

## Brunswick 2

### 3Q/2015 Plant Inspection Findings

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## Initiating Events

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## Mitigating Systems

**Significance:** G Jun 30, 2015

Identified By: NRC

Item Type: NCV Non-Cited Violation

### **Degraded Fire Barrier Seals in the Unit 2 Cable Accessway**

An NRC-identified Green non-cited violation (NCV) of License Condition 2.B.(6), Fire Protection Program, was identified for the licensee's failure to maintain the 3 hour fire seals in the Unit 2 cable access way. Specifically, three cables in the Unit 2 cable access way were not within continuously enclosed conduits, which failed to preserve the integrity of the 3-hour rated barrier. As corrective action, the licensee sealed all three penetrations with a qualified 3-hour seal. This issue was entered into the licensee's corrective action program (CAP) as nuclear condition report (NCR) 740606.

The inspectors determined that the licensee's failure to maintain the 3 hour penetration fire barrier conduits in the Unit 2 cable access way, as required by licensee specification 118-003, Selection and Installation of Fire Barrier and Pressure Boundary Penetration Seals, was a performance deficiency. The finding was more than minor because it was associated with the external factors attribute (i.e. fire) of the Mitigating Systems Cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, this resulted in the failure of the three conduits to perform their function. The finding was screened using NRC IMC 0609, Appendix F, "Fire Protection Significance Determination Process," dated September 20, 2013, because the finding affected the ability to confine a fire. Using IMC 0609, Appendix F, Attachment 1, "Fire Protection SDP Phase 1 Worksheet," dated September 20, 2013, the finding was assigned to the Fire Confinement category because the degraded penetrations were located in a fire barrier that separated two fire areas. Proceeding to Task 1.3.1 of IMC 0609, Appendix F, Attachment 1, the inspectors determined the finding was of very low safety significance (Green) because safety significant equipment was located a sufficient distance from the degraded penetrations and the reactor's ability to reach and maintain a safe shutdown condition was not impacted. The finding does not have a cross-cutting aspect since the performance deficiency is not indicative of current plant performance.

Inspection Report# : [2015002](#) (*pdf*)

**Significance:** G Jun 30, 2015

Identified By: NRC

Item Type: FIN Finding

### **Failure to Perform an Adequate Extent of Condition Review for the 1C Conventional Service Water Pump Strainer**

An NRC-identified Green finding of licensee procedure CAP-NGGC-0205, Condition Evaluation and Corrective

Action Process, was identified for the licensee's failure to perform an adequate extent of condition review for the 1C CSW pump strainer stop collar clearance issue. Specifically, between February 21, 2014, and April 8, 2015, the licensee failed to perform an adequate extent of condition to identify the 2C CSW pump strainer stop collar was also installed without being securely positioned. This resulted in the failure of the shear pin and inoperability of the 2C CSW strainer and pump. As corrective actions, the licensee replaced the shear pin securely and scheduled the replacement of the other CSW pump strainer shear pins at the earliest available work window. The licensee entered this issue into the CAP as NCR 742444.

The inspectors determined that the licensee's failure to perform an adequate extent of condition review for the 1C CSW pump strainer stop collar clearance issue, as required by licensee procedure CAP-NGGC-0205 was a performance deficiency. The finding was more than minor because it was associated with the equipment performance attribute of the Mitigating Systems Cornerstone and adversely affected the cornerstone objective to ensure the availability of systems that respond to initiating events to prevent undesirable consequences. Specifically, this resulted in the failure of 2C CSW pump strainer shear pin, and inoperability of the 2C CSW strainer and pump. Using IMC 0609, Appendix A, issued June 19, 2012, the SDP for Findings At-Power, the inspectors determined the finding was of very low safety significance (Green) because the finding did not affect the design or qualification of a mitigating SSC, the finding did not represent a loss of system and/or function, the finding did not represent an actual loss of a function of a single train for greater than the TS allowed outage time, the finding did not represent an actual loss of a function of one or more non-TS trains of equipment, and did not screen as potentially risk-significant due to a seismic, flooding, or severe weather initiating event. The finding has a cross-cutting aspect in the area of problem identification and resolution associated with the evaluation attribute because the licensee failed to thoroughly evaluate issues to ensure that resolutions address causes and extent of conditions commensurate with their safety significance. Specifically, the licensee failed to evaluate the applicability of the stop collar clearance issue to the other strainers after the failure of the 1C CSW pump strainer shear pin.

