Sequoyah 1
2Q/2011 Plant Inspection Findings

Initiating Events

Significance: G Mar 31, 2011
Identified By: Self-Revealing
Item Type: FIN Finding
Reactor trip due to unpluged steam dump load reject controller
A self-revealing finding was identified for the licensee's failure to perform adequate post-maintenance testing, as specified by procedures SPP-8.3, Post-Modification Testing, revision 10, and NPG-SPP-06.3, Pre-/Post-Maintenance Testing, revision 0, in conjunction with a work order which implemented a plant modification on Unit 1 and included the relocation of the steam dump load reject controller. This resulted in a manual trip of Unit 1 following a turbine trip from 26 percent rated thermal power due to the steam dump load reject controller power supply not being properly connected. The licensee entered this issue into their corrective action program as PERs 285349. The licensee implemented corrective actions to include a revision to post-modification testing procedures to require an additional post maintenance testing (PMT) review for large/complex modifications, as well as revision to applicable maintenance procedures to require verification for plug-in type connections.

The finding was determined to be greater than minor because it was associated with the equipment performance attribute of the initiating events cornerstone and affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, this finding resulted in a reactor trip. Using IMC 0609, "Significance Determination Process," Attachment 4, "Phase 1 - Initial Screening and Characterization of Findings," the finding was determined to be of very low safety significance (Green) because although it did contribute to the likelihood of a reactor trip, it did not contribute to the likelihood that mitigating systems will not be available.

The cause of this finding was determined to have a cross-cutting aspect of Work Planning, in the area of Human Performance associated with the Work Control component. The work planning processes failed to identify the need to include steps to verify the operational status of the controller following completion of the activity, considering the physical conditions and requirements associated with relocating the device. [H.3(a)]. (Section 4OA3.4)
Inspection Report# : 2011002 *(pdf)*

Significance: G Dec 31, 2010
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to collect reactor coolant pump oil leakage
•Green. The inspectors identified a Green non-cited violation of 10 CFR 50 Appendix R, Section III.O, "Oil collection system for reactor coolant pump," for the licensee's failure to ensure the capability of the reactor coolant pump (RCP) oil collection system to collect and drain all RCP oil leakage. System configuration and procedural deficiencies resulted in the inability of the oil collection system to collect and drain all RCP oil leakage. Approximately 2-3 gallons of oil leakage were identified on the containment floor following Unit 1 shutdown for a refueling outage. The licensee entered this issue into their corrective action program as PERs 270216, 278689, and 284244. Corrective actions included revision to applicable plant procedures to prevent the condition from occurring, as well as plans to evaluate a design change to modify the system configuration.

The finding was determined to be greater than minor because it was associated with the protection against external factors attribute of the initiating events cornerstone, and affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety function during shutdown as well as power operations. Specifically, the likelihood of a fire in the containment building was elevated due to the failure to maintain combustible material (RCP oil) within the boundaries of the oil collection system. Using IMC 0609 Appendix F, "Fire Protection Significance Determination Process," the inspectors assumed that the condition represented a low

degradation of the fire protection program element of fire prevention through control of combustible materials. Therefore, the finding was determined to be of very low safety significance (Green). No cross-cutting aspect was identified. The issue was not reflective of current licensee performance, since both the bowl drain line configuration (last modified in 1993) and the seal standpipe filling procedure (in place since at least 2000) had been in place for a number of years. (Section 1R05)
Inspection Report# : 2010005 *(pdf)*

Significance: G Sep 30, 2009
Identified By: Self-Revealing
Item Type: FIN Finding
Feedwater regulating valve failure due to inadequate maintenance procedure
A self-revealing finding was identified for an inadequate maintenance procedure which was used to perform a rebuild of the Unit 1, Loop 1, main feedwater regulating valve (FRV) actuator. The failure to specify an applicable torque requirement associated with the installation of the control air diaphragm resulted in a failure of the diaphragm and a reactor trip due to a loss of main feedwater to the Loop 1 steam generator. The event was reported to the NRC as event notification (EN) 45045 and documented in the licensee corrective action program as PER 170598.

