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Report Nos.: 50-325/89-31 and 50-324/89-31

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: September 18-22, 1989

Inspector: A. Gooden 10-20-89
A. Gooden Date Signed

Accompanying Personnel: M. Stein
J. Will

Approved by: W Rankin 10-20-89
W. Rankin, Chief Date Signed
Emergency Preparedness Section
Emergency Preparedness and Radiological
Protection Branch
Division of Radiation Safety and Safeguards

SUMMARY

Scope:

This special, announced inspection of the licensee's emergency preparedness program included a review of the following areas: corrective actions in response to deficiencies identified during exercises and real events involving offsite notifications from the Control Room; training; independent program audits; augmentation staffing; emergency action level (EAL) flowchart; dose projection; and Emergency Plan implementation in response to the loss of offsite power (Unit 2, June 1989); and observation of the licensee's actions in response to Hurricane Hugo and the loss of annunciators.

Results:

Within the areas reviewed, two violations were identified: (1) Failure to provide follow-up notifications to State/local agencies from the Control Room in accordance with Plant Emergency Procedure (PEP)-02.6.21 (Paragraph 4); and (2) Failure to provide emergency response training to personnel in accordance with PEP-4.3 and Training Instruction (TI)-306 (Paragraph 6). The inspection indicated that the licensee had taken appropriate action (subsequent to the June 1989 loss of offsite power event) to ensure that Control Room Personnel provide followup notifications to offsite authorities when required. However,

as evidenced by inconsistent responses during the interviews with Control Room personnel, a fundamental misunderstanding existed regarding the use of the three part memo for follow-up notifications and the philosophy regarding the time interval (60 minutes) between the initial notification and the follow-up notification message.

The inspector noted the following actions in response to Hurricane Hugo and the loss of Control Room annunciators (Unit 2):

- The event classification was appropriate for both Hurricane Hugo (Notification of Unusual Event) and the loss of annunciators (Alert).

- Both events were promptly classified, and offsite notifications were made in a timely manner. Follow-up notifications were made from the Control Room and Technical Support Center (TSC) in accordance with procedures.

- Actions were observed in response to Hurricane Hugo to be in accordance with Abnormal Operating Procedure (AOP) 13.0; and in response to loss of annunciators, actions were in accordance with AOP 29.0.

- In response to the Alert declaration involving the loss of annunciators, the TSC was activated within 60 minutes of the event declaration.

- Onsite protective actions for both events were appropriate.

- Repair personnel were prompt in returning the annunciators to service.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

D. Barbee Shift Technical Advisor
*C. Blackmon, Manager, Operations
K. Chism, Shift Foreman
*K. Enzor, Manager, Regulatory Compliance
M. Foss, Shift Operating Supervisor
*J. Harness, Plant General Manager
*B. Houston, Specialist, Emergency Preparedness
L. Johnson, Shift Operating Supervisor
R. LaBelle, Shift Operating Supervisor
W. Link, Shift Foreman
C. Mabry, Shift Technical Advisor
W. Noland, Shift Technical Advisor
J. Reinsburrow, Shift Foreman
M. Schall, Shift Foreman
J. Simon, Shift Operating Supervisor
R. Tart, Shift Operating Supervisor
R. Zuffa, Shift Technical Advisor

Other licensee employees contacted during this inspection included engineers, operators, security force members, technicians, and administrative personnel.

NRC Resident Inspector

*W. Ruland

*Attended exit interview

2. Emergency Detection and Classification (82201)

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

The inspector reviewed the licensee's classification procedure (PEP-2.1, Initial Emergency Actions). The event classifications in the procedure were consistent with those required by regulation. The classification procedure did not appear to contain impediments or errors which could lead to incorrect or untimely classification. In addition to PEP-2.1, the licensee's emergency action levels (EALs) were flow charted to aid personnel in emergency classification. Comparison of the EAL flow-charts

with the EAL description in Brunswick's PEP-02.1 and NUREG-0654 showed that use of the flow-charts would result in the proper classification.

Selected EALs specified in the classification procedures were reviewed. The reviewed EALs were consistent with the initiating events specified in Appendix 1 of NUREG-0654. The inspector noted that some of the EALs were based on parameters obtainable from control room instrumentation.

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 responsibility and authority for classification of emergency events and initiation of emergency action were prescribed in licensee procedures and in the Emergency Plan. Interviews with selected key members of the licensee's emergency organization revealed that these personnel understood their responsibilities and authorities in relation to accident classification, notification, and PARs.

