



Carolina Power & Light Company

PO Box 10429
Southport NC 28461-0429

December 19, 1996

SERIAL: BSEP 96-00476
10 CFR 2.201

James Lieberman
Director, Office of Enforcement
U. S. Nuclear Regulatory Commission
One White Flint North
11555 Rockville Pike
Rockville, MD 20852-2738

William R. Campbell
Vice President
Brunswick Nuclear Plant

BRUNSWICK STEAM ELECTRIC PLANT, UNITS 1 AND 2
DOCKET NOS. 50-325 AND 50-324/LICENSE NOS. DPR-71 AND DPR-62
REPLY TO NOTICE OF VIOLATION

Gentlemen:

On November 19, 1996, the Nuclear Regulatory Commission (NRC) issued a Notice of Violation for the Brunswick Steam Electric Plant, Units 1 and 2. The basis for the violation is provided in NRC Inspection Report 50-325/96-14 and 50-324/96-14.

Carolina Power & Light Company admits the violations occurred as described in NRC Inspection Report 50-325/96-14 and 50-324/96-14. Enclosure 1 provides Carolina Power & Light Company's response to the violations in accordance with the provisions of 10 CFR 2.201.

Carolina Power & Light Company finds the inspection does not contain information of a proprietary nature. Please refer any questions regarding this submittal to Mr. M. A. Turkal at (910) 457-3066.

Sincerely,

William R. Campbell

JFM/jfm 070059

Enclosures

1. Reply to Notice of Violations
2. List of Commitments

9701070162 961219
PDR ADOCK 05000324
G PDR

DCS
PDR

1/1
Ica

Mr. James Lieberman,

cc: Mr. S. D. Ebnetter, Regional Administrator, Region II
Mr. D. C. Trimble, Jr., NRR Project Manager - Brunswick Units 1 and 2
Mr. C. A. Patterson, Brunswick NRC Senior Resident Inspector
The Honorable H. Wells, Chairman - North Carolina Utilities Commission
Document Control Desk, U.S. Nuclear Regulatory Commission

ENCLOSURE 1

BRUNSWICK STEAM ELECTRIC PLANT, UNITS 1 and 2
NRC DOCKET NOS. 50-325 & 50-324
OPERATING LICENSE NOS. DPR-71 & DPR-62
REPLY TO NOTICE OF VIOLATIONS

VIOLATIONS:

During an NRC inspection conducted between June 24, 1996 and September 17, 1996, two violations of NRC requirements were identified. In accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions," NUREG-1600, the NRC proposes to impose civil penalties pursuant to Section 234 of the Atomic Energy Act of 1954, as amended (Act), 42 U. S. C. 2282, and 10 CFR 2.205. The particular violations and associated civil penalties are set forth below:

Violation A:

10 CFR 50.49 (d) requires, in part, the licensee to prepare a list of electric equipment important to safety covered by 10 CFR 50.49 (b), and include information concerning performance specifications, electrical characteristics and environmental conditions for this electric equipment in a qualification file; and, keep the list and information in the file current and retain the file in auditable form for the entire period during which the covered item is installed in the plant or is stored for future use.

10 CFR 50.49 (f) requires, in part, that each item of electric equipment important to safety be qualified by testing of, or experience with, identical or similar equipment, and that such qualification shall include a supporting analysis to show that the equipment to be qualified is acceptable.

10 CFR 50.49 (j) requires, in part, a record of the qualification in auditable form to permit verification that each item is qualified and meets its specified performance requirements under predicted environmental conditions.

10 CFR 50.49 (k) states that electric equipment important to safety which was previously required to be qualified in accordance with NRC's "Guidelines for Evaluating Environmental Qualification of Class 1E Electrical Equipment in Operating Reactors." November 1979 (Division of Operating Reactors (DOR) Guidelines), need not be requalified to 10 CFR 50.49. However, DOR Guidelines require that the radiation service condition include the sum of the gamma and beta doses unless it can be shown by assuming a conservative unshielded surface beta dose of 2.0×10^8 RADS and considering shielding factors, that the beta dose to radiation sensitive equipment internals would be less than or equal to 10 percent of the total gamma dose to which an item of equipment has been qualified. The DOR Guidelines further require that qualification records be complete and auditable for qualification to be considered valid.

