U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Brunswick 2 – Quarterly Plant Inspection Findings

2Q/2017 – Plant Inspection Findings

On this page:

Initiating Events

Mitigating Systems

Significance: G Mar 31, 2017
Identified By: NRC
Item Type: NCV Non-Cited Violation
Nonfunctional Sprinklers in the Service Water Building Without Compensatory Measures
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 implement compensatory measures for nonfunctional sprinklers. Specifically, from January 11, 2017, until January 14, 2017, fire sprinklers were impaired when scaffolding was built over the service water (SW) system discharge valves without the proper fire protection evaluation and compensatory measures, as required by licensee procedure 0PLP-01.2, Fire Protection System Operability, Action, and Surveillance Requirements. The licensee's corrective actions included declaring the sprinklers nonfunctional, and implementing an hourly fire watch and backup suppression until the scaffold could be removed. This issue was entered into the licensee's corrective action program (CAP) as nuclear condition report (NCR) 2091795.

The inspectors determined that the licensee's failure to implement compensatory measures for nonfunctional sprinklers in accordance with procedure 0PLP-01.2, was a performance deficiency. The finding was more than minor because it was associated with the Protection against External Events 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 nonfunctional sprinklers in a safety-related area without compensatory measures. The finding was screened using NRC IMC 0609, Appendix F, "Fire Protection Significance Determination Process," dated September 20, 2013, because the finding affected the fixed fire protection system capability. Using IMC 0609, Appendix F, Attachment 1, "Fire Protection SDP Phase 1 Worksheet," dated September 20, 2013, the finding was assigned to the Fixed Fire Protection System category because the nonfunctional sprinklers affected the automatic fire suppression system. 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

with the sprinklers nonfunctional, the reactor was able to reach and maintain safe shutdown. The finding has a cross-cutting aspect in the area of human performance associated with the field presence attribute because leaders did not observe, coach, and reinforce standards and expectations regarding scaffolding. Deviations from standards and expectations for building scaffolding near fire protection sprinklers were not corrected promptly.

Inspection Report# : 2017001 *(pdf)*

Significance: G Mar 31, 2017
Identified By: NRC
Item Type: NCV Non-Cited Violation
Failure to Control a Temporary Fire Ignition Source Near the Unit 2 Standby Liquid Control Pump Motor and Cables
An NRC-identified Green NCV of License Condition 2.B.(6), Fire Protection Program, was identified for the licensee's failure to adequately control fire ignition sources in the Unit 2 standby liquid control (SLC) pump area in accordance with licensee procedure AD-EG-ALL-1523, Temporary Ignition Source Control. Specifically, between January 7, 2017, and January 13, 2017, a temporary electric portable heater was energized 2 feet from a SLC pump motor without continuously attending the temporary ignition source or obtaining a continuous fire watch. The licensee's corrective actions included turning off the heater and removing it from near the SLC pumps. This issue was entered into the licensee's CAP as NCR 2091736.

The inspectors determined that the licensee's failure to control fire ignition sources in accordance with licensee procedure AD-EG-ALL-1523, was a performance deficiency. The finding was more than minor because it was associated with the Protection Against External Events 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, the temporary ignition source could have affected a nearby safety-related SLC pump motor and cables, which provide a shutdown mitigation function. The finding was screened using NRC IMC 0609, Appendix F, "Fire Protection Significance Determination Process," dated September 20, 2013. Using IMC 0609, Appendix F, Attachment 1, "Fire Protection SDP Phase 1 Worksheet," dated September 20, 2013, the finding was assigned to the Fire Prevention and Administrative Controls category because the portable heater is part of the plants combustible materials control program. 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 even if one train of SLC had been inoperable, the reactor was able to reach and maintain safe shutdown. This finding had a cross cutting aspect in the area of human performance associated with the teamwork aspect because individuals failed to effectively communicate and coordinate their activities to ensure that the temporary heaters were energized following prescribed fire protection control measures and written instructions.
Inspection Report# : 2017001 *(pdf)*

Significance: G Mar 31, 2017
Identified By: NRC
Item Type: NCV Non-Cited Violation
Failure to Install Flood Barrier Seals Around the EDG 2 Four-Day Fuel Oil Tank Vents
An NRC-identified Green NCV of 10 CFR Part 50, Appendix B, Criterion III, Design Control, was identified for the failure of the licensee to install flood barrier seals around the emergency diesel generator (EDG) 2, four-day fuel oil tank vent as described in engineering change (EC) 400606. This resulted in a nonfunctional flood barrier into the EDG 2 four-day tank room. As an immediate corrective action, the licensee grouted the opening to prevent water intrusion into the EDG 2 four-day fuel oil tank room. The licensee entered this issue into the CAP as NCR 2093563.

