

# Sequoyah 1

## 2Q/2010 Plant Inspection Findings

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### 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)

**Significance:**  Sep 30, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to perform a 10 CFR 50.59 evaluation for abnormal operating procedure M.09, "loss of charging".**

The inspectors identified a Severity Level IV NCV of 10 CFR 50.59 for the licensee's failure to perform a 10 CFR 50.59 evaluation for a new station Abnormal Operating Procedure (AOP) - M.09, "Loss of Charging," Rev. 0, that included a preplanned, proceduralized 10 CFR 50.54(x) action that was a deviation from the Technical Specifications (TS). The licensee entered this issue into their corrective action program as PER 158739, and completed the corrective actions to remove the NRC unapproved operator actions from the procedure.

This finding was assessed using traditional enforcement. The finding was more than minor because the change requiring 10 CFR 50.59 evaluation would have required NRC review and approval prior to implementation. A regional senior risk analyst performed a Phase 3 Significance Determination and characterized the performance deficiency as very low safety significance (Green) based on risk. The inspectors concluded that the finding reflected current licensee performance and involved the cross-cutting aspect of non-conservative assumptions of the decision-making component of the cross-cutting area of Human Performance [H.1(b)]. (Section 40A5.2)

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

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## Mitigating Systems

**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*)

**Significance:**  Sep 30, 2009

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

### **Failure to follow emergency diesel generator operating procedure**

A self-revealing non-cited violation (NCV) of 10 CFR 50 Appendix B, Criterion V, Instructions, Procedures, and Drawings, was identified for the licensee's failure to follow plant procedures for performing independent verifications of procedural steps. Emergency Diesel Generator (EDG) 1B-B was declared operable when it was unable to perform its required safety function due to 11 of 32 cylinder test plugs not being positioned as required following pre-start rolling, which subsequently resulted in EDG damage during testing. This issue was entered into the licensee's corrective action program as Problem Evaluation Report (PER) 201282. The licensee performed corrective maintenance and returned the emergency diesel generator to service.

The finding was determined to be greater than minor because it was associated with the configuration control attribute of the mitigating system cornerstone and affected the cornerstone objective to ensure the availability of systems that respond to initiating events to prevent undesirable consequences, in that operator error and damage to the 1B-B EDG rendered the EDG unavailable to perform its safety function. 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 the it did not represent a loss of safety function, a loss of single train of safety equipment for greater than the TS allowed outage time, a loss of significant maintenance rule equipment for greater than 24 hours, or screen as potentially risk-significant due to a seismic, flooding, or severe weather initiating event. 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 training of personnel [H.2(b)]. Specifically, the operator that performed the independent verification of the vent valves positions did not receive training on the operation of the new design of EDG cylinder vent valves. (Section 1R15).

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

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## **Barrier Integrity**

**Significance:**  Jul 31, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Promptly Correct a Condition Adverse to Quality Associated with Out-of-Train Maintenance Controls**

Green. The NRC identified a Green non-cited violation of 10 CFR 50, Appendix B, Criterion XVI, Corrective Action, for the licensee's failure to promptly correct a condition adverse to quality by failing to implement corrective actions to address deficient out-of-train maintenance controls during opposite train work weeks. This contributed to entry into a short term shutdown action statement and a Notice of Enforcement Discretion (NOED). The failure to implement corrective action to provide guidance for controlling out-of-train maintenance was entered into the licensee's corrective action program as PER 177665.

This finding was determined to be greater than minor because it was associated with the Barrier Integrity Cornerstone

attribute of barrier performance, and on September 25, 2008, adversely affected the cornerstone objective to provide reasonable assurance that physical design barriers such as the control room protect plant operators and plant controls. The finding was evaluated using Phase 1 of the At-Power Significance Determination Process, and was determined to be of very low safety significance (Green) because the finding only represented a degradation of the radiological barrier function provided for the control room. The finding was assigned a cross-cutting aspect in the corrective action program component of the problem identification and resolution area because, although the licensee had identified deficient controls for out-of-train maintenance, corrective actions were not taken to address the issue in an adequate and timely manner, commensurate with safety significance and complexity. (P.1(d)). (Section 40A2.a.(3))

Inspection Report# : [2009006](#) (*pdf*)

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## Emergency Preparedness

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## 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*)

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## Public Radiation Safety

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## 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.

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## Miscellaneous

**Significance:** N/A Jul 31, 2009

Identified By: NRC

Item Type: FIN Finding

### **Seqouyah PI&R Summary**

The team concluded that, in general, problems were properly identified, evaluated, prioritized, and corrected. Generally, the threshold for initiating problem evaluation reports (PERs) was appropriately low, as evidenced by the types of problems identified and the large number of PERs entered annually into the Corrective Action Program (CAP). Employees were encouraged by management to initiate PERs. However, several examples of minor problems were identified by the team, including equipment issues that were not entered into the corrective action program and corrective action item closures that did not implement the actions required to be performed.

The team determined that, overall, audits and self-assessments were adequate in identifying deficiencies and areas for improvement in the CAP, and appropriate corrective actions were developed to address the issues identified. Operating experience usage was found to be generally acceptable and integrated into the licensee's processes for performing and managing work and plant operations.

Based on discussions and interviews conducted with plant employees from various departments, the inspectors determined that personnel at the site felt free to raise safety concerns to management and use the CAP to resolve those concerns.

Inspection Report# : [2009006](#) (*pdf*)

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