



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

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Report Nos.: 50-325/92-36 and 50-324/92-36

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: October 19-23, 1992

Inspector: G. W. Salyers

18 Nov 92
Date Signed

Accompanying Personnel:

Approved by: James W. Hugan

William M. Sartor, Acting Chief
Emergency Preparedness Branch
Radiological Protection and Emergency
Preparedness Branch
Division of Radiation Safety and Safeguards

11/20/92
Date Signed

SUMMARY

Scope:

This routine, unannounced inspection was conducted in the area of emergency preparedness. The licensee's program was reviewed to determine whether the licensee was maintaining a capability for emergency detection and classification, protective action decision-making, notifications and communications, shift staffing and augmentation, training, dose assessment, and public information program.

Results:

The licensee's Emergency Preparedness program was operational and fully capable of performing its function. Areas receiving comments were: quality of ERF training (Paragraph 6), the ability of dose assessment personnel to effectively utilize field team data (Paragraph 7).

REPORT DETAILS

1. Persons Contacted

Licensee Employees

- *K. Ahern, Operations Manager U-2
- *H. Bean, Manager, Quality Control
- *J. Boone, Regulatory Compliance
- *M. Bradley, Manager, Nuclear Assessment Department (NAD)
- *S. Callis, Licensing On-Site Representative
- *C. Cashwell, Training
- *J. Cowan, Manager, Technical Support & Regulatory Compliance
- *M. Foss, Regulatory Compliance
- *R. Godley, Manager, NRC Compliance
- *B. Hart, Nuclear Assessment Department
- *R. Helme, Manager, Technical Support
- *J. Holder, Manager, Outage Management & Modifications
- *B. Houston, Senior Specialist Emergency Preparedness
- *M. Jackson, Maintenance Manager U-2
- *M. Jones, Manager, Training
- *M. Kesmodel, Coordinator IAP Control and Administration
- *J. Leininger, Manager, Engineering
- *L. Loflin, Quality Control
- *D. McCarthy, Manager, Nuclear Licensing
- *P. Mazzke, Training
- *D. Moore, Maintenance Manager U-1
- *R. Morgan, Plant Manager U-1
- *R. Richey, Vice President Brunswick Nuclear Plant (BNP)
- *C. Robertson, Manager, Environment and Radiation Control
- *G. Thearling, Regulatory Compliance
- *R. Starkey, Vice President, Nuclear Safety Department
- *A. Watson, Senior Vice President BNP
- *G. Warriner, Manager Control and Administration

Other licensee employees contacted during this inspection included members of the emergency response organization, training staff, and office personnel.

Nuclear Regulatory Commission

- *H. Christensen, Section Chief Division Reactor Projects
- *S. Ebnetter, Region II Regional Administrator
- *J. Johnson, Deputy Director, Division Reactor Projects
- *R. Lo, Project Manager NRR Project Director,
- *R. Prevatte, Senior Resident Inspector

*Attended exit meeting

2. Emergency Detection and Classification (82201)

Pursuant to 10 CFR 50.47(b)(4) and 10 CFR Part 50, Appendix E, Section IV.B and IV.C and Appendix 1 of NUREG-0654, this program area was inspected to determine if the licensee used and understood a standard emergency classification and action level scheme.

The inspector verified that the licensee's notification procedures included criteria for initiation of offsite notifications and for development of Protective Action Recommendations (PARs). The notification procedures required that offsite notifications be made promptly after declaration of an emergency.

The inspector reviewed documentation indicating that State and local review of the EALs was conducted during July 1992. The event classification in the procedures was consistent with the Emergency Plan and with those required by regulation. The inspector noted that the EALs were based on parameters obtainable from Control Room instrumentation and the EALs did not appear to contain impediments or errors which could lead to incorrect or untimely classification.

The responsibility and authority for classification of emergency events and initiation of emergency action were described in Section 2 of the Plant Emergency Procedures (PEP) and in Sections 2 and 3 of the site Emergency Response Plan. Interviews with Shift Supervisors and Dose Assessment personnel disclosed that the interviewees understood their role, responsibilities and authorities in event classification, notification, and PARs.

Selected Emergency Operation Procedures (EOPs) were reviewed to determine if the EOPs referenced the PEPs. The inspector concluded that neither the PEPs nor the Emergency Plan were integrated into the operator actions of the EOP. The licensee stated, due to the complexity of the EOPs and the Emergency Plan, and the number of changes that occur in the two documents annually, that the referencing of the two documents increased the potential for procedural errors. The licensee further stated that emphasis was placed on the EOPs and Emergency Plan EALs in licensed operators training. The inspector concurred with the licensee remarks and noted that integration (referencing) of the EOPs and EALs is not a requirement.