The finding was determined to be greater than minor because it was associated with the procedure quality attribute of the initiating events cornerstone and affected the cornerstone objective to limit the likelihood of those events that upset plant stability, in that the FRV actuator failure caused a reactor trip and loss of main feedwater to the Loop 1 steam generator. Using Inspection Manual Chapter (IMC) 0609, “Significance Determination Process,” Attachment 4, “Phase 1 - Initial Screening and Characterization of Findings,” the finding was determined to have very low safety significance (Green) because it did not contribute to both the likelihood of a reactor trip and the likelihood that mitigating systems will not be available. The cause of this finding was determined to have a cross-cutting aspect in the area of human performance associated with the resources component. It was directly related to the availability of resources necessary for complete accurate and up-to-date work packages. [H.2(c)] Specifically, the licensee’s vendor manual for the affected component was not maintained up-to-date to contain the most current information and requirements from the vendor applicable to the maintenance activities conducted (Section 4OA3.2).

Inspection Report# : 2009004 *(pdf)*

Mitigating Systems

Significance: G Jun 30, 2011
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to perform instrumentation surveillance testing within required frequency
The inspectors identified a non-cited violation of Units 1 and 2 TS Surveillance Requirement (SR) 4.0.2 for the licensee’s failure to perform SRs specified in Units 1 and 2 TS 3/4.3.1, “Reactor Trip System Instrumentation,” and 3/4.3.2, “Engineered Safety Feature Actuation System (ESFAS) Instrumentation,” within the required surveillance frequencies. The inspectors identified eight examples over the last three years (five examples on Unit 1 and three examples on Unit 2) where the interval between tests of the automatic actuation logic and reactor trip breaker functions required by SRs 4.3.1.1.1 and 4.3.2.1.1 exceeded the maximum surveillance interval allowed by TS. The licensee entered this issue into their corrective action program as PER 369938. Corrective actions included ensuring that work control processes correctly implement the required surveillance intervals.

The finding was determined to be greater than minor because it was associated with the equipment performance attribute of the mitigating systems cornerstone and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, extending beyond the required maximum interval between TS surveillance tests affects the ability to confirm continued availability of TS equipment, and the ability to detect potential latent operability concerns in a timely manner. Using Inspection IMC 0609, “Significance Determination Process,” Attachment 4, “Phase 1 - Initial Screening and Characterization of Findings,” the finding was determined to be of very low safety significance (Green)

since it did not represent an actual loss of safety function of a single train for greater than the associated TS allowed outage time. The inspectors did not identify that the cause of this finding was related to any of the cross-cutting aspects defined in IMC 0310, and therefore no cross-cutting aspect was assigned to this finding. (Section 1R22)
Inspection Report# : 2011003 *(pdf)*

Significance: G Jun 13, 2011
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to Establish Compensatory Actions for Blocked Sprinklers
The inspectors identified a non-cited violation of Sequoyah Operating License Conditions 2.C.(16) and 2.C.(13) for Units 1 and 2, respectively, for failure to establish compensatory measures for an obstructed sprinkler system. Specifically, scaffolding installed in auxiliary building fire area FAA-054/Room A01 was in a configuration which obstructed sprinkler heads A198 and A208. The licensee entered this issue into the corrective action program as Problem Evaluation Report 321911 and implemented compensatory measures (fire watches) in accordance with the approved fire protection program.
Inspection Report# : 2011006 *(pdf)*