Walk-through evaluations were conducted with various personnel involved in the event classification, offsite notification, and PARs. Personnel assigned to five of the six Control Room shifts were interviewed. Interviewees included the Shift Operations Supervisor, Shift Foreman, Shift Technical Advisor, and the Production Assistant (who functions as an Emergency Communicator). The inspector also interviewed individuals designated as Offsite Communicators in the TSC and the Emergency Operations Facility (EOF). The scenario postulated the approach and arrival of Hurricane Hugo. All interviewees properly classified the hypothesized accident situation presented to them, and appeared to be familiar with the appropriate classification procedures. With the exception of the Control Room shift that was in training at the time of the inspection, interviewees experienced a slight delay in classifying the event. This delay may have been caused by wording in the EAL pertaining to hurricanes which required the operators to consult the facility Final Safety Analysis Report. The delay was not significant enough to consider the response as unacceptable. The response by remaining personnel was effective in event detection, classification, and notification.

No violations or deviations were identified in this program area.

3. Protective Action Decision-Making (82202)

Pursuant to 10 CFR 50.47(b)(9) and (10) and 10 CFR Part 50, Appendix E, Section IV.D.3, this area was inspected to determine whether the licensee had 24-hour-per-day capability to assess and analyze emergency conditions and make recommendations to protect the public and onsite workers, and whether offsite officials had the authority and capability to initiate prompt protective action for the public.

The inspector discussed responsibility and authority for protective action decision-making with licensee representatives and reviewed pertinent portions of the licensee's Emergency Plan and procedures. The Plan and procedures clearly assigned responsibility and authority for accident assessment and protective action decision-making. Interviews with members of the licensee's emergency organization revealed that these personnel understood their authorities and responsibilities with respect to accident assessment and protective action decision-making.

Although the walk-through scenario did not require PARs to reduce radiological consequences, operators were questioned regarding procedures to follow and considerations to be taken into account in making such recommendations. Personnel interviewed appeared to be cognizant of appropriate onsite protective measures and aware of the range of PARs appropriate to offsite protection. Personnel interviewed were aware of the need for timeliness in making initial PARs to offsite officials.

No violations or deviations were identified.

4. Notification and Communication (82203)

Pursuant to 10 CFR 50.47(b)(5) and (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, offsite supporting agencies and authorities, and the population within the EPZ.

The inspector reviewed the licensee's notification procedures. The procedures were consistent with the emergency classification and EAL scheme used by the licensee. The inspector determined by review of applicable procedures and by discussion with licensee representatives that adequate procedural means existed for alerting, notifying, and activating emergency response personnel. The procedures specified when to notify and activate the onsite emergency organization, corporate support organization, and offsite agencies. The content of initial emergency messages was reviewed and appeared to meet the guidance of NUREG-0654, Sections I.E.3 and II.E.4.

The inspector conducted a very detailed review of the performance by the Control Room staff in the area of notification (initial and follow-up messages) in view of past performances during exercises. The review included walk-throughs with personnel assigned communications responsibility, training, performance during past drills/exercises, and performance during real events. Based on walk-throughs, the operators understood the necessity to make their initial County and State notifications within 15 minutes following the declaration of an emergency. However, interviewees expressed no urgency regarding the initial notification to the NRC in view of the notification procedure allowance of 60 minutes. Further, the operators acknowledged the necessity to make follow-up notifications to offsite authorities (State/local) immediately if major changes took place, but indicated a lack of concern for other

follow-up notifications (i.e. no major changes) until close to the 60 minutes time limit. Section 6.3.3 of PEP-02.6.21 (Emergency Communicator) provides for the use of a three-part memo or notebook paper for follow-up notification when the use of the prescribed notification form (exhibit 2.6.21-1) is not appropriate. Control Room personnel gave various interpretations for the use of these alternate forms of documentation: (1) used only if there was no change in plant status; (2) inadequate number of lines on the notification form for explanation of changes in plant status; (3) alternate forms should not be used at all; and (4) used to make the 60 minute time limit. The inspector determined during walk-throughs and discussions that the follow-up notification form did not provide sufficient space for explanation and the three part memo was not formalized as an exhibit to the procedure. In addition, the walk-throughs disclosed a misunderstanding on the part of Operators' and communicators' regarding follow-up notifications being made in a timely manner not to exceed 60 minutes. A licensee representative indicated that actions had been initiated with the offsite authorities to devise an acceptable follow-up notification form. Further, the licensee committed to conduct additional training regarding the notification time limit and the follow-up notification form once the form was completed. The inspector indicated that this matter would be considered as an Inspector Follow-up Item (IFI) for review during a subsequent inspection.

IFI (50-325, 324/89-31-01): Revision of follow-up notification form, and conduct of additional training regarding the timeliness of the follow-up message notification form.