No violations or deviations were identified.

3. Protective Action Decision-Making (82202)

Pursuant to 10 CFR 50.47(b)(9)(10) and 10 CFR Part 50, Appendix E, Section IV.D.3, this area was inspected to determine whether the licensee had 24-hour-a-day capability to assess and analyze emergency conditions and make recommendations to protect the public and on-site workers, and

whether offsite officials had the authority and capability to initiate prompt protective actions for the public.

The inspector reviewed portions of the licensee's Emergency Plan and procedures which describe the responsibility and authority for protective action decision-making. The steps of the General Emergency Procedure assigned the responsibility for protective action decision-making to the Emergency Response Manager (ERM). The Radiation Control Manager and Technical Analysis Manager provide support to the ERM by recommending on-site and offsite protective actions to the ERM. The licensee also provides for protective actions for on-site nonessential personnel by having the ERM consider site evacuation for Alert and higher classifications.

The inspector reviewed the following PEPs for guidance on protective action decision-making.

- PEP-02.1, Initial Emergency Conditions
- PEP-02.5, Emergency Control - General Emergency
- PEP-02.6.16, Emergency Response Manager

Each of the above procedures contained a flowchart for determining PARs based on plant conditions.

No violations or deviations were identified.

4. Notification and Communication (82203)

Pursuant to 10 CFR 50.47(b)(5)(6) and 10 CFR Part 50, Appendix E, Section IV.D., this area was inspected to determine whether the licensee was maintaining a capability for notifying and communicating (in the event of an emergency) among its own personnel, with offsite supporting agencies and authorities, and with the population within the Emergency Planning Zone (EPZ).

The inspector reviewed the licensee's notification procedures. The inspector determined that the procedures made provisions for message verification. The content of the initial emergency messages was reviewed and discussed with licensee representatives. The initial messages appeared to meet the guidance of NUREG-0654, Sections II.E.3 and II.E.4. Licensee representatives stated that the format and content of the initial emergency messages had been reviewed by State and local government authorities.

The licensee's program for alerting the community in an emergency within the EPZ was reviewed. The system consists of 34 sirens within the EPZ which are activated by the local counties EOC. The inspector observed

the annual full test of the Alert Notification System (ANS) conducted on October 22, 1992. The test consisted of two full actuations of approximately one minute duration and three minutes apart. On the first test, 32 of the 34 sirens sounded and rotated properly. On the second test, 33 of the 34 sirens sounded and rotated properly. One siren failed both tests. Repairs on the two failed sirens were initiated and completed within two days. The inspector reviewed records that indicated satisfactory operation of bi-weekly silent tests and quarterly growl tests of the ANS.

Each year, local residents within the 10-mile EPZ are mailed an information handout about the plant and calendar. The calendars identify radio and television channels which broadcast emergency information if the sirens sound, evacuation routes and shelters for each zone within the EPZ and other information about the emergency preparedness program.

The inspector determined by reviewing applicable procedures and by discussions with licensee representatives that procedures were in place for alerting, notifying, and activating emergency response personnel. The licensee uses a personnel pager system to activate the Emergency Response Organization (ERO). The inspector reviewed the licensee documentation of the monthly pager test. The review indicated that the licensees had been testing the system in accordance with their Plan and that the system had functioned properly. If the pager system failed, the licensee had provisions for a manual call-in of ERO personnel. Communications equipment in the EOF was inspected. Provisions existed for prompt communications among emergency response facilities, emergency response personnel, off site agencies, and to the public. The inspector witnessed a demonstration of, and reviewed documentation that indicated satisfactory performance of the monthly communication test from the Control Room and the TSC. The system allows simultaneous (group) calling of the State and local agencies from the Control Room or the TSC. The installed communications at the Emergency Response Facility (ERF) were consistent with systems descriptions in the Emergency Plan and Plant Emergency Procedures (PEPs).

No violations or deviations were identified.

5. Shift Staffing and Augmentation (82205)

Pursuant to 10 CFR 50.47(b)(2) and 10 CFR Part 50, Appendix E, Section IV.A and IV.C, this area was inspected to determine if shift staffing for emergencies was adequate both in numbers and in functional capability, and whether administrative and physical means were available and maintained to augment the emergency organization in a timely manner.

