

# Carolina Power & Light Company

## Brunswick Nuclear Project

P.O. Box 10429  
Southport, North Carolina 28461

November 25, 1992

SERIAL: BSEP-92-0045

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

BRUNSWICK STEAM ELECTRIC PLANT, UNITS 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 hereby responds to the Notice of Violation. Enclosure 1 to this letter provides CP&L's reply to the Notice of Violation in accordance with the provisions of 10 CFR 2.201. Enclosure 2 provides CP&L's reply to the Inspection Report's request for additional information.

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 Project

GMT/gmt (lwp/ea92027)

Enclosures

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

9211300126 921125  
PDR ADOCK 05000324  
G PDR

IEO/  
11

bcc: Mr. M. D. Bradley (BNP)  
Mr. R. K. Buckles (LIS)  
Mr. S. H. Callis (BNP)  
Mr. M. S. Calvert (BNP)  
Mr. R. M. Coats  
Mr. S. D. Floyd (BNP)  
Mr. J. L. Harness  
Mr. E. M. Harris  
Mr. J. D. Heidt  
Mr. W. G. Hindman (2)  
Mr. E. E. Willett (BNP)  
Mr. A. M. Lucas

Mr. E. M. Norheim  
Mr. D. B. Waters  
Mr. H. A. Pollock  
Mr. R. B. Richey  
Mr. R. E. Morgan (BNP)  
Mr. J. M. Brown (BNP)  
Mr. R. S. Stancil  
Mr. R. B. Starkey, Jr.  
Mr. G. H. Warriner (BNP)  
Mr. P. A. Watson  
File: BC/A-4  
File: B-X-0544.1  
File: B-X-0544.2

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 B3E 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 34B on elevation 17'-10 1/4" Drywell platform, Azimuth 99° to 122°, incorrectly as partial penetration welds. The correct classification for these welds is fillet.

#### A. Response To Violation

Bechtel Procedure WDP-002 was specifically developed for conducting Phase II walkdown activities for the Miscellaneous Steel Verification Program (MSVP) at the Brunswick Steam Electric Plant (BSEP). This walkdown procedure, of which Revision 2 was in effect at the time of the NRC inspection, provides appropriate technical and quality assurance program requirements for the walkdown activities.

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 do not specifically address criteria for inspection of partial penetration welds. In addition, neither discusses joint preparation verification which is an in-process inspection item. However, Appendix A does allow classifying appropriate welds which cannot be verified as "not obtainable (N/O)." Appendix A of WDP-002 provides 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. This additional check (second welding engineer) is in excess of VWAC requirements, or
- 2) classify the weld as inaccessible for verification.

The welds in question are difficult to assess due to the tight constraints of the joint. Special measures, including paint removal, were required to confirm that two of the six partial penetration welds questioned by the NRC during the site visit were essentially fillet welds contrary to the original interpretation by the welding engineers. The welds, having no other visible irregularity, were judged to be partial penetration welds consistent with the design information, and not fillet welds. Consideration should be given to the degree of difficulty involved in the verification. In addition, both partial penetration welds (with caps) and fillet welds have similar external attributes.

We believe the procedure was appropriate for anticipated conditions and reasonable efforts were exercised in interpreting and evaluating the in-place welds under difficult conditions.

This process provides high confidence that the judgement applied provides appropriate verification.

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. This process adds selective flexibility to the welding inspection process; however, some constraints exist for ALARA considerations and minimization of airborne contamination. Weld attributes, which cannot be confirmed, continue to be classified as inaccessible.

To assure that appropriate action was taken on the partial penetration weld population, additional reviews were conducted. A total of 107 connections which appeared to have partial penetration welds were identified in the Unit 2 Drywell. Of this population, 52 connections are of types that have been addressed, or will be addressed without taking any credit for partial penetration welds. For the remaining 55 joints, a reinspection program was conducted to assess joint preparation to confirm the partial penetration weld quality. Consistent with the expected difficulty of this inspection, none of the welds could be totally verified. Some appeared to be partial penetration, some appeared to have a level of reinforcing fillet, and others could not be classified beyond the visible fillet welds.

