

Summer 4Q/2012 Plant Inspection Findings

Initiating Events

Mitigating Systems

Significance: G Dec 31, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Promptly Identify and Correct a Condition Adverse to Quality for Alignment of the Safety-Related Refueling Water Storage Tank to a Non-Seismic Spent Fuel Purification system

A non-cited violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," was identified by the inspectors for the failure to promptly identify and correct a condition adverse to quality (CAQ) involving alignment of the safety-related refueling water storage tank (RWST) to a non-seismic spent fuel purification (SF) system. The licensee entered the problem into their corrective action program as condition report 12-06193.

The inspectors determined that the failure to promptly identify and correct the CAQ for the alignment of the RWST to the SF system was a performance deficiency (PD). The inspectors reviewed Inspector Manual Chapter (IMC) 0612, Appendix B and determined the PD was more than minor and therefore a finding, because it affected the Mitigating Systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences and the respective attribute of configuration control because the alignment of the safety-related RWST to the non-seismic SF system created a CAQ and rendered the RWST inoperable. The inspectors evaluated the finding in accordance with NRC IMC 0609, "Significant Determination Process," Attachment 4 and Appendix A and determined that the finding required a phase 3 evaluation by a senior reactor analyst using the NRC SPAR model. A one year exposure period was used and no recovery credit was assumed in the analysis. The non-seismic RWST purification piping was assumed to fail at the same seismic input as that assumed for a loss of offsite power. The dominant sequence was a seismically induced loss of offsite power leading to a station blackout with failure of the emergency power system and failure to recover offsite power or the EDGs. Subsequent battery depletion and operator failure to control the TDEFW pump would lead to core damage. The risk was mitigated by the low probability of a seismic event. The analysis determined that the risk increase of the performance deficiency was an increase in core damage frequency less than 1E-6/year a GREEN finding of very low safety significance. The cause of the finding involved the cross-cutting area of problem identification and resolution, the component of corrective action program, and the aspect of complete and thorough evaluation, P.1(c), because the licensee failed to determine that the alignment of the safety-related RWST to the non-seismic SF system was a CAQ. (Section 40A2.3)

Inspection Report# : [2012005](#) (*pdf*)

Significance: G Oct 31, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Procedures and Procedure Compliance For Preventative Maintenance Deferrals

The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings." The licensee failed to ensure that the procedure for performing Preventative Maintenance (PM) deferrals included provisions to ensure that when a Work Order (WO) high value Preventative Maintenance Task Sheet (PMTS) is deferred past its end date that the new end date for the PMTS is updated in the Computerized Maintenance Management System (CMMS). Additionally, the licensee failed to ensure personnel performed PM deferrals when a WO high value PMTS could not be performed by its required end date as directed by the PM

program procedure. The licensee entered the issue into the corrective action program as CRs 12-03940, 12-3930, 12-03931, 12-04122, and 12-04152.

The licensee's failure to have an adequate procedure for PM deferrals and failure to perform PM deferrals as required by procedure SAP 143 was a performance deficiency. The performance deficiency was determined to be more than minor because if left uncorrected, the performance deficiency had the potential to lead to a more significant safety concern. Specifically, the failure to perform PMs at the required intervals could result in degradation or failure of safety significant equipment. The inspectors used IMC 0609, Att. 4, "Initial Characterization of Findings," issued 6/19/12, and IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," issued 6/19/12, and determined the finding to be of very low safety significance (Green) because the finding was not a design or qualification deficiency, did not represent a loss of system and/or function, did not result in exceeding a TS allowed outage time and did not represent an actual loss of function of one or more non-Tech Spec Trains. The team identified a cross-cutting aspect in the resources component of the human performance area because the licensee failed to ensure that the procedure was complete accurate and up to date. [H.2(c)] (Section 40A2 a.3)

Inspection Report# : [2012008](#) (pdf)

Significance:  Sep 30, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Update the UFSAR for a Modification to the Sodium Hydroxide System

A Green, severity level (SL) IV, non-cited violation was identified by the NRC for the failure of the licensee to update the updated final safety analysis report (UFSAR) for a modification to the sodium hydroxide (NaOH) portion of the reactor building spray system. This modification installed recirculation and feed components primarily consisting of a feed tank and pump for makeup to the tank, a recirculation pump, and associated valves and piping. This violation is in the licensee's corrective action program as condition report 12-03644.

