



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION II  
SAM NUNN ATLANTA FEDERAL CENTER  
61 FORSYTH STREET SW SUITE 23T85  
ATLANTA, GEORGIA 30303-8931

June 2, 2004

EA-04-076

Carolina Power and Light Company  
ATTN: Mr. C. J. Gannon  
Vice President  
Brunswick Steam Electric Plant  
P. O. Box 10429  
Southport, NC 28461

SUBJECT: FINAL SIGNIFICANCE DETERMINATION FOR A WHITE FINDING AND NOTICE OF VIOLATION (NRC INSPECTION REPORT NO. 05000324/2004008, BRUNSWICK STEAM ELECTRIC PLANT)

Dear Mr. Gannon:

The purpose of this letter is to provide you with the Nuclear Regulatory Commission's (NRC) final significance determination for a finding at your Brunswick Steam Electric Plant involving the failure to take adequate corrective action for conditions adverse to quality associated with the No. 3 emergency diesel generator (EDG 3) jacket water cooling (JWC) system. This corrective action failure resulted in EDG 3 being inoperable for a period in excess of the Technical Specifications (TS) allowed outage time. Specifically, excessive leakage occurred from the JWC system that resulted in an inoperable EDG from December 8, 2003, until it was corrected on January 7, 2004.

The finding was documented in NRC Inspection Report (IR) 05000325/2004002 and 05000324/2004002, dated April 19, 2004, and was assessed under the significance determination process as a preliminary White issue for Unit 2 (i.e., an issue of low to moderate safety significance, which may require additional NRC inspection). The cover letter to the inspection report informed Carolina Power and Light Company (CP&L) of the NRC's preliminary conclusion, provided CP&L an opportunity to request a regulatory conference on this matter, and forwarded the details of the NRC's preliminary estimate of the change in core damage frequency (CDF) for this finding.

At your request, an open regulatory conference was conducted with you and members of your staff on May 19, 2004, to discuss your position on this issue. The enclosures to this letter include the list of attendees at the regulatory conference, and copies of the material presented by you and the NRC at the regulatory conference. During the conference, you provided the results of your review of the safety significance of the finding, root causes, and corrective actions. CP&L performed additional risk evaluations, including a human reliability analysis, a review of the EDG 3 fault exposure hours, and a review of external events. In some cases, the assumptions and inputs into your risk evaluation were different from those assumed by the NRC; however, you concluded that the results of your additional risk evaluations were insufficient to challenge the NRC's estimate that the finding was of low to moderate safety significance. In addition, CP&L agreed with the NRC's characterization of the finding as violations of regulatory requirements. CP&L also provided information regarding its investigation into the cause of the problem, and long-term corrective

actions to preclude this issue in the future. CP&L determined that the root and contributing cause of the finding was the missing structural supports on the jacket water turbocharger supply line, in combination with the failure to perform post-maintenance functional verification after CP&L's conduct of minor maintenance on the pipe coupling leakage on December 8, 2003.

After considering the information developed during the inspection and the information CP&L provided at the conference, the NRC has concluded that the final inspection finding is appropriately characterized as White for Unit 2, in the mitigating systems cornerstone.

You have 10 business days from the date of this letter to appeal the staff's determination of significance for the identified White finding. Such appeals will be considered to have merit only if they meet the criteria given in NRC Inspection Manual Chapter 0609, Attachment 2.

The NRC also determined that a violation occurred involving the requirements of 10 CFR 50, Appendix B, Criteria XVI, Corrective Action, in that CP&L failed to promptly correct a condition adverse to quality. Specifically, two structural supports located on the jacket water turbocharger supply line for EDG 3 (as indicated on Brunswick as-built Drawing No. FP-20323) were removed prior to approximately January 1, 2001 (or, as CP&L indicated at the conference, may have never been installed), and were not reinstalled until January 7, 2004. The failure to reinstall the missing supports contributed to the misalignment of the pipe coupling, and resulted in an EDG jacket water system leak on December 7, 2003. Corrective maintenance was performed on the leak on December 8, 2003, however, the leak was still present and larger on January 4, 2004. As a result, CP&L failed to comply with TS 3.8.1, in that EDG 3 was inoperable from December 8, 2003 until January 7, 2004, a period in excess of seven days. Because the failure to take adequate corrective action resulted in a failure to comply with TS, the NRC considers it appropriate to cite these as one violation. Accordingly, a Notice of Violation is included as an enclosure to this letter. In accordance with the NRC Enforcement Policy, NUREG-1600, the Notice of Violation is considered escalated enforcement action because it is associated with a White finding.