As a conservative action, CP&L determined that a restoration of the welds to their original equivalent capacity (generally with fillet welds), conservatively neglecting the unverifiable partial penetration (or other) welds, would be completed prior to start-up to close the issue. This action, 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 specifically require verification of significant weld attributes, and specific resolution where engineering evaluations require validation of structural integrity. Welds that cannot be confirmed will continue to 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

Modification sketches for partial penetration welds have been issued and reinforcing welds have been completed to conservatively ensure the original design requirements. WDP-002 was revised on September 8, 1992 and 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 in compliance with NRC requirements.



## Issue No. 2

Paragraph 11.2.4.1 of Procedure WDF-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° to 122°.

### A. Response To Violation Issue

A walkdown inspection by the NRC of an in-process work package identified a tangential beam connection at Azimuth 99° at elevation 17'-10 1/4" (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. The photos were received on the day of the NRC walkdown, the missing bolt was noted, and the data sheet was revised accordingly.

It should be recognized that the subject package was selected for the NRC walkdown inspection to minimize the need for HP coverage and grating removal, even though it was an in-process package.

### 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.

Package reviews have been completed and the package has been issued for analysis. No program changes were deemed necessary since the package was in-process and the documentation process used by the program made and documented the technical corrections. This process readily identifies isolated discrepancies with high confidence levels. The package identified was completed in the normal review and documentation cycle and issued for use.

### 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.

Since the walkdowns require collection of an extensive amount of data, many times in unfavorable conditions, the walkdown procedure was developed to provide multiple levels of checks and reviews to ensure accuracy of the data. This includes 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 both CP&L and Bechtel personnel. Thus, 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 in compliance with these NRC requirements.



### Figure N2.3

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

In response to this requirement, the welding engineers failed to document that welds at connection numbers B4A and B8B at Azimuth 270° to 349° and welds at connection numbers B4A and B3B at Azimuth 0° to 157° on the elevation 80 Drywell platform were covered with slag, and that these welds for cracks, lack of fusion, and other irregularities had not been inspected.

#### Response To Violation

Phase II Walkdown Procedure WDP-002 was specifically developed for conducting Phase II walkdowns for the Miscellaneous Steel Verification Program (MSVP) at BSEP. It has been the practice of the project team to share draft versions of this procedure with NRC representatives during the course of this project. This process is consistent with CP&L's commitment to permit adjustments to the program to meet changing requirements as the work progressed. This approach, outlined in the July 27, 1992 submittal (Serial NLS-92-203), commits to continued strengthening of the program when experience is obtained which offers opportunity for improvement. The proposed enhancements to WDP-002, including Appendix A, should be viewed in this context.

Appendix A was developed on the guidelines of VWAC and identified the weld verification criteria to be used for WDP-002. During the course of program development, with special concern for CLARA and airborne contamination on a large scale, the engineering team and technical specialists established a verification process using the best determination possible without significant removal of coatings or slag. While both objectives are important, they work against each other and a balanced approach was selected. For these reasons, slag removal was not identified as a requirement in Appendix A and the strict adoption of VWAC was not considered appropriate for this application. Large amounts of surface slag were not anticipated in the plant during the development of the acceptance criteria.

The program as defined balances several important program objectives and the presence of slag in this application has not been a major detriment in overall assessment of weld quality. At elevations 38'-5" and 17'-10", slag has been confirmed to be a non-issue on heavily loaded connections. At elevation 80'-0", slag is evident in greater amounts; however, these platforms are minor and lightly loaded. The issue of inspecting welds with surface slag present was presented to Technical Advisory Committee (TAC) in their August 27-28, 1992 meeting. It was suggested that technical reasons be assembled to provide a basis for acceptability. The technical reasoning was assembled and became a part of Appendix B to WDP-002 issued in Revision 2 on September 8, 1992. The inspecting of welds with slag was presented again to TAC in the September 17, 1992 meeting (after the NRC mentioned it as an issue) and in the November 13, 1992, meeting TAC concurred that the results of the slag inspection program provide an adequate basis for concluding that surface slag has not been a major factor in inhibiting sound weld verification in this application.