Contrary to the above, as of June 14, 1996, environmental qualification requirements were not met, as evidenced by the following examples:

1. The licensee failed to: (1) include the R.G. Laurence solenoid valves in the post-accident sampling system (PASS) and residual heat removal system of Units 1 and 2, identified by plant tag numbers 1(2)-RXS-SV-4180, 4181, 4193, 4194, and 1(2)-E11-SV-F079A, F079B, F080A, and F080B on the list of electric equipment important to safety required to be qualified under 10 CFR 50.49, (2) test or demonstrate that the subject Laurence solenoid valves were identical or similar to an appropriately tested configuration, and (3) document the qualification of the subject Laurence solenoid valves in the auditable form.
2. The licensee failed to: (1) include the Target Rock solenoid valves in the PASS of Units 1 and 2, identified by plant tag numbers 1(2)-RXS-SV-4182, 4183, 4184, 4185 and 4192, on the list of electric equipment important to safety required to be qualified under 10 CFR 50.49, (2) provide an analysis demonstrating that the subject Target Rock solenoid valves were acceptable, and (3) document the qualification of the subject Target Rock solenoid valves in the auditable form.
3. The licensee failed to: (1) include Target Rock open and close limit switches for PASS Valves 1(2)-RXS-SV-4182, 4183, 4184, and 4185, on the list of electric equipment important to safety required to be qualified under 10 CFR 50.49, (2) provide an analysis demonstrating that the subject Target Rock solenoid valves were acceptable, and (3) document the qualification of the subject Target Rock solenoid valves in the auditable form.
4. The licensee failed to maintain the Environmental Qualification (EQ) equipment list and EQ files current and in an auditable form, in that: (1) the EQ equipment list was not being maintained current as demonstrated by hundreds of items identified on the list as environmentally qualified without a reference to a qualification data package (QDP), the document utilized to establish environmental qualification; (2) several QDPs had been in revision for over two years; (3) several QDPs had never been issued; (4) Enertech/Herion solenoid valve 2-B32-SV-F019 was installed and declared operational without a QDP being issued and placed in the EQ File; (5) the QDPs did not include the latest Reactor Building environmental profiles which are required to establish predicted environmental conditions; (6) Hydrogen Water Chemistry modifications changed the radiation profiles and they had not been addressed in the EQ files; and (7) Beta radiation effects were not addressed in the EQ files.
5. The licensee failed to provide documentation in the auditable form to verify qualification of the safety-related Motor Control Centers 1(2)XA, 1(2)XB, 1(2)XC, 1(2)XD, 1(2)XE, 1(2)XF, 1(2)XH, 1(2)XM, 1(2)XA-2, 1(2)XB-2, 1(2)XDA, and 1(2)XDB which are located in the Reactor Building in that the heat transfer analysis included in the file to demonstrate qualification was not based on the most severe design basis accident conditions that had been postulated based on the licensee's Reactor Building Environmental Report, Revision 4.

6. The licensee failed to: (1) include the following equipment important to safety on the EQ equipment list required to be qualified to 10 CFR 50.49: 120/208 AC distribution panels such as but not limited to Panels 1(2)A-RX, 1(2)B-RX, 1(2)C-RX, 1(2)D-RX, and 1(2)AB-RX; Potentiometers 1-1XE-EBO-POT, 1-1XF-EE2-POT, 2-2XE-EBO-POT, 2-2XF-EE2-POT; various types of fuses identified as FRN-R, RNA, NOS, RES, NON, and SC; and Thread Sealants; (2) test or demonstrate that the equipment listed in (1) above, was similar to a tested configuration; and (3) document qualification of the equipment listed in (1) above, in an auditable form.
7. The licensee failed to maintain the EQ equipment list current by deleting the 300 EQ components listed in CP&L Great Idea numbers NED-326 and NED-327 without adequate justification and management review. Specifically, subsequent review of these EQ data changes in 1995 and 1996 disclosed that more than 50 of the 300 components had been downgraded, i.e., removed from the licensee's EQ Program incorrectly. (01013)

This is a Severity Level III violation (Supplement I).
Civil Penalty - \$50,000.

