Browns Ferry 3
2Q/2016 Plant Inspection Findings

Initiating Events

Significance: G Jun 30, 2016
Identified By: NRC
Item Type: FIN Finding
Failure to Provide Adequate Maintenance Results in Loss of Core Flow While Shutdown
A self-revealing, finding associated with the licensee's failure to provide adequate work instructions for performing maintenance on the discharge valves for 3A and 3B Recirculation Pump motors. This resulted in three consecutive pump trips and a complete loss of RCS core flow when time to boil was less than three hours. Upon discovery that a drawing error had resulted in an incorrect limit switch setting, a work order was created and performed to return the design feature to the proper settings. This resulted in correcting the pump start feature. The licensee initiated CRs 1151665 and 1151935 to address the inadequate post maintenance work instructions.

The failure to provide adequate work instructions for maintenance on the Unit 3 recirculation pump discharge valve motors which included appropriate testing as described in NPG – SPP 06.9.3 Post Modification testing, was a performance deficiency. The performance deficiency was more than minor because it affected the equipment performance attribute of the Initiating Systems Cornerstone and adversely affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown operations. The inspector performed the initial significance determination using NRC Inspection Manual Chapter 0609, Appendix G, Attachment 3, "Shutdown Operations Significance Determination Process Phase 1 Initial Screening and Characterization of Findings" and determined that the finding was of very low safety significance. This finding had a cross-cutting aspect in the area of human performance because Browns Ferry work planners did not ensure that design documentation was correct and that work packages provided the proper tests to ensure the Variable Frequency Drives (VFD) / Recirculation pump trip logic was properly coordinated with the discharge valve MOV limit switches [H.7].

Inspection Report# : 2016002 *(pdf)*

Mitigating Systems

Significance: G Apr 15, 2016
Identified By: NRC
Item Type: NCV Non-Cited Violation
Failure to Include Required Gasket Replacement in Limit Switch Surveillance Procedure
An NRC-identified non-cited violation (NCV) of Title 10, Code of Federal Regulations (CFR) Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for the licensee's failure to include vendor requirements for maintaining the environmental qualification of the main steam isolation valve (MSIV) limit switches in maintenance procedures. Specifically, not maintaining the MSIV limit switches in their qualified condition impacts their reliability. The licensee entered this issue into the corrective action program as CR 1160702. The licensee evaluated the impact of the

incorrect guidance, and determined that all three units were affected, and that the MSIV limit switches remained operable, although they were in an unqualified condition. The licensee plans to correct the affected procedures.
This performance deficiency was more than minor because it was associated with the mitigating systems cornerstone attribute of equipment performance 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, not maintaining the MSIV limit switches in their qualified condition impacted their reliability. The team used IMC 0609, Att. 4, "Initial Characterization of Findings," issued June 19, 2012, for Mitigating Systems, and IMC 0609, App. A, "The Significance Determination Process (SDP) for Findings At-Power," issued June 19, 2012, and determined the finding to be of very low safety significance (Green) because the finding was a deficiency affecting the design of a mitigating structure, system, or component (SSC), and the SSC maintained its operability or functionality. The team determined that no cross-cutting aspect was applicable because the finding was not indicative of current licensee performance.
Inspection Report# : 2016010 *(pdf)*

Significance: G Mar 31, 2016
Identified By: NRC
Item Type: NCV Non-Cited Violation
Failure to Identify Applicable Technical Specification Action Statement for a PCIV
. An NRC identified non-cited violation (NCV) of Technical Specification (TS) 5.4.1, Procedures, for the licensee's failure to implement OPDP-8, Operability Determinations and LCO Tracking. Specifically, the licensee failed to track the applicability of condition 'A' of TS LCO 3.6.1.3 upon discovery of the equipment failure related to the Residual Heat Removal (RHR) Shutdown Cooling (SDC) inboard suction valve as described in LER 05000296/2014-003-00. As an immediate corrective action, the licensee entered the violation into the corrective action program as CR 1115172.

