

## Vogtle 1 2Q/2013 Plant Inspection Findings

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### Initiating Events

**Significance:** G Dec 31, 2012

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

#### **Inadequate operations and maintenance procedures results in brittle failure of the loop 2 and loop 3 outboard MSIV stems**

A self-revealing non-cited violation (NCV) for failure to meet the requirements of 10 CFR Part 50 Appendix B, Criterion V, “Instructions, Procedures, and Drawings” was identified for failure to provide adequate work instructions in the operations and maintenance procedures used to open main steam isolation valves (MSIVs) that were bound in their closed seat. Specifically, the operations and maintenance procedures used to open the loop 2 and loop 3 outboard MSIVs did not provide instructions to limit the magnitude of the force applied to the valve stems while attempting to open the valves, which ultimately resulted in the brittle failure of the valve stems. The licensee conducted ultrasonic testing of the remaining six Unit 1 MSIVs to verify that the valve stems were intact. The two failed valve stems were replaced, and the reactor was restarted nine days later.

The finding was more than minor because it was associated with the procedure quality attribute of the reactor safety - initiating events cornerstone and it adversely affected the cornerstone 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 failure to provide adequate work instructions to operations and maintenance personnel resulted in the failure of both the loop 2 and loop 3 outboard MSIVs and the subsequent manual reactor trip. Since the inspectors answered “no” to the Exhibit 1, section B, initiating events screening question, the inspectors concluded that the finding was of very low safety significance (Green). The cause of the finding was related to the work control component of the human performance cross-cutting area due to less-than-adequate work planning. [H.3(a)] Specifically, the licensees’ procedures used to open the MSIVs that were stuck on their closed seat did not contain instructions or precautions to limit the magnitude of the force applied to the valve stems while attempting to open the valves. The licensee entered this issue into their corrective action program as CR 530916. (Section 40A2)

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

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### Mitigating Systems

**Significance:** G Mar 31, 2013

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

#### **Inadequate Maintenance Procedures Results in Failure of the Inboard Bearing on the Unit 1A CCW pump #1**

Green: A self-revealing non-cited violation (NCV) of 10 CFR Part 50 Appendix B, Criterion V, “Instructions, Procedures, and Drawings” was identified for failure to provide appropriate quantitative or qualitative acceptance criteria for determining that important activities have been satisfactorily accomplished. Specifically, procedure 27080-C, “CCW Pump Maintenance”, did not provide adequate direction as to the duration of and instrumentation required

to properly perform a post-maintenance test that would detect a misalignment between the pump and motor shafts. The licensee entered this issue into their corrective action program as CR 526268, and revised maintenance procedure 27080-C to specify the proper post maintenance testing required after rebuilding CCW pumps.

The finding was more than minor because it was associated with the equipment performance attribute of the mitigating systems cornerstone and it adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, the post-maintenance test performed after rebuilding the Unit 1A component cooling water (CCW) pump #1 failed to identify excessive misalignment between the motor and pump shafts, which subsequently resulted in the catastrophic failure of the inboard pump bearing once the pump was returned to service. Because the inspectors answered “No” to all of the IMC 0609 Appendix A (dated June 19, 2012) Exhibit 2, Section A, “Mitigating Systems Screening Questions,” the inspectors concluded that the finding was of very low safety significance (Green). The inspectors determined that the cause of this finding was related to the work control component of the human performance cross-cutting area due to less-than-adequate procedures. Specifically, the maintenance procedures used to reassemble the CCW pumps did not provide adequate direction as to the duration of and instrumentation required to properly perform an adequate post-maintenance test. [H.2(c)]

Inspection Report# : [2013002](#) (*pdf*)

