Browns Ferry 2
1Q/2016 Plant Inspection Findings

Initiating Events

Mitigating Systems

Significance: G Mar 31, 2016
Identified By: NRC
Item Type: FIN Finding
Unacceptable Preconditioning of RCIC Valve Prior to ASME In-Service Testing
An NRC identified finding (FIN) for failure to meet TVA procedure NETP-116.3, "Inservice Testing Program Preconditioning Guidelines," because unacceptable preconditioning of the Unit 2 Reactor Core Isolation Cooling (RCIC) steam supply valve occurred prior to quarterly In-Service Test (IST). Specifically, the preconditioning was unacceptable because the testing sequence was avoidable, it masked the actual as-found condition of the valve, and it could possibly result in an inability to verify the operability of the valve. As an immediate corrective action, the licensee performed an evaluation that determined the valve remained operable. The finding was entered into the licensee's corrective action program as CR 1159463 .

The performance deficiency was more-than-minor because it was associated with the Equipment Performance attribute of the Mitigating Systems Cornerstone and adversely affected the cornerstone objective of ensuring the reliability and capability of systems that respond to initiating events to prevent undesirable consequences (i.e. core damage). Additionally, if left uncorrected, the performance deficiency could lead to a more significant safety concern. Specifically, the licensee's justification of this particular preconditioning event could be applied to justify additional, avoidable, preconditioning events and possibly result in an inability to verify the operability of components. This finding was evaluated in accordance with NRC IMC 0609, Appendix A, Exhibit 2 "Mitigating Systems Screening Questions," dated June 19, 2012. The inspectors determined the finding was Green because the finding was not a design or qualification deficiency, did not represent a loss of system safety function, did not result in a loss of function of a single train for greater than its TS allowable outage time, did not result in a loss of function of non-TS equipment, and did not involve the loss of equipment or function specifically designed to mitigate an external event. The inspectors determined that the finding had a cross-cutting aspect in the Human Performance area of Consistent Process [H.13], because individuals did not complete the required preconditioning evaluation forms described in licensee procedure NETP-116.3, which would have challenged the validity of the licensee's original determination of acceptability.

Inspection Report# : 2016001 *(pdf)*

Significance: G Dec 31, 2015
Identified By: NRC
Item Type: NCV Non-Cited Violation
Failure to Properly Assess and Manage Risk During Planned Maintenance Activities
A self-revealing non-cited violation (NCV) of 10 CFR Part 50.65(a)(4) was identified for the licensee's failure to properly assess and manage the risk associated with performing maintenance on the Standby Gas Treatment (SBGT)

system piping . Specifically, the licensee failed to evaluate the effects of excavation activities associated with the SBGT piping repairs on the condensing coils of the Control Bay (CB) chillers which resulted in the fouling of the condensing coils of the 'A' CB chiller. The licensee's immediate corrective action was to clean the 'A' CB chiller condensing coils and restore it to an operable status. The issue was entered into the licensee's corrective action program (CAP) as CR 1056829.

The performance deficiency 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, reliability, and capability of systems that respond to events and prevent undesirable consequences. Specifically, with the 'B' CB chiller out of service for maintenance, the 'A' CB chiller lost the ability to perform its safety function due to excessive dirt buildup caused, in part, by the nearby excavation activities. The inspectors characterized the finding using IMC 0609, Appendix A, Significance Determination Process, Exhibit 2, Mitigating Systems. The finding was screened to Green because although the 'A' CB chiller was inoperable, the performance deficiency did not cause the loss of system function, and the inoperability did not exceed the 24 hours. The finding does not represent an immediate safety concern because the licensee had cleaned the 'A' CB chiller condensing coils and restored the system's safety function. A cross cutting aspect of Teamwork was assigned due to the licensee's Engineering, Maintenance, Work Control, and Operations staffs' failure to adequately coordinate or communicate prior to commencing the 'B' CB chiller maintenance. (H.4)
Inspection Report# : 2015004 *(pdf)*

Significance: G Dec 31, 2015
Identified By: NRC
Item Type: NCV Non-Cited Violation
Failure of 2A RHR Pump to Start from the Control Room due to a Loose Fastener
A self-revealing NCV of TS 5.4.1.a was identified for the licensee's failure to use appropriate maintenance procedures to ensure appropriate system start functions worked after maintenance activities on the 2A Residual Heat Removal (RHR) Pump breaker. Specifically, the licensee's failure to follow procedure MAI-3.3, Cable Terminating and Splicing for Cables Rated up to 15000 Volts resulted in the loose lead in the 2A RHR pump breaker. The licensee's immediate corrective actions were to properly tighten the terminal screw. The issue has been entered into the licensee's CAP as CR 1040950.