RESPONSE TO VIOLATION A:

Admission or Denial of Violation:

Carolina Power & Light admits this violation.

Reason for Violation:

By late 1995, Brunswick Engineering recognized a trend in discrepancies related to EQ documentation and accuracy of the EQ master equipment list. Increased management assessment of the EQ Program discrepancies confirmed that a programmatic problem existed. On April 12, 1996, Brunswick Engineering initiated a Condition Report (CR 96-01277) to document this concern. A root cause investigation was initiated to determine the cause of the program discrepancies. Additionally, an EQ Program self assessment (96-00271) was initiated to identify any EQ Program weaknesses.

Investigation into the cause of the EQ Program discrepancies determined that; 1) personnel responsible for control of the Brunswick Nuclear Plant (BNP) EQ Program failed to implement the program effectively, and failed to take appropriate action to resolve known deficiencies and 2) management oversight of the BNP EQ Program was inadequate and did not identify the deficiencies in the implementation of the program.

Corrective Actions Which Have Been Taken and Results Achieved:

A Short Term Corrective Action Plan was developed to identify the scope and significance of the EQ issues. The goal of the short term plan was to establish the appropriate EQ design base requirements. This provided the basis for ensuring that the electrical equipment at BNP which is required to be environmentally qualified will perform its intended function, and provided the basis for properly reconstructing the program. The following actions have been completed.

Actions were taken to increase skill sets of EQ engineers, ensure technology transfer and provide a heightened awareness, worldwide, of EQ related issues. This was accomplished by establishing a dedicated team of CP&L personnel augmented with contract EQ experts and led by a program manager to implement the EQ Program Short Term Corrective Action Plan. Additionally, near-term EQ training for appropriate engineering personnel including engineering supervisors and selected maintenance personnel was implemented.

In order to establish a sound foundation for reconstructing the EQ Program, a new EQ master equipment list was independently developed. This was then further validated by comparison to the existing equipment list. This action was necessary in order to ensure the electrical equipment required to be environmentally qualified was documented and understood. In order to ensure that the equipment identified above is capable of performing its safety function, and that no unreviewed safety questions exist, the environmental design conditions for each plant area and event were re-evaluated and corrected as necessary. These established and documented environmental conditions were reviewed to ensure that they were enveloped by the existing qualification testing. Revisions to site documents such as the Updated Final Safety Analysis Report and Reactor Building Environmental Report have been initiated to document changes as described. Justification for Continued Operation (JCO) evaluations were completed as required for equipment whose qualification documentation did not use environmental conditions which bounded the newly reconstructed environmental conditions, or for which no qualification documentation existed.

Independent assessments were initiated and performed to provide continued program improvement through self identification and prompt resolution of program weaknesses. These assessments include; 1) a Maintenance assessment of the EQ Maintenance Program assisted by the Nuclear Assessment Section (NAS), 2) a NAS assessment of EQ JCO evaluations, and 3) an assessment of the EQ Program Corrective Action Plan conducted by the Chief Engineering Section. Results from the assessments have been incorporated into the EQ Program Corrective Action Plan.

This Short Term Corrective Action Plan has been successful in identifying the scope and significance of EQ issues which must be corrected. Many discrepancies have been evaluated and captured through the Corrective Action Program and resolutions have been implemented. To date it has been determined that the issues are primarily documentation related with no impact on equipment operability. Except in the cases described in the JCOs referenced above, the equipment qualification documentation packages (QDPs) demonstrate the equipment had been tested to environmental profiles which envelope the actual environmental conditions for which

they will be exposed.

Corrective Steps Which Will Be Taken to Avoid Further Violations:

A Long Term Corrective Action Plan has been developed and is being implemented. The goal of the Long Term Corrective Action Plan is to implement actions which will establish comprehensive program procedures and develop upgraded QDPs which will provide the auditable documented evidence which validates program compliance. Upon completion of the Long Term Corrective Action Plan, the BNP EQ Program will fully meet the requirements set forth in 10 CFR 50.49. The plan includes the following actions.

All QDPs will be updated to ensure accuracy, and formatted to support future equipment maintenance activities. This QDP upgrade process will include walkdowns of installed EQ equipment to verify that the as-installed configuration of the equipment is consistent with the qualification documentation. Discrepancies identified as a result of these walkdowns will be assessed for operability and resolutions will be implemented.

