



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

May 29, 2014

EA-14-048

Mr. George Hamrick  
Vice President  
Duke Energy Progress, Inc.  
Brunswick Steam Electric Plant  
P.O. Box 10429  
Southport, NC 28461

SUBJECT: BRUNSWICK STEAM ELECTRIC PLANT - NRC INSPECTION REPORT NOS.  
05000325/2014011 AND 05000324/2014011; FINAL SIGNIFICANCE  
DETERMINATION AND NOTICE OF VIOLATION

Dear Mr. Hamrick:

This letter provides the final significance determination of the preliminary White finding and apparent violations (AVs) discussed in our previous communications dated March 21, 2014, and April 18, 2014, which were included in Nuclear Regulatory Commission (NRC) Inspection Report (IR) Nos. 05000325,324/2013010 and 05000325,324/2014010. The findings were previously characterized as follows:

The first finding (AV 05000325,324/2013010-01) was identified as an AV of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, Appendix B, Criterion XVI, Corrective Action, with two examples. The first example involved the failure to promptly identify and correct conditions adverse to quality associated with flood protection of multiple safety-related buildings. Specifically, certain safety-related buildings contained inappropriate openings that were not identified and corrected by the licensee and could have adversely impacted the ability to mitigate external flooding of the buildings in the event of a design basis probable maximum hurricane (PMH). This could have resulted in the potential loss of many safety-related service water pumps (SWPs) during a PMH flooding event. The second example involved the failure to correct a significant condition adverse to quality (SCAQ). Specifically, corrective actions were not implemented to preclude repetition of a previously identified SCAQ, when an engineering program was not adequately developed or implemented to mitigate the consequences of potential external events (flooding, high winds, and seismic).

As documented in previous NRC IR Nos. 05000325,324/2014010 on April 18, 2014, the Unit 1 AV was preliminarily determined to be Green, a finding with very low safety significance. Additionally, the Unit 2 AV was preliminarily determined to be White, a finding with low to moderate safety significance. These findings were assessed based on the best available information, using the applicable Significance Determination Process in accordance with Inspection Manual Chapter 0609, Appendix M. Following the initial review of this matter using preliminary quantitative analysis, Appendix M was used considering the potential impact of

uncertainties on the timeliness of the decision-making, which allows for the use of a bounding analysis and qualitative insights. Currently, the NRC does not have a tool to quantify the estimated likelihood of a severe coastal surge event from a PMH to accurately quantify the risk significance of the performance deficiency.

The second AV (05000325,324/2013010-04) was associated with the first finding and was the failure to report a condition prohibited by plant Technical Specification 3.7.2, Service Water (SW) System and Ultimate Heat Sink, and an event that could have prevented the fulfillment of a safety function of the residual heat removal system as required by 10 CFR 50.73. This AV was evaluated using the NRC's traditional enforcement process because it impacted NRC's ability to perform its regulatory function.

At your request, a Regulatory Conference and Pre-decisional Enforcement Conference was held on May 12, 2014, to discuss your views on these issues. A copy of the presentation made by Duke Energy was included in the meeting summary issued May 20, 2014 (Agencywide Documents Access and Management System (ADAMS) Accession number ML14140A291). During the meeting, Duke Energy representatives provided an assessment of the significance of the findings, the root cause evaluation, corrective actions taken and planned, and the methodology used to evaluate storm surge and flooding. The discussion included information which addressed the sources of uncertainty identified in the preliminary significance calculation performed by the NRC. Descriptions of the testing performed to determine the flow characteristics of the penetrations used in the licensee's calculations of the inleakage rates were also presented. The results of flooding calculations for both the service water building, and the high pressure coolant injection room in the reactor building, which demonstrated increased margin to immersion of critical equipment were also discussed. In addition, the duration of an assumed maximum storm surge flood was presented using the results of state of the art methodologies. Your calculations indicated the maximum storm surge flood to be less than that stated in the Updated Final Safety Analysis Report. As a result, the new calculations of the most likely water level that could have been reached in the service water building indicated a lower level, which reduced the probability that critical components would fail.