The performance deficiency was more than minor because it was associated with the Human Performance attribute of the mitigating systems cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of the Unit 2 RHR system to respond to events and prevent undesirable consequences. Specifically, the failure to retighten a terminal screw in the 2A RHR pump breaker resulted in the 2A RHR pump being unable to be started from the control room. The inspectors characterized the finding using IMC 0609, Appendix A, Significance Determination Process, Exhibit 2, Mitigating Systems. The inspectors determined the finding screened as very low safety significance (Green) because the finding did not represent an actual loss of function of at least a single Train for greater than its Tech Spec Allowed Outage Time. The finding does not represent an immediate safety concern because the automatic functions of the RHR pump were not lost and manual starts were available from the 4kV shutdown board. The cause of the finding was directly related to the cross-cutting aspect of Procedure Adherence due to the individuals failing to follow their work instructions. (H.8)
Inspection Report# : 2015004 *(pdf)*

Significance: G Dec 31, 2015
Identified By: NRC
Item Type: NCV Non-Cited Violation
Failure to Maintain The Design Packing Features of the Unit 2 HPCI Turbine Steam Admission Valve
A self-revealing Non-Cited violation (NCV) of 10 CFR Part 50, Appendix B, Criterion III, Design Control was

identified for the licensee's failure to properly install the Unit 2 High Pressure Coolant Injection (HPCI) turbine steam admission valve packing assembly. The licensee installed a valve packing type that was not as specified in design control drawings and due to inadequate maintenance drawings installed the packing gland follower upside down. Upon discovery of the packing failure, the licensee took action to isolate the associated steam leak and declare the HPCI system inoperable. Repairs were completed and tested on September 19, 2015. The licensee entered the issue into their corrective action program as CRs 1114188 and 1127172.

The performance deficiency was more-than-minor because it was associated with the Equipment Performance attribute of the Mitigating Systems cornerstone and it adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e. core damage). Specifically, the failure to maintain the design features led to the loss of operability of the HPCI system when valve 2-FCV-73-16 packing failed and HPCI was isolated to stop the steam leak. This finding was evaluated in accordance with NRC IMC 0609, Appendix A, Exhibit 2 "Mitigating Systems Screening Questions," dated June 19, 2012. The finding was screened to Green because HPCI would have been able to perform its design basis function with the steam leak. The inspectors determined that the finding had a cross cutting aspect of Design Margins because the licensee allowed non-equivalent packing material to be installed in the Unit 2 HPCI steam admission valve. (H.6)

Inspection Report# : 2016001 *(pdf)*
Inspection Report# : 2015004 *(pdf)*

Significance: G Dec 31, 2015
Identified By: NRC
Item Type: NCV Non-Cited Violation
Failure to Identify Significant Steam Leak on the Unit 2 HPCI Turbine Steam Admission Valve
A self-revealing Non-Cited Violation (NCV) of 10 CFR Part 50, Appendix B, Criterion XVI, Corrective Actions, was identified for the licensee's failure to take corrective action following the discovery of a significant steam leak from the packing gland of the Unit 2 HPCI steam inlet isolation valve, 2-FCV-73-16. Specifically, the licensee failed to correctly classify the severity of the leak on 2-FCV-73-16 as described in NPG-SPP-06.8, Leak Reduction Program, and allowed the condition to degrade until packing failure. Upon discovery of the packing failure, the licensee took action to isolate the associated steam leak and declare the HPCI system inoperable. Repairs were completed and tested on September 19, 2015. The licensee entered the issue into their corrective action program as CR 1082405.

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 it adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e. core damage). Specifically, misclassification of the leak severity as minor led to the loss of function of the HPCI system when valve 2-FCV-73-16 packing degraded until failure and HPCI was isolated to stop the steam leak. This finding was evaluated in accordance with NRC IMC 0609, Appendix A, Exhibit 2 "Mitigating Systems Screening Questions," dated June 19, 2012. The finding was screened to Green because HPCI would have been able to perform its design basis function with the steam leak. The inspectors determined that the finding had a cross cutting aspect of Resolution because the licensee did not take timely corrective action to repair the Unit 2 HPCI steam leak before it lead to a Safety System Functional Failure. (P.3)

