Browns Ferry 2
3Q/2007 Plant Inspection Findings

Initiating Events

Mitigating Systems

Significance: G Jun 30, 2007
Identified By: NRC
Item Type: NCV NonCited Violation
Inadequate Online Risk Assessment of Unit 2 Startup With All Three RFPs Out of Service (Section 1R13)
Green. The inspectors identified a Green non-cited violation of 10 CFR 50.65(a)(4) for the licensee's failure to conduct an adequate risk assessment prior to and during the startup of Unit 2 with all three reactor feedwater pumps (RFP) uncoupled and out of service. Subsequent configuration specific probabilistic safety analysis by the licensee determined the risk was acceptable. This finding was entered into the licensee's corrective action program as PER 123308.
The inspectors determined that the licensee's failure to perform an adequate risk assessment was more than minor because it was associated with the Mitigating Systems Cornerstone attribute of configuration control and adversely affected the cornerstone objective. Also, the licensee's risk assessment did not consider all the risk significant systems that were out of service which, when properly evaluated, resulted in an increased level of risk for Unit 2 (i.e., Red) from a Sentinel perspective. This finding was determined to be of very low safety significance because the actual risk deficit for incremental core damage probability was less than 1E-6, and less than 1E-7 for incremental large early release probability. The cause of this finding was directly related to the "appropriately plans work activities using risk insights" aspect of the Human Performance (Work Control component) cross cutting area because the licensee failed to effectively use their risk assessment tools in the work planning process prior to Unit 2 startup with all three reactor feedwater pumps out of service. (Section 1R13)

Inspection Report# : 2007003 *(pdf)*

Significance: G Mar 31, 2007
Identified By: NRC
Item Type: NCV NonCited Violation
Inadequate Corrective Actions to Resolve Deficiencies in SBO Mitigation Capabilities
The inspectors identified a Green non-cited violation of 10CFR50, Appendix B, Criterion XVI, for ineffective corrective actions by the licensee to ensure that the operating emergency diesel generators (EDGs) during a Unit 2 Station Blackout (SBO) event would have sufficient cooling water under worst case licensing-basis conditions. The licensee developed a new simplified mitigation strategy to address the issue. This finding was entered into the licensee's corrective action program as PER 119778.

This finding was greater than minor because it was associated with the Procedure Quality attribute of the Mitigating Systems Cornerstone, and adversely affected the cornerstone objective to ensure the availability and reliability of systems that mitigate initiating events to prevent undesirable consequences. The finding was determined to be of very low safety significance because of the low frequency of occurrence of the specific combination of multiple EDG failures that could lead to a loss of cooling water flow to all of the running EDGs. The cause of finding was directly related to the appropriate and timely corrective action aspect of the Problem Identification and Resolution cross-cutting area because corrective actions developed for Unit 2 SBO mitigation strategy deficiencies were not effective in ensuring timely restoration of cooling water to the EDGs.
Inspection Report# : 2007002 *(pdf)*

Significance: G Dec 31, 2006
Identified By: NRC
Item Type: NCV NonCited Violation
Lack of Assured Cooling Water for Emergency Diesel Generators During SBO Conditions
The inspectors identified a non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion III, Design Control, that affected Units 2 and 3. The licensee's calculations and procedures did not adequately implement the plant's licensing basis for Station Blackout (SBO), in that, they did not ensure the operating emergency diesel generators (EDGs) would have an adequate cooling water supply during a SBO with certain plant equipment configurations.

This finding is of greater than minor safety significance because it affected the objectives of the Mitigating Systems Cornerstone. It affected the availability and reliability of systems that mitigate initiating events to prevent undesirable consequences. The finding has very low safety significance due to the few very specific combinations of EDG failures that could lead to a loss of cooling water flow to all of the running EDGs. The licensee took prompt corrective action by revising procedures to add immediate operator actions to ensure adequate cooling water supply to the EDGs.
Inspection Report# : 2006005 *(pdf)*

Barrier Integrity

Significance: G Jun 30, 2007
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to Follow the Freeze Seal Procedure and Procedural Inadequacy (Section 4OA5.3)
Green. The inspectors identified a Green noncited violation of 10CFR50, Appendix B, Criterion V, for inadequate procedure and failure to follow quality-related procedure MSI-0-000-PLG001, Installation of Freeze Seals, while installing a freeze seal on the Unit 2 Reactor Vessel Bottom Drain to the Reactor Water Cleanup System. The freeze seal procedure and its use was placed on hold pending further training and industry benchmarking. This finding was entered into the licensee's corrective action program as PERs 120928 and 121179.

