Carolina Power & Light Company

Brunswick Steam Electric Plant
P.O. Box 10429
Southport, North Carolina 28461

December 22, 1992

SERIAL: BSEP-92-0055

United States Nuclear Regulatory Commission
ATTENTION: Document Control Desk
Washington, DC 20555

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

Gentlemen:

On October 26, 1992, the Nuclear Regulatory Commission issued a Notice of Violation for the Brunswick Steam Electric Plant, Units 1 and 2. Details of the underlying NRC inspections are provided in Inspection Report Nos. 50-325/92-27 and 50-324/92-27 dated October 26, 1992. Carolina Power & Light Company originally responded to the Notice of Violation on November 25, 1992 . Enclosure 1 to this letter provides CP&L's resubmitted reply to the Notice of Violation, which supersedes in its entirety CP&L's letter dated November 25, 1992, (Serial; BSEP-92-0045) as discussed with Mr. S. D. Ebneter on December 10, 1992.

The Notice of Violations request for additional information on the coldside and hotside walkdowns, and managements actions related to appropriate documented instructions or procedures will be provided by January 22, 1993.

Please refer any questions regarding this submittal to Mr. S. D. Floyd at (919) 457-2404.

Yours very truly,

R. E. Morgan
Interim Site Manager, Brunswick Nuclear Plant

GMT/gmt

Enclosures

cc: Mr. S. D. Ebneter
Mr. R. H. Lo
Mr. R. L. Prevatte

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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 VIOLATION

VIOLATION:

During an NRC inspection conducted on September 14-18 and September 24-25, 1992, a violation of NRC requirements was identified. In accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions," 10 CFR Part 2, Appendix C, the violation is listed below:

10 CFR 50, Appendix B, Criterion V, requires that activities affecting quality be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings. Procedures and instructions were either not appropriate (adequate) or were not followed for inspection of structural steel in the drywell and for performance of structural steel design activities as described below.

1. Paragraph 11.2.3.1 of Bechtel Procedure WDP-002, Phase II Walkdown Procedure for Reactor Building Miscellaneous Steel and Drywell Platform Steel, requires Phase II inspection personnel to evaluate welds using criteria specified in Appendix A of the procedure. Appendix A requires that weld size and all weld attributes be verified by welding engineers.

   Contrary to this requirement, Phase II welding engineers classified welds at connections B1B and B4B on the elevation 17' -10 1/4" drywell platform, azimuth 99 deg. to 122 deg. incorrectly as partial penetration welds. The correct classification for these welds is fillet.

2. Paragraph 11.2.4.1 of procedure WDP-002 requires the Phase II walkdown personnel to compare the number of bolts in each connection with design information and record differences on Exhibit G in the walkdown documentation for each connection.

   Contrary to this requirement, Phase II walkdown personnel failed to identify and document on Exhibit G a missing bolt in connection B-5A on the elevation 17' -10 1/4" drywell platform, azimuth 99 deg. to 122 deg.

3. Appendix A to Procedure WDP-002 requires welding engineers to document all welding attributes on Exhibit A-1.

   Contrary to this requirement, the welding engineers failed to document that welds at connection numbers B3B and B8B at azimuth 270 deg. to 349 deg. and welds at connection numbers B4A and B3B at azimuth 90 deg. to 157 deg. on elevation 80 drywell platform were covered with slag, and that inspection of these welds for cracks, lack of fusion, and other irregularities had not been performed.

4. Bechtel Procedure EDP-4.27, Design Verification, and EDPI-4.37, Design Calculations, require design calculations be checked to verify the calculations are correct and accurate.

   Contrary to these requirements, the calculation checkers failed to identify an error in the weld length on page 16 of 47 in calculation number 2RB2-1113, and the failure to perform evaluation of the irregularity at connection number B7B in package 2-RB-D-E160-1 (P-S/2IR-22R) in calculation number 2RB2-1010.

5. The welding inspection instructions in procedure WDP-002 were not appropriate to accomplish visual inspections in accordance with referenced NCIG Visual Welding Acceptance Criteria (VWAC). The procedure permitted inspection of welds covered with excessive slag and acceptance of groove welds with five percent lack of fusion. VWAC requires removal of slag to perform visual inspections and permit 0 percent lack of fusion in groove welds.

This is a Severity Level IV violation (Supplement I).

RESPONSE TO VIOLATION:

Admission or Denial of Violation:

Carolina Power & Light Company admits this violation.

RESPONSE TO SPECIFIC VIOLATION ISSUES

Issue No. 1

Paragraph 11.2.3.1 of Bechtel Procedure WDP-002, Phase II Walkdown Procedure for Reactor Building Miscellaneous Steel and Drywell Platform Steel, requires Phase II inspection personnel to evaluate welds using criteria specified in Appendix A of the procedure. Appendix A requires that weld size and all weld attributes be verified by welding engineers.