The inspectors determined the failure of the licensee to control the design of the installation of the new EDG 2 four-day

fuel oil tank vent was a performance deficiency. The finding is more than minor because it is associated with the protection against external factors (i.e., flood hazard) 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 (i.e., core damage). Specifically, the licensee failed to install flood barrier seals around the EDG 2 four-day fuel oil tank vent designed to mitigate a flood of the EDG 2 four-day fuel oil tank room. Using IMC 0609, Appendix A, issued June 9, 2012, The SDP for Findings At-Power, the inspectors determined the finding screened to Exhibit 4, External Events Screening Questions, since the finding involved the loss of equipment specifically designed to mitigate a flood. The inspectors determined the finding screened to Green since if the flood barrier is assumed to be completely failed, it would not result in the inoperability or degradation of EDG 2, and would not involve the total loss of any safety function that contributes to external event initiated core damage accident sequences. The finding has a cross-cutting aspect in the area of human performance associated with the design margins attribute because the licensee failed to maintain equipment within design margins and failed to change margins through a systematic and rigorous process. Specifically, the licensee changed the installation of the EDG 2 fuel oil tank roof vent without ensuring flood protection during the modification.
Inspection Report# : 2017001 *(pdf)*

Significance: G Feb 17, 2017
Identified By: NRC
Item Type: NCV Non-Cited Violation
Failure to Correct a Nonfunctional Fire Door
The NRC identified a Green non-cited violation (NCV) of Brunswick Operating License Condition (OLC) 2.B(6) for Units 1 and 2, for the licensee's failure to correct a nonfunctional fire door in the diesel generator (DG) building. Specifically, on three occasions, NRC inspectors identified door 2-DGB-DR-EL023-118 in the DG building as having a stuck open latch, which prevented the door from closing and latching securely. Upon the third discovery of the nonfunctional fire door, the licensee initiated AR 02100405, entered the appropriate action statement in accordance with site procedure 0PLP-01.2, "Fire Protection System Operability, Action, and Surveillance Requirements," and took actions to install a new thumb latch, and to install a new door closure mechanism.

The inspectors determined that the licensee's failure correct nonfunctional fire door was a performance deficiency (PD). The PD was determined to be more than minor because if left uncorrected, the PD could have the potential to lead to a more significant safety concern. Specifically, if the door was not repaired adequately, it could have the potential to not be able to perform its design function in the case of a fire in diesel generator cell nos. 1 or 2 (FA DG-4 or DG-5). Using IMC 0609, Appendix F, Attachment 1, "Fire Protection Significance Determination Process Worksheet," the finding was screened as Green at task 1.4.3-C because there was a fully functional automatic suppression system on at least one side of the fire barrier. The finding has a cross-cutting aspect in the area
of problem identification & resolution associated with the 'Evaluation' attribute because the organization did not thoroughly evaluate the condition of the door to ensure that the resolution addressed the underlying cause of the nonfunctional fire door (P.2).
Inspection Report# : 2017007 *(pdf)*

Significance: G Sep 30, 2016
Identified By: NRC
Item Type: NCV Non-Cited Violation
Failure to Implement Risk Management Actions during Elevated Risk
An NRC-identified Green non-cited violation (NCV) of 10 CFR 50.65(a)(4) was identified for the failure of the licensee to implement all necessary prescribed risk management actions (RMAs) during a 2A residual heat removal (RHR) and residual heat removal service water (RHRSW) outage. Specifically, between August 31, 2016, and September 1, 2016, the licensee failed to post protective equipment signs on the 2B RHR/RHRSW motor control

centers (MCCs) whose unavailability would have taken Unit 2 into a Yellow risk condition. The licensee took immediate corrective actions to protect the 2B RHR/RHRSW MCCs in the field. The licensee entered this issue into the corrective action program (CAP) as nuclear condition report (NCR) 2059064.