Significance: G Jun 13, 2011
Identified By: NRC
Item Type: NCV NonCited Violation
Sprinkler System in Room 690.0-A1 of the Auxiliary Building has NFPA Code Deviation
The inspectors identified a non-cited violation of Operating License Conditions 2.C.(16) and 2.C.(13), for Units 1 and 2 respectively, for failure to install the automatic suppression system (sprinkler system) in the auxiliary building corridor 690 foot elevation, in accordance with applicable National Fire Protection Association (NFPA) Standard No. 13, “Automatic Sprinkler Systems.” Specifically, NFPA 13-1975 required sprinklers to be installed within 12-inches of the ceiling. Portions of the auxiliary building sprinkler system were installed greater than 12-inches below the ceiling. As a result, the actuation of the fusible link type sprinklers would have been slower than originally intended after fire ignition. The licensee entered this issue into the corrective action program as Problem Evaluation Report 147467 and implemented compensatory measures (fire watches) in accordance with the approved fire protection program. The inspectors determined that there was no cross-cutting aspect associated with this finding because the condition has existed since initial plant licensing and was not reflective of present performance.
Inspection Report# : 2011006 *(pdf)*

Significance: G Mar 31, 2011
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
Failure to adequately qualify molded-case circuit breakers to safety-related application through commercial grade dedication.
The inspectors identified a non-cited violation of 10 CFR 50, Appendix B, Criterion III, Design Control, for the licensee’s failure to assure that appropriate quality standards were specified and included in design documents and that deviations from such standards were controlled. Specifically, the licensee failed to ensure that the molded case circuit breakers utilized in the station 120VAC vital instrument power boards were properly seismically qualified for their application. The licensee entered this issue into their corrective action program as PERs 264271, 266599, 286156, and 319161. Corrective actions included revision of applicable procedures to perform re-alignment of breakers in the vital instrument power boards.

The finding was determined to be greater than minor because it was associated with the design control attribute of the mitigating systems cornerstone and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to ensure that the 120VAC vital instrumentation board components had proper seismic qualification had the potential to affect the ability of safety-related equipment to perform its required function under design basis conditions. Using Inspection IMC 0609, “Significance Determination Process,” Attachment 4, “Phase 1 - Initial Screening and Characterization of Findings,” the finding was determined to have very low safety significance (Green) because it did not represent an actual loss of safety function. No cross-cutting aspect was identified, since the issue was determined

to not reflect current licensee performance. (Section 1R15.1)

Inspection Report# : 2011002 *(pdf)*

Significance: G Mar 31, 2011
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
Loss of 480-V motor control center due to inadequate breaker replacement maintenance
A self-revealing non-cited violation of Unit 1 TS 6.8, “Procedures & Programs,” was identified for the licensee’s failure to provide adequate procedures for maintenance involving the replacement of a safety-related 480V breaker. This resulted in the normal feeder breaker for the safety related 1A2 reactor motor operated valve (MOV) board unexpectedly tripping open when energized following maintenance, causing a loss of power to the board. The licensee entered this issue into their corrective actions program as PER 320274. Licensee corrective actions included revising the applicable breaker maintenance procedure, and reinforcing expectations regarding peer checking and procedure use and adherence.

The finding was determined to be greater than minor because it was associated with the procedure quality attribute of the mitigating systems cornerstone and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the loss of power to the 1A2 reactor MOV board resulted in the inoperability of its associated MOVs affecting two trains of AFW, one train of containment spray (CS), feedwater isolation valves, and containment isolation valves. Using Inspection IMC 0609, “Significance Determination Process,” Attachment 4, “Phase 1 - Initial Screening and Characterization of Findings,” the finding was determined to be of very low safety significance (Green) since it did not represent an actual loss of safety function of a single train for greater than the associated TS allowed outage time.