Inspection Report# : 2016001 *(pdf)*
Inspection Report# : 2015004 *(pdf)*

Significance: G Dec 18, 2015
Identified By: NRC

Item Type: NCV Non-Cited Violation
Failure to develop a PM schedule that specified inspection of the EDG neutral grounding resistor
A NRC-identified non-cited violation (NCV) of Technical Specifications (TS) 5.4.1 was identified for the failure to develop a preventive maintenance (PM) schedule that specified inspection of the Emergency Diesel Generators (EDG) neutral grounding resistor as recommended by Regulatory Guide (RG) 1.33, 9.b. Specifically, procedures failed to provide proper guidance to maintain the grounding resistor in accordance with design basis as described in the UFSAR and electrical calculations. Upon identification of the issue, the licensee performed a visual inspection of the resistor and determined that it was functional based on no signs of physical degradation or damage. The licensee entered this issue into the corrective action program (CAP) as CR1114779 to evaluate and implement appropriate corrective actions.
This performance deficiency was more than minor because if left uncorrected it could result in a more significant safety concern. Specifically, lack of inspections of the secondary grounding resistor could allow for an undetected condition which would cause transient voltages capable of damaging safety related equipment. The finding was screened for significance using the Mitigating Systems cornerstone column of IMC 0609, Attachment 4, “Phase 1 - Initial Screening and Characterization of Findings,” dated June 19, 2012, and was determined to be of very low safety significance (Green) using IMC 0609 Appendix A, “The Significance Determination Process (SDP) for Findings At-Power,” dated June 19, 2012, because the finding affected the design or qualification of a Mitigating SSC, and the SSC maintained its operability as documented in CR 1114779. No cross-cutting was assigned because it is not indicative of current licensee performance.
Inspection Report# : 2015007 *(pdf)*

Barrier Integrity

Significance: G Dec 18, 2015
Identified By: NRC
Item Type: NCV Non-Cited Violation
Failure to Specify Adequate Instrument Ranges for MSIV Leakage Testing
A NRC identified NCV of 10 Code of Federal Regulations (CFR) Part 50, Appendix B, Criterion XI, “Test Control,” was identified for the failure to specify adequate test instrumentation for performing MSIV leak rate testing. Specifically, the licensee test procedure allowed the use of high range test instruments to measure low leakage rates while performing the combined leak rate testing on the Unit 1 B Main Steam Line. This resulted in instrument uncertainties large enough to impact the validity of the test results. The licensee immediately entered this issue into their corrective action program as CR 1117381. The licensee performed an evaluation and determined that the latest test results provided reasonable assurance of operability.

This performance deficiency was more than minor because if left uncorrected had the potential to lead to a more significant safety concern by masking the failure to meet test acceptance criteria. The finding was screened for significance using the Barrier Integrity cornerstone column of IMC 0609, Attachment 4, “Phase 1 - Initial Screening and Characterization of Findings,” dated 7/1/2012, and IMC 0609 Appendix A, “The

Significance Determination Process (SDP) for Findings At-Power," dated 7/1/2012, and was determined to be of very low safety significance (Green) because the finding did not represent an actual open pathway in the physical integrity of reactor containment. This finding was assigned a cross-cutting aspect in the area of Problem Identification and Resolution because the licensee did not initiate a corrective action to identify the cause of the negative leak rate results obtained during the recent performance of the test procedure (P.1).
Inspection Report# : 2015007 *(pdf)*

Emergency Preparedness

Significance: G Mar 31, 2016
Identified By: NRC
Item Type: NCV Non-Cited Violation
Failure to adequately maintain emergency plan implementing procedures
The inspectors identified a non-cited violation (NCV) of Title 10 of the Code of Federal Regulations (CFR), Part 50.54(q)(2), for the licensee's failure to maintain the effectiveness of its emergency plan by ensuring procedures for use by the emergency response organization are maintained and up-to-date as required by 10 CFR 50.47(b)(16). Corrective actions already taken were implementation of a revision (49) to EPIP-5, effective January 7, 2016, essentially replacing Section 3.6 and references to appropriate Appendices, and a broader scope EOC to review all site EPIPs to ensure no other inadvertent omissions were made.