Development of improved EQ Program procedures and revisions to the EQ Design Basis Document will ensure that the proper guidance is in place to support program implementation. Procurement specifications will be reviewed to ensure that a sound basis exists for maintaining configuration control of the installed equipment. Development and implementation of long-term training needs will support maintenance of the knowledge base required to ensure continued improvement of the EQ Program at BNP.

Resolution of remaining CR action items will ensure closure of outstanding issues. This will be the final step in the reconstruction of the BNP EQ Program.

Ownership and self critical assessment is necessary to maintain and build the EQ Program to the highest standards. EQ Program ownership will be clearly identified in program procedures. Specific expectations and accountability for maintaining the EQ Program in compliance will be established for the owner(s).

To ensure that program oversight deficiencies, as evident by the EQ Program, do not exist or surface in other site technical programs, the following initiatives are being implemented by BESS:

Identification of BNP engineering technical programs and program owners

Establishment and clear communication of management expectations with regard to performance standards for each technical program engineer/owner

Incorporation of a series of self-assessments into the 1997 BESS Self-Assessment Plan which are targeted at evaluation of significant engineering programs

Date When Full Compliance Will Be Achieved:

Carolina Power & Light believes that all electrical equipment that falls under the scope of 10 CFR 50.49 will function in the environments in which they are located. Updates to the qualification documentation packages will be completed by December 31, 1997. Field validation of component configuration and resolution of any identified discrepancies will be completed by July 31, 1998, following the next Unit 1 refueling outage.

Violation B:

10 CFR 50, Appendix B, Criterion XVI, requires that measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances are promptly identified and corrected.

10 CFR 50, Appendix B, Criterion V, requires that activities affecting quality be prescribed by documented instructions or procedures, and shall be accomplished in accordance with these instructions or procedures.

Carolina Power & Light Company Plant Program Procedure PLP-4, Corrective Action Management, implements the requirements of 10 CFR 50, Appendix B, Criterion XVI, at the Brunswick Nuclear Plant.

Contrary to the above, as of the dates indicated, the licensee failed to assure that conditions adverse to quality were promptly identified and corrected and failed to follow Procedure PLP-4 as described in the examples below:

1. CP&L Procedure PLP-4, Revisions 4 through 17, dated December 26, 1990 through May 31, 1996, requires managers to assure that assigned corrective actions are implemented.
 - a. Corrective actions associated with Adverse Condition Report (ACR) 91-181 which was identified in April, 1991 regarding maintenance of the EQ program required by 10 CFR 50.49 were not implemented as of June 14, 1996.
 - b. Corrective actions identified on ACR number N93-0101 which was identified in August 1993 and subsequently reissued as ACR number 94-00980 in June 1994 regarding associated circuits were not implemented as of June 14, 1996.
2. Paragraph 6.0 of CP&L Procedure PLP-4, Revision 14, dated March 24, 1995, requires individuals identifying a condition to consult with their supervisors and initiate a Condition Report (CR). A condition is defined in paragraph 4.5 of PLP-4 as an adverse condition or a condition not meeting expectations.

Condition Reports (CRs) were not initiated to document and correct the following conditions not meeting expectations:

- a. The finding that EQ related QDPs had not been updated to account for the impact of hydrogen water chemistry increased radiation levels on EQ equipment, as documented in Engineering Service Request (ESR) 9400752, dated May 11, 1995.
 - b. The finding that QDPs potentially impacted by engineering changes may require revision, as documented in ESR 9400742, dated May 11, 1995.
 - c. The finding that procedures covering application of thread sealants for EQ equipment required revision and that unqualified thread sealants may have been used in EQ equipment applications, as documented in ESR 9400743, dated March 29, 1995.
3. Paragraphs 4.2 of CP&L Procedure PLP-4, Revision 15, dated June 7, 1995, requires managers and personnel to ensure CRs are initiated when they become aware of adverse conditions.