The failure to update the UFSAR to describe adequate facility operation for the aforementioned NaOH modification as required by 10 CFR 50.71(e) was a performance deficiency (PD). The PD is more than minor and therefore a finding because if left uncorrected it would have the potential to lead to a more significant safety concern. Additionally, the violation is considered for traditional enforcement because not having an updated UFSAR hinders the licensee's ability to perform adequate 10 CFR 50.59 evaluations and can impact the NRC's ability to perform its regulatory function such as license amendment reviews and inspections. This violation is also a finding which is evaluated by the significance determination process (SDP) to assess the effect on safety. However, the SDP does not specifically consider the effect on the regulatory process. Consequently, given the common regulatory concern different processes are used to correctly reflect both the regulatory importance of the violation and the safety significance of the associated finding. The inspectors evaluated the finding in accordance with NRC Inspection Manual Chapter 0609, "Significant Determination Process," attachment 4 and appendix A and determined that the finding was of very low safety significance or Green because it was not a design deficiency, did not result in the loss of a system function, or have an impact on components needed to mitigate a seismic, flooding or severe weather initiating event. Additionally, this finding was determined to be a SL-IV violation using Section 6.1 of the NRC's Enforcement Policy because the inaccurate information was not used to make an unacceptable change to the facility or procedures. There are no cross-cutting aspects because the finding was not representative of current licensee performance and cross-cutting aspects are not assigned to traditional enforcement violations. (Section 40A2.3)

Inspection Report# : [2012004](#) (pdf)

Significance:  Sep 30, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Installation of Unit 1 Service Water Piping and Related Pipe Support

A non-cited violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings," was identified by the NRC for the failure to accomplish the installation of Unit 1 service water (SW) piping and supports in accordance with prescribed drawings which resulted in no contact between piping and pipe support, SSWH-245, and caused an operable but degraded and nonconforming condition. The licensee entered this problem into their corrective action program as condition report 12-00771.

A performance deficiency (PD) was identified by the NRC for the failure to adequately install a Unit 1 SW pipe support in accordance with prescribed drawings. This PD had a credible impact on safety due to a reasonable doubt of operability during a seismic event and the resultant engineering evaluations to conclude that a complete loss of functionality would not occur. The PD was more than minor and therefore a finding, because it impacted the mitigating systems cornerstone objective to ensure the reliability and capability of systems which respond to initiating events and the related attribute of equipment performance because the reliability of the support configuration had been impacted by the reduction in design margin. In accordance with NRC Inspection Manual Chapter 0609, "Significant Determination Process," attachment 4 and appendix A the inspectors determined the finding was of very low safety significance or Green because the design deficiency was confirmed not to result in a loss of operability or functionality. The finding had no cross-cutting aspects because it was not representative of current licensee performance. (Section 40A5.3)

Inspection Report# : [2012004](#) (pdf)

Significance:  Jul 03, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Duties of the Shift Engineer During Off-Normal Fire Events

An NRC identified non-cited violation of V.C. Summer Technical Specification 6.8.1.e., Procedures and Programs – Emergency Plan, was identified related to the emergency plan procedural duties of the Shift Engineer (SE)/Shift Technical Advisor (STA) during off-normal events. Specifically, fire emergency procedures (FEPs) 1.0, 2.0, 3.0, and 4.0 assigned actions that would be performed by the SE during fire events which conflicted with the V.C. Summer Emergency Plan Procedure EP-100 requirement that the SE perform the duties of the STA of assessing and advising the Shift Supervisor during off-normal events. The licensee entered this issue in their corrective action program as Condition Report 12-02035 and implemented fire watch compensatory measures in the fire areas/fire zones where the FEPs assigned actions to be performed by the SE that were outside the main control room.

