UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
245 PEACHTREE CENTER AVENUE NE, SUITE 1200
ATLANTA, GEORGIA 30303-1257

November 20, 2012

Mr. Michael Annacone
Vice President
Carolina Power and Light Company
Brunswick Steam Electric Plant
P.O. Box 10429
Southport, NC 28461

SUBJECT: RESPONSE TO DISPUTED NON-CITED VIOLATION - BRUNSWICK STEAM ELECTRIC PLANT - NRC INTEGRATED INSPECTION REPORT NOS.: 05000325/2011004 AND 05000324/2011004 DATED NOVEMBER 14, 2011

Dear Mr. Annacone:

Thank you for your reply dated December 14, 2011, to the licensee identified violation (LIV) issued on November 14, 2011, concerning activities conducted at your facility.

In your reply, you disputed the LIV, concerning Technical Specification (TS) 3.3.6.1, Primary Containment Isolation Instrumentation, discussed in section 4OA7 of Integrated Inspection Report 05000325,324/2011004 based on the following: The incorrectly installed flow element did not render the reactor water clean-up (RWCU) Differential Flow – High instrumentation (Function 5.a of TS Table 3.3.6.1-1) inoperable. Operability of the RWCU Differential Flow– High instrumentation is dependent upon: meeting the TS required allowable value of equal to or less than 73 gallons per minutes (gpm); and the overall ability of the instrument loop to perform its intended safety function. The flow element installation error did not affect the transmitter or trip device and, as such, did not prevent the RWCU Differential Flow – High instrumentation to meet the TS allowable value of equal to or less than 73 gpm. The amount of uncertainty introduced by this condition was not sufficient to render the instrument loop incapable of performing its intended safety function (assuring that the 300 gpm analytical limit would not be exceeded). Therefore, a violation of TS 3.3.6.1 did not occur.

After consideration of your reply, the Nuclear Regulatory Commission (NRC) has concluded that, for the reasons presented in the enclosure to this letter, the LIV occurred as stated in section 4OA7 of Integrated Inspection Report 05000325, 324/2011004 dated November 14, 2011. This matter was the subject of a Task Interface Agreement (TIA) dated November 9, 2012, which is an attachment to this letter. No additional written response is required from you at this time. We will review your corrective actions for this violation during routine baseline inspections.

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

document systems (ADAMS), accessible from the NRC Web site at http://www.nrc.gov/readingrm/adams.html. To the extent possible, your response should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the public without redaction.

Should you have any questions concerning this letter, please contact Mr. Randall A. Musser, at (404) 997-4603.

Sincerely,

/William Jones RA for/

Richard P. Croteau, Director
Division of Reactor Projects

Docket Nos.: 50-325, 50-324
License Nos.: DPR-71, DPR-62

Enclosure: Evaluation and Conclusion
w/Attachment: Task Interface Agreement dated November 9, 2012.

cc w/encl: (See page 3)

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cc w/encl: (See page 3)

X PUBLICLY AVAILABLE NON-PUBLICLY AVAILABLE SENSITIVE X NON-SENSITIVE

ADAMS: X Yes ACCESSION NUMBER:_____ X SUNSI REVIEW COMPLETE ☐

FORM 665 ATTACHED

OFFICE	RII:DRP	RII:DRP	RII:DPR	HQ:OE	RII:DRP		
SIGNATURE	RAM for JD	/RA/	/RA/	Via Email	/RA/		
NAME	JDodson	RMusser	WJones	GGulla	RCroteau		
DATE	11/20/2012	11/20/2012	11/20/2012	11/19/2012	11/20/2012		
E-MAIL COPY?	YES NO	YES NO	YES NO	YES NO	YES NO		

OFFICIAL RECORD COPY DOCUMENT NAME: G:\DRPII\RPB4\BRUNSWICK\LIV Denial\BRU LIV denial NRC final response 2012.docx

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Letter to Michael Annacone from Richard P. Croteau dated November 20, 2012

SUBJECT: RESPONSE TO DISPUTED NON-CITED VIOLATION - BRUNSWICK STEAM ELECTRIC PLANT - NRC INTEGRATED INSPECTION REPORT NOS.: 05000325/2011004 AND 05000324/2011004 DATED NOVEMBER 14, 2011

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EVALUATION AND CONCLUSION

The licensee identified violation (LIV), concerning Technical Specification (TS) 3.3.6.1, Primary Containment Isolation Instrumentation, discussed in section 4OA7 of Integrated Inspection Report 05000325, 324/2011004 was identified during a routine Nuclear Regulatory Commission (NRC) inspection conducted between July 1 and September 30, 2011, at the Brunswick Steam Electric Plant in Southport, NC. In their letter dated December 14, 2011, the licensee, Carolina Power and Light Company (CP&L), disagreed with the violation. Specifically, the licensee stated that a violation of TS 3.3.6.1 did not occur.

Specific Basis for Disputing Licensee Identified Violation

The licensee cited the following reasons as their basis for disputing the violation: The incorrectly installed flow element did not render the reactor water clean-up (RWCU) Differential Flow – High instrumentation (Function 5.a of TS Table 3.3.6.1-1) inoperable. Operability of the RWCU Differential Flow– High instrumentation is dependent upon: meeting the TS required allowable value of equal to or less than 73 gpm; and the overall ability of the instrument loop to perform its intended safety function. The flow element installation error did not affect the transmitter or trip device and, as such, did not prevent the RWCU Differential Flow – High instrumentation to meet the TS allowable value of equal to or less than 73 gpm. The amount of uncertainty introduced by this condition was not sufficient to render the instrument loop incapable of performing its intended safety function (assuring that the 300 gpm analytical limit would not be exceeded). Therefore, a violation of TS 3.3.6.1 did not occur.

