Browns Ferry 2
2Q/2005 Plant Inspection Findings

Initiating Events

Significance: G Dec 31, 2004
Identified By: Self Disclosing
Item Type: NCV NonCited Violation
Poor Work Practices Resulted in a Failure to Follow Procedure and an Inadvertent Start of RHR.
A self-revealing NCV was identified for the licensee's failure, due to human performance, to comply with Technical Specification (TS) 5.4.1, Procedures, and correctly implement a surveillance test procedure for the Unit 2 Low Pressure Coolant Injection system. As a result, an inadvertent start of the Residual Heat Removal Pump 2B occurred.

This finding is greater than minor because it is associated with program and process attributes and affected the objective of the Reactor Safety/Initiating Event Cornerstone to limit the likelihood of those events that upset plant stability and challenge critical safety functions during at-power operations. In addition, if left uncorrected, this finding would result in a more significant safety concern if it occurred on a more sensitive plant-critical component. This finding was evaluated using the SDP and was determined to be a finding of very low safety significance because there was no actual loss of safety function, all aspects of the Emergency Core Cooling Systems (ECCS) remained fully functional, and other redundant ECCS were available to fulfill their safety function. The cause of the finding is related to the cross-cutting element of human performance.
Inspection Report# : 2004005*(pdf)*

Significance: G Dec 31, 2004
Identified By: Self Disclosing
Item Type: NCV NonCited Violation
A Human Performance Error Resulted in the Loss of Safety-Related 480-Volt Shutdown Board 2A and the Inadvertent Start of ECCS Equipment.
A self-revealing NCV was identified for the licensee's failure to comply with Unit 2 Technical Specification (TS) 5.4.1, Procedures. A human performance error in the failure to correctly implement a surveillance test procedure during relay calibration resulted in the loss of power to the safety-related 480-volt shutdown board 2A. As a result, multiple Technical Specification Limiting Conditions of Operation were entered. This event initiated Engineered Safety Features and caused the loss of systems important to safety on all three units.

This finding is greater than minor because it is associated with program and process attributes and affected the objective of the Reactor Safety/Initiating Event Cornerstone to limit the likelihood of those events that upset plant stability and challenge critical safety functions during at-power operations. This finding was evaluated using the SDP and was determined to be a finding of very low safety significance because the event was of short duration (approximately six minutes), other redundant safety features were available and remained fully functional, and there was no loss of safety function. The cause of the finding is related to the cross-cutting element of human performance.
Inspection Report# : 2004005*(pdf)*

Significance: G Dec 31, 2004
Identified By: Self Disclosing
Item Type: NCV NonCited Violation
Inadequate Procedures and Poor Human Performance Resulted in a Drop of the Reactor Building Crane Trolley.
A self-revealing NCV was identified for the licensee's failure to comply with 10 CFR 50, Appendix B, Criterion V, Instructions, Procedures and Drawings. As a result of inadequate procedures and poor human performance, a Reactor Building crane trolley was dropped approximately four feet onto the refuel floor while being rigged.

This finding is greater than minor because it is associated with program and process attributes and affected the objective of the Reactor Safety/Initiating Event Cornerstone to limit the likelihood of those events that upset plant stability and challenge critical safety functions during at power operations. In addition, if left uncorrected, this finding would result in a more significant safety concern. This finding was determined to be a finding of very low safety significance because no initiating event or transient actually occurred, there was no permanent structural damage to the refuel floor, there was no functional degradation, and mitigating capability was not affected. The cause of the finding is related to the cross-cutting element of human performance.
Inspection Report# : 2004005*(pdf)*

Significance: G Sep 25, 2004
Identified By: NRC

Item Type: NCV NonCited Violation
Violation of Technical Specification 3.3.1.1 - Turbine Control Valve Fast Closure Circuit
The inspectors identified a violation of Technical Specification (TS) 3.3.1.1. The Reactor Protection System (RPS) function in Table 1, Item 9, Turbine Control Valve Fast Closure, Trip Oil Pressure Low, was affected by disabling the inputs of the turbine generator power-load unbalance (PLU) circuit. The PLU input was the sole input signal that would initiate a reactor scram and was credited in the main generator load rejection event safety analysis. The licensee did not recognize the need to enter the associated TS Limiting Condition Of Operation and did not take the required actions to restore RPS trip capability within one hour and immediately reduce power to less than 30% RTP. As a result, Unit 2 operated in an unanalyzed condition from July 11, 2004 until August 11, 2004.

This finding is greater than minor because it affected the objective of the Barrier Cornerstone, specifically Fuel Cladding Barrier and could induce localized fuel rod leaks during the postulated event. This finding is of very low safety significance because reactor power was only the susceptible power range (30%-70%) for a short duration, no actual transient occurred, the turbine bypass system was operational during the time period, and leaking fuel represents degradation of only one of three major barriers designed to mitigate leaking fuel and to protect the public. The reactor pressure vessel and containment barriers were never affected by this deficiency.
Inspection Report# : 2004004*(pdf)*

Significance: G Sep 25, 2004
Identified By: Self Disclosing
Item Type: NCV NonCited Violation
Failure to Adequately Conduct Post-Design Change Testing in accordance with10 CFR 50, Appendix B, Criterion III, Design Control
A self-revealing NCV was identified for the licensee's failure to adequately control post-design change testing in accordance with 10 CFR 50, Appendix B, Criterion III, Design Control. Following a design change to main turbine monitoring circuits credited in a safety analysis, failure modes unaccounted for and not tested by the test program resulted and later contributed to a Unit 2 reactor scram.