The licensee's failure to comply with Technical Specification 6.8.1.e. was a performance deficiency. The finding was more than minor because it negatively impacted the Emergency Response Organization (ERO) Readiness Attribute of the Emergency Preparedness cornerstone objective to ensure that the licensee is capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. This finding was determined to be of very low safety significance (Green) using NRC Inspection Manual Chapter 0609, Appendix B, Emergency Preparedness Significance Determination Process (Section 5.2, Table 5.2.1), because there were no actual instances of entry into the FEPs in which shortages of the emergency plan minimum staffing occurred. The inspectors determined that there was no cross-cutting aspect associated with this finding because the licensee's decision to use the SE/STA to perform safe shutdown actions occurred before the 1985 revision of the Fire Protection Evaluation Report (FPER) and was not reflective of current licensee performance. (Section 1R05.05)

Inspection Report# : [2012007](#) (pdf)

Significance:  Jul 03, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Missing Cold Shutdown Repair Equipment

An NRC identified non-cited violation of License Condition 2.C (18), "Fire Protection System," was identified for the licensee's failure to provide readily available equipment to support the implementation of cold shutdown fire emergency procedures (FEPs). Specifically, the licensee failed to ensure that cold shutdown equipment will be

readily available to implement Cold Shutdown Procedures FEP- 4.1 and EMP-100.002.

The licensee documented the deficiencies in Condition Reports 12-01975, 12-01948 and 12-01939. The licensee took immediate corrective action to replace all the missing equipment and performed an extent of condition to verify all other equipment identified in procedure FEP-4.1 was available and included on appropriate inventory lists.

The licensee's failure to ensure that cold shutdown equipment was readily available to implement cold shutdown Procedures FEP-4.1 and EMP-100.002 as written was a performance deficiency. The performance deficiency was more than minor because it was associated with the configuration control 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. The finding was evaluated for safety significance using NRC Inspection Manual Chapter 0609, Appendix F. Since the finding was related to the ability to achieve and maintain cold shutdown, the finding had very low safety significance (Green) from the Phase 1 evaluation. This performance deficiency had a cross-cutting aspect in the area of human performance associated with resources because the licensee did not have adequate and available facilities and equipment to ensure nuclear safety. Specifically, personnel did not have required equipment to implement the cold shut down procedures readily available in the designated areas [H.2 (d)]. (Section 1R05.09)

Inspection Report# : [2012007](#) (pdf)

G

Significance: Apr 01, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Control Transient Combustibles Adjacent to a Safety-Related Motor Control Center

The inspectors identified a non-cited violation of V.C. Summer Nuclear Station Technical Specification 6.8.1 for a failure to implement the requirements of their fire protection procedures for control of transient combustibles associated with a work activity in the Unit 1 'A' train emergency diesel generator (EDG) motor control center (MCC) room. The licensee entered the problem into their corrective action program as condition report, CR-12-00767.

The inspectors determined that the failure to implement the requirements of the fire protection procedures was a performance deficiency (PD). The inspectors also reviewed Inspection Manual Chapter (IMC) 0612, Appendix B and determined the PD is more than minor and therefore a finding, because (1) it was similar to IMC 0612, Appendix E, Example 4k, and (2) it impacted the Mitigating Systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences, and the related attribute of protection against external factors such as fire. The inspectors used IMC 0609, Appendix F, Attachments 1 and 2 to determine that the finding was of very low safety significance or Green because of the low fire frequency of the Unit 1 EDG MCC room and the short duration of the violation. The cause of this finding involved the cross-cutting area of human performance, the component of work practices, and the aspect of work activity planning, H.3 (a), because the licensee failed to adequately evaluate transient combustible controls during planning for a work activity to monitor overloads in safety-related breakers. (Section 1R05)

Inspection Report# : [2012002](#) (pdf)

G

Significance: Apr 01, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Properly Inspect Service Water Pump Motor Lube Oil Heat Exchangers

The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for the failure to adequately prescribe a procedure to inspect the service water (SW) pump motor lube oil heat exchangers (HXs) as committed to in the licensee's Generic Letter 89-13 response dated January 31, 1990. Specifically, a review of SW pump motor lube oil HX inspection documents identified that the licensee was not

inspecting the internals of the lube oil HXs and did not adequately implement other accepted performance monitoring methodologies. The issue was entered into the licensee's corrective action program as condition report CR-12-00844.

