

Oconee 3

4Q/2016 Plant Inspection Findings

Initiating Events

Mitigating Systems

Significance:  Sep 30, 2016

Identified By: NRC

Item Type: FIN Finding

Failure to Translate Design Requirements to Prevent the Effects of Waterhammer

Green. The NRC identified a finding for the licensee's failure to translate the limiting flow rate design requirement into station procedures used to start and operate the alternate reactor building cooling (RBC) system, in accordance with the Duke Energy Carolinas Topical Report, Quality Assurance Plan (QAP). Specifically, the licensee failed to translate the limiting flow rate of 170 gallons per minute (gpm) into Procedure AP/0/A/1700/051, "Alternate Reactor Building Cooling," Revision (Rev.) 2, to ensure prevention of waterhammer on the "A" reactor building cooling unit (RBCU) or connecting low pressure service water (LPSW) lines when starting the RBCU Hale pump. The licensee entered this issue into their corrective action program as Action Request (AR) 02049903 and revised Procedure AP/0/A/1700/051 to limit the RBCU Hale pump discharge flow to each affected unit to an initial fill rate of 120 gpm or less.

The performance deficiency was determined to be more than minor because it adversely affected the protection against external factors attribute of the mitigating systems cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, opening the RBCU Hale pump discharge valve four turns, as specified in the procedure, would have resulted in filling the alternate RBC system at approximately 600-700 gpm and exceeding the design flow rate of 170 gpm established to prevent equipment and piping damage as a result of waterhammer. This provided a reasonable doubt that the alternate RBC system had the capability to reliably perform its intended safety function and, in turn, that the protected service water (PSW) system had the capability to meet its 30-day mission time during a turbine building fire that resulted in a loss of offsite power. The finding was determined to be of very low safety significance (Green) because the finding would not have resulted in a fire that caused secondary fires outside of the originating fire area due to circuit issues and did not affect the ability to reach and maintain a stable plant condition within the first 24-hours of a fire event. The inspectors determined the finding was indicative of present licensee performance and was associated with the cross-cutting aspect of design margin, in the area of human performance. Specifically, the licensee failed to operate and maintain the alternate RBC system equipment within design margins when they did not translate design requirements from Engineering Change (EC) 110008 and Calculation OSC-8107 into station procedures. [H.6] (Section 1R17)

Inspection Report# : [2016003](#) (*pdf*)

Significance:  Jun 30, 2016

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to properly control transient combustible materials in the Oconee Main Control Rooms.

Green: An NRC-identified Green non-cited violation (NCV) of Oconee Nuclear Station Units 1, 2, and 3 Renewed Facility Operating License Condition 3.D, "Fire Protection," was identified for the licensee's failure to adequately implement the requirements of the transient combustible material program. Specifically, licensee failed to control the storage of transient combustible material in the Oconee main control rooms with the proper evaluation in accordance with procedure AD-EG-ALL-1520, "Transient Combustible Control," Attachment 3, "Allowed Combustible Materials in Level B and Level C Areas." The licensee removed the stored items from each of the main control rooms and entered this issue into their corrective program as nuclear condition reports (NCRs) 02012091; 02012290; and 02013990.

The licensee's failure to control the storage of transient combustible material in the Oconee main control rooms with the proper evaluation in accordance with procedure AD-EG-ALL-1520 was a performance deficiency. The performance deficiency was more-than-minor because it was associated with the protection against external factors 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, uncontrolled transient combustibles challenge the habitability requirements of the main control room in the event of a fire and the ability of licensed operators to respond to events using the systems designed to prevent undesirable consequences. The finding was screened in accordance with IMC 0609, "Significance Determination Process," Attachment 4, "Initial Characterization of Findings" and IMC 0609 Appendix F, "Fire Protection Significance Determination Process" Task 1.3.1, and determined to be of very low safety significance (Green) because the finding did not prevent the reactor to reach and maintain a safe shutdown condition. The finding was determined to have a cross-cutting aspect of procedure adherence in the human performance cross-cutting area because the licensee failed to implement the requirements of station procedure AD-EG-ALL-1520, "Transient Combustible Control" [H.8]. (Section 4OA2)

Inspection Report# : [2016002](#) (*pdf*)

Significance:  Jun 30, 2016

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

Degraded power cables result in inoperable startup transformer and loss of Unit 3 safety function.

A self-revealing Green violation of Oconee Technical Specification 5.4, "Procedures," was identified for the licensee's failure to establish written procedures. Station procedure IP/0/A/2400/002, "Substation Insulators, Lighting Arrestors, CCVT, Transformer Drop Down Line, Bus Inspection and Maintenance," lacked sufficient detail for maintenance personnel to properly inspect power cables for cracks and fraying. This allowed undetected degradation of the Oconee startup transformer power cables to develop causing the Unit 3 startup transformer to become inoperable. The licensee performed repair activities on the degraded power cables to remove areas where strands of the power cables were severed and re-established proper connections. Also, the licensee created work orders in their work management process to replace the drop down lines on the Unit 1 and Unit 3 startup transformers. The licensee entered this issue into their corrective program as NCR 01733811.