This finding is greater than minor because it is associated with program and process attributes and affected the objective of the Reactor Safety/Initiating Event Cornerstone to limit the likelihood of those events that upset plant stability and challenge critical safety functions during at power operations. This finding is of very low safety significance because all plant systems operated as designed following the scram.
Inspection Report# : 2004004*(pdf)*

Mitigating Systems

Significance: G Mar 31, 2005
Identified By: Self Disclosing
Item Type: NCV NonCited Violation
Failure to Adequately Implement the Inservice Testing Program.
Green. A self-revealing NCV was identified for the Failure to Comply with Unit 3 TS 5.5.6, Inservice Testing Program, specifically 3-SI-3.2.3, Testing ASME Section XI Check Valves. As a result of failing to follow procedures, a common cause failure was not addressed, resulting in Unit 2 operating with multiple stuck open Service Water inlet check valves to Residual Heat Removal (RHR) Heat Exchangers for a period of time in excess of one year.

This finding is greater than minor because it affected the equipment performance attribute of the Mitigating Systems Cornerstone to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. This finding was evaluated using the SDP and was determined to be a finding of very low safety significance because the accident analysis did not specifically credit the closure function of these check valves. However, 10 CFR 50.55a required, in part, that both opening and closing functions be demonstrated even when the close function is not credited. The cause of this finding involved the cross-cutting aspect of Human Performance due to the failure to properly follow the written guidance of the surveillance instruction.
Inspection Report# : 2005002*(pdf)*

Significance: G Mar 31, 2005
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to Promptly Identify and Correct a Stuck Fuel Injector on the 1A EDG
Green. The inspectors identified an NCV for the failure to promptly identify and correct a condition adverse to quality as prescribed in 10 CFR 50, Appendix B, Criterion XVI, Corrective Action. As a result of not reviewing post maintenance test (PMT) data in a timely manner, the 1A Emergency Diesel Generator (EDG) was operated on four occasions during surveillance testing with a stuck fuel injector.

This finding is greater than minor because it affected the equipment performance attribute of the Mitigating Systems Cornerstone to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). This finding was evaluated using the SDP and was determined to be a finding of very low safety significance because the 1A EDG did not fail during any of its four one-hour surveillances, was not called upon to mitigate the consequences of a accident, and vendor information regarding

operation of similar EDG's with failed fuel injectors provided some assurance that the engine could operate without imminent failure. The cause of this finding, the failure to use available indications and identify the stuck injector, is associated with the cross-cutting area of Problem Identification and Resolution.
Inspection Report# : 2005002*(pdf)*

Significance: G Dec 31, 2004
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to Demonstrate that the RMOV Board 1B Performance Was Effectively Controlled per 10 CFR 50.65 (a)(2).
The inspectors identified an NCV of 10 CFR 50.65 (Maintenance Rule) for failing to demonstrate that the performance of the Reactor Motor-Operated Valve (RMOV) Board 1B was being effectively controlled through the performance of appropriate preventive maintenance such that the system remained capable of performing its intended function. As a result, after it exceeded its Maintenance Rule a(2) performance criteria, the licensee had not established goals nor monitored the performance of the RMOV Board 1B per 10 CFR 50.65a(1).

This finding is more than minor because it affected the reliability objective of the Equipment Performance attribute under the Mitigating Systems Cornerstone. The finding is of very low safety significance because there was no design deficiency, the equipment affected by the board failure either failed in a safe manner or had its redundant equipment functional.

Inspection Report# : 2004005*(pdf)*

Barrier Integrity

Significance: G Jun 30, 2005
Identified By: NRC
Item Type: NCV NonCited Violation
Untimely and Ineffective Corrective Actions To Ensure RHR Keep Fill Containment Isolation Valves Fulfill Their Safety Function Per 10 CFR 50.65 (a)(1)
The inspectors identified a non-cited violation of 10CFR50.65(a)(1) in which the licensee has failed to implement timely and effective corrective actions to preclude multiple, repetitive failures of containment isolation valves in the Unit 2 and 3 Residual Heat Removal (RHR) Keep Fill System. These failures ultimately resulted in the failure of two containment isolation valves simultaneously for the same penetration, which created an open pathway from containment and a consequential loss of the maintenance rule safety function. Licensee monitoring and corrective actions per 10 CFR 50.65(a)(1) were ineffective at ensuring that containment isolation valves in the RHR Keep Fill System were capable of performing their intended safety function.
The finding is greater than minor because if left uncorrected it would become a more significant safety concern and because it affected the Containment Isolation SSC Reliability objective of the SSC and Barrier Performance attribute under the Barrier Integrity Cornerstone. The finding was assessed using the SDP, Manual Chapter 0609, Appendix H, Table 4.1. This assessment determined the finding to be of very low safety significance because, in the case of the most consequential containment isolation valve failures, the associated pathway was a small (i.e., 2-inch) line and would not have significantly contributed to Large Early Release Frequency (LERF). This finding had cross-cutting aspects associated with Problem Identification and Resolution.
Inspection Report# : 2005003*(pdf)*