Following the conference, the NRC evaluated the remaining uncertainties and assumptions used in the calculations along with the margin to failure for the inputs presented. The NRC determined that the sequence of events that must occur to result in a failure of all AC powered mitigation equipment during the hurricane surge reduced the probability of the loss of function of the service water system, even with the consideration of the potential uncertainty involved in estimating the frequency of such an extreme coastal surge scenario. The NRC concluded that the Unit 1 preliminary Green finding was appropriately characterized, and the Unit 2 preliminary White finding should be re-characterized as a Green finding, an issue of very low safety significance.

The NRC also has determined that because this finding was a violation of 10 CFR Part 50, Appendix B, Criterion XVI, Corrective Action, and there was a failure to restore compliance from the previous White violation documented in NRC IR Nos. 05000325,324/2011014, this violation is being cited in accordance with the NRC Enforcement Policy. The Notice of Violation (Notice) is attached as Enclosure 1. The circumstances surrounding the violation were described in detail in NRC IR Nos. 05000325,324/2013010. For this violation, the NRC reviewed whether

the NCV criteria of Section 2.3.2 of the NRC Enforcement Policy were satisfied. In this case, the 10 CFR Part 50, Appendix B, Criterion XVI violation was directly attributable to a failure on the part of Brunswick staff to identify and correct existing non-conformances in response to a previously identified White finding (issued on December 27, 2011, EA-11-251). As such, the NRC concluded that Brunswick failed to restore compliance within a reasonable period of time, and that a cited violation is warranted.

Based on the information developed during the inspection associated with the first issue previously described (AV 05000325,324/2013010-01) and the information provided at the Regulatory Conference and Pre-decisional Enforcement Conference, the NRC has concluded that an additional violation of NRC requirements occurred (AV 05000325,324/2013010-04). Specifically, the NRC determined that you failed to submit a licensee event report to the NRC within 60 days of identifying a condition or event that satisfied the reporting requirements of 10 CFR 50.73(a)(2)(i)(B) and 10 CFR 50.73(a)(2)(v)(B). The circumstances surrounding this violation were described in detail in NRC IR Nos. 05000325,324/2013010.

As discussed in the Enforcement Policy, the severity level of a violation involving the failure to make a required report to the NRC will be based upon the significance of and the circumstances surrounding the matter that should have been reported. In this case, and as discussed above, the NRC concluded that the failure to provide a required report is associated with a Green finding, a failure to promptly identify and correct conditions adverse to quality associated with flood protection of multiple safety-related buildings, and the failure to correct a significant condition adverse to quality. Based on the above, the NRC concluded that the violation of 10 CFR 50.73 is appropriately characterized as a Severity Level IV, in accordance with the NRC Enforcement Policy. This violation is being dispositioned as a non-cited violation in accordance with Section 2.3.2.a of the NRC Enforcement Policy.

You are required to respond to this letter and should follow the instructions specified in the enclosed Notice when preparing your response. In your response, please provide a timeline for completion of specific corrective actions. If you have additional information that you believe the NRC should consider, you may provide it in your response to the Notice. The NRC review of your response to the Notice will also determine whether further enforcement action is necessary to ensure compliance with regulatory requirements.

We intend to conduct corrective action follow-up baseline inspection of the related corrective actions (Inspection Procedure 71152) based on the timeline provided in the response to the notice of violation. This inspection will include a review of the inspection findings issued in this final significance determination letter.

For administrative purposes, this letter is issued as NRC IR Nos. 05000325,324/2014011. Accordingly, consistent with the regulatory positions described in this letter, AV 05000325,324/2013010-01 is updated as VIO 05000325,324/2013010-01 with a cross-cutting aspect in the area of Human Performance, because you did not ensure supervisory and management oversight of work activities, including contractors. Specifically, licensee management failed to ensure degradation associated with flood protection of the safety-related buildings was identified and corrected [H.2]. AV 05000325,324/2013010-04 is updated as NCV SL IV 05000325,324/2013010-04 with no cross-cutting aspect.

