

# Sequoyah 1

## 4Q/2014 Plant Inspection Findings

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### Initiating Events

**Significance:** G Mar 31, 2014

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

#### **Inadequate clearance causes control air system transient**

A self-revealing non-cited violation of Units 1 and 2 Technical Specification 6.8.1.a, Administrative Controls (Procedures), was documented for the licensee's failure to establish an adequate clearance in preparation for maintenance activities on the B station air compressor. Implementation of this inadequate clearance on February 21, 2014, resulted in a reduction of control air pressure and a plant transient which challenged control room operators. Immediate corrective action was to revise the clearance to establish an adequate boundary. The licensee entered the issue into the corrective action program (CAP) for resolution as PER 850331.

The performance deficiency was more than minor because it was associated with the configuration control and human performance attributes of the initiating events cornerstone and adversely affected the cornerstone's objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the inadequate clearance caused a plant transient during power operations that without operator action would have resulted in a loss of air operated plant components and ultimately require the operators to trip both units. The finding was determined to be of very low (green) safety significance based on Exhibit 1, "Initiating Events Screening Questions," found in Inspection Manual Chapter 0609, "Significance Determination Process," Appendix A, "Significance Determination Process for Findings At-Power," because the finding did not result in a complete or partial loss of a support system that contributed to the likelihood of, or cause, an initiating event and affected mitigation equipment. The inspectors determined the cause of this finding was associated with a cross cutting aspect of Work Management in the Human Performance area. Specifically, the licensee failed to implement their clearance process such that nuclear safety was the overriding priority. (H.5) (Section 4OA3)

Inspection Report# : [2014002](#) (*pdf*)

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### Mitigating Systems

**Significance:** G Jun 30, 2014

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Failure to perform visual examination of the Unit 1 and Unit 2 CRDM seismic plate supports**

An NRC-identified Green non-cited violation (NCV) of 10 CFR 50.55a(g)(4), "Inservice Inspection Requirements" was identified for the licensee's failure to perform visual examinations of the control rod drive mechanism (CRDM), American Society of Mechanical Engineers (ASME) Class 1, seismic plate supports as required by the ASME Code, Section XI. The licensee entered this issue into their corrective action program (CAP) as Problem Evaluation Report (PER) 889400. The licensee developed an operability evaluation and concluded that the supports remained functional. The licensee also initiated corrective actions to perform the required visual examinations of the CRDM seismic plate

supports before the end of the current inservice inspection (ISI) interval in April 2016.

The finding was more than minor because it was associated with the protection against external factors attribute of the mitigating systems cornerstone, and affected the cornerstone objective to ensure availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequence. The inspectors screened this finding as Green because the finding did not involve the loss or degradation of equipment or function specifically designed to mitigate a seismic initiating event. A crosscutting aspect was not assigned to this finding in accordance with IMC 0612, Appendix B, because the exclusion of the CRDM seismic plate supports from the scope of the ISI Program occurred outside of the nominal 3-year period for present performance, and therefore it was not reflective of present licensee performance. (Section 1R08)

Inspection Report# : [2014003](#) (*pdf*)

**Significance:** G Mar 05, 2014

Identified By: NRC

Item Type: NCV NonCited Violation

**Improper orientation of fire dampers in auxiliary building**

An NRC-identified Green non-cited violation of Sequoyah Operating License Conditions 2.C.(16) and 2.C.(13) for Units 1 and 2 respectively, was identified for the licensee's failure to ensure that fire dampers were functional, as required by the approved fire protection program (FPP), in the Auxiliary Control Room (fire area FAA-066), Vital Battery Board Room II (fire area FAA-068), and Vital Battery Board Room III (fire area FAA-087) fire area boundaries. The licensee entered this issue into the corrective action program as Problem Evaluation Reports 845913 and 848580, and implemented hourly roving fire watches in the affected fire areas.