The inspectors determined that the failure to adequately prescribe a procedure to inspect the SW pump motor lube oil HXs was a performance deficiency (PD). The inspectors also reviewed Inspection Manual Chapter (IMC) 0612, Appendix B and determined the PD is more than minor and therefore a finding, because it adversely impacted the Mitigating Systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences and the respective attribute of procedure quality because inadequate monitoring of the HX performance would lead to a common mode failure mechanism that would adversely impact the safe operation of the SW pumps during severe environmental conditions. The inspectors performed a risk evaluation using IMC 0609, Appendix A, Phase 1, and determined the finding has very low safety significance (Green) because it was not a design deficiency, did not represent a loss of safety function and did not screen as potentially risk significant due to a seismic, flooding or severe weather initiating event. The cause of this finding did not involve a cross-cutting aspect because it is not indicative of current licensee performance. (Section 1R07)

Inspection Report# : [2012002](#) (*pdf*)

Significance:  Apr 01, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Analyze a Moderate Energy Fluid System for Leakage Cracks

The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the failure to analyze a moderate energy fluid system for leakage cracks resulting in flooding and/or spray as described in the licensee's Facility Safety Analysis Report (FSAR). Specifically, chilled water piping, located in a fan room located above and with access to the safety-related 1DB switchgear room, was not analyzed for leakage cracks. This issue was entered into the licensee's corrective action program as condition report, CR-12-00844.

The inspectors determined that the failure to analyze a moderate energy fluid system for leakage cracks as described in the FSAR was a performance deficiency (PD). The inspectors also reviewed Inspection Manual Chapter (IMC) 0612, Appendix B and determined the PD is more than minor and therefore a finding, because (1) it was similar to IMC 0612, Appendix E, Example 3i, in that the licensee had to perform calculations to show that design basis requirements were met, and (2) it adversely affected the Mitigating Systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences and the respective attribute of design control because the licensee failed to analyze a chilled water pipe which presented a vulnerability to a safety-related motor control center that was not designed for water spray. The inspectors reviewed IMC 0609, Attachment 4, and determined that the finding was of very low safety significance, or Green, because the finding was a design or qualification deficiency confirmed not to result in loss of operability or functionality. The cause of this finding did not involve a cross-cutting aspect because it is not indicative of current licensee performance. (Section 1R15.1)

Inspection Report# : [2012002](#) (*pdf*)

Significance:  Apr 01, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Promptly Correct Conditions Adverse to Quality for Lightning Induced Trips of Safety-Related Chillers

A non-cited violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," was identified by the inspectors for two examples of the failure to promptly identify and correct a condition adverse to quality (CAQ) involving safety-related chiller trips due to lightning. The licensee entered these problems into their corrective action program as condition reports, CR-11-03187 and CR-11-05225.

The inspectors determined that the failures to promptly identify and correct the CAQs for the trips of safety-related chillers due to lightning were performance deficiencies (PDs). The inspectors reviewed Inspection Manual Chapter

(IMC) 0612, Appendix E and determined the PDs were more than minor and therefore findings, because they were similar to Examples 4d and 4f in that the failure to correct a condition adverse to quality led to the inoperability of the component. The inspectors determined the PDs were also more than minor because they impacted the Mitigating Systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences and the respective attribute of protection against external factors such as lightning. The inspectors reviewed IMC 0609, Attachment 4 and determined that the findings were of very low safety significance or Green because the findings were not a design deficiency confirmed not to result in loss of functionality, were not a loss of safety function, and did not screen as potentially risk significant for a severe weather initiating event. The cause of the findings involved the cross-cutting area of problem identification and resolution, the component of corrective action program, and the aspect of complete and thorough evaluation, P.1(c), because the licensee failed to identify corrective actions for the safety-related chiller trips caused by lightning. (4OA5.2)

Inspection Report# : [2012002](#) (*pdf*)

Significance:  Apr 01, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Follow Fire Protection Program Requirements for Procurement and Use of Approved Fire Hose

The NRC identified an apparent violation of V.C. Summer Nuclear Station's Renewed Operating License NPF-12, 2.C(18), "Fire Protection System," with two examples for the failure to comply with Fire Protection Program (FPP) requirements in which the licensee used unapproved fire hoses. Specifically, the licensee selected non-collapsible hose with an incorrect minimum bend radius and failed to use lined fire hose. The issue was entered into the licensee's corrective action program as condition reports (CR), CR-11-05578 and CR-11-05852.

