

## Dresden 2

### 4Q/2013 Plant Inspection Findings

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## Initiating Events

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## Mitigating Systems

**Significance:** G Dec 31, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Update the UFSAR for Reactor Water Cleanup Design Changes**

A Severity Level IV NCV of 10 CFR 50.71(e), "Periodic Update of the Final Safety Analysis Report" (USFAR) and an accompanying Green finding were identified by the inspectors for the licensee's failure to update the Updated Final Safety Analysis Report (UFSAR) for a design modification performed on the Unit 3 reactor water cleanup (RWCU) system. Specifically, the licensee did not update Dresden UFSAR Section 5.4.8, "Reactor Water Cleanup System," to reflect changes made during a design modification installed on Unit 3 in 1997. The design changes included reducing the pipe dimension of RWCU piping outside of the primary containment and eliminating a string of regenerative and non-regenerative heat exchangers. The licensee also identified several high energy line break (HELB) calculations which did not include the design modification when determining the impact on environmentally qualified components affected by a failure of the RWCU system piping outside of the primary containment structure. Corrective actions included submitting a UFSAR change request to include the appropriate operating characteristics and specifications under the present design. In addition, the licensee reviewed all affected calculations to ensure no non-conservative outcomes resulted based on the design modifications installed.

This finding was determined to be more than minor using IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," dated September 7, 2012 because, if left uncorrected, the performance deficiency could have led to a more significant safety concern. Specifically, failure to update the UFSAR with the actual RWCU system configuration prevented the inspectors from readily concluding that the design change would not require additional calculational analyses for HELB. The inspectors completed a Phase 1 significance determination of this issue using IMC 0609, "Significance Determination Process," Attachment 0609.04, "Initial Characterization of Findings," dated July 1, 2012 and IMC 0609, Appendix A, "The Significance Determination Process (SDP) For Findings At-Power," dated July 1, 2012. The inspectors answered NO to all questions in Exhibit 2, Section A, "Mitigating SSCs and Functionality," therefore the finding screened as Green (very low safety significance). In accordance with Section 6.1.d.3 of the NRC Enforcement Policy, this violation is categorized as Severity Level IV because the information was not used to make an unacceptable change to the facility or procedures since the design changes did not result in a reduction of the previous margin to the 10 CFR 100 guidelines nor did they challenge the environmental quality rating of safety related components in the vicinity of the RWCU system during a HELB event outside of containment. The inspectors determined that this finding did not reflect present performance because it is a legacy issue with changes made to the facility more than 16 years previously; therefore, there was no cross cutting aspect associated with this finding.

Inspection Report# : [2013004](#) (pdf)

**Significance:** G Dec 31, 2013

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

**Inadvertent Lo-Lo Reactor Water Level Indication Received During Maintenance Resulting in Unavailability of the 2/3 Emergency Diesel Generator to Unit 3**

A finding of very low safety significance and associated non-cited violation of Technical Specification (TS) 5.4.1, "Procedures", was self-revealed on November 17, 2013, when the 2/3 Emergency Diesel Generator (EDG) was inoperable to Unit 3 with an Emergency Core Cooling Systems (ECCS) signal present on Unit 2 due to sensing a low reactor water level condition. Specifically, while the licensee performed procedure DIS 0263-07, Revision 20, "Unit 2 ATWS RPT/ARI and ECCS Level Transmitters Channel Calibration Test and EQ Maintenance Inspection", in conjunction with Anticipated Transient Without a Scram (ATWS) level transmitter replacements, a failure to remove trip relays in addition to performing all transmitter replacements at the same time resulted in an unexpected Lo-Lo reactor water level trip signal, subsequently resulting in the auto initiation of the Unit 2 EDG and the 2/3 EDG, causing the 2/3 EDG to be inoperable to Unit 3. The licensee immediately restored the ATWS trip relay circuitry, clearing the Lo-Lo reactor water level signal. This enabled the EDGs to be returned to a standby condition and, thereby, restored 2/3 EDG availability to Unit 3.

