

Brunswick 2

4Q/2014 Plant Inspection Findings

Initiating Events

Mitigating Systems

Significance: G Dec 31, 2014

Identified By: NRC

Item Type: NCV NonCited 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: G Dec 31, 2014

Identified By: Self-Revealing

Item Type: NCV NonCited 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*)

Significance:  Sep 30, 2014

Identified By: NRC

Item Type: FIN Finding

Failure to Correct SLC Tank Level Indication Degradation

An NRC-identified Green finding of Licensee Procedure AD-PI-ALL-0100, Corrective Action Program (CAP), was identified for the failure of the licensee to identify and correct a condition adverse to quality with the Unit 2 standby liquid control (SLC) control room level indicator. Specifically, between February 25, 2012, and August 17, 2014, the licensee failed to identify and correct three clogged SLC tank level indicators before the indicators failed. The licensee’s corrective actions included cleaning out the SLC tank level indicator bubbler and evaluating the adequacy of the preventative maintenance associated with this indicator. The licensee entered this issue into the CAP as NCRs 704327 and 704593.

The inspectors determined that the failure of the licensee to identify and correct the clogged SLC tank level indicators before the indicators failed 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 affects 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 instrument reading a higher tank level than actual due to the flow restriction in the bubbler tube, and the inoperability of the instrument. 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 structure, system and component (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 technical specifications (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 human performance associated with the work management attribute because the licensee failed to implement a process of planning, controlling, and executing work activities such that nuclear safety is the overriding priority. The licensee failed to have the work process include the identification and management of risk commensurate to the work and the need for coordination with different groups. Specifically, the licensee failed to identify and manage the risk of the SLC tank level indicator bubbler clogging issue. [H.5]

Inspection Report# : [2014004](#) (*pdf*)

Significance:  Jun 30, 2014

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Include Flood Protection Features in the Maintenance Rule Program

An NRC-identified Green non-cited violation (NCV) of 10 CFR 50.65(b)(2)(ii) was identified for the failure of the licensee to scope flood protection features in the maintenance rule (MR) program. Specifically, from July 10, 1996, to May 8, 2014, the licensee failed to include floor drain flood protection features in the MR program that are nonsafety-related but whose failure could prevent safety-related structures, systems, and components (SSCs) from fulfilling their safety-related function. The licensee's corrective actions included scoping the floor drains into the MR program. The licensee entered this issue into the corrective action program (CAP) as nuclear condition report (NCR) 677850.

The inspectors determined that the failure of the licensee to monitor flood protection features in the MR program, as required by 10 CFR 50.65(b)(2)(ii), 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 affects the cornerstone objective of ensuring the availability, reliability, and capability of the safety related systems to respond to initiating events to prevent undesirable consequences. Specifically, the finding is more than minor because failing to monitor flood protection features resulted in degradation of various flood protection features which could have impacted safety-related equipment. Using IMC 0609, Appendix A, issued June 9, 2012, The SDP for Findings At-Power, Exhibit 2, the inspectors determined the finding is of very low safety significance (Green) because it did not represent an actual loss of function of one or more non-TS trains of equipment designated as high safety-significant in accordance with the licensee's maintenance rule program for greater than 24 hours. The finding has a cross-cutting aspect in the area of problem identification and resolution associated with the resolution attribute because the organization failed to take effective corrective actions to address issues in a timely manner commensurate with their safety significance. Specifically, the licensee failed to scope the credited flood protection floor drains into the MR program. [P.3]

Inspection Report# : [2014003](#) (*pdf*)

Barrier Integrity

Emergency Preparedness

Significance:  Jun 30, 2014

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Maintain a Standard Emergency Action Level Scheme for Flooding

An NRC-identified Green NCV of 10 CFR 50.54(q)(2), 10 CFR 50.47(b)(4), and the requirements of Appendix E to

10 CFR Part 50, was identified for the failure of the licensee to maintain the effectiveness of the emergency plan. Specifically, from November 6, 2009, to July 21, 2014, the licensee failed to maintain in effect, a standard emergency action level (EAL) scheme by failing to provide effective means for determining flooding water levels which is required to properly classify an ALERT during a probable maximum hurricane (PMH). The licensee's corrective actions include painting level indication on the service water building visible to the operator stationed at the service water building to determine when the ALERT flood level is reached. The licensee entered this issue into the CAP as NCRs 688613 and 693590.

The inspectors determined that the failure to provide reliable and timely indication for operators to adequately implement the ALERT flooding EAL HA 1.5 was a performance deficiency. The finding is more than minor because it is associated with the Facilities and Equipment attribute of the Emergency Preparedness (EP) cornerstone and affected the cornerstone objective to ensure the licensee is capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. Specifically, the licensee's ability to classify an ALERT for a flooding event was adversely affected because flood levels could not be adequately determined. In accordance with the IMC 0609, Appendix B, "Emergency Preparedness Significance Determination," issued February 24, 2012, and Figure 5.4-1, the inspectors determined that this finding is of very low safety significance (Green) because the performance deficiency was a condition where an EAL has been rendered ineffective such that an ALERT would not be declared for a flooding event. The finding has a cross-cutting aspect in the area of human performance associated with the resources attribute because leaders failed to ensure that personnel, equipment, procedures, and other resources are available and adequate to support nuclear safety and declare an ALERT for a PMH. [H.1]

Inspection Report# : [2014003](#) (*pdf*)

Occupational Radiation Safety

Significance:  Sep 30, 2014

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Post a High Radiation Area

A Green self-revealing NCV of TS 5.7.1 was identified for the failure to post a high radiation area (HRA). Specifically, on September 25, 2014, the licensee failed to post the Unit 2 high pressure coolant injection (HPCI) pump room as a HRA during a HPCI pump run in which maximum dose rates increased to 900 mrem per hour at 30 cm. As a result, an individual entered the area without knowledge of the changing radiological conditions and received a dose rate alarm. In response, the licensee immediately shut down the HPCI pump, performed a human performance review board, posted the area as a HRA, and surveyed the affected areas. The licensee entered this issue into the CAP as NCR 710281.

The failure to post a high radiation area with dose rates greater than 100 mrem per hour is a performance deficiency. The performance deficiency was more than minor because it was associated with the Occupational Radiation Safety Cornerstone attribute of program and process (exposure control) and adversely affected the cornerstone objective to ensure the adequate protection of worker health and safety from exposure to radiation from radioactive material during routine civilian nuclear reactor operation. Failure to inform workers of radiological conditions through the use of postings could lead to unintended exposures. The Occupational Radiation Safety Cornerstone was affected; therefore, the inspectors used Manual Chapter 0609, Appendix C, "Occupational Radiation Safety Significance Determination Process," dated August 19, 2008, to determine the significance of the violation. The violation had very low safety significance (Green) because: (1) it was not an as low as is reasonably achievable finding, (2) there was no overexposure, (3) there was no substantial potential for an overexposure, and (4) the ability to assess dose was not

compromised. The finding has a cross-cutting aspect in the area of human performance, associated with the teamwork attribute, because individuals and work groups failed to communicate and coordinate their activities within and across organizational boundaries to ensure nuclear safety is maintained and post the HPCI room as a high radiation area.
[H.4]

Inspection Report# : [2014004](#) (*pdf*)

Public Radiation Safety

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.

Miscellaneous

Last modified : February 26, 2015