The cause of this finding was determined to have a cross-cutting aspect in the area of Human Performance associated with the Resources component. The work package was not adequate to assure nuclear safety due to the complexity and ambiguity associated with the procedure step which involved the jumper installation requirement. [H.2(c)]. (Section 1R15.2)
Inspection Report# : 2011002 *(pdf)*

Significance: G Mar 31, 2011
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
Inadequate maintenance procedures result in inoperable feedwater regulating valve.
A self-revealing non-cited violation of 10 CFR 50 Appendix B Criterion V, “Instructions, Procedures, and Drawings,” was identified for the failure to provide adequate procedures for maintenance on the Unit 1 loop 3 feedwater regulating valve (FRV). The applicable procedures did not contain adequate guidance to ensure that the valve’s operability was not adversely affected during reassembly. As a result, the FRV was placed in a condition where it was unable to perform its function of main feedwater isolation as required by TS LCO 3.7.1.6. The licensee entered this issue into their corrective actions program as PERs 284451 and 314771. Corrective actions included revision to the applicable work procedure to ensure no inadvertent valve stem rotation during reassembly.

The finding was determined to be greater than minor because it was associated with the procedure quality attribute of the mitigating systems cornerstone and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, as a result of the maintenance activity, the FRV was placed in a condition where it was unable to perform its required function of main feedwater isolation. Using IMC 0609, “Significance Determination Process,” Attachment 4, “Phase 1 - Initial Screening and Characterization of Findings,” the finding was determined to be of very low safety significance (Green) since the finding did not represent an actual loss of safety function of a single train for greater than the associated TS allowed outage time.

The cause of this finding was determined to have a cross-cutting aspect in the area of Human Performance associated with the Resources component, in that a complete work package which was adequate to assure nuclear safety was not provided for this maintenance activity. The work procedures did not include guidance to ensure that the operability of

the FRV was not adversely affected. [H.2(c)]. (Section 4OA2.2)
Inspection Report# : 2011002 *(pdf)*

Significance: G Dec 31, 2010
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to implement Technical Specification requirements to vent ECCS piping
•Green. The inspectors identified a Green non-cited violation of Technical Specification 6.8.1(c), "Procedures and Programs," for the failure to establish surveillance test procedures to verify that ECCS piping systems were full of water by venting accessible piping high points on the suction side of the ECCS pumps as required by Surveillance Requirement (SR) 4.5.2.b.1. The licensee has entered this issue into their corrective action program as service request 291511.

The finding was determined to be greater than minor because it adversely affected the equipment performance attribute of the mitigating systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to perform surveillance tests on the ECCS system reduced the assurance that the system could respond to initiating events to prevent undesirable consequences. Using IMC 0609, "Significance Determination Process," Attachment 4, "Phase 1 - Initial Screening and Characterization of Findings," the finding was determined to be of very low safety significance (Green) since it was not a design or qualification deficiency, it did not represent the loss of a system safety function or the loss of any equipment trains, and is not potentially risk significant due to seismic, flooding or severe weather initiating events. Because site interdepartmental communication, coordination, and cooperation were not sufficient to identify the impact of changes to ECCS surveillance requirements on existing surveillance test procedures, the cross cutting aspect in the work control component of the human performance area applies to this finding [H.3(b)]. (Section 4OA5.4)
Inspection Report# : 2010005 *(pdf)*

Significance: G Dec 31, 2010
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to use worst case 6900 VAC bus voltage in design calculations
•Green. The inspectors identified a Green non-cited violation of 10 CFR 50, Appendix B, Criterion III, Design Control, for the licensee's failure to assure that applicable regulatory requirements and the design basis for structures, systems, and components are correctly translated into specifications, drawings, procedures, and instructions. Specifically, the licensee failed to assure that applicable regulatory requirements for undervoltage (degraded) voltage protection, including those prescribed in TS section 3.3.14, table 3.3.14-2, were correctly translated into design calculation, SQNETAPAC, "AC Auxiliary Power System Analysis", Rev. 36, which evaluated transient motor starting voltages at the beginning of a design basis loss of coolant accident (LOCA). The licensee has entered this into their corrective action program as PER 297671