The licensee's failure to properly implement the steps in the procedure was a performance deficiency that was determined to be more than minor, and thus a finding, because it was associated with the Mitigating Systems Cornerstone attribute of Configuration Control and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The finding was determined to be of very low safety significance. The finding was of very low safety significance because each of the questions provided in IMC 0609, Appendix A, Exhibit 2, "Mitigating Systems Screening Questions," were answered "no." The finding has a cross-cutting aspect in the area of human performance, work control, for failing to appropriately coordinate work activities by incorporating actions to address the impact of changes to the work activity on the plant. Specifically, the licensee committed a human performance error by failing to adequately address the impact of work activity changes on the plant and implement the required prerequisites.

Inspection Report# : [2013005](#) (pdf)

**Significance:**  May 30, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

**Adequate Voltage Not Assured for Emergency Diesel Generator Air Start Solenoid Valve**

The inspectors identified a finding of very low safety significance and associated NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the failure to assure and verify adequate voltage was available at the air start solenoid associated with Unit 2 and Unit 2/3 emergency diesel generators. Specifically, the licensee failed to assure the minimum available voltage at the air start solenoid met the minimum rated voltage value for the solenoid. The licensee entered this finding into their Corrective Action Program and provided test results and calculations to reasonably conclude the currently installed air start solenoid valves would energize at the minimum calculated available voltage.

The performance deficiency was determined to be more than minor because it was associated with the Mitigating Systems cornerstone attribute of design control and affected the cornerstone objective of ensuring capability and reliability of systems that respond to initiating events to prevent undesirable consequences. The finding screened as very low safety significance (Green) because the finding was a design deficiency that did not result in a loss of operability or functionality. The inspectors did not identify a cross-cutting aspect associated with this finding because the finding was not representative of current performance.

Inspection Report# : [2013007](#) (pdf)

**Significance:**  May 30, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

### **Non-conservative Sizing Calculation for Target Rock Safety Relief Valve Air Accumulators**

The inspectors identified a finding of very low safety significance and associated NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the failure to correctly calculate the minimum air volume and pressure required to actuate the Target Rock Safety/Relief Valve air accumulators. Specifically, when calculating the minimum required air volume in the accumulator, the licensee failed to include the volume of air needed to stroke the air operator from closed to open. The licensee entered this finding into their Corrective Action Program and verified through a preliminary calculation there would be sufficient air in the accumulators for the valves to perform their safety function.

The performance deficiency was determined to be more than minor because it was associated with the Mitigating Systems cornerstone attribute of design control and affected the cornerstone objective of ensuring capability and reliability of systems that respond to initiating events to prevent undesirable consequences. The finding screened as very low safety significance (Green) because the finding was a design deficiency that did not result in a loss of operability or functionality. The inspectors did not identify a cross-cutting aspect associated with this finding because the finding was not representative of current performance.

Inspection Report# : [2013007](#) (pdf)

**Significance:**  May 30, 2013

Identified By: NRC

Item Type: FIN Finding

### **Failure to Ensure Functionality of High Pressure Coolant Injection Steam Supply Valve During an Anticipated Transient Without Scram**

The inspectors identified a finding of very low safety significance concerning motor-operated valve differential pressure calculation with respect to Dresden's anticipated transient without scram (ATWS) analysis. Specifically, the inspectors identified the design differential pressure used in calculation for the high pressure coolant injection (HPCI) steam supply valve did not address the significantly higher differential pressure that would be applied across the motor-operated valve during an ATWS event. The licensee entered this finding into their Corrective Action Program and verified through a preliminary calculation the HPCI steam supply valve would have sufficient thrust to open against the higher differential pressure to allow HPCI to function during ATWS event.