The licensee's failure to ensure the fire dampers were functional as required by the FPP was determined to be a performance deficiency. This performance deficiency was more than minor because it affected the reactor safety mitigating systems cornerstone attribute of protection against external factors (i.e., fire) and it affected the fire protection defense in depth strategies involving the control of fires that do occur and to protect systems important to safety. The finding was screened in accordance with NRC IMC 0609, "Significance Determination Process," Attachment 4, "Initial Characterization of Findings," which determined that an IMC 0609, Appendix F, "Fire Protection Significance Determination Process," review was required as the finding involved the ability to confine a fire. The finding category of "Fire Confinement" was assigned, based upon that element of the FPP being impacted. Using IMC 0609, Appendix F, Attachment 1, "Fire Protection Significance Determination Process Worksheet," the inspectors determined that the finding was of very low safety significance (Green) at Task 1.4.3, Question C, based upon observation that a fully functional automatic sprinkler system was on either side of each affected fire barrier partition. No cross cutting was assigned to this finding because the cause of the finding was not indicative of current licensee performance. The dampers were purchased and installed in 1997. (Section 1R05.02)

Inspection Report# : [2014007](#) (*pdf*)

**Significance:** G Mar 05, 2014

Identified By: NRC

Item Type: NCV NonCited Violation

**Auxiliary control instrument room 2A sprinklers not in compliance with NFPA 13-1975**

An NRC-identified Green non-cited violation of Sequoyah Operating License Conditions 2.C.(16) and 2.C.(13), for Units 1 and 2 respectively, was identified for the licensee's failure to properly install an automatic pre-action fire sprinkler system in Auxiliary Control Instrument Room 2A (fire area FAA-090) in accordance with the approved FPP and applicable National Fire Protection Association (NFPA) Standard No. 13, "Automatic Sprinkler Systems." The licensee entered this issue in the corrective action program as Problem Evaluation Report 847948.

The licensee's failure to install the sprinkler heads in accordance with the applicable NFPA Code of Record specified in the approved FPP for Sequoyah is a performance deficiency. This performance deficiency is more than minor because it is associated with the reactor safety mitigating systems cornerstone attribute of protection against external factors (i.e., fire) and it adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The potential delayed actuation of the sprinkler system could affect the fire protection defense in depth strategy involving suppression of fires. The finding was screened in accordance with NRC IMC 0609, "Significance Determination Process," Attachment 4, "Initial Characterization of Findings," which determined that an IMC 0609, Appendix F, "Fire Protection Significance Determination Process," review was required as the finding involved fixed fire suppression systems. Using IMC 0609, Appendix F, Attachment 2, "Degradation Rating Guidance Specific to Various Fire Protection Program Elements," a "low" degradation rating was assigned, based on the fact that four sprinkler heads were installed in a room of 110 ft<sup>2</sup> and at least one head would be installed within 10 feet of combustibles of concern. Due to their spacing the sprinklers would be within the fire plume zone of influence for the combustibles of concern and the expected heat release rate (HRR) of postulated fires. Except as noted, the system was considered to be nominally code compliant, and therefore, met the low degradation criteria for water based suppression systems. Using IMC 0609, Appendix F, Attachment 1, "Fire Protection Significance Determination Process Worksheet," the inspectors determined that the finding was of very low safety significance (Green), at Task 1.4.2, Question A. The cause of this finding was determined to have a cross-cutting aspect of Evaluation (P.2) in the Problem Identification and Resolution cross-cutting area, because the licensee did not thoroughly evaluate the issue to ensure that resolutions addressed extent of conditions commensurate with their safety significance. (Section 1R05.03)  
Inspection Report# : [2014007](#) (*pdf*)

**Significance:**  Mar 05, 2014

Identified By: NRC

Item Type: NCV NonCited Violation

**Design control requirements not met during safety-related circuit breaker replacements**

An NRC-identified Green non-cited violation (with two examples) of 10 CFR Part 50, Appendix B, Criterion III, Design Control, was identified for the licensee's failure to assure that design documents were controlled and appropriate quality standards for design were specified as required by site procedures. The licensee entered this issue in the corrective action program as Problem Evaluation Reports 845951, 846017, 848756, and 849220.

