

# Quad Cities 2

## 4Q/2011 Plant Inspection Findings

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### Initiating Events

**Significance:**  Sep 30, 2011

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

#### **VALVE OUT OF POSITION IN RADWASTE**

A self revealed finding of very low safety significance with an associated NCV of Technical Specification (TS) 5.4.1.a was identified for failure to properly track the abnormal position of the waste sample tanks or floor drain sample tanks to waste collector tank valve, 1/2 2001 54. On August 12, 2011, an operator failed to position the valve in accordance with the operating procedure and did not follow station administrative procedures for tracking components that deviate from expected position. On August 17, a second operator transferred contaminated water to an unintended tank because of this deviation. This issue has been entered into the licensee's corrective action program as Issue Report (IR) 1252370. The 1/2 2001 54 valve was shut immediately on discovery to stop water transfer.

The performance deficiency was more than minor since it can reasonably be viewed as a precursor to a more significant event because mispositioned components could reasonably be expected to result in liquid spills or significant personnel exposure. This performance deficiency also adversely affected the Initiating Events Cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions in that a large, uncontrolled spread of contamination as a result of a mispositioned valve in the liquid radioactive waste system would impact access to plant areas and would complicate operator response. Using IMC 0609, Table 4a, under the Initiating Events Cornerstone, all questions were answered "No." This issue was screened as Green, or very low safety significance. Inspectors concluded that this issue had a cross cutting aspect in the area of Human Performance Decision Making. The operator made a decision outside his authority, in that, senior reactor operator approval is required to leave the 1/2 2001 54 valve open and the operator did not engage supervision to obtain that authorization (H.1(a)). (Section 1R04.1.b(2))

Inspection Report# : [2011004](#) (*pdf*)

**Significance:**  Jun 30, 2011

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

#### **WRONG LIMIT ERROR DURING SURVEILLANCE**

A self-revealed finding of very low safety significance and associated NCV of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was identified on May 4, 2011, when instrument technicians caused a control room alarm on Unit 2 after receiving permission from the Unit 1 unit supervisor to perform the test on Unit 1. Immediate actions included termination of the surveillance and restoration of the equipment to the correct lineup for plant conditions. The issue was entered into the corrective action program as IR 1211933.

Inspectors determined that the licensee's failure to follow the procedure as written resulted in Unit 2 surveillance procedure steps being performed on Unit 1 safety-related equipment; therefore, this was a performance deficiency. The inspectors answered the more than minor screening questions of IMC 0612, Appendix B, Figure 2, Block 9, question 2.a, indicating the performance deficiency could be viewed as a precursor to a significant event, and the finding was, therefore, more-than-minor. Inspectors determined that performing procedural action on the wrong unit would impact the Initiating Event Cornerstone objective of limiting the likelihood of upsetting plant stability and challenging critical safety functions during power operations. Specifically, the objective attributes of configuration control equipment performance were negatively impacted. Inspectors performed the SDP phase I screening using IMC 0609, Attachment 4, Table 4a for transient initiators in the Initiating Events Cornerstone column and answered the question "No." The issue was screened as Green or very low safety significance. Inspectors concluded that the finding had a cross-cutting aspect in Human Performance-Work Practices, in that, licensee staff involved in the event failed to utilize human performance error prevention techniques commensurate with the risk of the assigned task to prevent

impact to the station (H.4(a)).

Inspection Report# : [2011003](#) (pdf)

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## Mitigating Systems

**Significance:**  Oct 21, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

### **Non-Conservative Calibration Tolerance Limits for Electrical Relay Settings**

The inspectors identified a finding of very low safety significance (Green) and associated Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," involving the licensee's failure to specify in a design calculation the allowable relay setpoint calibration tolerances. Specifically, the acceptance criteria used in relay setting calibration procedures was not bounded by the relay setting design calculations. The licensee entered this finding into their corrective action program and verified the calibrated relay settings would still provide adequate electrical protection coordination capability. The inspectors reviewed the licensee's analysis and had no concerns.