#### B. Corrective Actions, Steps Taken, and Results Achieved

Several walkdowns by Bechtel welding specialists confirm that generally, at connections where slag has been removed, welds are of good quality.

However, recognizing the continued goal to enhance the program, WDP-002 and Appendix A were revised on September 8, 1992 to include selected discretionary slag or paint removal to strengthen validation of weld inspection. This additional flexibility offered the welding inspector does not connote extensive slag removal that would be detrimental to ALARA and increase airborne contamination.

C. Corrective Steps to Avoid Further Violations

The enhancement to Appendix A of the walkdown procedure specifically allows the removal of paint and/or slag as judged necessary by the weld evaluator to confirm weld quality. As part of the procedure revision process, welding engineers performing the inspections have been retrained to the enhanced provisions allowing them to remove slag, as required, to complete the inspection.

A sampling and reverification program has been implemented to justify inspection of welds with more slag remaining in place than is permitted by VWAC, and to demonstrate that the presence of slag does not adversely affect the weld evaluations. This program is discussed in Issue 5.

D. Date of Full Compliance

The program is in compliance with these NRC requirements and is to be validated by the slag sampling program discussed in Issue 5.

#### 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-EL60-1 (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. Response To Violation Issue

During an NRC site visit to walk down structural steel welding and review the procedures for welding-related issues, an NRC inspector requested a separate meeting to review the process used for the disposition of welding irregularities, including weld derating, and methodology.

The meeting was held and Bechtel described the interfacing processes between walkdown data collection, welding inspection, document control, and processing through the evaluation group. In the course of these discussions, the NRC inspector requested a listing of calculations and their status. Bechtel clearly indicated that all evaluation work was in-process, that some of the work had been checked, but none had been design-verified or reviewed by the evaluation supervisor. None of the packages had been released to CP&L for an Owner's Review. The NRC inspector asked if he could review some of the in-process calculations.

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 in 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.

In summary, while the errors identified are acknowledged, the calculations were in-process. The overall assessment of quality, completeness, and compliance to the procedures had not been performed. Correction of these errors has not changed the acceptability of the irregularities.

B. Corrective Steps and Results Achieved

Both calculations have been revised, design-verified, and signed by the Bechtel engineering supervisor. Both have significant margins and are acceptable in their final form.

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 obtained to establish the overall quality of the calculations. Pareto charts were developed to identify areas deserving attention and training sessions held on those areas where enhancements could be realized. 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.

The calculations are proceeding with the Bechtel Engineering Supervisor's review, design verification, and administrative review. Additional reviews are being performed by the Bechtel Chief Civil/Structural Engineer's office, and CP&L on an ongoing basis to further ensure a consistent and high quality product is being provided.

When project calculation quality issues were raised by the NRC and CP&L, an assessment was performed with the goal of developing a specific calculation quality improvement plan. A number of factors were identified which adversely affected quality. These can be grouped into two fundamental causes that, taken together, identified the corrective actions that were subsequently taken.

- Evolving project technical approaches and methodologies - Technical problems were identified as work progressed that required expert judgement and guidance to the conditions being evaluated for Brunswick. As a consequence, initial calculations were started without sufficiently detailed guidance and clear definition or expectations.
- Rapid manpower buildup for a demanding schedule - Staffing of engineers progressed at a rate that (1) out-paced physical resources resulting in a difficult working environment and (2) created a less-than-ideal supervisory span of control.

In order to validate these original causes and identify any further specific causes, collection of data on calculation errors or discrepancies has been initiated. The discrepancies are being categorized to allow rapid identification of trends to address in a continuing improvement plan.

