

## Brunswick 2

### 4Q/2015 Plant Inspection Findings

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## Initiating Events

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## Mitigating Systems

**Significance:** G Dec 31, 2015

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

### **Inadequate Procedure for the 2C RHRSW Booster Pump Motor Bearings**

A self-revealing Green non-cited violation (NCV) of 10 CFR Part 50, Appendix B, Criterion V, Instructions, Procedures, and Drawings, was identified for the failure of the licensee to have an adequate procedure for the 2C residual heat removal service water (RHRSW) pump motor bearing maintenance. Specifically, licensee procedure OCM-M503, Maintenance Instructions for the RHRSW Booster Pump Motors, did not contain information to ensure proper sealing of the 2C RHRSW motor bearings. This finding resulted in a violation of technical specification (TS) 3.0.4, Limiting Condition for Operation (LCO) Applicability, and TS 3.7.1, RHRSW System. As immediate corrective actions, the licensee applied sealant to the motor bearings. Additionally, the licensee revised procedure OCM-M503 and added a detailed location for applying the sealant to the RHRSW pump motors. The licensee entered this issue into the Corrective Action Program (CAP) as nuclear condition report (NCR) 742643.

The inspectors determined the licensee's failure to have an adequate procedure for the 2C RHRSW pump motor bearing maintenance was a performance deficiency. The finding was more than minor because it was associated with the procedural quality attribute 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, the inadequate procedure resulted in the inoperability of the Loop A RHRSW subsystem, and the loss of safety function while the Loop B RHRSW subsystem was out for maintenance. Using IMC 0609, Appendix A, issued June 19, 2012, the SDP for Findings At-Power, Exhibit 2, "Mitigating Systems Screening Questions," the inspectors determined the finding screened to a more detailed risk evaluation, since the finding represented a loss of system and/or function. The regional Senior Reactor Analyst performed a detail risk review of the finding. The at-power model was conservatively used to bound the risk that would happen at the proposed time of failure, which was many days after shutdown due to the time it takes for the oil leak to cause potential bearing failure. Since the licensee had procedures for running the service water (SW) system without the RHRSW pumps energized, and the decay heat loads at the time of failure would be low, a failure rate of only 0.1 for the loss of function was assumed. This was also conservative, since the adverse conditions that would have prevented refill of the oil were LOCA assumptions, and LOCA sequences did not contribute greatly to the risk in the model.

The at-power models solution was more than an order of magnitude below the Green/White threshold for the SDP. Therefore, the finding was determined to be of very low safety significance (Green). The finding has a cross-cutting aspect in the area of human performance associated with the challenge the unknown attribute because the licensee did not stop when faced with uncertain conditions, and risks were not evaluated and managed before proceeding. Specifically, the licensee continued through the 2010 and 2013 2C RHRSW pump maintenance outages, even when the bearings were found without sealant. Additionally, the licensee did not question the procedurally required location for the sealant. H.11

Inspection Report# : [2015004](#) (pdf)

**Significance:**  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:**  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:**  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*)

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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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