**Significance:**  Sep 30, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

**Ineffective corrective action renders Unit 1A ESF chiller inoperable**

A NRC identified, non-cited violation (NCV) for failure to meet the requirements of 10 CFR 50, Appendix B, Criterion XVI was identified. Specifically, the licensee’s failure to follow the requirements of 10 CFR 50, Appendix B, Criterion XVI to promptly identify and correct a condition adverse to quality. The condition adverse to quality was that the Unit 1A Engineered Safety Features (ESF) chiller purge compressor resistance temperature detector (RTD) was discovered out of its thermo well. The licensee reinstalled the RTD and took no additional corrective actions. During a subsequent walkdown by a resident inspector and system engineer, they found the RTD not in its thermo well and they informed the control room operators. The licensee’s investigation revealed that the RTD’s thermo well threads had been cross threaded. The licensee’s immediate action was to install a clamping device to hold the RTD inside the thermo well. The licensee has entered the issue into their corrective action program (CR 51198) and has initiated actions to permanently correct the issue with the Unit 1A ESF chiller purge compressor RTD.

This issue is more than minor because it is associated with a cornerstone attribute and adversely affects the objective of the Mitigating Systems cornerstone. Specifically, the performance deficiency is an equipment performance issue which affects the availability, reliability, and capability of the A train ESF chiller to perform its intended safety function. The finding was determined to be Green because the event did not represent an actual loss of safety function of a single train for greater than its Technical Specification allowed outage time. The inspectors determined that the cause of this finding was related to the Corrective Action Program component of the Problem Identification and Resolution cross-cutting area due to less-than-adequate problem evaluation. [P.1(c)]. Specifically, the corrective maintenance actions used to resolve the issue of the purge unit RTD becoming dislodged from its thermo well were less than adequate. (Section 1R12)

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

**Significance:**  Jul 13, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to install freeze protection for exposed fire protection piping**

An NRC-identified non-cited violation of Vogtle Unit 1, Operating License Condition 2.G, was identified for the

licensee's failure to provide proper freeze protection for an 8" diameter above ground fire water line located along side the Unit 1 Main Steam Valve Room. The NCV was associated with exposed fire protection lines and piping that was not provided electrical freeze protection or insulated. Specifically, Design Basis Document DC-2301, Fire Protection Water System Section 3.3.6 stated, in part, that exposed lines shall be electrically freeze-protected and insulated. Vogtle's NFPA codes of record, NFPA-14 (1983 Edition) and NFPA-24(1984 Edition), required proper safeguards to be provided to prevent freezing for areas that were unheated and that exposed lines and equipment shall be electrically freeze protected and insulated. The licensee documented the deficiency in their corrective action program as CR482524. No immediate compensatory measures were needed because the temperature at the time of the discovery was well above freezing.

The licensee's failure to provide freeze protection for the Unit 1 fire protection piping, as required by the design bases document and applicable NFPA codes, was a performance deficiency. The performance deficiency was more than minor because it adversely affected the Mitigating Systems cornerstone attribute of Protection Against External Events and adversely 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 provide freeze protection for exposed sections of fire protection piping could result in the unavailability of fire suppression capability during a fire event. In accordance with NRC IMC 0609, Appendix F, Fire Protection (SDP) Phase 1 Worksheet, the inspectors conducted a screening and determined the finding to be of very low safety significance (Green) because temperatures at Vogtle are normally well above freezing and there was a low likelihood of complete loss of suppression capability; therefore, the deficiency was determined to be low degradation. No cross cutting aspect was assigned to this finding because the NRC concluded the finding did not reflect current licensee performance. (Section 1R05.03)

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

## Barrier Integrity

**Significance:**  Mar 31, 2013

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

### **Human Performance Error Renders 1A CS Pump Inoperable**

Green. A self-revealing non-cited violation (NCV) for failure to meet the requirements of plant Technical Specification (TS) 5.4, Procedures was identified. While realigning equipment to support the filling and venting of the Unit 2 containment spray header the system operator inadvertently closed 1HV-9017A, refueling water storage tank (RWST) suction to Unit 1 containment spray (CS) pump A. As a result, the 1A CS pump was temporarily rendered inoperable. The valve was subsequently re-opened and the pump was declared operable. The licensee entered the issue into their corrective action program (CR 608718).