Emergency Preparedness

Occupational Radiation Safety

Significance: G Jun 30, 2005
Identified By: Self Disclosing
Item Type: NCV NonCited Violation
Two Examples of Failure to Comply with Radiation Work Permit Requirements
The inspectors reviewed two examples of a self-revealing, non-cited violation of TS 5.4.1 for the failure of workers to comply with radiation work permit (RWP) requirements. The first example occurred on March 22, 2004, when an operator entered a posted high radiation area on an RWP that did not allow entry into high radiation areas. The operator received a electronic dosimeter dose rate alarm. Radiation dose rates in the area were 600 mrem per hour on contact and 300 mrem per hour at 30 cm from the radiation source. The second example occurred on October

4, 2004, when a craft worker entered an area in the overhead, greater than 6 feet, of the Unit 1 reactor building 593-foot elevation without contacting radiation protection personnel as required by the RWP. The worker did not review the planned work with radiation protection personnel prior to entry and did not monitor electronic dosimetry prior to reaching the dose alarm setpoint. A survey of the overhead area indicated dose rates of 200 mrem per hour on contact, 60 mrem per hour at 30 cm, and 25 mrem per hour general area from overhead piping. The finding is greater than minor because it was associated with the Occupational Radiation Safety cornerstone attribute of program and process and it affected the associated cornerstone objective to ensure adequate protection of worker health and safety from exposure to radiation. Using the Occupational Radiation Safety Significance Determination Process, the finding was determined to be of very low safety significance because it did not involve (1) ALARA planning and controls, (2) an overexposure, (3) a substantial potential for overexposure, or (4) an impaired ability to assess dose. In addition, this finding had cross-cutting aspects associated with human performance when personnel failed to follow radiation work permit instructions.
Inspection Report# : 2005003*(pdf)*

Significance: G Nov 24, 2004
Identified By: Self Disclosing
Item Type: NCV NonCited Violation
Failure to Barricade, Conspicuously Post, and Control a High Radiation Area
The inspectors reviewed a self-revealing, non-cited violation of TS 5.7.1 resulting when operations personnel failed to inform radiation protection personnel of the operation of the waste backwash transfer pump which caused an increase in dose rates to high radiation area levels. Specifically, on November 24, 2004, a radwaste operator received an electronic dosimeter dose rate alarm when he entered the waste surge and collector pump room on the 546-foot elevation of the radwaste building. The operator entered an area with dose rates of 159 mrem per hour and received a dose of 5 mrem from the entry. A survey of the area showed contact dose rates with overhead piping were as high as 2500 mrem per hour, with general area dose rates of 300 mrem per hour.
The finding is greater than minor because it is associated with the Occupational Radiation Safety cornerstone attribute of exposure control and it affected the associated cornerstone objective to ensure the adequate protection of worker health and safety from exposure to radiation. Using the Occupational Radiation Safety Significance Determination Process, the finding was determined to be of very low safety significance because it did not involve: (1) ALARA planning and controls, (2) an overexposure, (3) a substantial potential for overexposure, or (4) an impaired ability to assess dose. The cause of this finding had cross-cutting aspects associated with human performance.
Inspection Report# : 2005003*(pdf)*

Significance: G Sep 25, 2004
Identified By: Self Disclosing
Item Type: NCV NonCited Violation
Failure to Implement Adequate Engineering Controls for Airborne Radioactive Material
A self-revealing NCV of 10 CFR 20.1701 was identified for failure to implement adequate engineering controls to limit airborne radioactivity stemming from decontamination activities for the 1C Reactor Water Cleanup (RWCU) Regenerative Heat Exchanger. Specifically, the High Efficiency Particulate Air (HEPA) filtration unit being used during the evolution did not have a HEPA filter cartridge. In addition, the HEPA filtration unit used during this evolution had been selected from the station's common pool of HEPA units. Consequently, this type of event could have occurred on Unit 2 or Unit 3 had the unit been selected for use on one of the other two units.

This finding is more than minor because it adversely affects the Occupational Radiation Safety cornerstone objective to ensure the adequate protection of worker health and safety from exposure to radiation from radioactive materials and the attribute of having adequate programs and processes for contamination control. The finding is of very low safety significance because the licensee's three-year rolling average for collective dose is less than 240 person-rem.
Inspection Report# : 2004004*(pdf)*

Public Radiation Safety

Physical Protection

Physical Protection information not publicly available.

Miscellaneous

Last modified : August 24, 2005