The first set of evaluation calculations was formally issued by Bechtel to CP&L in November 1992. The finalized calculations are in compliance with applicable project procedures.

C. Corrective Steps to Avoid Further Violations

With the continued application of the project review process prior to issuance of calculations (checker, Engineering Supervisor's review, design verification, and administrative review), gathering data and evaluating it in relation to quality issues, providing training as required, and use of the Bechtel Chief Engineer's reviews and CP&L owner's reviews as deemed appropriate, discrepancies will be minimized.

D. Date of Full Compliance

The Miscellaneous Steel Verification Project (MSVP) including the engineering evaluation process is in compliance with these 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. Response To Violation Issue

The proposed violation issue presumably is based on the assumption that NCIG VWAC criteria was the referenced criteria and basis for weld inspection in WDP-002. While many of the provisions of VWAC were accepted, selected deviations were adopted to meet the specific conditions to minimize airborne contamination and exposure to personnel. Two contributions form the basis of the above violation issue:

- 1) Acceptance of groove welds with up to 5% lack of fusion.
- 2) Complete removal of slag.

The allowance of 5% lack of fusion for groove welds was introduced in Revision 2 of the procedure and has since been removed by Revision 3. As discussed with NRC representatives, this provision was never used and does not impact the data collected, nor the evaluation of any welds. Partial penetration groove welds have been upgraded or reconfirmed as described in Issue No. 1 as a conservative action to improve quality by CP&L.

Regarding the second contributor, the issue of appropriate levels of slag removal has received extensive review by the project team, Bechtel and CP&L staff technical specialists, Bechtel and CP&L staff welding specialists, the Technical Advisory Committee (TAC) (with NRC participation), and significant on-site discussions with NRC representatives. The selective chipping as determined by the welding inspector, while mitigating the need for extensive paint and slag removal, has been clearly outlined in the program. In addition, this approach meets the program objectives, and the slag removal exception to strict VWAC adoption is important and valid.

### B. Corrective Actions, Steps Taken, and Results Achieved

Enhancement of WDP-002 has continued as a result of ongoing walkdown experience, technical interfaces, interfaces with the TAC, and interaction with the NRC. As indicated in CP&L's response to Issue 3, Item B, Appendix A 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 address the ALARA and contamination concerns. WDP-002 revision 3 also added Appendix C which more clearly described the specific guideline to be used for evaluation and disposition of welding irregularities.



### C. Corrective Actions to Avoid Further Violations

The enhancements made in revision 3 of WDP-002 should eliminate future problems. The procedure neither accepts a lack of fusion for partial penetration groove welds, nor is the constrained removal of paint and slag a significant issue impacting verification of the welding evaluations.

To validate the effectiveness of the program evaluation quality and address NRC concerns, a selective sampling and reverification program was established with the addition of Appendix C. The sampling program was intended to confirm the in-place welding verification process reflected through the procedure by assessing its potential impact on some of the most heavily loaded members. This also confirms whether the process in any way compromises the accurate weld verification on some of the most important members.

The VWAC sampling program was used as a guide to select 64 welds for slag removal and further evaluation. For additional conservatism and, as discussed with NRC personnel, the sample selection was based on the most heavily loaded connections using analysis data from the platform sampling portion of the program. While the specific purpose of the sample was to verify whether the assessment process was valid, the secondary purpose was to provide a high level of confidence in the program that the weld evaluation process, for the most important welds, is not compromised by the presence of surface slag.

