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

Browns Ferry 2 – Quarterly Plant Inspection Findings

2Q/2017 – Plant Inspection Findings

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Initiating Events

Significance: G Sep 30, 2016
Identified By: NRC
Item Type: NCV Non-Cited Violation
Failure to Implement Compensatory Roving Fire Watch
An NRC identified non-cited violation (NCV) of Renewed License Number DPR-52, condition 2.C.(14) was identified for the licensee's failure to implement and maintain in effect all provisions of the approved fire protection program that comply with 10 CFR 50.48(a) and 10 CFR 50.48(c). Specifically, the licensee failed to establish a compensatory roving fire watch, within 1 hour of rendering the spray systems that protect the Main 500kV transformer 2B and Unit Service Station Transformer (USST) 2B nonfunctional. As an immediate corrective action, the licensee established the required fire watch and entered the violation into the licensee's corrective action program as CR 1203990.
The performance deficiency was more-than-minor because it was associated with the protection against external factors (Fire) attribute of the Initiating Events cornerstone and adversely affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. This finding was evaluated in accordance with NRC IMC 0609, Appendix F, Fire Protection Significance Determination Process, dated September 20, 2013. The inspectors determined the finding was Green because the finding did not affect the reactor's ability to reach and maintain the fuel in a safe and stable condition. The inspectors determined that the finding had a cross-cutting aspect in the Human Performance area of Change Management (H.3) because leaders failed to clearly establish the control room's ownership of Fire Protection Requirements Manual (FPRM) usage as part of the NFPA 805 transition.
Inspection Report# : 2016003 *(pdf)*

Significance: G Sep 30, 2016
Identified By: Self-Revealing
Item Type: NCV Non-Cited Violation

Failure to Maintain the High Pressure Fire Protection System Piping
A self-revealing Non-cited Violation (NCV) of Technical Specification (TS) 5.4.1.d, Fire Protection Program Implementation, was identified for the licensee's failure to maintain the integrity of the high pressure fire protection piping. The licensee's immediate corrective action was to isolate the leak and entered this issue into their corrective action program as CR 1102016.
This performance deficiency was more than minor because it adversely affected the Initiating Events cornerstone objective of protection against external factors such as fire. Specifically, the high pressure fire protection system piping was unable to maintain the required pressure during a system demand. This finding was evaluated in accordance with NRC IMC 0609, Appendix F, Fire Protection Significance Determination Process, dated September 20, 2013. The inspectors determined the finding was Green because the finding did not affect the reactor's ability to reach and maintain the fuel in a safe and stable condition. The inspectors assigned a cross cutting aspect of Operating Experience because there was a similar occurrence of a fire protection piping break at Browns Ferry caused by heavy construction vehicle traffic in 2014 (P.5).
Inspection Report# : 2016003 *(pdf)*

Mitigating Systems

Significance: G Sep 30, 2016
Identified By: NRC
Item Type: NCV Non-Cited Violation
Failure to Ensure Adequate Piping Clearances After MOV Modification
An NRC identified non-cited violation (NCV) of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings" was identified for the licensee's failure to ensure sufficient clearance was available following a replacement of the Core Spray minimum flow valve actuator motors. Modifications personnel failed to identify that the resulting clearances were less than permitted by TVA procedure MAI-4.10 "Piping Clearance Instruction" and that they required an engineering evaluation. As an immediate corrective action, the licensee cut away portions of floor grating to establish an acceptable amount of clearance for the valves. The violation was entered into the licensee's corrective action program as CRs 1161330 and 1169591. The performance deficiency was more-than-minor because it was associated with the Design Control 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 inadequate clearance resulted in an analysis showing that ASME code allowable design stresses would be exceeded under accident conditions. Exceeding design stresses created a reasonable doubt on the operability and reliability of loop 2 of the Core Spray system for Units 2 and 3. 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 a deficiency affecting the qualification of the Core Spray loop. Operability was maintained because an engineering evaluation demonstrated, through the use of alternative analytical methods, that the piping stress criteria in Appendix F of Section III of the ASME Boiler and Pressure Vessel Code was satisfied and that the stresses in the valve would not cause distortions of a magnitude that would prevent operation of the valve. The inspectors did not assign a cross-cutting aspect because the performance deficiency was not reflective of present licensee performance since it occurred more than three years ago.
Inspection Report# : 2016003 *(pdf)*

Significance: G Aug 12, 2016
Identified By: NRC
Item Type: NCV Non-Cited Violation
Failure to Identify and Evaluate All Targets Within the Zone of Influence of Ignition Sources
The NRC identified a violation of 10 CFR 50.48(c) for the licensee's failure to

address in the Fire Probabilistic Risk Assessment (Fire PRA) the risk contribution associated with all potentially risk significant fire scenarios for a given fire compartment/fire area. The licensee did not identify and evaluate all targets that were within the zone of influence (ZOI) of ignition sources for selected fire scenarios that could potentially contribute to the risk for the fire scenarios. The licensee entered the issue in the corrective action program (CAP) as Condition Reports (CRs) 1195603 and 1197392. The affected area was already covered by an hourly roving fire watch as a compensatory measure.
The licensee's failure to address the risk contribution associated with all potentially risksignificant fire scenarios, as required by section 2.4.3.2 of NFPA 805, was a performance deficiency. For each example, the performance deficiency was determined to be more than minor because it was associated with the reactor safety mitigating systems cornerstone attribute of protection against external factors (i.e., fire) 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. Specifically, the licensee failed to analyze the full risk impact of the selected fire scenarios, and the missed targets in the ZOI for the selected fire scenarios had the potential to impact the ability to achieve safe and stable conditions. Using IMC 0609, Appendix F, Attachment 1, "Fire Protection Significance Determination Process Worksheet," the finding was screened as Green in step 1.6.1 "Screen by Licensee PRA-Based Safety Evaluation." There was no cross cutting aspect assigned to this finding because it was not indicative of current licensee performance since the original ignition source and target walkdowns were performed more than 3 years ago.
Inspection Report# : 2016011 *(pdf)*