The performance deficiency was more-than-minor because, if left uncorrected, would have the potential to lead to a more significant safety concern. Specifically, this failure was indicative of a programmatic weakness with the licensee's evaluation of certain logic circuit failures which can result in misapplication of the allowances of TS LCO 3.0.6 and inappropriate TS LCO entries. The inspectors determined that this type of error was likely to recur which could lead to worse errors if uncorrected. The inspectors determined the finding was Green because the error did not result in an actual open pathway in the physical integrity of reactor containment, containment isolation system or heat removal components. The inspectors determined that the finding had a cross-cutting aspect of Training in the area of Human Performance because the finding was indicative of a knowledge gap among the operations department (H.9)

Inspection Report# : 2016001 *(pdf)*

Significance: G Feb 25, 2016
Identified By: NRC
Item Type: NCV Non-Cited Violation
Failure to Promptly Identify Conditions Adverse to QUality Associated with RHRSW Room Flood Barriers
An NRC identified non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion XVI, Corrective Action, was identified for the licensee's failure to promptly identify conditions adverse to quality associated with deficient flood barrier penetrations in the 'B' Residual Heat Removal Service Water (RHRSW) compartment. As an immediate corrective action, the licensee evaluated the deficiencies and determined that the equipment in the room would remain

operable during a design basis flood. The violation was entered into the licensee's corrective action program as CR 1119892.
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 of ensuring the capability of systems that respond to initiating events to prevent undesirable consequences (i.e. core damage). Specifically, the capability of the flood protection function of the 'B' RHRSW compartment was adversely affected due to the presence of degraded penetrations. The finding was screened using IMC 0609 Appendix A, Exhibit 4, "External Events Screening Questions," dated June 19, 2012. The finding screened as very low safety significance (Green) because the finding would not cause a plant trip, initiating event, degrade two or more trains of a multi-train system or function, and it would not degrade one or more trains of a system that supports a risk significant system or function. Additionally, the finding did not involve the total loss of any safety function. The inspectors determined that the finding had a cross-cutting aspect in the Human Performance area of Conservative Bias (H.14) because personnel characterized the potential deficiencies as "not unacceptable" rather than establishing that final acceptability was still in question which required timely resolution.
Inspection Report# : 2016007 *(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 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)*

Significance: G Sep 30, 2015
Identified By: NRC
Item Type: NCV Non-Cited Violation
Failure to Promptly Identify a Condition Adverse to Quality Associated with HPCI Turbine Exhaust System
Green. An NRC identified NCV of 10 CFR Part 50, Appendix B, Criterion XVI was identified for the licensee's failure to establish measures to promptly identify a condition adverse to quality involving the malfunction of the High Pressure Coolant Injection (HPCI) turbine exhaust system. Upon discovery of the malfunction, the licensee took action to determine that HPCI remained operable despite the degraded and nonconforming condition. The licensee is developing corrective actions to resolve the degraded and nonconforming condition. The licensee entered the violation into the licensee's corrective action program as CR 1098320.
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 performance deficiency resulted in the HPCI system being operated with an unidentified degraded/non-conforming condition which degraded the system capability and challenged system operabilty. The inspectors determined the finding was Green because the finding was a deficiency affecting the qualification of HPCI, but based on the licensee’s evaluations, operability was maintained. The inspectors determined that the finding had a cross-cutting aspect in the Problem Identification and Resolution area of Evaluation [P.2], because the licensee did not thoroughly evaluate an abnormal system condition to ensure that resolutions addressed causes commensurate with their safety significance.
Inspection Report# : 2015003 *(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 Jun 30, 2016
Identified By: NRC
Item Type: NCV Non-Cited Violation
Failure to Declare Notification of Unusual Event
The inspectors identified a non-cited violation (NCV) of Title 10 of the Code of Federal Regulations (CFR) Part 50.54 (q)(2), when the licensee failed to declare a Notification of Unusual Event (NOUE) within 15 minutes of entry conditions being met. Specifically, on April 6, 2016, at 3:05 pm, Browns Ferry Unit 3 main control room (MCR) operators received a high-high radiation alarm on the main steam lines (MSL) that met Emergency Action Level (EAL) 1.4-U for declaring a NOUE.

The failure to declare a NOUE when an EAL entry criteria had been met was considered a performance deficiency. This finding is more than minor because it was associated with the Emergency Preparedness cornerstone attribute of

Emergency Response Organization Performance, and adversely affected the cornerstone objective of ensuring that a licensee is capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. Specifically, on April 6, 2016, personnel did not declare a NOUE within 15 minutes of initial indications that EAL 1.4-U had been exceeded. The performance deficiency is associated with the Emergency Classification Planning Standard, which is considered a Risk Significant planning Standard (RSPS). The failure to declare a NOUE when directed by the EAL Matrix is considered a lost or degraded RSPS in accordance with Section 4 of Inspection Manual Chapter (IMC) 0609, Appendix B. Section 4.3.e of IMC 0609, Appendix B, provides the significance determination for a "Failure to Implement," and the performance deficiency was determined to be of very low safety significance (Green). The finding was associated with a cross-cutting aspect in the Procedure Adherence component of the Human Performance area because individuals did not follow processes, procedures and work instructions that would have led them to declare in a timely manner [H.8].

Inspection Report# : 2016002 *(pdf)*

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 : August 29, 2016