The validation process for the sample welds was as follows:

- 1) The 64 most highly loaded welds were identified and ranked by load magnitude from the sample drywell analysis computer output.
- 2) The weld locations were identified. At Elevation 17'-10", 24 were located; and at Elevation 38'-5", 40 were located. As a back-up, the next 38 most highly loaded welds were included in the population.
- 3) At Elevation 17'-10", a reinspection of the sample welds identified that no slag was present. Since several welds had been brushed clean in preparation for other work, the original photographs were re-reviewed to identify the presence of slag. No slag was identified. The conclusions reached was that no slag was evident on the 24 most heavily loaded welds at Elevation 17'-10".
- 4) At Elevation 38'-5", a reinspection of the 40 remaining welds indicated no slag was present.
- 5) To provide additional evaluation data, the 38 next most highly loaded welds (the ones selected as back-ups) were reviewed using photographs. This additional assessment concluded that no slag was evident on the additional 38 welds.

The validation process concluded that the conservative sample taken of most heavily loaded welds, from the platform sampling program, indicated that no slag is evident. While the VWAC sample program could not be confirmed due to the limited amount of slag, the process verified that the presence of limited slag is not a deterrent to the MSVP weld verification process and the determination of weld quality is not compromised. The most

highly loaded 102 samples have no evidence of slag. A general overview of the balance of the packages at Elevation 17'-10" and 38'-5" showed that approximately 4% of the welds had slag indications, but this amount is not considered significant.

Documentation of the selective sampling and reverification program is to be included in the "MSVP Report For Restart."

D. Date of Full Compliance

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

## ENCLOSURE 2

### BRUNSWICK STEAM ELECTRIC PLANT, UNITS 1 AND 2 NRC DOCKET NOS. 50-325 & 50-324 OPERATING LICENSE NOS. DPR-71 & DPR-62 REPLY TO THE REQUEST FOR ADDITIONAL INFORMATION

#### I. COLDSIDE AND HOTSIDE WALKDOWNS

On April 21, 1992 both units were taken off line in response to issues dealing with the seismic qualification of the Diesel Generator Building walls.

It was determined at that time that a general walkdown of the Unit 2 areas, which were normally inaccessible during operation, would be conducted to assess the material condition (this was not intended to be a design verification walkdown). These series of walkdowns were referred to as the "Hotside" walkdowns. At this time, Unit 2 was scheduled for a 6/15/92 startup and Unit 1 for 5/25/92 and walkdowns were initially limited to Unit 2.

Guidance from existing procedure AI-96 "Drywell Inspections", input from the Nuclear Engineering Department (NED) Lead Civil Engineer, and a Turkey Point procedure/checklist were used by Technical Support management to develop a briefing package for the walkdowns. Personnel from Technical Support Training and NED were selected to function as inspection teams in the performance of the walkdowns. At the time of the initial Unit 2 walkdown briefing (4/27/92), startup was anticipated as 7 weeks away and plant senior management set an expectation that these walkdowns should capture about 80% of the existing material condition discrepancies.

During the Unit 2 walkdowns, the Unit 1 startup date was rescheduled to 9/1/92, and therefore "Hotside" walkdowns were initiated on Unit 1, with a briefing held on 5/8/92.

Prior to each walkdown, the areas were divided into "Zones" and personnel from Technical Support training or NED were assigned. The inspectors were responsible for collecting the walkdown data and providing this data to a data coordinator designated by the Manager assigned to perform the walkdowns. Trouble tags were used to mark discrepancies found in the field. Where needed, pictures of the discrepancies were taken to supplement the data sheet describing the discrepancies. The data sheets were forwarded to the Maintenance planners for the development and planning of Work Requests/Job Orders (WR/JOs).

The number of discrepancies noted during the "Hotside" walkdown led to a decision to perform a "Coldside" walkdown. In addition, Technical Support conducted a walkdown of the Diesel Generator Building. The data from the "Coldside" walkdowns was gathered by the Zone Leaders and entered into various databases. The databases were merged for convenience into a single database.