The inspectors determined that the performance deficiency was more than minor because it was associated with the procedure quality attribute of the Emergency Preparedness (EP) cornerstone, adversely affected the associated cornerstone objective, and may have been used had an emergency been declared. The finding was evaluated using the EP significance determination process and was identified as having very low safety significance (Green) because it was a failure to comply with NRC requirements and was not a loss of the planning standard function. The finding was associated with a cross-cutting aspect in the Evaluation component of the Problem Identification and Resolution area because the licensee failed to thoroughly evaluate a similar issue at one of its other sites to ensure extent of conditions commensurate with their safety significance are thoroughly resolved. [P.2]

Inspection Report# : 2016001 *(pdf)*

Occupational Radiation Safety

Significance: G Mar 31, 2016
Identified By: NRC
Item Type: NCV Non-Cited Violation
Unauthorized Entry into a High Radiation Area
A self-revealing, Non-cited Violation (NCV) of Technical Specification (TS) 5.7.1, was identified for a worker who entered a High Radiation Area (HRA) without proper authorization. Specifically, the worker entered a posted HRA located outside the Radwaste Ventilation Equipment Room without receiving a HRA briefing, and subsequently received a dose rate alarm. This issue was entered into the licensee's corrective action program as Condition Report (CR) 1072342, and the licensee took immediate corrective actions including surveys of the area, and restricting the

worker's access to the Radiologically Controlled Area.

The performance deficiency was greater than minor because it was associated with the Occupational Radiation Safety cornerstone attribute of Program and Process (Monitoring and Radiation Protection (RP) Controls) and adversely affects the cornerstone objective of ensuring adequate protection of worker health and safety from exposure to radiation from radioactive material during routine civilian nuclear reactor operation. The inspectors determined the finding to be of very low safety significance (Green) because it was not related to As Low As Reasonably Achievable (ALARA) planning, nor did it involve an overexposure or substantial potential for overexposure, and the ability to assess dose was not compromised. This finding involved the cross-cutting aspect of Human Performance, Procedural Adherence [H.8] because the event was a direct result of the worker's failure to adhere to requirements for HRA access.

Inspection Report# : 2016001 *(pdf)*

Significance: G Mar 31, 2016
Identified By: NRC
Item Type: NCV Non-Cited Violation
Unposted High Radiation Areas
A self-revealing, NCV of 10 CFR 20.1902(b), with two examples, was identified for the failure to post multiple HRAs. Specifically, areas within the Unit 2 (U2) Control Rod Drive Rebuild Room and U2 Reactor Water Cleanup Holding Pump Room contained dose rates exceeding 100 mrem/hr at 30 cm and remained unposted for several months during 2015. These issues were entered into the licensee's corrective action program as CR 1017294, CR 1023385, and CR 1119944, and the licensee took immediate corrective actions to correctly post the areas, performed surveys to evaluate the extent of condition, and performed an Apparent Cause Evaluation.

The performance deficiency was greater than minor because it was associated with the Occupational Radiation Safety cornerstone attribute of Program and Process (Monitoring and RP Controls) and adversely affects the cornerstone objective of ensuring adequate protection of worker health and safety from exposure to radiation from radioactive material during routine civilian nuclear reactor operation. The inspectors determined the finding to be of very low safety significance (Green) because it was not related to As Low As Reasonably Achievable (ALARA) planning, nor did it involve an overexposure or substantial potential for overexposure, and the ability to assess dose was not compromised. This finding involved the cross-cutting aspect of Human Performance, Documentation [H.7] because the unposted high radiation areas were a direct result of the failure to identify documented radiological conditions that required additional posting and control.

Inspection Report# : 2016001 *(pdf)*

Public Radiation Safety

Significance: G Mar 31, 2016
Identified By: NRC
Item Type: NCV Non-Cited Violation
Failure to Include the Correct Proper Shipping Name on Radioactive Material Shipping Papers
The inspectors identified a NCV of 10 CFR 71.5 for the failure to include the correct Proper Shipping Name (PSN) on radioactive material shipping papers in accordance with the requirements of Department of Transportation (DOT) regulation 49 CFR 172.202. This resulted in multiple Low Specific Activity (LSA) shipments containing quantities

exceeding an A2 value being shipped as “UN2915, Radioactive Material, Type A Package”. The licensee documented this issue in CR 1145617 and took immediate corrective actions including updating the software used to perform shipping activities and additional training of personnel.

The performance deficiency was greater than minor because it was associated with the Public Radiation Safety Cornerstone, Program & Process attribute (transportation program), and adversely affected the associated cornerstone objective to ensure adequate protection of public health and safety from exposure to radioactive materials released into the public domain as a result of routine civilian nuclear reactor operation. The inspectors determined the finding to be of very low safety significance (Green) because the issue involved transportation, but there were no radiation limits exceeded, and there was no package breach. In addition, it did not involve a Certificate of Compliance or low-level burial problem, nor was there a failure to make notifications or provide emergency response information. The finding has a cross-cutting aspect in the area of Human Performance, Training [H.9], because the DOT requirements pertaining to LSA shipments were not well understood.

Inspection Report# : 2016001 *(pdf)*

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 : July 11, 2016