This finding was considered to be greater than minor because it was associated with the Barrier Integrity cornerstone attributes of Human Performance and Procedure Quality, and adversely affected the cornerstone objective to provide reasonable assurance that the Reactor Coolant System barrier provided protection to the public from radionuclide releases caused by accidents or events. Furthermore, this finding could be reasonably viewed as a precursor to a significant event. This finding was determined to be of very low safety significance because the finding's risk was minimal due to the many systems available for reactor vessel injection, the instruments and alarms available to the operators for monitoring water level, and the amount of time available to act. The cause of this finding was directly related to the aspect of "supervisory and management oversight of contractor work activities" in the cross-cutting area of Human performance (Work Practices component) because of inadequate supervisory and management oversight of contractor execution of critical freeze seal activities during the Unit 2 refueling outage. (Section 4OA5.3)
Inspection Report# : 2007003 *(pdf)*

Significance: G Mar 31, 2007
Identified By: NRC
Item Type: NCV NonCited Violation
Operation of Unit 2 Outside the Limits Allowed by the Power-Flow Map
The inspectors identified a Green non-cited violation of TS 5.4.1.a for the operators' failure to maintain Unit 2 core flow within the bounds of the Core Power/Flow Map established by operating procedures. When notified, the licensee promptly reduced reactor recirculation pump flow. This finding was entered into the licensee's corrective action program as PER 119305.

This finding was more than minor because if left uncorrected, operators could have unknowingly allowed core flow to exceed the analytical bounds of the fuel vendor's reload report transient analysis which would have been a more significant safety concern. This finding was of very low safety significance because it is associated with fuel barrier

integrity. Furthermore, core flow was still within the envelope of the fuel vendor's analytical limits and none of the reactor fuel thermal limits were exceeded. The cause of the finding was directly related to the procedure compliance aspects of the Human Performance cross-cutting area because of inadequate communication of management and supervisory expectations for unit operations in the increased core flow region and lack of operator attention to the proceduralized power/flow map limits.
Inspection Report# : 2007002 *(pdf)*

Emergency Preparedness

Occupational Radiation Safety

Significance: G Mar 31, 2007
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
Two Examples of Failure to Perform Adequate Surveys.
Two examples of a Green self-revealing non-cited violation of 10 CFR 20.1501(a)(2)(i) were identified for failure to conduct surveys that were reasonable under the circumstances to evaluate the magnitude and extent of radiation levels in areas where work was performed. On February 9 and 16, 2007, investigation into electronic dosimeter dose rate alarms, received during work activities, revealed dose rates in excess of those measured during pre-job surveys. Since the new dose rates exceeded the criteria for posting as a high radiation area, the licensee immediately posted and controlled these areas as high radiation areas. This finding was entered into the licensee's corrective action program as PERs 119482 and 119829.

This finding is more than minor because it is associated with the Occupational Radiation Safety Cornerstone attribute of Program and Process, and it adversely affected the cornerstone objective because the failure to conduct adequate surveys did not 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 the failures to survey did not pose a substantial potential for over exposure and did not affect the ability to assess doses. The cause of the finding was directly related to the work activity coordination aspect of the human performance cross-cutting area because pre-job radiological surveys were inadequate to apprise personnel of plant conditions that affected work activities.
Inspection Report# : 2007002 *(pdf)*

Public Radiation Safety

Significance: G Mar 31, 2007
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
Failure to Properly Prepare a Radioactive Materials Package for Shipment
A Green self-revealing non-cited violation of 10 CFR 71.5 was identified for failure to properly package radiological material such that, under conditions normally incident to transportation, the radiation levels at the external surface of the package would not exceed applicable Department of Transportation (DOT) limits. When the two shipments arrived at a processing facility on April 21, 2005, the radiation dose rates measured on portions of the external surface of the packages were as high as 300 mrem/hr, which was in excess of the 200 mrem/hr limit specified by the regulation. The licensee established additional supervisory review and approval prior to shipping packages approaching DOT limits. This finding was entered into the licensee's corrective action program as PER 81364.

This finding is more than minor because it is associated with the Plant Facilities/ Equipment and Instrument attribute

of the Public Radiation Safety cornerstone and adversely affected the cornerstone objective, in that, the improper transportation packaging resulted in a shipping container with external dose levels exceeding regulatory requirements. Using the Public Radiation Significance Determination Process, the finding was determined to be of very low safety significance because the areas on the packages with elevated radiation levels were inaccessible to the public and the radiation levels were less than two times the DOT limit.
Inspection Report# : 2007002 *(pdf)*

Physical Protection

Although the NRC is actively overseeing the Security cornerstone, the Commission has decided that certain findings pertaining to security cornerstone will not be publicly available to ensure that potentially useful information is not provided to a possible adversary. Therefore, the cover letters to security inspection reports may be viewed.

Miscellaneous

Significance: G Mar 31, 2007
Identified By: NRC
Item Type: NCV NonCited Violation
Work Hours for I&C Mechanics Exceeded Overtime Limits Without Prior Authorization
The inspectors identified a Green non-cited violation of Technical Specification 5.2.2.d due to inadequate management oversight and awareness of the administrative requirements for controlling overtime which resulted in multiple instances of Instrumentation and Control personnel exceeding overtime limits without prior authorization and documentation. Management immediately changed work schedules to comply with the Technical Specification requirements and entered the issue into their corrective action program as PER 119016.

This finding was greater than minor because if left uncorrected it could become a more significant safety concern due to excessive fatigue by key maintenance personnel performing safety-related activities. An NRC management review determined that the finding was of very low safety significance because no specific performance deficiencies were identified for the individuals during the time they exceeded the established overtime limits
Inspection Report# : 2007002 *(pdf)*

Last modified : December 07, 2007