This finding is more than minor because it is associated with the human performance attribute of the barrier integrity cornerstone and it adversely affected the cornerstone objective to provide reasonable assurance that physical design barriers (fuel cladding, reactor coolant system, and containment) protect the public from radionuclide releases caused by accidents or events. Specifically, the performance deficiency is a human performance error which affected the availability, reliability, and capability of the Unit 1 "A" train containment spray system to limit and maintain post accident conditions to less than containment design values. Because the inspectors answered "No" to all of the IMC 0609 Appendix A (dated June 19, 2012) Exhibit 3, Section B, "Barrier Integrity Cornerstone Screening Questions," the inspectors concluded that the finding was of very low safety significance (Green). The inspectors determined that the cause of this finding was related to the work practices component of the human performance cross-cutting area

due to less-than-adequate human error prevention techniques. Specifically, peer checking techniques were less than adequate. [H.4(a)]

Inspection Report# : [2013002](#) (*pdf*)

**Significance:**  Sep 30, 2012

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

**Failure to follow procedure results in a misplaced fuel assembly**

A self-revealing NCV of technical specification (TS) 5.4.1 was identified for failure to follow procedure 93641-C Rev.19.2, Development and Implementation of the Fuel Shuffle Sequence Plan during spent fuel pool fuel moves in preparation for an upcoming full core off-load. As a result, a fuel assembly was moved to an unintended, unanalyzed location and remained unanalyzed for 50 days. Upon discovery, the licensee immediately performed an analysis, determined that the location was suitable for the fuel assembly, and verified that all other fuel assemblies moved during the reshuffle sequence were located in their correct locations. This issue was entered into the licensee's corrective action program as Condition Report (CR) 523617.

The inspector determined that the failure to follow procedure 93641-C is a performance deficiency. This finding was more than minor because it was associated with the Human Performance attribute of the Barrier Integrity cornerstone and adversely affected the cornerstone objective of providing reasonable assurance that physical design barriers (fuel cladding, reactor coolant system, and containment) protect the public from radionuclide releases caused by accidents or events. Specifically, a spent fuel assembly was stored in a location for which it had not been analyzed for 50 days. IMC 0609, "Significance Determination Process," Phase 1 screening worksheet of the SDP, instructed the inspector to process this finding using IMC 0609, Appendix G, "Shutdown Operations Significance Determination Process." Checklist 4 from IMC 0609, Appendix G, Attachment 1 was determined to be the most appropriate because the water level was greater than 23 feet and the time to boil was greater than two hours in the Spent Fuel Pool. Using Checklist 4, the inspectors determined that the finding did not require a quantitative assessment because the licensee met the Technical Specifications for the spent fuel pool, specifically water level and boron concentration. Therefore, this finding was determined to be of very low safety significance (Green). The inspectors determined that the cause of this finding was related to the Work Practices component of the Human Performance cross-cutting area due to less than adequate procedure use and self/peer checking. [H.4(a)] (Section 1R20)

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

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## Emergency Preparedness

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## Occupational Radiation Safety

**Significance:**  Dec 31, 2012

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

**Unauthorized entry into a high radiation area**

The inspectors identified a Green, self-revealing, Non-cited Violation of technical specification 5.7.1, "High Radiation Area", for an unauthorized entry into a High Radiation Area (HRA). A maintenance worker entered a HRA in Unit 1 containment without being briefed on the radiological conditions. The licensee entered this issue into their corrective

action program as CR 523976 and took immediate corrective actions including an outage work crew stand down.

This finding was more than minor because it was 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 evaluated using the occupational radiation safety significance determination process. The finding was not related to As Low As Reasonably Achievable (ALARA) 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, work practices [H.4.b] because the HRA event was a direct result of poor communications during the pre-job briefing and a lack of procedure adherence on the part of the maintenance worker. The licensee entered this issue into the Corrective Action Program (CAP) as CR 523976. (Section 2RS1)

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

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