The licensee's failure to establish an adequate procedure to detect degradation of startup transformer power cables during periodic maintenance was a performance deficiency. The performance deficiency was determined to be 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, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e. core damage). Specifically, the power cable failure caused inoperability of the Unit 3 startup transformer. The finding was screened in accordance with IMC 0609, "Significance Determination Process," Attachment 4 and Appendix A and determined to require a detailed risk evaluation. A senior reactor analyst performed a detailed risk evaluation of this condition and determined delta CDF was 3E-7 (Green). The finding was determined to have a cross-cutting aspect of evaluation in the problem identification and resolution cross-cutting area because the licensee's corrective actions resulting from a degraded

power cable in 2002 failed to incorporate sufficient detail into their procedures necessary to detect frayed cables [P.2]. (Section 40A3)

Inspection Report# : [2016002](#) (pdf)

Significance: N/A Jun 30, 2016

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to Make a Non-Emergency Eight Hour Notification of a Loss of Safety Function

SL IV. An NRC-identified Severity Level IV NCV of 10 CFR 50.72(b)(3)(v) was identified for the licensee's failure to make a required non-emergency eight hour notification for a loss of the emergency AC power path function. On December 7, 2015 Oconee Nuclear Station Unit 3 experienced a loss of the emergency AC power path function for approximately 21 minutes. The licensee entered this issue into their corrective action program as NCR 01981762.

The failure to make an eight hour non-emergency report for a loss of the emergency AC power path function per 10 CFR 50.72(b)(3)(v) was a performance deficiency. This performance deficiency impacted the ability of the NRC to perform its regulatory oversight function and was dispositioned using traditional enforcement. Failure to report negatively impacts many of the surveillance, quality control, and auditing systems on which both the NRC and its licensees rely to monitor compliance with safety standards are based primarily on complete, accurate, and timely recordkeeping and reporting. This violation was assessed using Section 2.2.4 of the NRC's Enforcement Policy, revised February 4, 2015. Using the example listed in Section 6.9.d.9, "A licensee fails to make a report required by 10 CFR 50.72," the issue was determined to be a Severity Level IV violation. In accordance with IMC 0612, because this violation involved traditional enforcement and does not have an underlying technical violation that would be considered more-than-minor, a cross-cutting aspect was not assigned to this violation. (Section 40A3)

Inspection Report# : [2016002](#) (pdf)

Significance:  Mar 18, 2016

Identified By: NRC

Item Type: NCV Non-Cited Violation

Postulated Fire Affecting High Pressure Injection Pump Did Not Receive a VFDR Evaluation

Green. The NRC identified a Green NCV of 10 CFR 50.48(c) and National Fire Protection Association Standard (NFPA) 805, Section 2.4.2.4 for the licensee's failure to perform an adequate engineering analysis to determine the effects of fire on the ability to achieve the nuclear safety performance criteria, and consequently, did not add an associated variation from deterministic requirements (VFDR) into the Fire probabilistic risk assessment (PRA). Specifically, the licensee's Nuclear Safety Capability Assessment (NSCA) failed to identify cables in the turbine building (TB) that could prevent the operation of the High Pressure Injection (HPI) Pumps. This item was entered into the corrective action program (CAP) as action request (AR) 02011673, and the licensee implemented compensatory measures in the form of hourly fire watches.

The performance deficiency (PD) was more than minor because it was associated with the reactor safety Mitigating Systems cornerstone attribute of protection against external factors (i.e. fire), and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the licensee's failure to analyze the effects of fire damage on the HPI cables in the TB could result in fire damage adversely affecting the ability to achieve and maintain safe and stable conditions. Using the guidance of IMC 0609, App. F, the finding was screened as Green because the finding did not affect the ability to reach and maintain a stable plant condition within the first 24 hours of a fire event (Task 1.4.5-B). Across cutting aspect in the area of Human Performance, Consistent Process because the licensee did not use a consistent, systematic approach to make decisions, and did not incorporate appropriate risk insights (H.13). (Section 1R05.06)

Inspection Report# : [2016007](#) (pdf)

Barrier Integrity

Significance:  Jun 30, 2016

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to perform ISI general visual examinations of containment moisture barrier.

Green: An NRC-identified Green NCV of 10 CFR Part 50.55a, “Codes and Standards,” was identified for the licensee’s failure to conduct 100 percent general visual examinations of the moisture barriers to the containment liner in accordance with Subsection IWE of American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section XI. Specifically, the licensee failed to conduct visual examinations for the sealant applied to interior expansion joint locations in containment. In response, the licensee repaired the identified moisture barriers and confirmed the operability of the containment liner with the satisfactory results of the containment integrated leak rate test. The licensee entered this issue into their corrective action program as NCR 02027086.

The failure to conduct a general visual examination of 100 percent of the moisture barriers intended to prevent intrusion of moisture against inaccessible areas of the containment liner was a performance deficiency. The performance deficiency was determined to be more-than-minor because it was associated with the design control attribute of the barrier integrity cornerstone objective of providing reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. Specifically, the inspectors determined that this finding was of more-than-minor significance because the failure to conduct required visual examinations and identify the degraded moisture barriers, which could allow the intrusion of water, if left uncorrected, had the potential to lead to a more significant concern. The inspectors used IMC-0609, Appendix A, “The Significance Determination Process (SDP) For Findings At-Power,” “Exhibit 3 – Barrier Integrity Screening Questions,” and determined that the finding was of very low safety significance (Green) because it did not represent an actual open pathway in the physical integrity of the reactor containment and did not involve an actual reduction in function of hydrogen igniters in the reactor containment. The inspectors determined no cross-cutting aspect was associated with this finding because the finding was not reflective of present licensee performance. (Section 1R08)

Inspection Report# : [2016002](#) (*pdf*)

Emergency Preparedness

Occupational Radiation Safety

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.

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Miscellaneous

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