G. Hamrick

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In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response, will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's document system (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/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.

Sincerely,

***/RA/***

Richard P. Croteau, Director  
Division of Reactor Projects

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

Enclosure: Notice of Violation EA-14-048

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G. Hamrick

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Sincerely,

**/RA/**

Richard P. Croteau, Director  
Division of Reactor Projects

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Letter to George Hamrick from Richard P. Croteau dated May 29, 2014.

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DETERMINATION

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## NOTICE OF VIOLATION

Duke Energy Progress Inc.  
Brunswick Steam Electric Plant

Docket Nos.: 50-325;324  
License Nos.: DPR 71/62  
EA-14-048

During an NRC inspection completed on December 31, 2013, a violation of NRC requirements was identified. In accordance with the NRC Enforcement Policy, the violation is listed below:

Appendix B to 10 CFR Part 50, Criterion XVI, Corrective Action, states, in part, that measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and non-conformances are promptly identified and corrected. In the case of significant conditions adverse to quality, the measures shall assure the cause of the condition is determined and corrective action taken to preclude repetition.

Contrary to the above, the licensee failed to promptly identify and correct conditions adverse to quality, and failed to correct and preclude repetition of a significant condition adverse to quality, as evidenced by the following two examples:

1. From 1995 to 2012, the licensee failed to identify and correct conditions adverse to quality involving degraded and nonconforming flood penetration seals and openings in multiple safety-related buildings, including the service water building (SWB), reactor building (RB), and emergency diesel generator building (EDGB). In 2012, the licensee identified but failed to correct over 450 work requests/work orders/nuclear condition reports for degraded and/or nonconforming flood protection features, the majority of which were attributed to degraded or nonconforming flood penetration seals. Specifically, the licensee identified degraded flood penetration wall seals, conduit seals, an EDGB rollup door seal, and a 3-inch gap in the seal along the bottom of the Unit 2 RB railroad door which would have allowed leakage into the SWB, RB, and EDGB during a probable maximum hurricane.
2. As of December 31, 2013, the licensee failed to correct and preclude repetition of a significant condition adverse to quality which was originally identified in 2011. Specifically, the licensee's corrective action to preclude repetition of the NRC-identified White finding from 2011 was to "develop an engineering program in accordance with licensee procedure EGR-NGGC-0008, Engineering Programs, to mitigate the consequences of external events (flooding, high winds, and seismic). This program, or programs, must ensure appropriate equipment classifications, with interfacing programs of maintenance rule (MR) and zero tolerance for equipment failures. The program must ensure performance of necessary operation, maintenance, testing, and inspection activities in accordance with the work management process to maintain needed design features." However, the licensee failed to adequately develop this engineering program to mitigate the consequences of external events (flooding, high winds, and seismic).

Enclosure

This violation is associated with a Green Significance Determination Process finding.

Pursuant to the provisions of 10 CFR 2.201, Duke Energy Progress, Inc. is hereby required to submit a written statement or explanation to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001 with a copy to the Regional Administrator, Region II, and a copy to the NRC Resident Inspector at Brunswick Steam Electric Plant, within 30 days of the date of the letter transmitting this Notice of Violation (Notice). This reply should be clearly marked as a "Reply to a Notice of Violation; EA-14-048" and should include for each violation: (1) the reason for the violation, or, if contested, the basis for disputing the violation or severity level, (2) the corrective steps that have been taken and the results achieved, (3) the corrective steps that will be taken, and (4) the date when full compliance will be achieved. Your response may reference or include previous docketed correspondence, if the correspondence adequately addresses the required response. If an adequate reply is not received within the time specified in this Notice, an order or a Demand for Information may be issued as to why the license should not be modified, suspended, or revoked, or why such other action as may be proper should not be taken. Where good cause is shown, consideration will be given to extending the response time.

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.

Because your response will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's document system (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>, 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. 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 of receipt.

Dated this 29 day of May 2014

Enclosure