The NRC has concluded that information regarding the reason for the violation, the corrective actions taken and planned to correct the violation and prevent recurrence, and the date when full compliance was achieved is adequately addressed on the docket in the information provided by CP&L at the conference (Enclosure 3). Therefore, you are not required to respond to this letter unless the description therein does not accurately reflect your corrective actions or your position. In that case, or if you choose to provide additional information, you should follow the instructions specified in the enclosed Notice.

Because plant performance for this issue has been determined to result in the increased regulatory response band, we will use the NRC Action Matrix to determine the most appropriate NRC response for this finding. We will notify you, by separate correspondence, of that determination.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosures, and your response (should you choose to provide one), will be available electronically for public inspection in the NRC Public Document Room (PDR) or from the NRC's document

system (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

For administrative purposes, this letter is issued as a separate NRC Inspection Report, No. 05000324/2004008, and the above violation is identified as VIO 05000324/2004008-01: Failure to Promptly Correct EDG Jacket Water Coolant Leakage. Accordingly, the associated apparent violations, AV 05000324/2004002-01 and AV 05000324/2004002-02, are closed.

Should you have any questions regarding this letter, please contact Paul Fredrickson, Chief, Reactor Projects Branch 4, at 404-562-4530.

Sincerely,

*/RA/*

Loren R. Plisco  
Deputy Regional Administrator

Docket No.: 50-324  
License No: DPR-62

Enclosures: 1. Notice of Violation  
2. List of Attendees  
3. Material presented by CP&L  
4. Material presented by NRC

cc w/encls: (see page 4)

cc w/ encls:

W. C. Noll, Director Site Operations  
Brunswick Steam Electric Plant  
Carolina Power & Light Company  
Electronic Mail Distribution

David H. Hinds, Plant Manager  
Brunswick Steam Electric Plant  
Carolina Power & Light Company  
Electronic Mail Distribution

James W. Holt, Manager  
Performance Evaluation and  
Regulatory Affairs PEB 7  
Carolina Power & Light Company  
Electronic Mail Distribution

Edward T. O'Neil, Manager  
Site Support Services  
Brunswick Steam Electric Plant  
Carolina Power & Light Company  
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Leonard R. Beller, Supervisor  
Licensing/Regulatory Programs  
Brunswick Steam Electric Plant  
Carolina Power & Light Company  
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William D. Johnson  
Vice President & Corporate Secretary  
Carolina Power & Light Company  
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John H. O'Neill, Jr.  
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2300 N Street NW  
Washington, DC 20037-1128

Beverly O. Hall, Section Chief  
Division of Radiation Protection  
N. C. Department of Environment  
and Natural Resources  
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Margaret A. Force  
Assistant Attorney General

State of North Carolina  
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Jo. A. Sanford, Chair  
North Carolina Utilities Commission  
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Robert P. Gruber  
Executive Director  
Public Staff NCUC  
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Public Service Commission  
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David R. Sandifer, Chairperson  
Brunswick County Board of Commissioners  
P. O. Box 249  
Bolivia, NC 28422

Warren Lee, Director  
New Hanover County Department of  
Emergency Management  
P. O. Box 1525  
Wilmington, NC 28402-1525

Distribution w/encls: (See page 5)

Distribution w/encls:

L. Reyes, EDO  
W. Borchardt, NRR  
L. Chandler, OGC  
D. Dambly, OGC  
E. Julian, SECY  
B. Keeling, OCA  
Enforcement Coordinators  
RI, RIII, RIV  
E. Hayden, OPA  
G. Caputo, OI  
H. Bell, OIG  
C. Carpenter, NRR  
M. Johnson, NRR  
R. Franovich, NRR  
F. Congel, OE  
L. Plisco, RII  
V. McCree, RII  
L. Wert, RII  
C. Casto, RII  
H. Christensen, RII  
R. Bernhard, RII  
P. Fredrickson, RII  
S. Sparks, RII  
G. DiPaolo, RII  
C. Evans, RII  
G. MacDonald, RII  
R. Hannah, RII  
K. Clark, RII  
PUBLIC  
OEMAIL  
OEWEB

OFFICE	RII:DRS	RII:EICS	RII:DRP	OE		
SIGNATURE	/RA/	/RA/SSPARKS FOR	/RA/LWERT FOR	/RA JDIXONHERRITY PER EMAIL		
NAME	RBERNHARD	CEVANS	VMCREE	FCONGEL		
DATE	5/24/04	5/21/04	5/24/04	5/27/04		

## NOTICE OF VIOLATION

Carolina Power and Light Company  
Brunswick Steam Electric Plant  
Unit 2

Docket No.: 50-324  
License No.: DPR-62  
EA-04-076

During an NRC inspection completed on March 20, 2004, a violation of NRC requirements was identified. In accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions," (Enforcement Policy), the violation is listed below:

10 CFR 50, Appendix B, Criteria XVI, Corrective Actions, requires in part that measures shall be established to assure that conditions adverse to quality, such as failures and malfunctions, are promptly identified and corrected.