The current project manager tasked with the walkdowns has been required to track the discrepancies noted during the walkdowns from "cradle to grave". This information has been uploaded to the database called the IBIR (Integrated Backlog Item Report). The walkdown data is ranked by the System Engineer upon his review of the IBIR per the methodology described in CP&L's July 23, 1992 letter to Mr. Ebner (NLS-92-160). The ranking process is still ongoing. In parallel to this, WR/JO's and Site Memoranda have been initiated to address the walkdown discrepancies. Of the over 2400 items identified during the walkdowns, 19 were inadequately identified, such that the discrepancies could not be relocated. Future walkdowns per "Special Plant Walkdown Procedure" (OSP-92-076) are planned and will include the areas containing these unidentified discrepancies.

An NRC follow-up inspection was performed, at which time an area that had been included in the "Hotside" walkdown was revisited. Additional discrepancies were discovered by the NRC inspector that were previously undocumented. The NRC further expressed concern that neither the drywell or torus had been included in the walkdown. Subsequently, additional walkdowns were performed to assess operability concerns found on one unit against the opposite unit and to capture the drywell and torus. Note however, that the drywell would have been walked down prior to startup per AI-96 and inspections per OPT-20.5.1 will cover the torus on its regularly scheduled basis.

#### RESPONSE TO FOUR SPECIFIC ITEMS:

The following is a summary of the 4 specific NRC concerns addressed in IER 92-27 associated with the walkdown inspection program and the associated actions BNP has taken or plans to take to address these concerns. The intent of these actions is to improve the overall quality of the hotside/coldside inspection process.

**ITEM 1** Hotside/coldside inspections were performed without detailed written procedural guidance.

#### RESPONSE:

Although a formal procedure was not used in performance of the original walkdowns, guidance from existing procedure AI-96 "Drywell Inspections," input from the NED Civil Load Engineer, and a Turkey Point procedure/checklist were used by Technical Support management to develop a briefing package for the walkdowns. This method was used in lieu of a procedure, because at the time, startup was scheduled for approximately 7 weeks from the 4/21/92 shutdown. Training in the form of a prejob briefing was conducted with the walkdown team members, prior to starting the walkdowns. These briefings were conducted on 4/27/92 (Unit 2) and 5/8/92 (Unit 1) by Technical Support management. The Plant General Manager, and the Manager of OM&M provided management goals and expectations during the Unit 2 briefing.

Subsequent to the original series of walkdowns, procedure OSP-92-076 was approved on 10/19/92 for the performance of additional plant walkdowns as deemed necessary. This procedure incorporates the recommendations of the INPO Good Practice for Plant Inspection Programs. Additional walkdowns are being scheduled which will be performed per the requirements of this procedure.

- ITEM 2** Failure to perform walkdowns of the drywell, torus, and portions of the control room. Other safety-related areas may not have been inspected, but the inspectors could not determine which ones, if any, without further review.

**RESPONSE:**

The drywell was not included in the original scope of the hotside walkdowns as a general walkdown of the drywell is required prior to startup per procedure AI-96. Additionally, drywell structural concerns were omitted from the original scope of this effort since a civil/structural walkdown, performed by Bechtel, was planned for the drywell. It was decided that these inspections would identify the major deficiencies and the radiological dose that would be incurred to identify the remaining minor deficiencies was not warranted.

Additional walkdowns are being scheduled which will include the areas identified above as well as repeating portions of the original walkdown scope as appropriate. The expansion of the hotside/coldside walkdowns is to include the torus and control room.

- ITEM 3** Use of inspection personnel with varying qualifications and experience levels to perform the walkdowns. The level of experience and expertise varied significantly from one inspection team to another, which affected the results of the walkdowns.

**RESPONSE:**

Personnel used for the hotside/coldside walkdowns were selected based their knowledge of the plant and experience. Although personnel came from various plant organizations, previous plant field experience was a prerequisite.

Procedure OSP-92-076, now requires that walkdowns be performed by a multi-disciplinary team of inspectors. The walkdown inspection teams are to be comprised of, as a minimum, three members (1 Electrical/I&C, 1 Mechanical, 1 Civil/Structural). Additionally, this procedure requires that these personnel have the appropriate skills and knowledge in their discipline (Mechanics, I&C Technicians, Engineering Technicians, Engineers, Quality Control, Maintenance Planners).



