Browns Ferry 1
1Q/2008 Plant Inspection Findings

Initiating Events

Significance: G Dec 31, 2007
Identified By: NRC
Item Type: NCV NonCited Violation
Untimely Corrective Actions To Resolve Leaking Recirculation Flow Transmitter Fitting Resulted In Unit 1 Reactor Scram
The inspectors identified a Green noncited violation of 10 CFR 50, Appendix B, Criterion XVI, for untimely corrective actions to ensure that repairs were initiated to correct the Unit 1 Recirculation System flow transmitter fitting 1-FT-68-81B prior to the failure and subsequent Neutron Monitoring system (NMS) initiated reactor trip signal and reactor scram that occurred on August 11, 2007. The compression fitting for FT-68-81B was repaired prior to reactor startup. This finding was entered into the licensee's corrective action program as Problem Evaluation Report (PER) 132061.

This finding was considered to be greater than minor because it was associated with the Equipment performance attribute of the Initiating Events Cornerstone, and adversely affected the cornerstone objective to limit the likelihood of events that upset plant stability. However, this finding was determined to have a very low safety significance (Green) because the finding did not contribute to the likelihood that mitigation equipment or functions would not be available following a reactor trip. This finding contained a cross-cutting aspect in the area of Problem Identification and Resolution, in that, the licensee did not take appropriate corrective actions to address safety issues and adverse trends in a timely manner, commensurate with their safety significance and complexity (P.1.(d)).
Inspection Report# : 2007005 *(pdf)*

Significance: G Dec 31, 2007
Identified By: NRC
Item Type: FIN Finding
Unisolable EHC Leak Due To Fretting From Missing Pipe Support Isolator Blocks Caused Unit 1 Reactor Scram
A Green self-revealing finding was identified for inadequate pre-startup walkdowns of the Unit 1 Electro-Hydraulic Control (EHC) system that failed to identify critical pipe support components were missing from an EHC line which directly resulted in a manual reactor scram due to an unisolable EHC leak caused by fretting. Inspections and walkdowns were subsequently performed by the licensee to verify all other EHC pipe supports were properly configured. This finding was entered into the licensee's corrective action program as Problem Evaluation Report 129791.

This finding is greater than minor because it is associated with the Initiating Event Cornerstone attributes of Human Performance, and adversely affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during at-power operations. The finding was determined to be of very low safety significance because it did not contribute to both the likelihood of a reactor trip and the likelihood that mitigating equipment or functions were not available. The cause of this finding was directly related to the cross-cutting aspect of having a low threshold for accurately identifying problems in the area of Problem Identification and Resolution (Corrective Action component) because inadequate walkdowns during the system return to operation process failed to identify missing structural support isolator blocks that resulted in a fretting failure of a critical EHC line which directly led to reactor scram (P.1(a))
Inspection Report# : 2007005 *(pdf)*

Significance: G Dec 31, 2007
Identified By: NRC
Item Type: FIN Finding

Untimely Corrective Actions To Resolve Moisture Separator Level Switch Vulnerabilities Resulted In Unit 1 Reactor Scram
A Green self-revealing finding was identified for incomplete and untimely corrective actions that allowed for a repeat Unit 1 turbine trip and reactor scram due to previously identified oversized moisture separator high level dump valves. The stems of these moisture separator dump valves were subsequently modified to limit their travel and thereby restrict flow. This finding was entered into the licensee's corrective action program as Problem Evaluation Report 131878.

This finding is greater than minor because it is associated with the Initiating Event Cornerstone attribute of Design Control, and adversely affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during at-power operations. The finding was evaluated using Phase 1 of the At-Power SDP, and was determined to be of very low safety significance (Green) because it did not contribute to both the likelihood of a reactor trip and the likelihood that mitigating equipment or functions were not available. The cause of this finding was directly related to the aspect of appropriate and timely corrective action in the cross-cutting area of Problem Identification and Resolution (Corrective Action component) because interim actions to mitigate the impact of previously identified oversized moisture separator high level dump valves were not implemented in a timely manner (P.1(d)).
Inspection Report# : 2007005 *(pdf)*

Significance: G Sep 30, 2007
Identified By: Self-Revealing
Item Type: FIN Finding
Unisolable Electro-hydraulic Control System Leak Due To Improperly Installed Compression Fitting Causes Unit 1 Reactor Scram
Green. A Green self-revealing finding was identified for poor work practices and inadequate licensee oversight. This allowed for the improper installation of a critical compression fitting on the Unit 1 Electro-Hydraulic Control (EHC) system that caused an unisolable EHC leak which directly resulted in a manual reactor scram. Inspections were subsequently performed to identify any other improperly installed compression fittings on EHC lines throughout the EHC system. This finding was entered into the licensee's corrective action program as Problem Evaluation Report (PER) 125288.

