

Sequoyah 1

3Q/2010 Plant Inspection Findings

Initiating Events

Significance:  Dec 31, 2009

Identified By: Self-Revealing

Item Type: FIN Finding

Reactor Trip due to Inadequate Transformer Bus Duct Maintenance Procedure

A self-revealing finding was identified for an inadequate maintenance procedure which was used to perform a periodic maintenance activity to clean and inspect the bus duct associated with the 'D' common station service transformer (CSST). This resulted in the bus duct being left in a condition that allowed for water intrusion to occur, which led to a fault that caused a loss of one offsite power supply and an automatic reactor trip of both units with main feedwater unavailability. The licensee entered this issue into the corrective action program (CAP) as PER 166884.

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 and challenge critical safety functions. Specifically, the use of an inadequate procedure directly contributed to the loss of one offsite power supply and an automatic reactor trip of both units with main feedwater unavailability. Using Inspection IMC 0609, "Significance Determination Process," Attachment 4, "Phase 1 - Initial Screening and Characterization of Findings," the finding was determined to be applicable to a Phase 2 analysis since the finding contributed to both the likelihood of a reactor trip and the likelihood that mitigating systems will not be available. Using IMC 0609 Appendix A, "Determining the Significance of Reactor Inspection Findings for At-Power Situations," a Phase 2 analysis was performed using the site specific risk-informed inspection notebook. The finding was assumed to affect the initiating event likelihood (IEL) of a Transient With Loss of Power Conversion System (TPCS), since power availability to the unit boards affects reactor coolant pump function as well as main condenser availability. A regional Senior Reactor Analyst performed a Phase 3 Significance Determination Process evaluation. The evaluation concluded the finding was of very low safety significance (Green) based on an assumed unavailability of the CSST 'B' fast transfer function of 0.11/yr. No cross-cutting aspect was identified since the issue was not reflective of current licensee performance, in that the inadequate maintenance procedure was implemented in December 2006 Inspection Report# : [2009005](#) (pdf)

Significance:  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 40A3.2).

Inspection Report# : [2009004](#) (pdf)

Mitigating Systems

Significance:  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:  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 40A2.3)

Inspection Report# : [2010004](#) (pdf)

Significance:  Apr 16, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

Violation of 10 CFR 50, Appendix B, Criterion V for Failure to Follow Procedure for Vendor Contact Program

The team identified a Green non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion V, Instructions, Procedures, and Drawings, for the failure to properly maintain the vendor contact program for safety-related components. The team identified 37 examples of vendor technical manuals where the associated vendor had not been contacted in over three years. Procedure SPP-2.5, "Vendor Manual Control," required contact to be made with the vendors of safety-related components every three years to ensure that technical manuals and vendor documents contained the most current and applicable information consistent with the guidance of Generic Letter (GL) 90-03. The team identified 37 examples of vendor manuals and technical documents where the associated vendor had not been contacted in more than three years with several examples extending to almost six years. The licensee entered this issue into their corrective action program with actions to make contact with the vendors for all documents identified as having not been verified with the vendor in over the required three years. This finding was entered into the licensee's corrective action program as problem evaluation reports (PERs) 224364 and 224975. As an immediate corrective action, the licensee is ensuring that the vendor manuals and documents associated with safety-related components are being verified as most current with the respective vendors.

This finding is more than minor because it affected the Mitigating Systems Cornerstone objective of ensuring the availability and reliability of safety systems, is related to the attribute of Procedure Quality (i.e., Maintenance and Testing (Pre-Event) Procedures) and represented a programmatic break-down which if left uncorrected, could become a more significant safety concern. The team assessed this finding using the SDP and determined that the finding was of very low safety significance (Green) because the inspectors found no documented occurrences where the lack of vendor contact ultimately resulted in the inability of a safety-related component to perform the intended safety function and will be treated as an NCV.

The inspectors determined that the thorough evaluation of problems such that the resolutions address problems and extent of conditions, as necessary was a significant cause if this performance deficiency. The plant experienced a reactor trip in 2009 which was determined to have been caused, in part, by a vendor manual associated with a feedwater regulating valve (FRV) not being updated. The FRVs are components with both safety-related and non-safety-related features. The extent of condition of the corrective actions associated with this failed to identify the programmatic breakdown of the TVA vendor contact program for safety-related components. This is directly related to the Corrective Action Program component of the cross-cutting area of Problem Identification and Resolution (P.1. (c)). (Section 1R21.2.3)

Inspection Report# : [2010007](#) (pdf)

Barrier Integrity

Emergency Preparedness

Occupational Radiation Safety

Significance:  Dec 31, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Evaluate Mission Dose for Manual Operator Actions Required by Plant Procedures

The inspectors identified a non-cited violation (NCV) of Units 1 and 2 Technical Specification 6.8, "Procedures & Programs," for the licensee's failure to follow procedures involving the review and approval of revisions to a plant abnormal operating procedure (AOP). The incorporation of manual operator actions regarding closure of the containment equipment hatch in the event of a fuel handling accident into a plant AOP without performing a mission dose evaluation resulted in the likelihood that personnel involved with the activity would receive a dose in excess of regulatory limits for occupational exposure. The licensee entered this issue into their corrective action program as PERs 167420 and 167428.

The finding was determined to be greater than minor because it was associated with the program and process attribute of the occupational radiation safety cornerstone and affected the cornerstone objective to ensure the adequate protection of the worker health and safety from exposure to radiation from radioactive material during routine civilian nuclear reactor operation. The cornerstone objective was affected since adequate worker protection from exposure to radiation was not ensured through the AOP revision process. Using Inspection IMC 0609, "Significance Determination Process," Attachment 4, "Phase 1 - Initial Screening and Characterization of Findings," and Appendix C, "Occupational Radiation Safety Significance Determination Process," the finding was determined to be of very low safety significance (Green) because it did not affect the licensee's ability to assess dose, did not involve an overexposure or substantial potential for overexposure, and was not related to ALARA planning. No cross-cutting aspect was identified since the issue was not reflective of current licensee performance, in that the performance deficiency occurred in 2004

Inspection Report# : [2009005](#) (*pdf*)

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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