The inspector reviewed licensee documentation dated July 21, 1989, that detailed an Unusual Event declaration made on June 17, 1989, due to a loss of power to Unit 2 (discussed also in NRC Report Nos. 50-325, 324/89-12). According to documentation, the initial notifications from the Control Room to the offsite authorities was done in accordance with procedures. However, following the initial notifications (at 9:10 p.m.), the licensee did not make follow-up notifications for more than two hours (11:15 p.m.). According to PEP-02.6.21 (Emergency Communicator, Rev. 17, dated April 3, 1989), Section 6.3.1, follow-up notifications should be made at 30 to 60 minute intervals or as required by changing conditions. During a confirmed fire event on April 27, 1989, which was declared as an Alert (based on a fire potentially affecting safety related equipment), and was immediately downgraded to an unusual event, State and county agencies were notified of the Alert but a follow-up message regarding event de-escalation to an Unusual Event was not provided. In both events, Control Room personnel failed to follow procedures governing notification (PEP-02.6.21) requirements. Procedural nonconformance was identified by the licensee during both events, and a nonconformance report was issued. Other examples that were noted where follow-up notifications did not occur from the Control Room included the Calendar Years 1987, 1988, and 1989 exercises. The inspector was provided documentation to show that actions were taken to resolve the above findings and hopefully prevent recurrence. Actions that were taken by the licensee involved training of all Operations personnel. Included in the training out-line was a discussion

of the Site Emergency Coordinator (SEC) and the Emergency Communicator Functions; offsite notification requirements; review of past events (both exercises and real event) with highlights of any concerns or improvements in the area of notification; and finally, a review of procedural changes involving follow-up notification requirements and maintaining a log of emergency activities. The licensee was informed that in view of the multiple examples given for repeat failures on the part of Control Room personnel to provide follow-up notifications to State/local agencies in accordance with PEP-02.6.21, a violation of Technical Specification 6.8.1.e is iden' fied.

Violation (50-325, 324/89-31-02): Failure to follow PEP-02.6.21 (Emergency Communicator) which implements Section 3.5 of the Emergency Plan regarding notification and activation.

Two events occurred during the period of the inspection which afforded the inspector the opportunity to observe first hand the licensee's response in the area of initial and follow-up notifications. The two events (discussed in Paragraph 9 of this report and NRC Report Nos. 50-325, 324/89-26) involved a Notification of Unusual Event due to Hurricane Hugo, and an Alert due to loss of annunicators.

In response to Hurricane Hugo, the licensee was prompt in declaring the event and making offsite notifications. Communications from the Control Room and TSC to offsite authorities were done in accordance with the Emergency Communications procedure. On September 21, 1989, prior to Hugo's arrival, the licensee's TSC was activated for hurricane tracking, communications, damage control, and other actions as warranted. A continous open line of communication was established by the licensee with the NRC. On an hourly basis until event termination, updates were provided to offsite authorities (State, local, and Coast Guard).

During the loss of annunciators, the inspector observed notification from the Control Room and TSC. Continous manning of the Control Room Emergency Notification System (ENS) was established within 60 minutes of the Alert declaration. Once the TSC was activated, all communications responsibility were transferred to the TSC until the Alert condition was terminated. A follow-up message was transmitted to the offsite authorities following the event downgrade.

During both events, no problems were noted with the initial or follow-up notifications to offsite authorities. All notifications were done within the time limits specified in PEP-02.6.21.

One violation was identified.

5. Shift Staffing and Augmentation (82205)

Pursuant to 10 CFR 50.47(b)(2) and 10 CFR Part 50, Appendix E, Sections IV.A and IV.C, this area was inspected to determine whether 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 reviewed the Emergency Plan requirements for on-shift staffing, the Technical Specification minimum requirements for shift crew composition, the on-call organization for augmenting the on-shift organization, the associated call-in procedure, and the results of periodic augmentation drills.

The Brunswick Emergency Plan specifies that the minimum on-shift staff is that staff required by Technical Specifications. However, the minimum shift crew composition does not meet the staffing levels of NUREG-0737 Supplement 1 and Table B-1 of NUREG-0654. The minimum staffing discussed in the Technical Specifications address licensed Operator, Auxiliary Operators, Shift Technical Advisor, etc; the staffing requirements for Health Physics, Chemistry, Mechanical, etc. is not addressed. In addition, the station's call list (Appendix A to the PEPs or on-call staff listing) does not include maintenance, chemistry, and other personnel for augmenting the 30 and 60 minutes staffing described in NUREG-0654 or 0737. When records from periodic augmentation drills were reviewed, the results confirmed that Health Physics, Chemistry, and maintenance personnel were not called in to verify augmentation times. Section 3.0 of the Brunswick Emergency Plan states that compliance with the requirements of NUREG-0654 Table B-1 has been assured. Contrary to Section 3.0 of the Emergency Plan, based on the records review, compliance with Table B-1 of NUREG-0654 had not been demonstrated. The licensee committed to conducting an unannounced augmentation drill requiring that personnel travel to the site for verification of Table B-1 augmentation requirements. The inspector indicated that this matter would be considered an IFI.

