licensee representatives stated that a modification package was on order from the vendor; the purpose of the modification was to provide improved measurement of dissolved gases in the reactor coolant. Several licensee personnel had been trained and qualified to operate the PASS in accordance with plant training and operating procedures.

Technical Specifications 3/4.3.5.9 and 3/4.11.2.6 define the requirements for hydrogen gas monitoring in the main condenser offgas system. The inspector discussed the offgas hydrogen monitoring instrumentation with licensee representatives and was informed that none of the hydrogen monitoring instruments in the Augmented Offgas (AOG) System were operable and that the modification package had been turned back to the contractor for resolution. The ACTION statement of Technical Specification 3.3.5.9 states that the licensee may continue to operate the AOG system provided that grab samples are collected at least once each 24 hours and analyzed within the following four hours, and proper functioning of the recombiner is assured by monitoring recombiner temperature in accordance with approved procedures. The inspector reviewed selected analytical logs and records and determined that grab samples had been taken and analyzed in accordance with the action statement and that approved procedures had been followed.

This item was identified as an inspector followup item pending resolution of the inoperable status of the hydrogen monitoring instruments; the licensee acknowledged this inspector followup item and had no comments:

Inspector Followup Item (IFI 50-325, 324/85-12-01: Inoperable Condition of Hydrogen Gas Monitoring Instruments in Augmented Off-Gas System to be Corrected and Instruments Returned to Service).

No violations or deviations were identified.

#### 14. Semi-Annual and Annual Reports (84723, 84724, 80721)

Technical Specification 6.9.1.6 requires the licensee to submit an Annual Radiological Environmental Operating Report. Technical Specification 6.9.1.8 requires the licensee to submit a Semi-Annual Radioactive Effluent Release Report.

The inspector reviewed the Annual Radiological Environmental Monitoring Reports for calendar years 1983 and 1984 and Report 2-SR-84-2, "Followup Report on Non-Routine Environmental Radiological Reports," dated February 29, 1984. The inspector also reviewed the Semi-Annual Radioactive Effluent Release Reports for January-June 1984 and July-December 1984.

No technical discrepancies were noted and the reports were consistent with the Technical Specification requirements.



No violations or deviations were identified.

15. Environmental Monitoring Program (80721)

The inspector conducted a detailed review of the radiological environmental monitoring and surveillance program to determine if the status of the program was consistent with sampling, analytical requirements, and schedules defined in Technical Specification 3.12.1. The inspection included the following: (1) review and discussions with licensee personnel of monitoring, surveillance, and radiological procedures; (2) review of selected sampling records and equipment calibration records; (3) examination of eight air particulate and radioiodine monitoring stations; (4) examination of selected area TLD stations; (5) examination of two continuous surface water samplers; and (6) examination of two sediment sampling sites.

Implementation of the environmental sampling program was detailed in procedure E&RC-3101 "Radiological Effluent Technical Specifications Monitoring Program", Rev. 2, May 30, 1985. This procedure specified sample types and locations, sampling frequency, method of sample collection, and type of frequency of analyses. The inspection disclosed that the radiological environmental monitoring and surveillance program was implemented in accordance with Environmental Technical Specification requirements.

The licensee demonstrated the ability to track and control various environmental samples by maintaining records for field collection of samples. A Surveillance Test Completion/Exception Form detailing required sampling and collection dates was computer-generated prior to the required environmental sampling. After sample collection, the completed form was entered on a computer for sample collection tracking.

The inspector determined that the Brunswick Meteorological Monitoring Program, a corporate function, had been evaluated as part of the Emergency Preparedness Implementation Appraisal for the Shearon Harris facility (50-400/85-09) to determine whether or not the program met the commitments and requirements of Supplement I to NUREG-0737 and was in conformance with Regulatory Guide 1.97. The inspector verified by direct observation that the meteorological monitoring instrumentation was operable and that the meteorological computer readout in the control room was functioning properly.

Environmental radiochemical analyses for the Brunswick facility were performed by the Harris Energy and Environmental Center (HEEC). The HEEC was evaluated as part of the Shearon Harris environmental inspection (50-400/85-17).

Technical Specification 3.12.2 requires the licensee to perform an annual land use census, the results of which are to be included in the Annual Radiological Environmental Operating Report. Review of the 1983 and 1984

Environmental Reports confirmed the annual land use census had been performed and documented as required.

The inspector's review included the following documents and records:

- a. Environmental Weekly Sample Sheets  
February 1985 - June 1985
- b. Environmental Bimonthly Sample Sheets  
February 1985 - June 1985
- c. Environmental Quarterly Sample Sheets  
April 1985 - June 1985
- d. Calibration check-off sheets for nine Bendix environmental air samplers  
February 1985 and August 1984
- e. Surveillance Test Completion/Exception Forms  
June 1985

No violations or deviations were identified.

16. Inspector Followup (92701B)

(Closed) Inspector Followup Item (IFI) 82-14-02: Elevated Co-60 Activity Level in Discharge Canal Sediment. The inspector reviewed 1983 and 1984 Environmental Reports and a Followup Report on Nonroutine Radiological Events (2-SR-84-2) dated February 29, 1984. Licensee's evaluation and followup actions were determined to be adequate.

(Closed) IFI 83-21-02: Use of Tc-99 Source for Particulate Counter Efficiency Determinations. The inspector determined that the licensee had changed calibration and check sources from Sr-90 to Tc-99 for all applications except for analyses for Sr-90. The licensee's action was adequate and this item is considered closed.

(Closed) Inspection and Enforcement Notice (IEN) 83-C6-01: IE Information Notice No. 82-49 Correction for Sample Conditions for Air and Gas Monitoring. The inspector determined that all operational air and gas monitors were provided with mass flow meters. This type meter is not subject to the discrepancies described in the IEN. This item is considered closed.

(Closed) IFI 83-40-01: Licensee is to provide description of DOP and freon sample plane test. The inspector reviewed plant records showing the results of system flow distribution tests. Test results were adequate to permit closing this item.