The performance deficiency was determined to be more than minor because it was associated with the Mitigating Systems Cornerstone attribute of Equipment Performance, and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to adequately evaluate the design requirements of the relay settings could have resulted in a loss-of-relay coordination and could allow a fault on one piece of equipment to propagate to other safety-related equipment outside the designed isolation boundary. The finding screened as very low safety significance (Green) because the finding was design deficiency confirmed not to result in a loss of safety function of a system or a train. There was no cross-cutting aspect associated with this finding because it did not reflect current performance.

Inspection Report# : [2011009](#) (pdf)

**Significance:**  Oct 21, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Perform Required In-Service Testing of Shutdown Cooling Suction Valves**

The inspectors identified a finding of very low safety significance (Green) and associated Non-Cited Violation of Technical Specification 5.5.6, "Inservice Testing Program," for the failure to perform required testing in accordance with the American Society of Mechanical Engineers Code for eight valves that had active safety functions. Specifically, the licensee failed to test eight valves which were required to operate in Mode 3 to return the residual heat removal system from the shutdown cooling mode to the low pressure coolant injection mode of operation. The licensee entered this finding into their corrective action program and verified the valves were operable based on recent exercising of the valves during the last refueling outages.

The performance deficiency was determined to be more than minor because it was associated with the Mitigating Systems Cornerstone attribute of Equipment Performance, and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, degraded valve performance could go undetected without periodic testing and trending. The finding screened as very low safety significance (Green) because the finding was not a design or qualification deficiency, did not represent a loss of system safety function, and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. The finding had no cross-cutting aspect because the incorrect valve classification was not indicative of current performance.

Inspection Report# : [2011009](#) (pdf)

**Significance:**  Oct 21, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

### **Safety-Related Battery Charger Testing and Maintenance Procedures Did Not Include Steps for Electrolytic**

## Capacitor Replacement

The inspectors identified a finding of very low safety significance (Green) and associated Non-Cited Violation of Technical Specification 5.5.6, "Inservice Testing Program," for the failure to perform required testing in accordance with the American Society of Mechanical Engineers Code for eight valves that had active safety functions. Specifically, the licensee failed to test eight valves which were required to operate in Mode 3 to return the residual heat removal system from the shutdown cooling mode to the low pressure coolant injection mode of operation. The licensee entered this finding into their corrective action program and verified the valves were operable based on recent exercising of the valves during the last refueling outages.

The performance deficiency was determined to be more than minor because it was associated with the Mitigating Systems Cornerstone attribute of Equipment Performance, and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, degraded valve performance could go undetected without periodic testing and trending. The finding screened as very low safety significance (Green) because the finding was not a design or qualification deficiency, did not represent a loss of system safety function, and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. The finding had no cross-cutting aspect because the incorrect valve classification was not indicative of current performance. (Section 1R21.3.b.(2))  
Inspection Report# : [2011009](#) (pdf)

**Significance:** SL-IV Oct 21, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Update the FSAR With the Safety Analysis Performed In Response to GL 2008-01**

On January 11, 2008, the NRC requested each addressee of GL 2008 01 to evaluate its ECCS, DHR, and containment spray systems licensing basis, design, testing, and corrective actions to ensure that gas accumulation was maintained less than the amount that would challenge the operability of these systems, and take appropriate actions when conditions adverse to quality were identified. As a consequence, the licensee performed analyses that resulted, in part, in the development of void acceptance criteria, identification of gas susceptible locations in piping, development of periodic gas monitoring procedures for these newly identified locations, and the acceptance of some locations that could potentially accumulate voids that were determined to be benign. However, on September 4, 2011, the inspectors noted the licensee had not updated the UFSAR to reflect these analyses.

Inspection Report# : [2011009](#) (pdf)

**Significance:**  Oct 21, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Ensure that RHR Would Be Capable to Respond to a LOCA at Mode 3**

The inspectors identified a finding of very low safety significance and associated Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the failure to ensure the emergency core cooling system mode of operation of the residual heat removal system would be capable of performing its mitigating function at Mode 3. Specifically, the residual heat removal system would experience flash evaporation during a rapid system depressurization while in Mode 3 and this condition was not analyzed. This finding was entered into the licensee's corrective action program.