Inspection Report# : [2015002](#) (*pdf*)

**Significance:**  Jun 18, 2015

Identified By: NRC

Item Type: NCV Non-Cited Violation

**Failure to Identify Conditions Adverse to Quality**

An NRC-identified Green non-cited violation (NCV) of the Code of Federal Regulations (10 CFR) Part 50, Appendix B, Criterion XVI, Corrective Action, was identified for licensee failure to identify conditions adverse to quality during the evaluation of an emergency diesel generator (EDG) output breaker failure on March 16, 2015. Specifically, the licensee missed that an internal change made to a relay was a condition adverse to quality. Further, the licensee failed to reclassify a corrective action document to higher significance when information arose indicating that the event in question was a loss of safety function. The licensee documented these issues in their corrective action program, completed the necessary reviews for a condition adverse to quality, and reclassified the original event to Significance Level 1.

The inspectors determined that the finding was more than minor in accordance with Manual Chapter 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," dated September 7, 2012, because, if left uncorrected, additional unqualified relays would likely have been installed in the plant. Using Manual Chapter 0609, Appendix A, Exhibit 1, effective July 1, 2012, the finding screened as Green for each unit by answering "no" to the questions related to an actual loss of function of a system, a single train, non-technical specification equipment designated as high safety-significant in accordance with the licensee's maintenance rule program for >24 hrs. The finding had a cross-cutting aspect for "Evaluation" in the area of Problem Identification & Resolution because the most likely cause of the missed conditions adverse to quality was a lack of thorough investigation during the evaluations (for cause and reportability) of the relay issue [P.2]

Inspection Report# : [2015007](#) (*pdf*)

**Significance:** G Jun 18, 2015

Identified By: NRC

Item Type: NCV Non-Cited Violation

**Insufficient Material Evaluation of Commercially Dedicated Allen Bradley Relays**

An NRC-identified Green NCV of 10 CFR Part 50, Appendix B, Criterion III, Design Control was identified for the licensee's inadequate commercial grade dedication technical evaluation that resulted in non-conforming relays being installed in the control circuits for emergency diesel generator output breakers. This led to specification of a relay that was unsuitable for the application being installed in the control circuit for two emergency diesel generator output breakers and failure of one of those breakers to close. The licensee documented this issue in their corrective action program and performed corrective actions to mitigate the effects of the undetected changes on the relay.

The inspectors determined that the finding was more than minor in accordance with Manual Chapter 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," dated September 7, 2012, because, if the process for detecting commercial grade item changes using material evaluations was left uncorrected, additional undetected design or process changes would likely occur. Using Manual Chapter 0609, Appendix A, issued June 19, 2012, "The Significance Determination Process (SDP) for Findings At-Power," the inspectors determined the finding required a detailed risk evaluation because the effect on two emergency diesel generators was considered a loss of function. For Unit 1, the regional Senior Reactor Analyst used demand data to adjust the probability that an emergency diesel generator would fail to start and ran a condition assessment on SAPHIRE. Because of limited exposure time, the finding was determined to be Green for Unit 1. For Unit 2, the conditions for exposure occurred during an outage with the reactor cavity filled, and both EDGs would be available. The SRA determined the significance to be bounded by the at power risk analysis performed for Unit 1. Because of the low exposure time, and the high likelihood of operators recovering the failure to start of the EDGs, this issue was Green for Unit 2. The inspectors did not identify a cross-cutting aspect associated with this finding because the original relay evaluation was done in 1999 and was not indicative of current licensee performance.