ITEM 4 The extent of the inspection effort and the attention to detail varied significantly from one inspection team to another. Interviews with several walkdown team members disclosed significant differences in the time spent performing the walkdowns and the inspection methodology they employed during the walkdowns.

**RESPONSE:**

As identified above, multi-disciplinary inspection teams will be used to perform additional plant walkdowns. Procedure OSP-92-076 requires that a pre-job briefing be conducted prior to performing any inspections and that the length of time spent inspecting each zone take as long as the zone team members feel is necessary to ensure a complete and thorough walkdown. Additionally, these plant walkdowns are intended to be performed with a limited number of qualified personnel. The intent of the preceding is to ensure that:

- 1) Each zone be inspected for deficiencies by a team of personnel qualified in various plant disciplines.
- 2) All personnel involved in the walkdowns are aware of their duties and responsibilities.
- 3) There is consistency in the inspection methodology.
- 4) Adequate time is spent identifying deficiencies in a given area.



## II. APPROPRIATE DOCUMENTED INSTRUCTIONS OR PROCEDURES

The NRC's Inspection Report 92-27 indicated that a weakness was identified regarding the use of a draft procedure to perform calculations for evaluation of irregularities. The following provides the results of the investigation conducted by CP&L, which included interviews with Bechtel personnel, to address the NRC's concern in this regard.

Bechtel Engineering Department Procedure (EDP) 4.37 provides the QA requirements for the preparation, checking review, approval, and control of design calculations. Bechtel Project Engineering Procedures Manual (PEPM), which contained this approved EDP, was initially issued on July 2, 1992. The PEPM provided the procedural basis for performing engineering activities. It was recognized by CP&L and Bechtel that certain Engineering Department Project Instructions (EDPIs) would be developed to address CP&L plant-specific requirements. As a part of the first group of plant specific EDPIs, EDPI 4.37-01 was issued with Revision 1 of the PEPM on August 24, 1992. This EDPI included the plant unique formats and a requirement for review and approval of calculations by CP&L. At the time of the NRC inspection, Revision 6 of this EDPI was in effect and was being implemented for preparation of design calculation.

The calculations reviewed by the NRC during their Site visit of September 14-18, 1992 listed EDPI 4.90-02 as a reference. At that time EDPI 4.90-02 had been internally reviewed by Bechtel and was pending final approval by CP&L prior to its issuance. The primary purpose of preparing EDPI 4.90-02 was to provide an overall description of the Miscellaneous Steel Verification Program (MSVP) and to address its major functions and corresponding governing procedures. During the development of this EDPI, Bechtel in coordination with CP&L, decided to include in this EDPI a matrix of Updated Final Safety Assessment Report (UFSAR) criteria and clarifications as it applied to the miscellaneous steel. The purpose was to provide uniformity in the use of applicable criteria from the UFSAR, including its clarifications and other assumptions. This EDPI, was pending approval by CP&L and was issued for use with Revision 3 of the PEPM on September 17, 1992.

EDPI 4.90-02 does not provide QA requirements for preparation, review and control of calculations. Rather it provides an overview of the MSVP and provides criteria available in the UFSAR and clarification and assumptions which could have been otherwise individually included in the calculations. As indicated to the NRC at the time of inspection, all calculations were in-process. It had been recognized by CP&L and Bechtel that some work had to be performed in parallel but, this was consistent with this type of EDPI. As indicated to the NRC at the time of the inspection, the final reviews and approvals of calculations were pending issuance of the EDPI, in order that the calculations could be reviewed to insure consistency and conformance. Bechtel has assured us that no work activities have been or will be performed and issued outside the approved QA Program and procedures. It is CP&L's policy not to allow safety related work to be performed and issued outside of the approved QA Program and procedures. CP&L has the final approval of QA program, procedures, and work product (calculations, modification sketches, design criteria, etc.).