The performance deficiency was determined to be minor per the IMC-0612 significance determination process. Because it was associated with the Mitigating System Cornerstone attribute of Equipment Performance and affected the cornerstone objective of ensuring the capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the design of the residual heat removal system did not ensure that its emergency core cooling mode of operation would be capable of performing its mitigating function at Mode 3. Steam voids would form when transitioning from decay heat removal to emergency core cooling mode of operation in Mode 3 and this condition was not analyzed. The finding screened as very low safety significance (Green) using a Significance Determination Process Phase II evaluation. This finding had a cross-cutting aspect in the area of problem identification and resolution because the licensee did not thoroughly evaluate relevant external operating experience. Specifically, the licensee's evaluation of similar operating experience such as Information Notice 2010-11 incorrectly concluded the station was not vulnerable to the operating experience described therein. [P.2(a)] (Section 4OA5.1c(2))  
Inspection Report# : [2011009](#) (pdf)

**Significance:** G Mar 31, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

### **MSIV RPS LIMIT SWITCH PRECONDITIONING**

NRC inspectors identified a finding of very low safety significance (Green) and an associated NCV of 10 CFR 50, Appendix B, Criterion V on December 21, 2010. While observing performance of QCOS 0250-01, "MSIV [Main Steam Isolation Valve] Scram Sensor Channel Functional Test," inspectors identified that the licensee's surveillance procedure unacceptably preconditioned the reactor protection system (RPS) 'B' limit switches during testing of the RPS 'A' switches. The licensee had not previously evaluated the pre-conditioning to determine potential impact to the test and subsequently validated the inspectors' assessment that the test methodology did unacceptably precondition the 'B' RPS limit switches. The issue was documented in the corrective action program as Issue Report 1155212. The procedure was revised and subsequent retesting on March 26 and 27, 2011, demonstrated that all MSIV RPS limit switches were operable.

This issue was more than minor because, if left uncorrected, the performance deficiency would have the potential to lead to a more significant safety concern in that preconditioning could mask a condition which would prevent an automatic actuation of RPS on MSIV closure. Inspectors performed the SDP phase 1 screening using IMC 0609, Attachment 4, Table 4a, Mitigating Systems Cornerstone column, and answered all questions "No." Therefore, this finding is Green, or very low safety significance. The issue was considered a legacy issue and no cross-cutting aspect was assigned.

Inspection Report# : [2011002](#) (*pdf*)

**Significance:** G Mar 31, 2011

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

### **UNIT 1/2 EDG OUTPUT BREAKER FAILURE TO UNIT 2**

A self-revealed finding of very low safety significance (Green) and associated NCV of Technical Specification 5.4.1.a was identified on March 7, 2011, when a broken wire lug prevented closure of the 1/2 emergency diesel generator (EDG) output supply breaker to Unit 2 during core spray system logic testing. The failure to identify or correct wire routing deficiencies during cubicle inspections was a performance deficiency and a finding. The inspectors identified that work instructions did not contain sufficient detail to ensure that breaker wiring was configured correctly and the ability to perform safety functions was not adversely impacted. The broken lug was repaired and the 1/2 EDG was declared operable to Unit 2 on March 8, 2011. The issue was documented in the corrective action program as Issue Report 1184304.

This issue was more than minor because, if left uncorrected, the performance deficiency would have the potential to lead to a more significant safety concern in that similar failures could result in a loss of safety function. Inspectors performed the SDP phase 1 screening using IMC 0609, Attachment 4, Table 4a, Mitigating Systems Cornerstone column, and answered all questions "No." Therefore, this finding screens as Green, or very low safety significance. The inspectors identified that this finding has a cross-cutting aspect in the Problem Identification and Resolution - Operating Experience Component. Specifically, the licensee failed to implement and institutionalize internal operating experience concerning the improper routing of cubicle wiring through appropriate changes to the station preventative maintenance program (P.2(b)).