The inspectors determined the failure of the licensee to adequately post protected equipment signs for the 2B RHR/RHRSW system, whose unavailability would have taken the unit into a Yellow risk condition, was a performance deficiency. The finding was more than minor because if left uncorrected, the failure to perform RMAs could result in a loss of a safety-related mitigating function, specifically the RHR low pressure coolant injection (LPCI). Using IMC 0609, Appendix K, issued May19, 2005, Maintenance Risk Assessment and Risk Management Significance Determination Process, Flowchart 2, Assessment of RMAs, the inspectors determined the finding screened as very low safety significance (Green) since the incremental core damage probability was less than 1E-6. The finding has a crosscutting aspect in the area of human performance associated with the procedure adherence attribute because the licensee failed to follow plant procedures to fully protect the 2B RHR/RHRSW loop during the 2A RHR/RHRSW loop outage.

Inspection Report# : 2016003 *(pdf)*

Significance: G Sep 30, 2016
Identified By: Self-Revealing
Item Type: NCV Non-Cited Violation
Inadequate Procedure to Perform Preventive Maintenance on the HPCI Auxiliary Oil Pump Motor Overload Relay
A self-revealing Green NCV of Technical Specification (TS) 5.4.1a, Procedures, was identified for the failure of the licensee to have an adequate procedure for preventive maintenance (PM) on the Unit 2 high pressure coolant injection (HPCI) auxiliary oil pump motor overload relay 2-2XDA-B11-74. Specifically, from May 26, 2015, to July 6, 2016, the licensee failed to incorporate PM task 482688, a 12 year replacement task for the relays, into procedures, resulting in a shorted relay coil, the loss of control power, and the inoperability of the HPCI pump. The licensee replaced the relay and the HPCI pump was returned to operable. The licensee entered this issue into the CAP as NCR 2043067.

The inspectors determined that the failure of the licensee to have an adequate PM procedure to replace the Unit 2 HPCI auxiliary oil pump motor overload relay 2 2XDA B11-74 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 failure to replace the HPCI auxiliary oil pump motor overload relay resulted in the inoperability of the Unit 2 HPCI pump, and the loss of safety function. 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 HPCI system and/or function. The inspectors used SAPHIRE to conduct a more detailed risk review of the finding. The inspectors determined that the finding was of very low safety significance (Green), because the core damage frequency (CDF) risk was less than 1.0E-6/year. This finding has a cross-cutting aspect in the area of human performance associated with the work management aspect, for failing to implement a process of planning, controlling, and executing work activities such that nuclear safety is an overriding priority. Specifically the licensee failed to effectively plan and coordinate PM strategies associated with operating experience to prevent the failure of the HPCI pump.
Inspection Report# : 2016003 *(pdf)*

Significance: G Sep 30, 2016
Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation
Inadequate Procedure for the 2B RHRSW Subsystem Operability Test
A self-revealing Green 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 2B RHRSW pump operability test. Specifically, from July 12, 2001, to August 2, 2016, licensee procedure 0PT-08.1.4A(B), RHR Service Water System Operability Test, did not contain sufficient information to maintain plant status control for the Unit 2 RHRSW subsystem "B" pressure switch instrument isolation valves, 2-SW-PS-1176B-3 and 2-SW-PS-1176D-3, resulting in the valves being found mispositioned (closed) and the inoperability of the 2B RHRSW subsystem. This finding resulted in a violation of TS 3.7.1, RHRSW System, since the 2B RHRSW subsystem was inoperable for greater than the TS allowed outage time (AOT). As immediate corrective actions, the licensee opened the 2-SW-PS-1176B(D)-3 valves and ensured the subsystem "A" pressure switch instrument isolation valves were open. Additionally, the licensee revised procedure 0PT-08.1.4A(B) to maintain plant status control by throttling the drain valves versus the pressure switch instrument isolation valves, and included an independent verification step to ensure the valves are returned to the correct position. The licensee entered this issue into the CAP as NCR 2037920.
The inspectors determined the licensee's failure to have an adequate procedure for the 2B RHRSW subsystem operability test to ensure configuration control 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 2B RHRSW subsystem. 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 an actual loss of safety function of a single train for greater than its TS AOT. A regional Senior Risk Analyst (SRA) performed a detailed risk evaluation for the finding by setting the exposure period for 11 days, and assuming recovery actions that could be taken to mitigate the event. In addition, a second later recovery was possible for the dominant sequences because service water, in sufficient quantity, can be pushed through the inoperable pumps to provide adequate cooling in non-loss-of-coolant accident (LOCA) sequences. The dominant contributor involved loss of the heat sink through common cause failure. The risk analysis resulted in a finding that is characterized as very low safety significance (Green). The finding had 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 April 2016 2B RHRSW system operability test, even when the procedure was not clear on which valve to manipulate to adjust for flow fluctuations.