The licensee's failure to assure that design documents were controlled and appropriate quality standards for design were specified in accordance with design control procedures was a performance deficiency. The performance deficiency was more than minor because if left uncorrected it could lead to installation of breakers that may not meet the critical characteristics needed to perform their safety function. The finding was screened in accordance with NRC IMC 0609, "Significance Determination Process," Appendix A, "The Significance Determination Process for Findings At-Power." Using IMC 0609, Appendix A, Exhibit 2, "Mitigating Systems Screening Questions," 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 1R05.06)

Inspection Report# : [2014007](#) (*pdf*)

**Significance:**  Mar 05, 2014

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to maintain necessary materials and procedures for cold shutdown repairs**

An NRC-identified Green non-cited violation of Sequoyah Operating License Conditions 2.C.(16) and 2.C.(13), for Units 1 and 2 respectively, was identified for the licensee's failure to maintain necessary materials and procedures for cold shutdown repairs, as required by the approved fire protection program. The licensee entered this issue into the

corrective action program as Problem Evaluation Reports 845931, 847420, 847428, 847449, and 847462.

The licensee's failure to provide adequate guidance for all repairs listed in the Appendix R casualty procedure and failure to maintain the required repair parts for the same procedure was a performance deficiency. The performance deficiency was more than minor because it was associated with the procedure quality attribute of the Mitigating Systems Cornerstone and it adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events (fire) to prevent undesirable consequences. Inadequate procedural guidance and the lack of required materials could adversely affect the licensee's capability to achieve and maintain cold shutdown conditions. The finding was screened in accordance with NRC IMC 0609, "Significance Determination Process," Attachment 4, "Initial Characterization of Findings," which determined that an IMC 0609, Appendix F, "Fire Protection Significance Determination Process," review was required as the finding affected fire protection defense-in-depth strategies involving post-fire safe shutdown. Using IMC 0609, Appendix F, Attachment 1, "Fire Protection Significance Determination Process Worksheet," the inspectors determined that the finding was of very low safety significance (Green) at Task 1.3.1, because it was determined that the reactor was able to reach and maintain a hot safe shutdown condition. The cause of this finding was determined to have a cross-cutting aspect of Teamwork (H4) in the Human Performance cross-cutting area because the licensee failed to assure that individuals and work groups communicated and coordinated their activities within and across organizational boundaries to ensure nuclear safety was maintained. Specifically, the coordination between operation's department procedure writers, maintenance department procedure writers, and fire operations department personnel was inadequate to ensure the adequacy of cold shutdown repair procedures and the availability of required materials. (Section 1R05.09)  
Inspection Report# : [2014007](#) (*pdf*)

**Significance:**  Mar 05, 2014

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to perform the required reviews when adding fire watches to the fire protection program**

An NRC-identified Green non-cited violation of Sequoyah Operating License Conditions 2.C.(16) and 2.C.(13), for Units 1 and 2 respectively, was identified for the licensee's failure to perform the required reviews when adding fire watches to the fire protection program. The licensee entered the issue into their corrective action program as Problem Evaluation Report 845593.

The licensee's failure to perform the required evaluation and review prior to revising the fire hazards analysis was a performance deficiency. The performance deficiency was more than minor because it was associated with the procedure quality attribute of the Mitigating Systems Cornerstone and it adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events (fire) to prevent undesirable consequences. Specifically, the sole use of fire watches as a mitigation measure for the unavailability of the credited pressurizer power operated relief valve would adversely affect the capability to achieve and maintain safe shutdown during a fire event. The finding was screened in accordance with NRC IMC 0609, "Significance Determination Process," Attachment 4, "Initial Characterization of Findings," which determined that an IMC 0609, Appendix F, "Fire Protection Significance Determination Process," review was required as the finding affected fire protection defense-in-depth strategies involving post-fire SSD. Using IMC 0609, Appendix F, Attachment 1, "Fire Protection Significance Determination Process Worksheet," the issue screened as having very low safety significance (Green) at Task 1.5.3 because the change in core damage frequency (delta CDF) was less than 1E-6 (i.e., delta CDF calculated to be 6.6E-7). The cause of this finding was determined to have a cross-cutting aspect of Evaluation (P.2) in the Problem Identification and Resolution cross-cutting area, because the licensee did not thoroughly evaluate the issue to ensure that resolutions addressed causes commensurate with their safety significance. Specifically, the establishment of effective corrective actions was adversely affected by the failure to perform an evaluation prior to revising the fire hazards analysis. (Section 1R05.11)