This finding is more than minor because it affects the Design Control attribute of the Mitigating Systems Cornerstone. It impacts the cornerstone objective of ensuring the availability, reliability, and operability of the 6900 VAC safety buses to perform its intended safety function during a design basis event. The potential availability, reliability, and operability of the 6900 VAC safety buses during a potential degraded voltage condition was impacted as the licensee calculation used a non conservative degraded voltage input, with respect to the values specified in TS, into their safety-related motor starting and running calculations. The inspectors assessed the finding using the SDP and determined that the finding was of very low safety significance (Green) because the finding represented a design deficiency confirmed not to result in the loss of functionality of safety-related loads due to the availability of load tap changers (LTCs) that are installed to improve a degraded voltage condition. (Section 4OA5.5)
Inspection Report# : 2010005 *(pdf)*

Significance: G Sep 30, 2010
Identified By: NRC
Item Type: NCV NonCited Violation

Inadequate inspection of raw water side of containment spray heat exchangers
The inspectors identified a non-cited violation of 10 CFR 50 Appendix B Criterion V, “Instructions, Procedures, and Drawings,” for the failure to provide adequate documented instructions for inspection of the containment spray heat exchangers. Preventive maintenance (PM) procedures associated with these inspections failed to provide for an adequate inspection of the ERCW side (shell side) of these heat exchangers. Consequently, the heat transfer capability of these heat exchangers has not been periodically verified through either testing or adequate visual inspection. The licensee entered this issue into their corrective action program as PER 236318. Planned corrective actions include the development and implementation of a single-tube method for thermal performance testing of the heat exchangers in lieu of inspection.

The finding was determined to be greater than minor because it was associated with the equipment performance attribute of the mitigating systems cornerstone and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences, since the heat transfer capability of these heat exchangers has not been periodically verified through either testing or adequate visual inspection. Using IMC 0609, “Significance Determination Process,” Attachment 4, “Phase 1 - Initial Screening and Characterization of Findings,” the finding was determined to be of very low safety significance (Green) since the finding did not represent an actual loss of safety function. The cause of this finding was determined to have a cross-cutting aspect of Corrective Action Program Issue Identification in the area of Problem Identification and Resolution associated with the Corrective Action Program component, in that the evaluation of PERs in 2009 on the subject of CS heat exchanger inspection failed to identify the need to resolve the discrepancy between the scope of the program PMs and the implementing procedure requirement for CS heat exchanger shell side inspection. Thus, the licensee failed to completely and accurately identify issues in the corrective action program [P.1(a)]. (Section 1R07)

Inspection Report# : 2010004 *(pdf)*

Significance: G Sep 30, 2010
Identified By: NRC
Item Type: NCV NonCited Violation
Non-conservative design calculation for RHR suction temperature limit
The inspectors identified a Green non-cited violation of 10 CFR 50 Appendix B Criterion III, “Design Control,” for the failure to provide design control measures for verifying the adequacy of the design calculation used to establish the maximum RHR operating temperature limit for maintaining ECCS operability. A design calculation yielded a non-conservative temperature limit for use in plant operations procedures. This resulted in several occasions where ECCS operability was in question due to the fluid temperature in the RHR system suction piping. The licensee entered this issue into their corrective action program as PER 215434. Corrective actions included revising operations procedures to reflect the corrected temperature limit from a revised calculation.

The finding was determined to be greater than minor because it was similar to example 3.j. of IMC 0612 Appendix E in that the non-conservatism in the calculation resulted in a condition where reasonable doubt existed as to the operability of the ECCS system. Additionally, it was associated with the procedure quality attribute of the mitigating systems cornerstone and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, plant procedures for RHR system operation contained non-conservative temperature limits for ensuring TS operability, and actual system temperatures exceeded the revised appropriate limit on several occasions. Using IMC 0609, “Significance Determination Process,” Attachment 4, “Phase 1 - Initial Screening and Characterization of Findings,” the finding was determined to be of very low safety significance (Green) since the finding did not represent an actual loss of safety function. No cross-cutting aspect was identified since the issue was not reflective of current licensee performance, since the previous calculation in question was last revised and approved in 1996. (Section 4OA2.3)

Inspection Report# : 2010004 *(pdf)*

Barrier Integrity

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

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