NRC Evaluation of Licensee's Response:

The NRC staff reviewed CP&L's response and concluded that, the LIV occurred as stated in section 4OA7 of Integrated Inspection Report 05000325, 324/2011004 dated November 14, 2011. The NRC's basis for this determination is as follows:

The NRR staff evaluation included review of the Brunswick-2 UFSAR; Brunswick-2 Technical Specifications for Limiting Conditions for Operation applicability, Surveillance Requirement applicability and Table 3.3.6.1-1, Primary Containment Isolation Instrumentation, Function 5.a, RWCU Differential Flow – High; the licensee's documentation withdrawing Licensing Event Report 2-2011-001; the licensee's operability determination (AR 479248-21) and the regulations under Title 10 of the Code of Federal Regulations (10 CFR) Part 50.36, Technical Specifications.

The licensee's contested violation letter BSEP 11-0108, dated December 14, 2011, stated that operability of the RWCU Differential Flow – High instrumentation is dependent upon:
(1) Meeting the TS required allowable value of less or equal than 73 gpm and (2) the overall ability of the instrument loop to perform its intended safety function. The flow safety function of the instrument loop is met when it can be demonstrated that the analytical limit is met. The staff's evaluation of the information provided by the licensee, confirms that sufficient safety margin was available and the additional error did not prevent the loop from meeting the analytical limit for the RWCU Differential Flow – High instrumentation function.

Under 10 CFR 50.36(c)(2) Limiting conditions for operation, (i) “Limiting conditions for operation are the lowest functional capability or performance levels of equipment required for safe operation of a facility. When a limiting condition for operation is not met, the licensee shall follow any remedial action permitted by the technical specifications until the condition can be met.” Whether a TS LCO is satisfied cannot solely be determined by the successful performance of licensee surveillance procedures. It is possible that the surveillance procedures are not adequate to demonstrate a system, subsystem, component, or device is capable of performing its specified safety function(s). The surveillance procedures corresponding to the Surveillance Requirements (SR) for RWCU System differential flow-high presume that the flow element is installed correctly. SR 3.3.6.1.6 requires performance of a channel calibration once every 24 months. The TS definition for Channel Calibration establishes requirements to verify that channel safety functions will be met. The pertinent part of the definition of Channel Calibration is:

> A Channel Calibration shall be the adjustment, as necessary, of the channel output such that it responds within the necessary range and accuracy to known values of the parameter that the channel monitors. The Channel Calibration shall encompass all devices in the channel required for channel Operability and the Channel Functional Test. Calibration of instrument channels with resistance temperature detector (RTD) or thermocouple sensors may consist of an in-place qualitative assessment of sensor behavior and normal calibration of the remaining adjustable devices in the channel.

Thus, the TS Allowable Value (AV) does not account for an incorrectly installed flow element unless the calibration procedure adjusts the channel output to respond within the necessary range and accuracy to known values of the parameter that the channel monitors.
The NRC staff reviewed the licensee’s description of the RWCU high differential flow surveillance procedure documents. The procedure for SR 3.3.6.1.6 does not evaluate the channel sensor (flow element), does not compare the calculated flow to a known value of the actual plant flow rate, and does not include an in situ qualitative assessment of sensor behavior similar to the comparison required to be performed for RTD or thermocouple sensors. RWCU high differential flow surveillance procedures neither address an incorrectly installed flow element nor require the TS AVs to be verified to ensure that passing the channel calibration test validates that the TS LCO has been satisfied. Therefore, the incorrectly installed flow element created an unaccounted-for error, because the calculated TS AV did not address the condition of an incorrectly installed sensor and no in-situ qualitative assessment of sensor behavior was performed. Furthermore, the Channel Calibration did not compare calculated flow to a known value of actual flow. In this instance, there is a valid argument for stating that the safety significance of this degraded condition is low, because the estimate of the magnitude of the unaccounted for error is small compared to the remaining safety margin after accounting for all identified errors. The regulations under 10 CFR 50.36(b) require plant-specific TSs be derived from the analyses and evaluations included in the UFSAR. The Brunswick-2 TSs AV is the LCO (10 CFR 50.36(c)(2)(i)) and it is the AV that establishes an appropriate margin to the UFSAR Analytical Limit for RWCU system isolation on high differential flow. The purpose of SR 3.3.6.1.6 is to verify that the RWCU Differential Flow – High instrumentation is operable when channel output is such that it responds within the necessary range and accuracy to known values of the RWCU flow to isolate RWCU on a sensed differential flow of equal to or less than 73 gpm.

Region II staff consulted the NRR Technical Specifications Branch and the Instrumentation and Control Branch. NRR concurs with the RII position outlined in this assessment. The assessment, in summary, states that the licensee's assertion that the instrument inaccuracy associated with the flow orifice installation error is not applicable to the TS AV is not appropriate because allocation of instrument inaccuracy introduced by maintenance errors is not accounted for in the licensee's calculation and should be evaluated as a degraded condition. This degraded condition has a clear and quantifiable impact on the instrument's ability to perform its TS required function of isolating the RWCU system piping with a setpoint of less than or equal to 73 gpm.

NRC Conclusion:

Based on the NRC assessment of the condition of the Brunswick-2 RWCU system with the inlet flow orifice installed backwards, the NRC staff has concluded that TS Table 3.3.6.1-1, Function 5.a was inoperable from the date the orifice was installed backwards during the Unit 2 refueling outage in April 2011, until the date in August 2011, when the orifice was reinstalled correctly. The licensee's evaluation of the condition is not correct and the LIV issued in Inspection Report 05000325, 324/2011004 is valid. Furthermore, the condition is reportable as a condition prohibited by TS per 10 CFR Part 50.73(a)(2)(i)(B). For the reasons stated above, the NRC concludes that the violation occurred.