Inspection Report# : [2011002](#) (*pdf*)

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## **Barrier Integrity**

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## **Emergency Preparedness**

**Significance:** SL-IV Jun 23, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

### **Changes to EAL Basis Decreased the Effectiveness of the Plan without Prior NRC Approval.**

The inspector identified a violation of very low safety significance involving a Severity Level IV NCV of 10 CFR 50.54(q) for failing to obtain prior approval for an emergency plan change which decreased the effectiveness of the plan. Specifically, the licensee modified the Emergency Action Level (EAL) Basis in EAL HU6, Revision 22, which indefinitely extended the start of the 15 minute emergency classification clock beyond a credible notification that a fire is occurring or indication of a valid fire detection system alarm. This change decreased the effectiveness of the emergency plan by reducing the capability to perform a risk significant planning function in a timely manner.

The violation affected the NRC's ability to perform its regulatory function because it involved implementing a change that decreased the effectiveness of the emergency plan without NRC approval. Therefore, this issue was evaluated using Traditional Enforcement. The NRC determined that a Severity Level IV violation was appropriate due to the reduction of the capability to perform a risk significant planning standard function in a timely manner. The licensee entered this issue into its corrective action program and revised the EAL basis to restore compliance. (1EP4)

The associated performance deficiency is tracked as item 2011-503-02.

Inspection Report# : [2010503](#) (*pdf*)

**Significance:**  Jun 23, 2011

Identified By: NRC

Item Type: FIN Finding

### **Changes to EAL Basis Decreased the Effectiveness of the Plan without Prior NRC Approval.**

The inspector identified a finding of very low safety significance involving a Severity Level IV NCV of 10 CFR 50.54 (q) for failing to obtain prior approval for an emergency plan change which decreased the effectiveness of the plan. Specifically, the licensee modified the Emergency Action Level (EAL) Basis in EAL HU6, Revision 22, which indefinitely extended the start of the 15 minute emergency classification clock beyond a credible notification that a fire is occurring or indication of a valid fire detection system alarm. This change decreased the effectiveness of the emergency plan by reducing the capability to perform a risk significant planning function in a timely manner.

The finding was more than minor using IMC 0612, because it is associated with the emergency preparedness cornerstone attribute of procedure quality for EAL and emergency plan changes, and it adversely affected the cornerstone objective of ensuring 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. Therefore, the performance deficiency was a finding. Using IMC 0609, Appendix B, the inspector determined that the finding had a very low safety significance because the finding is a failure to comply with 10 CFR 50.54(q) involving the risk significant planning standard 50.47(b)(4), which, in this case, met the example of a Green finding because it involved one Unusual Event classification (EAL HU6).

Due to the age of this issue, it was not determined to be reflective of current licensee performance and therefore a cross-cutting aspect was not assigned to this finding. (Section 1EP4)

The associated traditional enforcement item is tracked as item 2011-503-01.

Inspection Report# : [2010503](#) (*pdf*)

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## **Occupational Radiation Safety**

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## **Public Radiation Safety**

**Significance:** **G** Sep 30, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

### **TURBINE BUILDING DIFFERENTIAL PRESSURE INDICATING POSITIVE**

An NRC identified finding of very low safety significance with an associated NCV of 10 CFR 20.1302 was identified for failure to take action to prevent a potential unmonitored release on August 3, 2011, when the turbine building differential pressure indicated positive on the building differential pressure indication in the main control room. This issue was entered into the licensee's corrective action program as IR 1247501. Immediate corrective action included determination that the turbine building was still at a negative differential pressure and no unmonitored release path existed.

The performance deficiency was more than minor because it adversely affected the Public Radiation Safety Cornerstone objective to ensure adequate protection of public health and safety from exposure to radioactive materials released into the public domain as a result of routine civilian nuclear reactor operation. Failure to perform surveys when indicated conditions warrant increases the possibility that an unmonitored release could occur. Using IMC 0609, Appendix D, "Public Radiation Safety Significance Determination Process," radioactive material control program flowchart, there was no public exposure, and this finding was screened as Green, or very low safety significance. The inspectors identified that this finding had a cross cutting aspect in the area of Human Performance Work Practices because operators failed to follow the steps of the annunciator response procedure (H.4(b)). (Section 1R04.1.b(1))  
Inspection Report# : [2011004](#) (*pdf*)

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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**

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