The inspector also discussed staff augmentation times with licensee representatives for the backshift periods. Section 3 of the Brunswick Emergency Response Plan (ERP) addressed the organization and the

responsibilities of the emergency organization. The staffing and organization of the Emergency Response Organization meet the guidance of NUREG-0654 Rev. 1, Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants. In Section 6 of the ERP, the licensee committed to an augmentation drill requiring travel to the site once every 24 months. Brunswick Records for an unannounced augmentation drill in January 1991, were reviewed. The records indicated that the ERFs were staffed within the required time limits.

No violations or deviations were identified.

6. Knowledge and Performance of Duties (82206)

Pursuant to 10 CFR 50.47(b)(2) and (15) and 10 CFR Part 50, Appendix E, Section IV.F, and Section B of the Emergency Plan, this area was inspected to determine whether the licensee's key emergency response personnel were properly trained and understood their emergency responsibilities.

At BNP an individual is considered qualified for their emergency responder roles by maintaining their training current. The ERO training records are computerized. The computer lists each member of the ERO and the dates in which they completed each training course. In response to past training violations the licensee has incorporated a "Micro" function into the computer for tracking ERO training. The Micro program identifies members of the ERO at 90 days, 60 days, and 30 days prior to each training course expiration date. If a member's training should indicate "expired", security is requested to remove their site access badge. The inspector reviewed the ERO Roster and reviewed randomly selected members training records. The inspector's review did not identify any ERO member with expired qualifications.

In order to determine whether emergency response personnel had received adequate training, whether they understood their emergency response roles, and whether they could perform their assigned functions, the inspector conducted interviews with two individuals qualified as Emergency Response Manager. The interviewees demonstrated the ability to classify accident conditions, make initial notifications, and demonstrated a proficiency with the PEPs. In order to ascertain the interviewees overall understanding of the EP program, the inspector asked some general overview questions concerning the EP program. As an example:

- When fully activated, what is the function of the TSC, EOF?
- At what emergency classification level is the EOF activated?
- In a General Emergency when full activated, which facility is

responsible for performing dose assessments and who is responsible for making PARs?

Neither interviewee satisfactorily answered the questions. The inspector discussed with the licensee representative the apparent weakness of the interviewee's overall knowledge of the EP program and its operation.

The inspector interviewed two additional individuals responsible for dose assessment. During the interviews, each individual successfully demonstrated the ability to use the computer (IRDAM program) to perform dose assessments and recommend PARs based on the computer output. The inspector asked both interviewees to back calculate the field team data and make dose assessment and PARs based upon that data. Both interviewees displayed difficulty in performing the task. This is discussed in Paragraph 7 of this report. With that exception, the interviewees demonstrated capability to perform both manual and computer dose projections and to recommend PARs.

The inspector reviewed the emergency responder training program and test used during the last training cycle. The inspector noted that the initial and requalification training for ERO members was a self study program. Students were given a student handout or lesson plan for needed courses. The student was expected to study the handout or lesson plan and at a later date, demonstrate their proficiency by satisfactorily completing a test of the material. The inspector selected tests for different ERO positions and compared each test over the past two years. The inspector noted that the test consisted of ten multiple choice or matching questions. Further review of the tests revealed that seven of the ten questions were the same on two consecutive years exams and that the remaining three were similar. The method of course presentation and the quality of testing were discussed with the licensee. The licensee stated that the question bank from which the test questions originate was limited. The licensee states that ERO training was a licensee identified concern and that they had recently hired an instructor specifically designated for EP training and a consultant to assist the instructor in upgrading the EP training program. The inspector's discussion with the new EP instructor noted that the licensee intends to totally revamp the EP training program. The licensee is working toward developing the program based on a systematic approach to training, using job and task analysis, subject matter experts and peer review. The licensee representatives stated they intend to develop the program along the same guidelines used in the operator licensing program. The licensee also stated that student handouts and lesson plans are to be reviewed and rewritten if necessary. The inspector reviewed the licensee development plan and time line for upgrading the EP training program. The inspector's review of the new training program development and discussion with the licensee revealed that the licensee had committed to improving the program and was in the process of following through with the program presented to the inspector. The licensee was informed the upgrading of

the EP training program following the guidance of a systematic approach to training would be tracked as an Inspector Follow-up Item (IFI).