IFI (50-325, 324/89-31-03): Conduct an unannounced drill to verify that Table B-1 of NUREG-0654 regarding augmentation staffing and arrival times can be met.

No violations or deviations were identified.

6. Training (82206)

Pursuant to 10 CFR 50.47(b)(2) and (15), Section IV.F of Appendix E to 10 CFR Part 50, and Section 6.1 of the Emergency Plan, this area was inspected to determine whether the licensee's key emergency response personnel and personnel involved in the initial stages of an incident were properly trained and understood their emergency responsibilities.

The inspector reviewed Section 6.1.1 of the Emergency Plan, PEP-04.3 (Performance of Training, Exercises, and Drills), and TI-306 (Emergency Plan Training) for a description of the training program and training procedures. In addition, selected lesson plans or training modules were reviewed, and personnel with the responsibility for conducting the emergency response training were interviewed. It was determined that the licensee maintains a formal emergency training program. According to a

discussion with a licensee representative, training modules can be completed through self-study and passing an exam. The exams, are formally scheduled, and proctored by an instructor following a self study and review period. The licensee's training program did not require practical training in assigned positions in the emergency response organization. This approach was noted as promoting the development of a few highly experienced responders for an on-call position while the remaining responders for the same position only gain experience as team members (see Paragraph 7 regarding dose projection walk-through). The inspector discussed conducting more hands-on or practical training for personnel in some of the accident assessment areas (eg. dose projection, radiological monitoring). The licensee did not commit to any action in this regard.

Training records were reviewed for several members of the emergency organization. Training records were chosen based on the on-call Management Roster for the period September 15, 1989 to September 21, 1989; the operations shift schedule for the week beginning September 16, 1989; and the list of responders in Revision 30 of PEP-Appendix A dated September 13, 1989. When personnel training records were compared with position assignments, the inspector noted the following:

- One individual designated as a Production Assistant with responsibility as a Control Room Communicator had not received Emergency Communicator or Emergency Plan Overview training as specified in TI-306 Attachment 1.

- Two individuals designated as Shift Operating Supervisors with responsibility as Interim Site Emergency Coordinator (SEC) training had expired. The annual Emergency Plan Overview training had not been attended by either individual. In addition, one of the individuals failed to complete the annual training on Module EP6C02B entitled Site Emergency Coordinator.

- Twelve individuals designated as Auxiliary or Radwaste operators had either expired training, or failed to attend any of the required training.

- Five of six individuals designated as Shift Technical Advisors had expired training on Module EP6C02B entitled Site Emergency Coordinator.

In addition to the above training discrepancies involving operations personnel, three individuals designated as Communicators on the augmentation staff and one individual designated as the Technical Assessment Director had not completed annual training on Module EP6C03B entitled TSC Operations.

Section 6.1.1 of the Brunswick Emergency Response Plan states that PEP-04.3 assures training of those individuals who may be called to respond to an emergency by providing initial training and annual refresher

training. This item is identified as a violation of Technical Specification 6.8.1.e.

Violation (50-325, 324/89-31-04): Failure to provide training to members of the emergency organization in accordance with PEP-04.3 and TI-306.

As evidenced by the number of individuals with expired training, a centralized administrative control system for tracking and ensuring that training is current for emergency response personnel did not exist. The licensee agreed that the current practices for tracking emergency response training warrants increased attention. The licensee committed to implementing an effective tracking system for emergency response training to ensure that personnel assigned to the emergency organization training is current and up-to-date during the period of assignment. The inspector identified this item as an IFI for review during a subsequent visit.

IFI (50-325, 324/89-31-05): Development and implementation of a centralized tracking system for emergency response training.

The inspector conducted walk-through evaluations with selected key members of the emergency organization (Control Room Staff and dose projection personnel). During these walk-throughs, individuals were given various hypothetical sets of emergency conditions and data involving Hurricane Hugo and asked to respond as if an emergency actually existed. The individuals demonstrated familiarity with emergency procedures and equipment, and no significant problems were observed in the areas of emergency detection and classification, notifications, dose calculation, assessment action (to include plant conditions), and protective action decision-making.