Inspection Report# : [2014007](#) (*pdf*)

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## Barrier Integrity

**Significance:**  Sep 30, 2014

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

### **Failure to Perform Adequate Maintenance on Containment Vacuum Relief Valve (Section 1R12)**

A Self-revealing Green Non-Cited Violation (NCV) of Technical Specification (TS) 6.8.1.a. was identified for the licensee's failure to adequately implement a maintenance procedure associated with a vacuum relief containment isolation valve. Specifically, during a refueling outage on May 24, 2014, the licensee failed to properly install a locking wire associated with the spring tension bolts on the Unit 2 containment vacuum relief valve. This error ultimately led to a failure of the valve on June 24 at 1600 and entry into TS 3.6.3, "Containment Isolation Valves." The valve was ultimately repaired and the valve was declared operable on June 26 at 0026. The inspectors determined that the licensee's failure to adequately develop and implement a procedure governing the maintenance of a containment isolation valve was a performance deficiency.

This finding was determined to be greater than minor because it was associated with the Configuration Control attribute of Barrier Integrity cornerstone and adversely affected the cornerstone's objective to ensure the structural integrity of the containment boundary. Specifically, the finding challenged containment integrity. A screening analysis was conducted using the assumption that all core damage sequences would lead to a Large Early Release. This was an overestimation of risk, since actions to mitigate a release were possible. The short exposure time multiplied by the Core Damage Frequency for the plant resulted in less than a 1E-7 increase in Large Early Release Probability, and the finding is Green. The cause of this finding was determined to have a cross-cutting aspect in the Human Performance component, relating to the assurance by supervision that procedures are adequate to ensure nuclear safety. [H.1]. (Section 1R12)

Inspection Report# : [2014004](#) (*pdf*)

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## Emergency Preparedness

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## Occupational Radiation Safety

**Significance:**  Jun 30, 2014

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to comply with entry requirements to a HRA**

The inspectors identified a Green, self-revealing, NCV of Technical Specification (TS) 6.12.1, "High Radiation Area", for two examples where workers made entries into High Radiation Areas (HRA) on May 16, 2014, without meeting the entry requirements specified therein. Specifically, these workers, while performing decontamination activities and moving materials in the upper reactor containment, entered a posted HRA: 1) without knowledge of the current radiological conditions in the actual work area, 2) not using a radiological work permit (RWP) approved for HRA entry, and 3) without wearing the prescribed electronic dosimetry for an HRA. The licensee entered these events into the Corrective Action Program (CAP) as Problem Evaluation Reports (PERs) Numbers 886668 and 886160. Immediate corrective actions included restricting worker access to the Radiologically Controlled Area (RCA) and issuance of communications to the site and within the Radiation Protection organization to reinforce roles in RWP

adherence and access control.

This finding was more than minor because it is associated with the Occupational Radiation Safety Cornerstone attribute of Human Performance and adversely affects the cornerstone objective of ensuring adequate protection of worker health and safety from exposure to radiation from radioactive material during routine civilian nuclear reactor operation. The finding was not related to As Low As Reasonably Achievable planning, nor did it involve an overexposure or substantial potential for overexposure and the ability to assess dose was not compromised. Therefore, the finding was determined to be of very low safety significance (Green). This finding involved the cross-cutting aspect of Human Performance, Avoid Complacency [H.12] because workers failed to apply appropriate error reduction tools during participation in the pre-job brief and prior to crossing the HRA boundaries. (2RS1)

Inspection Report# : [2014003](#) (*pdf*)

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## Public Radiation Safety

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## Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the [cover letters](#) to security inspection reports may be viewed.

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## Miscellaneous

Last modified : February 26, 2015