IFI 50-324, 325/92-36-01: Upgrade the EP training program following the guidance of a systematic approach to training .

The inspector's review of selected lesson plans concluded that the existing Emergency Plan student handouts and lesson plans contained sufficient information to satisfactorily train members of the ERO in their position.

One IFI and no violations or deviations were identified.

7. Dose Calculation and Assessment (82207)

Pursuant to 10 CFR 50.47(b)(9), this area was inspected to determine whether there was an adequate method for assessing the consequences of an actual or potential radiological release.

The inspector reviewed the following licensee procedures:

- PEP-02.6.16, Emergency Response Manager
- PEP-03.4.1, Initial Dose Projections
- PEP-03.4.2, Whole Body Dose Projections
- PEP-03.4.3, Thyroid Dose Projections
- PEP-03.4.7, Automation of Dose Projections Procedures Using the IBM Personal Computer
- PEP-03.6.1, Release estimates Based Upon Stack/Vent Readings

The procedure provides the conditions and prerequisites for making protective action recommendations based on plant conditions and/or calculated or measured dose rates.

The licensee's dose assessment and PARs are based on actual plant conditions, IRDAM Computer Code, then actual field team data.

The inspector interviewed two individuals responsible for dose assessment. During the interviews, each individual successfully demonstrated the ability to perform dose assessments and recommend PARs using both the manual calculation and the computer (IRDAM program).

The inspector presented both interviewees the following problem;

You are given field team data that was considerably higher than the

computer generated projected dose. Back calculate the data to the source term and make revised dose assessment and PARs based upon that data.

Both interviewees displayed difficulty in performing the task. One interviewee did not complete the task, and the other interviewee's methodology and solution was questioned by the inspector.

The results of the interview was discussed with licensee representatives. The licensee stated that at present, they do not have a procedure or computer program for back calculating field team data. The licensee stated that they had also identified the concern and provided their Action Item Tracking List to the inspector. Item 4 on the Action Item Tracking List, stated "Develop a guideline to perform back calculations to be used at the projects and to be approved by the Dose Assessment Working Group (DAWG)". The licensee stated that a draft procedure for performing back calculations was written and was presently at the Corporate Office for editing. The licensee committed to finalize and implement the procedure for back calculating field team data to the source term. The inspector informed the licensee that the commitment to develop and implement the procedure for back calculating field team data to the source term and make dose assessments and PAR recommendations based on the back calculated field team data would be tracked as an IFI.

IFI 50-324, 325/92-36-02: Develop and implement the procedure for back calculating field team data to the source term and make dose assessments and PAR recommendations based on the back calculated field team data.

One IFI and no violations and no deviations were identified.

8. Public Information Program (82209)

Pursuant to 10 CFR 50.47(b)(7), Criteria in NUREG-0654, Section II.G, and Section G., Public Education and Information of the licensee's Emergency Plan, this area was reviewed to determine if the licensee was disseminating information to the public in the plume exposure pathway EPZ.

The licensee provides emergency preparedness and protective action information to the public in conjunction with the State and local government. The licensee utilized calendars and brochures to inform the public. A licensee representative stated that the calendars and brochures were updated annually and mailed to residents and businesses within the 10-mile EPZ. The calendars include information on early warning systems, emergency broadcast stations, sheltering procedures, evacuating procedures, evacuation routes and maps, special needs, radiation and contamination controls, and telephone numbers for agencies to obtain additional information. Brochures designed for students within the 10-mile EPZ were also issued at schools.

The inspector independently verified that emergency preparedness information was being disseminated to area merchants.

No violations or deviations were identified.

9. Action on Previous Inspection Findings (92701)

The inspector reviewed the open items from the previous inspection and concluded the items could best be evaluated and closed during an annual exercise inspection. No open items were closed during this inspection.

10. Exit Interview

The inspection scope and results were summarized on October 23, 1992, with those persons indicated in Paragraph 1. The inspector described the areas inspected and discussed in detail the inspection results. No proprietary information was reviewed during this inspection. The licensee acknowledged the findings concerning utilization of field team data, and upgrading of the EP training program.

<u>Item Number</u>	<u>Category, Description, and Reference</u>
50-324,325/92-36-01	IFI: Upgrade the EP training program following the guidance of a systematic approach to training (Paragraph 6).
50-324,325/92-36-02	IFI: Develop and implement the procedure for back calculating field team data to the source term and make dose assessments and PAR recommendations based on the back calculated field team data (Paragraph 7).