This finding is greater than minor because it is associated with the Initiating Event Cornerstone attributes of Human Performance, and adversely affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during at-power operations. The finding was determined to be of very low safety significance because it did not contribute to both the likelihood of a reactor trip and the likelihood that mitigating equipment or functions were not available. The cause of this finding was directly related to the cross-cutting aspect of supervisory and management oversight of contractor activities in the area of Human Performance; in that inadequate oversight of contractor activities allowed for poor installation practices and a lack of communication of human error prevention techniques for maintenance on non-quality related systems like the EHC system. These less than adequate oversight and work practices resulted in the failure of a critical compression fitting which directly resulted in a reactor scram (H.4(c)). (Section 4OA3.4)
Inspection Report# : 2007004 *(pdf)*

Significance: G Sep 30, 2007
Identified By: Self-Revealing
Item Type: FIN Finding
Moisture Separator Level Control System Failure Due To Improperly Installed Compression Fitting Causes Unit 1 Reactor Scram
Green. A Green self-revealing finding was identified for poor work practices and inadequate oversight that allowed for the improper installation of a critical compression fitting on the Feedwater Heater and Moisture Separator Level Control panel that caused the 1A2 level control system to fail, directly resulting in a reactor scram. All compression fittings on the Unit 1 Main Feedwater Heater, Moisture Separator, and Main Steam control panels were subsequently checked and tightened as necessary. This finding was entered into the licensee's corrective action program as PERs 126049 and 126054.

This finding is greater than minor because it is associated with the Initiating Event Cornerstone attributes of Human Performance, and adversely affected the cornerstone objective to limit the likelihood of those events that upset plant

stability and challenge critical safety functions during at-power operations. The finding was determined to be of very low safety significance because it did not contribute to both the likelihood of a reactor trip and the likelihood that mitigating equipment or functions were not available. The cause of this finding was directly related to the cross-cutting aspect of supervisory and management oversight of contractor activities in the area of Human Performance; in that inadequate oversight of contractor activities allowed for poor installation practices and inadequate leak checks that resulted in the failure of a critical compression fitting which directly led to a reactor scram (H.4(c)). (Section 4OA3.7)
Inspection Report# : 2007004 *(pdf)*

Mitigating Systems

Significance: G Dec 14, 2007
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to Perform ASME Inspections of Safety-Related Piping.
The inspectors identified a Green non-cited violation of 10 CFR 50.55a(g)4 Codes and Standards. Specifically, the licensee failed to perform required code inspections of accessible portions of safety-related piping. The licensee entered this issue into their corrective action program.

This finding is more than minor because if left uncorrected it would become a more significant safety concern. The failure to perform required inspections of safetyrelated piping could have allowed undetected through-wall flaws to remain in-service. These undetected flaws could grow in size until leakage from the piping degrades system operation, or if sufficient general corrosion occurs, a gross rupture or collapse of the piping could occur. The finding is of very low safety significance because the finding did not represent a loss of safety function. The cause of the finding is related to the cross-cutting element of problem identification and resolution under the operating experience aspect of the corrective action component [P.2(b)].
[Section 1R21.4]
Inspection Report# : 2007007 *(pdf)*

Significance: G Dec 14, 2007
Identified By: NRC
Item Type: NCV NonCited Violation
Corrective Actions for Cable Submersion Were Not Effective.
The inspectors identified a Green non-cited violation of 10 CFR 50, Appendix B, Criterion XVI, Corrective Action. Specifically, the licensee failed to correct a cable submergence issue which resulted in the failure of a safety-related cable.

This finding is more than minor because it is associated with the equipment performance attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The finding is of very low safety significance because the finding was not a design or qualification deficiency, and did not represent a loss of safety function because the redundant train was available. The cause of the finding is related to the cross-cutting element of problem identification and resolution under the licensee thoroughly evaluates problems aspect of the corrective action component [P.1(c)].
Inspection Report# : 2007007 *(pdf)*

Significance: G Sep 30, 2007
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
Reactor Trip Function on Turbine Stop Valve Closure Not Enabled at 30% Rated Thermal Power
Green. A Green self-revealing noncited violation of Unit 1 Technical Specifications (TS) 3.3.1.1 and Table 3.3.1.1-1, Reactor Protection System Instrumentation, Function 8, Turbine Stop Valve Closure and Function 9, Turbine Control Valve Fast Closure - Trip Oil Pressure Low, was identified. During Unit 1 startup on June 3, 2007, these trips were

not enabled when the reactor reached 30% Reactor Thermal Power (RTP) as required by TS. An operator workaround was established to manually enable the reactor trip on turbine trip before reactor power was increased above 30% power. This finding was entered into the licensee's corrective action program as PER 125755.