Inspection Report# : [2015007](#) (*pdf*)

**Significance:** G Dec 31, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

**Failure to Protect Emergency Diesel Generator 4-Day Fuel Oil Tank Ventilation Piping from Tornado Missiles**

The NRC-identified a Green non-cited violation (NCV) of Title 10 of the Code of Federal Regulations (10 CFR) Part 50, Appendix B, Criterion III, Design Control, for the failure to ensure adequate tornado missile protection for the emergency diesel generator (EDG) 4-day fuel oil tank ventilation piping. Specifically, it was determined that the ventilation piping could be sheared with a design basis tornado missile at the 4-day fuel oil tank building roof level and water intrusion into the EDG fuel oil system would occur during a design basis rain event that would prevent the diesel from performing its required safety function. The licensee documented this issue in their corrective action program (CAP) and performed corrective actions to install concrete blocks around the piping.

The inspectors determined that the finding was more than minor in accordance with IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," dated September 7, 2012, because it is associated with the Mitigating Systems Cornerstone attributes of Protection Against External Factors and Equipment Performance, and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, it was determined that the ventilation piping could be sheared with a design basis tornado missile at the 4-day fuel oil tank building roof level and water intrusion into the EDG fuel oil system would occur during a design basis rain event that would prevent the EDG from performing its required safety function. Using IMC 0609, Appendix A, issued June 19, 2012, "The Significance Determination Process (SDP) for Findings At-Power," the inspectors determined the finding screened to a detailed risk evaluation since the EDG1 fuel oil system was assumed to be completely failed due to a tornado, and it would degrade one or more trains of a system that supports a risk significant system or function. The regional Senior Reactor

Analyst performed a detailed risk evaluation by using a qualitative screening analysis to determine the significance of the finding. Tornado initiating event frequency was derived from Nation Weather Service data. Because of the low likelihood of a tornado powerful enough to throw an object of sufficient size to damage the piping, the remote chance the thrown object would strike the vent pipe, and because the remaining EDGs would not be impacted in the same way by the tornado, the finding was determined to be Green. The inspectors did not identify a cross-cutting aspect associated with this finding because the finding is an old design issue that has been in place since original plant construction.

Inspection Report# : [2014005](#) (*pdf*)

**Significance:**  Dec 31, 2014

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

#### **Failure to Follow Emergency Diesel Generator No. 3 Monthly Load Test Surveillance Procedure**

A Green self-revealing NCV of 10 CFR Part 50, Appendix B, Criterion V, Instructions, Procedures, and Drawings, was identified for the failure to conduct the number 3 EDG monthly load test in accordance with the prescribed technical specification surveillance test procedure. Specifically, plant personnel performing the load test on EDG3 manually synched the generator out-of-phase to its corresponding emergency bus, causing equipment damage to the collector ring and brushes and the silicon controlled rectifier (SCR) circuitry. The licensee documented the issue in their CAP, completed a prompt investigation, and performed a root cause evaluation. The EDG was immediately repaired and additional corrective actions include: 1) revise all EDG monthly load test procedures with “cautions” to emphasize the importance of synching the generator properly and performing the steps of the procedure as prescribed; and 2) install synch check relays on all manually paralleled generators.

The finding was more than minor in accordance with IMC 0612, Appendix B, because it is associated with the Mitigating Systems Cornerstone attribute of Human Performance, and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, plant personnel performing the local load test on EDG3 manually synched the generator out-of-phase to its corresponding emergency bus, resulting in extended EDG3 inoperability and equipment damage to the collector ring, brushes, and the SCR circuitry. Utilizing IMC 0609, Appendix A, Exhibit 1, effective July 1, 2012, the finding screened as Green by answering “no” to the question related to an actual loss of function of one or more non-technical specification trains of equipment designated as high safety-significant in accordance with the licensee’s maintenance rule program for >24 hrs. The finding had a cross-cutting aspect in the area of Human Performance related to the aspect of Avoid Complacency, in that individuals failed to recognize and plan for the possibility of mistakes, latent issues, and inherent risk, even while expecting successful outcomes, and implement appropriate error reduction tools. In this event, the operators had an inaccurate risk perception that the evolution of increasing load on the EDG was more critical than synching the generator properly. This was emphasized during the pre-job brief and not identified by the supervisory oversight of the evolution. [H.12]

Inspection Report# : [2014005](#) (*pdf*)

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## **Barrier Integrity**

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## **Emergency Preparedness**

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## Occupational Radiation Safety

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## Public Radiation Safety

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## Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the [cover letters](#) to security inspection reports may be viewed.

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## Miscellaneous

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