Technical Specification Limiting Condition of Operation 3.8.1, AC Sources-Operating, requires four Emergency Diesel Generators (EDGs) to be operable when in Mode 1 with three EDGs allowed for a period of seven days.

Contrary to the above, from December 8, 2003, through January 7, 2004, the licensee failed to correct conditions adverse to quality. Specifically, the corrective maintenance the licensee performed on December 8, 2003, to stop a pipe coupling leak on the jacket water supply line to the turbo charger for EDG 3 failed to correct the leak. In addition, the licensee failed to identify that two structural supports for the line were not in place, potentially contributing to the misalignment of the coupling. On January 4, 2004, the licensee identified that the line was again leaking at an even greater rate. Because of the ongoing leak, the licensee failed to comply with TS 3.8.1, in that EDG 3 was inoperable while the plant was in Mode 1 from December 8, 2003 until January 7, 2004, a period in excess of seven days.

This violation is associated with a White Significance Determination Process finding for Unit 2.

The NRC has concluded that information regarding the reason for the violation, the corrective actions taken and planned to correct the violation and prevent recurrence and the date when full compliance was achieved is already adequately addressed on the docket in the information provided by CP&L at the conference (Enclosure 3). However, you are required to submit a written statement or explanation pursuant to 10 CFR 2.201 if the description therein does not accurately reflect your corrective actions or your position. In that case, or if you choose to respond, clearly mark your response as a "Reply to a Notice of Violation - EA-04-076," and send it to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555 with a copy to the Regional Administrator, Region RII, within 30 days of the date of the letter transmitting this Notice of Violation (Notice).

If you contest this enforcement action, you should also provide a copy of your response, with the basis for your denial, to the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001.

Enclosure 1

If you choose to respond, your response will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's document system (ADAMS), to the extent possible, it should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the public without redaction. ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>. If personal privacy or proprietary information is necessary to provide an acceptable response, then please provide a bracketed copy of your response that identifies the information that should be protected and a redacted copy of your response that deletes such information. If you request withholding of such material, you must specifically identify the portions of your response that you seek to have withheld and provide in detail the bases for your claim of withholding (e.g., explain why the disclosure of information will create an unwarranted invasion of personal privacy or provide the information required by 10 CFR 2.390(b) to support a request for withholding confidential commercial or financial information). If safeguards information is necessary to provide an acceptable response, please provide the level of protection described in 10 CFR 73.21.

In accordance with 10 CFR 19.11, you may be required to post this Notice within two working days.

Dated this 2<sup>nd</sup> day of June 2004

## LIST OF REGULATORY CONFERENCE ATTENDEES

### NUCLEAR REGULATORY COMMISSION:

L. Plisco, Deputy Regional Administrator, Region II  
V. McCree, Director, Division of Reactor Projects, Region II  
L. Wert, Deputy Director, Division of Reactor Projects, Region II  
H. Christensen, Deputy Director, Division of Reactor Safety, Region II  
C. Evans, Director, Enforcement and Investigations Coordination Staff, Region II  
P. Fredrickson, Chief, Branch 4, Division of Reactor Projects, Region II  
R. Bernhard, Senior Reactor Analyst, Division of Reactor Safety, Region II  
S. Sparks, Senior Enforcement Specialist, Region II  
G. MacDonald, Senior Project Engineer, Division of Reactor Projects, Region II  
E. DiPaolo, Senior Resident Inspector, Brunswick Steam Electric Plant  
M. Bates, Project Engineer, Division of Reactor Projects, Region II  
J. Dixon-Herrity Senior Enforcement Specialist, Office of Enforcement,  
D. Coe, Office of Nuclear Reactor Regulation (NRR)  
R. Franovich, Enforcement Coordinator, NRR  
R. Rasmussen, Senior Risk Analyst, NRR

### PROGRESS ENERGY/CAROLINA POWER AND LIGHT COMPANY (CP&L):

C. Gannon, Brunswick Site Vice President  
M. Williams, Brunswick Operations Manager  
E. O'Neil, Brunswick Manager Support Services  
A. Pope, Brunswick Superintendent Systems Engineering  
G. Miller, Brunswick Licensing/PRA Engineer





# **Brunswick Steam Electric Plant**

**Emergency Diesel Generator No. 3  
Jacket Water Cooling**



# Introduction

- Neil Gannon Site Vice President
- Mike Williams Manager Operations
- Ed O'Neil Manager Nuclear Services
- Annette Pope Supt Systems Engineering
- Gary Miller Licensing/PRA Engineer