Contrary to this requirement, Phase II welding engineers classified welds at connections B1B and B4B on elevation 17'-10¼" Drywell platform, Azimuth 99° to 122°, incorrectly as partial penetration welds. The correct classification for these welds is fillet.

A. Reason For Violation

Appendix A of WDP-002, which is based on EPRI Document NP-5380, Visual Weld Acceptance Criteria (VWAC), specifically interprets VWAC and provides requirements to be used at BSEP for inspection of existing, completed welds. However, VWAC and Appendix A did not specifically address criteria for inspection of partial penetration welds. However, Appendix A did allow classifying appropriate welds which could not be verified as "not obtainable (N/O)." Appendix A of WDP-002 provided two basic options to the welding engineers.

1) Identify the weld (using a reasonable best effort basis) and confirm the identification with the second welding engineer in the team; or

2) classify the weld as inaccessible for verification.

The welds in question were difficult to assess due to the tight constraints of the joint and were incorrectly judged to be partial penetration welds.

B. Corrective Actions, Steps Taken, and Result Achieved

To strengthen the ability of welding personnel to validate weld configurations and joint verification, Appendix A was revised to permit additional usage of chipping hammers and other common tools for additional partial paint or slag removal. Weld attributes, which cannot be visually confirmed will be classified and documented as "not obtainable (N/O)."

To assure that appropriate action was taken on the partial penetration weld population, additional reviews were conducted. A total of 117 connections which appeared to have partial penetration welds were identified in the Unit 2 Drywell. Of that population, 58 connections were of types that have or will be addressed without taking any credit for partial penetration welds. The remaining 59 joints will have the welds restored to their original equivalent capacity (generally with fillet welds), conservatively neglecting the unverifiable partial penetration (or other) welds. This action will be completed prior to start-up and when completed will positively and conservatively address the structural acceptability of the partial penetration weld issue.

C. Corrections to Avoid Further Violations

The revised WDP-002 Appendix A (Revision 3) was issued October 26, 1992 to more specifically address partial penetration groove welds and require verification of significant weld attributes. Welds that cannot be confirmed will be classified as "N/O" (not obtainable). Engineering will not use weld capacity of unverified partial penetration welds unless a fillet weld is added for load capacity. Evaluations for this condition will be based on the verified fillet weld capacity only.

D. Date of Full Compliance

Modifications of 55 partial penetration welds have been completed with the remaining 4 to be completed prior to start-up. WDP-002 was revised on October 26, 1992 with enhancements and agreements recommended in meetings with the NRC. Responsible personnel have been trained in the revised requirements and WDP-002 is now in compliance with NRC requirements.

Issue No. 2

Paragraph 11.2.4.1 of Procedure WDP-002 requires the Phase II walkdown personnel to compare the number of bolts in each connection with design information and record differences on Exhibit G in the walkdown documentation for each connection.

Contrary to this requirement, Phase II walkdown personnel failed to identify and document on Exhibit G a missing bolt in connection B-5A on the elevation 17'-10¼" Drywell platform, Azimuth 99° to 122°.

A. Reason For Violation

A walkdown inspection by the NRC of an in-process work package identified a tangential beam connection at Azimuth 99° at elevation 17'-10¼" (Drywell) with a bolt missing. This missing bolt had, at the time of the NRC walkdown, not been documented in the work package.

The walkdown process incorporates specific steps to match the data sheets and the photos and this process is formal, documented, and uses a flowchart and routing slip. These reviews, closely comparing the photos and data sheets, had not been completed on the subject package pending receipt of the developed photos.

B. Corrective Steps Taken and Results Achieved

Review of the package was completed using the photos and the existing defined process. The data sheet was modified to identify the missing bolt and the photographs were included in the package.

C. Corrective Steps to Avoid Further Violations

As added emphasis, additional instructions were provided verbally during group meetings of walkdown personnel reinforcing the process to reconfirm data sheets with the photos prior to sign-off.

The walkdown procedure was developed to provide multiple levels of checks and reviews to ensure accuracy of the data including walkdowns by two-person teams, reviews of packages including comparisons with and use of photographs by walkdown and engineering personnel, independent verifications, and audits and surveillances by Bechtel personnel. Due to the deficiencies identified by this violation, CP&L personnel are now involved in field surveillance and trending of verification data. The walkdown procedure process provides sufficient controls to minimize errors in the walkdown data and provides for continuous improvement through feedback, additional levels of training, and procedure revisions.

D. Date of Full Compliance

The program is now in compliance with NRC requirements.

Issue No. 3

Appendix A to Procedure WDP-002 requires welding engineers to document all welding attributes on Exhibit A-1.

Contrary to this requirement, the welding engineers failed to document that welds at connection numbers B3B and B8B at Azimuth 270° to 349° and welds at connection numbers B4A and B3B at Azimuth 90° to 157° on the elevation 80 Drywell platform were covered with slag, and that inspection of these welds for cracks, lack of fusion, and other irregularities had not been performed.

A. Reason For Violation

A weakness existed in not specifically requiring documention of the presence of excess slag and not identifying weld quality irregularities as "not obtainable (N/O)" due to the presence of excess slag.