The inspectors determined that the procurement and use of the fire hose, which was not in accordance with the FPP, was a performance deficiency (PD). The inspectors also reviewed Inspection Manual Chapter (IMC) 0612, Appendix B and determined the PD is more than minor and therefore a finding, because it impacted the mitigating systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences and the respective attribute of protection against external factors such as fire. The inspectors reviewed IMC 0609, Appendix F, Attachments 1 and 2, and determined that the finding was potentially of moderate safety significance because the non-collapsible rubber hose and portable extinguishers are the only local means of fire suppression for several fire zones, of which the most significant are the 7.2 kV safety-related switchgear rooms. The inspectors determined that because multiple fire areas were affected, a phase 3 SDP risk assessment was required. The phase 3 SDP risk assessment was performed by a regional senior reactor analyst using the guidance of NRC IMC 0609 Appendix F and NUREG/CR 6850, Revisions 0 and 1. Significant assumptions affecting the analysis are listed in the analysis section of 4OA5.2. The conditional core damage probability for the various fire scenarios was developed using the NRC's latest V.C. Summer Sapphire 8 SPAR model. The risk was mitigated by the fact that most of the failed hoses served areas which were equipped with fixed suppression and that the areas served by the failed hoses did not contain many fixed ignition sources. The result of the phase 3 analysis was that the performance deficiency resulted in an increase in core damage frequency of <math><1E-6</math> per year, a GREEN finding of very low safety significance. The cause of the finding involved the cross-cutting area of human performance, the component of work practices, and the aspect of procedural compliance, H.4(b), because the licensee failed to follow FPP procedural and program requirements for proper fire hose selection and use. (Section 4OA5.2)

This Apparent Violation (AV) was closed as a Non-Cited Violation (NCV) based on results of NRC Phase 3 evaluation. This NCV was discussed and documented in the NRC inspection report no. 05000395/2012003.

Inspection Report# : [2012002](#) (*pdf*)

Barrier Integrity

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Significance:  Dec 31, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Resin Shipment in Steel High Integrity Container Noncompliance with 10 CFR 61.56(b)(2)

A self-revealing NCV of 10 CFR 61.56(b)(2) was identified because the licensee transported a cask shipment for disposal at the Energy Solutions Disposal Facility, Barnwell, South Carolina, which contained liquid above regulatory limits for final form for burial. The licensee entered the problem into their corrective action program as CR-12-04279.

This finding is greater than minor because it was associated with the low level burial attribute of the Public Radiation Safety Cornerstone and adversely affected the cornerstone objective to ensure adequate protection of the public health and safety from exposure to radioactive materials released into the public domain. The finding is of very low safety significance because the shipping cask was discovered to have minimal liquid exceeding the regulatory limit of one half percent of the waste shipment total volume transported to the burial site for disposal and the liquid was discovered prior to waste disposal. The cause of the finding involved the cross-cutting area of human performance, the component of resources, and the aspect of complete and accurate procedures, H.2(c), because the procedures did not address the permutation of having wet resin added on top of already dewatered resin, nor did it lead the user to the more restrictive dewatering regimen based on internals as a first choice. (Section 2RS8)

Inspection Report# : [2012005](#) (*pdf*)

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.

Miscellaneous

Significance: N/A Oct 31, 2012

Identified By: NRC

Item Type: FIN Finding

PI&R Assessment Results

The inspectors concluded that, in general, problems were properly identified, evaluated, prioritized, and corrected. The licensee was generally effective at identifying problems and entering them into the corrective action program (CAP) for resolution. Generally, prioritization and evaluation of issues, formal root cause evaluations for significant

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problems, and corrective actions specified for problems were consistent with licensee CAP procedures. Overall, corrective actions developed and implemented for issues were generally effective and implemented in a timely manner.

The inspectors determined that 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, plant operations, and cause evaluations.

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# : [2012008](#) (*pdf*)

Last modified : February 28, 2013