Significance: G Aug 12, 2016
Identified By: NRC
Item Type: NCV Non-Cited Violation
Failure to Adequately Identify and Evaluate All Circuit Failures for NSCA Credited Equipment
The NRC identified a violation of 10 CFR 50.48(c) for the licensee's failure to properly identify circuits required for the nuclear safety function. Specifically, the licensee's Nuclear Safety Capability Assessment (NSCA) failed to identify that fire-induced failure of cables associated with the undervoltage trip function of the 4KV Shutdown Board could cause the shutdown board to not shed loads upon an undervoltage condition. This could lead to overloading the emergency diesel generator (EDG) credited for powering the shutdown board. This item was entered into the CAP as CR 1199002. The affected area was already covered by an hourly roving fire watch as a compensatory measure. Additionally, the licensee submitted EN 52150 to the NRC, documenting this as an unanalyzed condition.
The licensee's failure to identify circuits required for the nuclear safety function, as required by Section 2.4.2.2.1 of NFPA 805 was a PD. The PD was determined to be more than minor because it was associated with the reactor safety mitigating systems cornerstone attribute of protection against external factors (i.e., fire) 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. Specifically, the licensee's failure to analyze the effects of fire damage on the 4kV shutdown bus undervoltage circuitry could result in overloading the emergency diesel generator (EDG) credited for powering the shutdown board. Using the guidance of IMC 0609, App. F, the finding was screened as Green because the risk increase associated with the finding was an increase of core damage frequency of <1E-6/year. There was no cross cutting aspect

assigned to this finding because it was not indicative of current licensee performance since the original ignition source and target walkdowns were performed more than 3 years ago.
Inspection Report# : 2016011 *(pdf)*

Barrier Integrity

Significance: G Mar 31, 2017
Identified By: NRC
Item Type: NCV Non-Cited Violation
Failure to Take Corrective Actions to Preclude a Repeat Failure of a Containment Isolation Valve
An NRC identified non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion XVI, Corrective Action, was identified for the licensee's inadequate corrective actions to preclude repetition (CAPR) of a significant condition adverse to quality (SCAQ). The licensee's failure to take appropriate CAPRs for a SCAQ that resulted in an inoperable RCIC containment isolation check valve was a performance deficiency. The licensee entered the condition into their corrective action plan as CR 1265552, performed repairs to the valve, and initiated a new root cause analysis. This performance deficiency was more than minor, because it was associated with the configuration control attribute of the Barrier Integrity cornerstone and adversely affected the cornerstone objective because the misalignment of the stem to disc for 2-CKV-71-14 resulted in a loss of reliability. The finding screened as Green because the RCIC subsystem remained operable. The finding was not assigned a crosscutting aspect because the cause was not related to current licensee performance.
Inspection Report# : 2017001 *(pdf)*

Emergency Preparedness
Occupational Radiation Safety

Significance: G Mar 31, 2017
Identified By: NRC
Item Type: NCV Non-Cited Violation
Unauthorized Entry into a High Radiation Area
. A self-revealing non-cited violation (NCV) of TS 5.7.1 was identified for a worker who entered a High Radiation Area (HRA) (Unit 1 reactor building steam tunnel) without proper authorization. This performance deficiency was determined to be greater than minor because it was associated with the Occupational Radiation Safety Cornerstone attribute of Human Performance and adversely affected 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). The licensee entered the issue into their Corrective Action Program (CAP) as Condition Report (CR) 1219539, and took immediate corrective actions including restricting Radiologically Controlled Area (RCA) access for the individuals involved and performing confirmatory surveys of the area. This finding involved the cross-cutting aspect of Human Performance, Teamwork, [H.4], because a significant contributor to this event was poor communication between different work groups (workers entering the reactor building steam tunnel and RP personnel at the control)
Inspection Report# : 2017001 *(pdf)*

Significance: G Mar 31, 2017
Identified By: NRC
Item Type: NCV Non-Cited Violation
Failure to Perform Airborne Radioactivity Surveys
An inspector-identified non-cited violation (NCV) of TS 5.4.1 was identified for the licensee's failure to obtain an air sample while performing work in an area with smearable contamination levels greater than 50,000 disintegrations per

minute (DPM) per 100cm2. This performance deficiency was determined to be greater than minor because it was associated with the Occupational Radiation Safety Cornerstone attribute of Human Performance and adversely affected 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). The licensee entered the issue into their CAP (CR 1219539) and, since the work created airborne radioactivity in the area, performed in-vivo monitoring on the affected workers to assess doses from the intake of radioactive material. This finding involved the cross-cutting aspect of Human Performance, Avoid Complacency, [H.12], because, considering the contamination levels present, RP staff underestimated the risk for potential airborne radioactive material in the area
Inspection Report# : 2017001 *(pdf)*

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

Current data as of : September 05, 2017

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