Inspection Report# : 2016003 *(pdf)*

Barrier Integrity

Significance: G Mar 31, 2017
Identified By: NRC
Item Type: NCV Non-Cited Violation
Failure to Enter the Technical Specification for an Inoperable 1D Control Room Air Conditioning Unit
An NRC-identified Green NCV of Technical Specification (TS) 3.7.4, Control Room Air Conditioning (AC) System, was identified for the failure to declare the 1D control room AC unit inoperable. Specifically, on December 1, 2016, the licensee failed to declare the 1D control room AC unit inoperable due to extensive corrosion on the support channels. As a result, the 1D control room AC unit was inoperable from December 1, 2016, until the next time it was inspected on January 30, 2017, and exceeded the TS allowed outage time. As corrective actions, the licensee replaced the supports of the 1D and 2D control room AC units and inspected the 2E control room AC unit for corrosion. The licensee entered this issue into the CAP as NCRs 2113799 and 2113800.

The inspectors determined the licensee's failure to declare the 1D control room AC unit inoperable and enter TS 3.7.4 was a performance deficiency. The finding was more than minor because it was associated with the structures, systems, and components (SSC) attribute of the Barrier Integrity Cornerstone and adversely affected the cornerstone objective of providing reasonable assurance that physical design barriers (fuel cladding, reactor coolant system, and containment) protect the public from radionuclide releases caused by accidents or events. Specifically, this resulted in the 1D control room AC unit being inoperable from December 1, 2016, to January 30, 2017. 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 only represent a degradation of the radiological barrier function for the control room and the finding did not represent a degradation of the barrier function of the control room against smoke or toxic atmosphere. This finding had a cross cutting aspect in the area of problem identification and resolution associated with the resolution aspect because the licensee failed to take effective corrective actions to address issues in a timely manner commensurate with their safety significance. Specifically, the licensee did not correct the degradation of the 1D control room AC unit until the unit was inoperable.
Inspection Report# : 2017001 *(pdf)*

Emergency Preparedness
Occupational Radiation Safety
Public Radiation Safety
Security

The security cornerstone is an important component of the ROP, which includes various security inspection activities the NRC uses to verify licensee compliance with Commission regulations and thus ensure public health and safety. The Commission determined in the staff requirements memorandum (SRM) for SECY-04-0191, "Withholding Sensitive Unclassified Information Concerning Nuclear Power Reactors from Public Disclosure," dated November 9, 2004, that specific information related to findings and performance indicators associated with the security cornerstone will not be publicly available to ensure that security-related information is not provided to a possible adversary. Security inspection report cover letters will be available on the NRC Web site; however, security-related information on the details of inspection finding(s) will not be displayed.

Miscellaneous

Significance: N/A Dec 31, 2016
Identified By: NRC
Item Type: NCV Non-Cited Violation
Failure to Submit a Licensee Event Report for a Condition Prohibited by Technical Specification
An NRC-identified severity level (SL) IV NCV of 10 CFR 50.73(a)(2)(i)(B) was identified for the failure of the licensee to provide a written report to the NRC within 60 days of identifying a condition which was prohibited by plant Technical Specifications (TSs). The licensee entered this issue into the corrective action program (CAP) as nuclear condition report (NCR) 2091608.
The inspectors had previously evaluated the underlying technical issue and determined the failure to promptly identify and correct a condition adverse to quality, which resulted in the condition prohibited by Technical Specifications (TS), was a performance deficiency. The issue was documented as a Green NCV, 05000325;324/2016002-01, Failure to Identify Broken Auto Start Control Relay on Emergency Diesel Generator 1. The ROP's significance determination process does not specifically consider the regulatory process impact in its assessment of licensee performance. Therefore, it was necessary to address this violation which involved a failure to make a required report to the NRC and was considered to impact the regulatory process, using traditional enforcement to adequately deter non-compliance. Using the NRC Enforcement Policy, Section 6.9.d.9, the SL assigned to this violation was SL IV, because the licensee failed to make a report required by 10 CFR 50.73. This violation also meets the criteria for an NCV because it was not repetitive or willful, and was entered into the licensee's CAP. Traditional enforcement violations are not assessed for

cross-cutting aspects.
Inspection Report# : 2016004 *(pdf)*

Current data as of : September 05, 2017

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