B. Corrective Actions, Steps Taken, and Results Achieved

A review of the Drywell connection photographs has been completed and the walkdown packages are currently being revised to document the presence of slag and identify any weld quality irregularities which could not be verified as "not obtainable (N/O)."

C. Corrective Steps to Avoid Further Violations

Appendix A to WDP-002 has been revised to specifically require the documentation of the presence of excess slag (see issue No. 5).

D. Date of Full Compliance

The program is in compliance with NRC requirements.

Issue No. 4

Bechtel Procedure EDP-4.27, Design verification, and EDPI-4.37-01, Design Calculations, require design calculations be checked to verify the calculations are correct and accurate.

Contrary to these requirements, the calculation checkers failed to identify an error in the weld length on page 16 of 47 in calculation number 2RB2-1113, and the failure to perform evaluation of the irregularity at connection number B7B in package 2-RB-D-E160-1 (P-S/21R-22R) in calculation number 2RB2-1010.

Note: Calculation 2RB2-1113 (Reactor Building calculation number) is for the Drywell and subsequent to NRC review, the calculation number was revised to 2RIP-1017 to be consistent with the CP&L numbering system for Drywell calculations. The correct walkdown package number corresponding to calculation 2RB2-1010 is 2-RB-D-EL60-1 (P-S/21R-22R).

A. Reason For Violation

The two errors identified were among at least 22 calculation issues being addressed in the two documents. The specific details are as follows:

- The error associated with calculation 2RB2-1113 was a transposition of weld length, the actual condition (4" weld) is clearly stated on the calculation sheet. However, the welded member length (5" clip angle) was erroneously used in computing the weld properties. The calculation error upon correction indicates the connection capacity to be 50% above its loading.

- The error associated with calculation 2RB2-1010 was not specifically addressing the weld irregularity for the clip angle attachment to the web of the connecting beam (very similar weld configuration/loading to that of the clip angles to the embed plate which was addressed in the calculation). This calculation error upon correction indicates the connection capacity to be 260% above its loading.

These calculation errors clearly indicated weaknesses in the checking/design verification process.

B. Corrective Steps and Results Achieved

Both calculations have been corrected, design-verified, and signed by the Bechtel engineering supervisor. The corrected calculations confirmed that both have significant margins and did not change the acceptability of the identified irregularities.

The following process changes and additional steps have been instituted to ensure and enhance quality:

Irregularity evaluation calculations required for Unit 2 restart, which were originated and checked prior to October 2, 1992, were reviewed in-depth and data was collected to identify areas deserving attention and training sessions were held. CP&L personnel were involved to ensure that there is a clear understanding of what is expected in terms of format, preferences, and level of detail in providing justifications for conclusions reached (especially where engineering judgement is involved). Selected improvements in the work processes were incorporated to assess the quality of work in various in-process stages. In addition, weekly meetings on technical and procedural issues have been instituted to provide a vehicle to share contemporary technical issues and resolutions among the engineering evaluation team members.

C. Corrective Steps to Avoid Further Violations

The identified discrepancies have resulted in additional CP&L involvement in the verification of calculation accuracy. This includes a 100% checking process which will continue at this level until discrepancies are reduced below a level deemed acceptable by CP&L. If needed, a sample program will be developed to allow the checking process to be reduced below 100%. The additional CP&L checking process has shown a continuing increase in the quality of the calculations.

D. Date of Full Compliance

The program is in compliance with NRC requirements.

Issue No. 5

The welding inspection instructions in procedure WDP-002 were not appropriate to accomplish visual inspections in accordance with referenced NCIG Visual Welding Acceptance Criteria (VWAC). The procedure permitted inspection of welds covered with excessive slag and acceptance of groove welds with five percent lack of fusion. VWAC requires removal of slag to perform visual inspections and permit 0 percent lack of fusion in groove welds.

A. Reason For Violation

While many of the provisions of VWAC were adopted, selected deviations were made to minimize airborne contamination and exposure to personnel. The two exceptions to VWAC that were not properly documented were:

1) Acceptance of groove welds with up to 5% lack of fusion.

2) Inspection of welds without removal of slag.

B. Corrective Actions, Steps Taken, and Results Achieved

Discussions with the welding engineers confirmed that the provision for acceptance of up to 5% lack of fusion on groove welds had not been used prior to its removal in Revision 3.

Appendix A to WDP-002 was revised to permit selected discretionary slag or paint removal to strengthen the weld verification process. While this revision is not completely compatible with all VWAC requirements it provides a balanced approach which properly addresses the ALARA and contamination concerns. It clearly identifies and provides the basis for justification of the remaining exception to VWAC in Appendix C which includes the sampling plan.

C. Corrective Actions to Avoid Further Violations

Revision 3 of WDP-002 documents compliance with VWAC with one exception noted.

D. Date of Full Compliance

The program contents and procedures in place are now in compliance with the NRC requirements.