Managers in the Design Control Group in the Brunswick Engineering Site Support Organization did not ensure that CRs were initiated to document and correct numerous deficiencies in the Brunswick EQ program which were documented in an unpublished, undated document, titled EQ Self-Assessment, when it was discussed with them in November 1995 through January 1996. The individual who identified the conditions also failed to initiate a CR.

4. Paragraph 6.0 of CP&L Procedure PLP-4, Revisions 14 through 17, dated March 24, 1995 through May 31, 1996, requires managers to ensure that assigned corrective actions are effective and are implemented.

Corrective actions to resolve discrepancies in the EDBS safety classification for EQ equipment documented on CR 95-00513, dated February 22, 1995, were not effective and were not properly implemented as of June 14, 1996.

5. Paragraph 4.2 of CP&L Procedure PLP-4, Revisions 17 and 18, dated May 13, 1996 and August 7, 1996, requires managers to assure CRs are initiated for adverse conditions and events.
- a. On August 22, 1996, the NRC identified that a CR had not been initiated to document the fact that Control Room personnel on duty at 3:00 P.M. on July 18, 1996 had not been informed regarding compensatory measures for potential failure of valves on the Post Accident Sampling System.
 - b. On August 6, 1996, the NRC identified that a CR had not been initiated to document that the Target Rock open and close limit switches for the PASS valves 1(2)RXS-SV-4182, 4183, 4184, and 4185 were not EQ qualified. (02013)

This is a Severity Level III violation (Supplement I).
Civil Penalty - \$100,000.

RESPONSE TO VIOLATION B:

Admission or Denial of Violation:

Carolina Power & Light admits this violation.

Reason for Violation:

During investigations initiated in conjunction with BNP CR 96-01277, referenced in the reason for Violation A, it was discovered that many of the BNP EQ Program inconsistencies being identified had been previously recognized by BNP EQ Program personnel. Many of these issues were identified in accordance with CP&L Corrective Action and Self-Assessment Programs. Actions to resolve these problems were either closed prior to fully resolving the issue or not tracked adequately through the Corrective Action Program to ensure the issue was dealt with adequately and in a timely manner. Consequently, the problems remained uncorrected.

Failure to implement effective corrective actions to resolve known deficiencies associated with the BNP EQ Program, resulted from causes similar to those described as the reason for Violation A in that; 1) personnel failed to take timely action to document and resolve known deficiencies and 2) management's lack of intrusiveness failed to recognize the extent of the deficiencies and the ineffectiveness of the actions which were taken. Ineffective issue tracking due to weaknesses in the Corrective Action and Self-Assessment processes allowed the deficient conditions to persist.

Corrective Actions Which Have Been Taken and Results Achieved:

During the past several years BNP has continued to strive to improve its Corrective Action Program. Actions taken during 1995 and continuing through 1996 have addressed the Corrective Action Program weaknesses evident in our response to the EQ Program deficiencies. These actions are described below.

In March of 1995, BNP implemented aggressive changes to the site Corrective Action Program. One of the major changes was the training of designated plant personnel in the performance of organizational and human performance root cause analysis. Additionally, Revision 14 of procedure OPLP-04 "Corrective Action Management" introduced program changes which were designed to; 1) lower the threshold for performing root cause analysis, 2) stress self identification of conditions, and 3) increase line management ownership of the program.

Revision 17 of OPLP-04 introduced the Event Review Team concept. Section 8.0 of the

procedure describes this concept which was established for investigating significant site events. This concept provides an integrated approach to incident investigation which is designed to quickly identify issues, determine causes of these events, and establish immediate corrective actions.

In May 1996, additional Corrective Action Program enhancement was initiated. This enhancement consisted of training for appropriate Engineering and Regulatory Affairs personnel, and Corrective Action Program subprogram coordinators to ensure they are sensitized to the level of intrusiveness required during reviews of action item closure. This includes validation that action item closure ensures full resolution of the problem, or follow-up action items are initiated for tracking resolution. This requirement was added to Revision 3 of OPLP-04.1, "Site Action Item Management", section 5.3 in May 1996. These expectations were further reinforced by site management in a series of memorandums issued in July of 1996. Additionally, Revision 18 of OPLP-04, which was issued in July 1996, deleted the ability to track corrective actions by any other means than the Corrective Action Program database.