This finding was considered to be greater 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 of systems that respond to initiating events. The error in the calculation of 1st Stage Turbine Pressure's relation to reactor power established a non-conservative setpoint following a modification to the high pressure turbine which inappropriately allowed bypassing of a required trip function of the reactor protection system beyond 30% RTP. This finding was determined to be of very low safety significance because the reactor trip was unavailable for only a very limited power band (30-34% RTP) and the function of the high dome pressure trip was available to mitigate the consequences of a turbine trip at low reactor power. The cause of this finding was directly related to the cross-cutting aspect of complete, accurate and up-to-date design documentation, procedures, and work packages in the area of Human Performance; in that the work scope for conducting the necessary post maintenance testing was inadequate to ensure the set point armed the trip prior to reaching 30% RTP (H.2(c)). (Section 4OA3.6)
Inspection Report# : 2007004 *(pdf)*

Significance: G Jun 30, 2007
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
Non-Conservative APRM/LPRM Gain Settings Result in Neutron Flux Setdown Setpoint in Excess of TS Limit (Section 1R15)
Green. A self-revealing Green noncited violation was identified for a violation of Unit 1 Technical Specifications 3.3.1.1.A.1 and Table 3.3.1.1-1, Function 2a, Reactor Protection System Instrumentation, on two separate occasions when Unit 1 entered Mode 2 on May 21 and 26, 2007, with non-conservative Average Power Range Monitor (APRM) and Local Power Range Monitor (LPRM) Gain Adjustment Factor (GAF) settings that resulted in the APRM Neutron Flux - High Setdown trip function exceeding the allowed TS setpoint limits. The nonconservative LPRM/APRM GAF settings were discovered as a result of the licensee's inability to adjust APRMs beyond the current indicated power level during a calibration, but were properly set prior to Mode 1 operation. This finding was entered into the licensee's corrective action program as PER 125408.

This finding was considered to be greater than minor because it was associated with the configuration control attribute of the Mitigating Systems Cornerstone due to loss of control of critical gain settings that adversely affected operability of the high neutron flux trip (setdown) function of the neutron monitoring system. Furthermore, this finding exceeded a Technical Specifications limit. This finding was determined to be of very low safety significance because the APRM Neutron Flux - High Setdown trip function was only a backup or secondary scram function to the Intermediate Range Monitor (IRM) Neutron Flux - High function while in Mode 2, and no safety analyses took credit for the APRM Setdown function. Consequently, the finding did not result in a loss of a safety function (high neutron flux scram at low power) for a system or train. The cause of this finding was directly related to the aspect of "appropriately coordinating work activities" in the cross-cutting area of Human Performance (Work Control component) because the LPRM work scope for conducting the necessary post maintenance testing to ensure the gain settings were properly set was deferred without considering the potential operational impact. (Section 1R15)

Inspection Report# : 2007003 *(pdf)*

Barrier Integrity

Significance: G Oct 09, 2007
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
Failure to Recognize an Inoperable RCIC Steam Flow Isolation Instrument
A green self-revealing non-cited violation (NCV) of Technical Specification (TS) 3.3.6.1 was identified for failing to recognize an inoperable Reactor Core Isolation Cooling (RCIC) steam flow isolation instrument resulting in exceeding the TS allowed outage time. The licensee entered the deficiency into their CAP for resolution.

This finding is greater than minor because it affected the ability of the licensee to ensure reactor containment isolation following a break in the RCIC turbine steam line and is associated with the Barrier Integrity cornerstone and the respective attribute of configuration control. The finding is of very low safety significance (Green) because it did not represent a degradation of the barrier function of the control room, did not represent an actual open pathway in the physical integrity of the reactor containment, or involve an actual reduction in defense-in-depth for the atmospheric pressure control or hydrogen control functions of the reactor containment. The finding directly involved the cross-cutting area of Human Performance under the correct labeling of components aspect of the Resources component; in that the licensee failed to ensure adequate work instructions and correct labeling were implemented. This directly contributed to the failure of craftsmen and quality control personnel to identify the improperly installed instruments [H.2(c)].
Inspection Report# : 2007008 *(pdf)*

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

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: N/A Aug 24, 2007
Identified By: NRC
Item Type: FIN Finding
Problem Identification and Resolution
The licensee was effective in identifying problems at a low threshold and entering them into the CAP. Issues were typically properly characterized and evaluations such as root causes were sufficiently thorough and detailed. Strong management oversight of the CAP was evident. Initial prioritization of issues and corrective actions appeared to be appropriate to risk and program guidance; however, numerous delays in completion of corrective actions had led to increased backlogs in closure of Problem Evaluation Reports (PERs). Recent management attention had resulted in the backlogs beginning to decrease at the time of this inspection. In
addition, the inspectors concluded that the licensee had been slow to effect significant improvement in equipment reliability based on the number of equipment problems and timeliness of corrective actions. Also, some repeat problems, such as, adequacy of corrective action implementation were noted; however, these problems were improved from previous inspections.

The licensee was effective in evaluating internal and external industry operating experience items for applicability and taking appropriate action.

Based on review of the licensee’s Concerns Resolution Program (CRP), discussions conducted with plant employees

from various departments, and review of many PERs, the inspectors did not identify any reluctance to report safety concerns. The inspectors concluded that licensee
management routinely emphasized the need for all employees to identify and report problems using the appropriate methods established within the administrative programs.
Inspection Report# : 2007008 *(pdf)*

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