One violation was 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 manual and computerized dose projection procedures, and the basis document for the dose projection methodology to determine if adequate procedures exist for dose calculation under anticipated release conditions. No problems were noted.

An inspection and operability check were made of dose projection equipment and support items used for dose assessment in the Control Room and TSC. No problems were observed.

The inspector requested and observed dose assessment walk-throughs with one Shift Technical Advisor (STA) and three individuals designated as Dose Projection Team Leaders (DPTL). The STA walk-through involved the performance of initial dose projection from the Control Room, and the

three DPTLs were evaluated based on their ability to acquire meteorological data and perform dose projections from the TSC using the computerized and manual methods. The DPTLs using the manual dose projection procedure (PEP-03.4.3) were unable to provide dose projection results within 10 minutes of being provided effluent monitor readings. Additionally, the DPTLs were not accustomed to correlating dose assessment results with recommendations to the SEC for PARs or emergency classifications. Though qualified for the DPTL position by virtue of training, the interviewees were inexperienced in serving as the DPTL. All three interviewees had previously performed as dose projection team members during previous drills and were dependent on the direction of an experienced team leader. It was noted that the DPTL function is normally performed by a more senior person with experience in this position. Although the licensee's program appears to be adequate, as previously discussed in Paragraph 6, the licensee was informed that more practical hands-on training is needed to ensure personnel performance in assigned areas of responsibility is acceptable. This item was considered for improvement.

No violations or deviations were identified.

8. Licensee Audits (82210)

Pursuant to 10 CFR 50.47(b)(14) and 10 CFR 50.54(t), this area was inspected to determine whether the licensee had performed an independent review or audit of the emergency preparedness program and whether the licensee had a corrective action system for deficiencies and weaknesses identified during audits, drills, and exercises.

The inspector reviewed the licensee's procedure and check-list for conducting audits. Records for audits conducted in 1987, 1988, and 1989 were reviewed. In addition, the licensee's program for tracking and follow-up action on audit, drill, and exercise findings were reviewed. The licensee's audit program was also reviewed during a previous NRC inspection and discussed in Report Nos. 50-325, 324/89-04. Based on this review and the previous referenced report, this area of the licensee's program appears to be adequate.

No violations or deviations were identified.

9. Emergency Plan Implementation (93702)

During the period of the inspection, two events occurred which required Emergency Plan and PEPs implementation. On September 20, 1989, at 7:50 p.m., the licensee declared an Unusual Event in response to Hurricane Hugo; and on September 21, 1989, at 8:47 a.m., an Alert was declared based on the loss of annunciators on Unit 2. In both instances, the event was properly classified, and the appropriate actions were taken in accordance with procedures. No problems were noted with the timeliness of initial or follow-up notifications from the Control Room or TSC. A more detailed

description of events and equipment functions or malfunctions will be included in NRC Report Nos. 50-325, 324/89-26.

No violations or deviations were identified.

10. Exit Interview

The inspection scope and results were summarized on September 22, 1989, with those persons indicated in Paragraph 1. The inspector described the areas inspected and discussed in detail the inspection results listed below. The licensee did not identify as proprietary any of the material provided to or reviewed by the inspector during this inspection. In response to the IFIs detailed in Paragraphs 4, 5, and 6 of the report, the Plant General Manager made the following commitments:

- An acceptable follow-up notification form and the additional training regarding follow-up notification requirements will be completed by the end of Calendar Year 1989 (Paragraph 4).
- Unannounced augmentation drill will be conducted by March 1990, that would require augmentation personnel to respond to the plant site (Paragraph 5).
- An effective tracking system for emergency response training will be developed and implemented by the end of Calendar Year 1989 (Paragraph 6).

There were no dissenting comments regarding any of the inspection findings.

Item Number	Description/Reference
50-325, 324/89-31-01	IFI - Develop an acceptable follow-up notification form, and conduct additional training regarding the timeliness of the follow-up message (Paragraph 4).
50-325, 324/89-31-02	Violation - Failure to provide follow-up notifications to State/local agencies in accordance with PEP-02.6.21 (Paragraph 4).
50-325, 324/89-31-03	IFI - Conduct an unannounced augmentation drill to verify that Table B-1 of NUREG-0654 staffing and arrival times can be met (Paragraph 5).
50-325, 324/89-31-04	Violation - Failure to provide members of the emergency organization with training in accordance with PEP-04.3 and TI-306 (Paragraph 6).

50-325, 324/89-31-05	IFI - Develop and implement an effective tracking system for emergency response training (Paragraph 6).