A site assessment was performed at BNP in mid 1996 which also identified the need to improve the effectiveness of the site Corrective Action Program. This site initiative was developed to provide a self critical look at BNP organizational and programmatic activities. Based on the results of this assessment, several action plans were introduced to the site which were designed to improve Corrective Action and Self-Assessment effectiveness.

Additional actions were initiated as a result of the 1996 site assessment to improve the effectiveness of the Corrective Action Program. These actions, which were specified in Revision 19 of OPLP-04, include; 1) increased management involvement in program implementation as defined in section 4.2, and 2) a requirement to add a corrective action item to all root cause analysis which requires a follow-up effectiveness review of corrective actions implemented, as stated in paragraph 6.10.2.4.

A Self-Assessment Improvement Team was formed to develop and implement the site assessment action plan to improve self-assessment effectiveness. As a result, procedure OPLP-25 "Self-Assessment" was revised. New procedural requirements include; 1) a requirement to initiate CRs to track resolution of all findings as stated in paragraph 6.2.3.9, 2) increased management oversight which involves management review and approval of self-assessment outlines and completed reports is required as defined in paragraph 4.2.2, and 3) documented disposition of items for management consideration by managers is required as defined in paragraph 6.2.3.10. Lead Assessors and management have been trained on effective methods and management expectations with respect to development of self-assessment outlines, conducting self-assessments and reporting assessment results. Lead Assessors are required to be trained as stated in section 4.5 of OPLP-25.

Each of these programs (Corrective Action and Self-Assessments) procedurally enhance management involvement in program execution, including verification of the effectiveness of corrective actions.

Brunswick Engineering Support Section (BESS) management support of these programs is evident. During 3rd Quarter 1996 ESP Continuing Training, a session was provided which reinforced the reason for and the importance of maintaining an effective Corrective Action Program. Management continues to stress the importance of self critical assessments and effective dispositioning of problems. Weekly management meetings (Section Manager and Superintendents) are held to review completed root cause analyses and self-assessments with the responsible individuals to critique the reports and ensure corrective actions are appropriate.

Additional Corrective Steps Which Will Be Taken:

An assessment will be performed by the Nuclear Assessment Section in 1997 of the Corrective Action Program and Self-Assessment Program to evaluate the effectiveness of the improvements made.

Date When Full Compliance Will Be Achieved:

Carolina Power and Light believes that it is in full compliance with the requirements of 10 CFR 50, Appendix B.

Enclosure 2
List of Regulatory Commitments

The following table identifies those actions committed to by Carolina Power & Light Company in this document. Any other actions discussed in the submittal represent intended or planned actions by Carolina Power & Light Company. They are described to the NRC for the NRC's information and are not regulatory commitments. Please notify the Manager-Regulatory Affairs at the Brunswick Nuclear Plant of any questions regarding this document or any associated regulatory commitments.

Commitment	Committed date or outage
1. All QDPs will be reviewed and updated as necessary to ensure accuracy, and formatted to support future equipment maintenance activities.	12/31/97
2. Field validation of component configuration and resolution of any identified discrepancies will be completed following the next Unit 1 refueling outage.	07/31/98
3. Develop improved EQ Program procedures and revisions to the EQ design basis documents to ensure that the proper guidance is in place to support program implementation.	07/14/97
4. Procurement specifications will be reviewed to ensure that a sound basis exists for maintaining configuration control of the installed equipment.	12/31/97
5. Develop and implement long-term training to establish the knowledge base required to ensure development and continued improvement of the EQ Program at BNP.	11/30/97
6. EQ Program ownership will be clearly identified in program procedures. Specific expectations and accountability for maintaining the EQ Program in compliance will be established for the owner(s).	07/14/97
7. Identify engineering technical programs and program owners for BNP.	02/28/97

Commitment	Committed date or outage
8. Establish and provide clear communication of management expectations with regard to performance standards for each technical program engineer/owner	02/28/97
9. Incorporate a series of self-assessments into the 1997 BESS Self-Assessment Plan which are targeted at evaluation of significant engineering programs	02/28/97
10. An assessment will be performed by the Nuclear Assessment Section in 1997 of the Corrective Action Program and Self-Assessment Program to evaluate the effectiveness of the improvements made.	08/31/97