# Agenda

- Opening Remarks
- Root Cause & Corrective Actions
- Operations Perspective
- Lessons Learned

# Opening Remarks

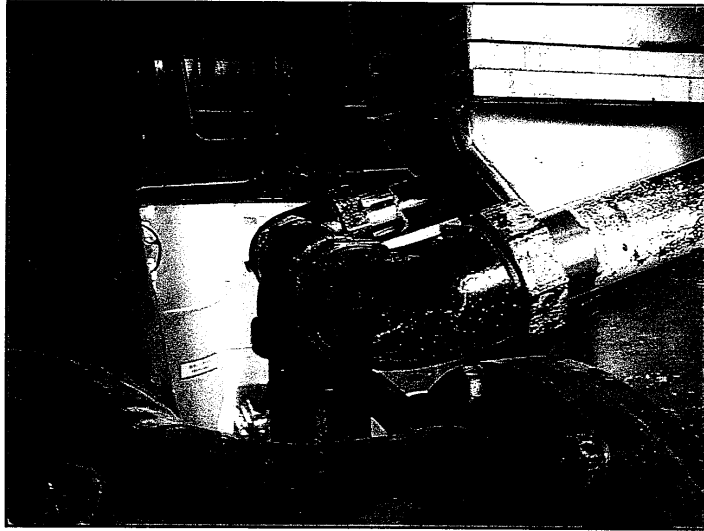
- BNP accepts the findings and preliminary significance determination
- Additional evaluations performed
  - ▶ Human Reliability Analysis
  - ▶ EDG 3 fault exposure hours
  - ▶ External events

# Opening Remarks

- Results
  - ▶ Measurable reduction in risk associated with finding
  - ▶ Not sufficient to change significance determination

# Background

- January 4, 2004
  - Monthly surveillance test identified EDG 3 Jacket Water Cooling System (JWC) piping leak
  - EDG 3 declared inoperable



# Background

- Past operability review
  - ▶ February 2003 - JWC pipe coupling misaligned
  - ▶ December 8, 2003 - Coupling tightened
    - ◆ Degraded coupling discovered during EDG 3 run on January 4, 2004



# Root Causes

- Pipe supports
  - Historical condition
- Post-maintenance functional verification not performed
  - Work management procedure requires functional verification following minor maintenance

# Corrective Actions

- Jacket water line configuration restored
  - ▶ Coupling replaced
  - ▶ Pipe supports installed
  - ▶ Piping leak tested
- Other jacket water lines inspected
- Lessons learned and minor maintenance process requirements reviewed with applicable maintenance personnel

# Operations Perspective

- EDGs are high safety significant components
  - ▶ SROs monitor each planned EDG run and operators are dispatched to monitor each unplanned run
- Response to off-normal conditions
  - ▶ Jacket water leak
    - ◆ Proceduralized use of fire suppression system as makeup source
  - ▶ Other off-normal conditions

# Operations Perspective

- Heightened sensitivity to degraded conditions
  - ▶ Work orders
  - ▶ Operability assessment
  - ▶ Safety-related performance testing to be discussed at morning plant status meetings

# Lessons Learned

- Planned upgrade of key couplings in Jacket Water Cooling system
- Maintenance Activities
  - ▶ SRO review of minor maintenance work orders affecting safety significant systems
  - ▶ Heightened awareness of all work orders associated with EDGs, Batteries, HPCI, and RCIC
- Operability Assessments
  - ▶ Increasing Site Management involvement
  - ▶ Review at morning plant status meetings



# Questions

OPEN REGULATORY CONFERENCE

BRUNSWICK STEAM ELECTRIC PLANT

MAY 19, 2004

NRC REGION II OFFICE, ATLANTA, GEORGIA

- I. OPENING REMARKS, INTRODUCTIONS AND MEETING INTENT  
L. Plisco, Deputy Regional Administrator
- II. NRC REGULATORY CONFERENCE POLICY  
V. McCree, Director, Division of Reactor Projects
- III. STATEMENT OF THE ISSUE WITH RISK PERSPECTIVES  
V. McCree, Director, Division of Reactor Projects
- IV. SUMMARY OF APPARENT VIOLATIONS  
V. McCree, Director, Division of Reactor Projects
- V. LICENSEE RISK PERSPECTIVE PRESENTATION
- VI. LICENSEE RESPONSE TO APPARENT VIOLATIONS
- VII. BREAK / NRC CAUCUS  
L. Plisco, Deputy Regional Administrator
- VIII. CLOSING REMARKS  
L. Plisco, Deputy Regional Administrator

Enclosure 4