The performance deficiency was determined to be more than minor because it was associated with the Mitigating Systems cornerstone attribute of design control and affected the cornerstone objective of ensuring capability and reliability of systems that respond to initiating events to prevent undesirable consequences. The finding screened as very low safety significance (Green) because the finding was a design deficiency that did not result in a loss of operability or functionality. The inspectors did not identify a cross-cutting aspect associated with this finding because the finding was not representative of current performance.

Inspection Report# : [2013007](#) (pdf)

**Significance:**  May 30, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Ensure Isolation Condenser Would Perform Its Safety-Related Function Under Design Conditions**

The inspectors identified a finding of very low safety significance and associated NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the failure to ensure the isolation condenser would be capable of performing its safety function under design conditions. Specifically, the licensee was unable to justify the assumption the heat transfer rate would remain the same once the isolation condenser tubes began to become exposed. The licensee entered this finding into their Corrective Action Program and instituted a standing order to maintain the shellside water level and temperature in a more restrictive band. In addition, the licensee contracted a vendor to develop a calculation and additional bases for the design assumptions.

The performance deficiency was determined to be more than minor because it was associated with the Mitigating Systems cornerstone attribute of design control and affected the cornerstone objective of ensuring capability and reliability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the inspectors had reasonable doubt the system would have been able to perform its safety function during the initial 20 minutes of operation if called upon under design conditions. The finding screened as very low safety significance (Green) because the finding was a design deficiency that did not result in a loss of operability or functionality. The inspectors did not identify a cross-cutting aspect associated with this finding because the finding was not representative of current performance.

Inspection Report# : [2013007](#) (*pdf*)

**Significance:** G Mar 31, 2013

Identified By: NRC

Item Type: FIN Finding

#### **Failure to Include Adequate Acceptance Criteria in a Surveillance Test**

The inspectors identified a Finding having very low safety significance for the failure to include acceptance criteria in a surveillance test for equipment that is the sole source of make-up water to the isolation condenser and spent fuel pool for both units during a probable maximum flood (PMF) scenario postulated in the Updated Final Safety Analysis Report (UFSAR). As described in the Exelon Quality Assurance Manual, the licensee is committed to the requirements of ANSI/ANS 3.2-1988, which states that surveillance tests contain or reference acceptance criteria in appropriate design or other source documents.

The inspectors determined that the failure to include adequate acceptance criteria in a surveillance test was a performance deficiency warranting a significance evaluation. The inspectors determined that the finding was more than minor because if left uncorrected, it could lead to a more significant safety concern. Specifically, without any acceptance criteria in the surveillance test, the licensee cannot determine whether the flood pump was able to perform its function as described in the UFSAR and calculation DRE99-0035. The inspectors completed a Phase 1 significance determination of this finding and determined that the finding impacted the Mitigating Systems Cornerstone. The inspectors concluded that the diesel-driven make-up pump would be a mitigating system in the case of the probable maximum flood. The inspectors answered “No” to the question on Exhibit 2 - Mitigating Systems Screening Questions of Appendix A, “The Significance Determination Process for Findings At-Power,” of IMC 0609. As a result, the issue screened as of very low safety significance. Similar issues were identified previously by the inspectors involving inadequate surveillance test and operating procedures for the flood pump. Therefore, the inspectors determined that this finding has a cross-cutting aspect in the area of Problem Identification and Resolution, Corrective Action Program.

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

**Significance:** W Mar 31, 2013

Identified By: NRC

Item Type: VIO Violation

#### **Deficiency In Abnormal Operating Procedures for Site Response to External Flooding Events**

Technical Specification Section 5.4.1 requires, in part, that written procedures be established, implemented, and maintained covering the applicable procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978. Regulatory Guide 1.33, Revision 2, Appendix A, Paragraph 6 addresses “Procedures for Combating Emergencies and Other Significant Events” and lists Item w “Acts of Nature (e.g., tornado, flood, dam failure, earthquakes)” as an activity under Paragraph 6 to be covered by written procedures.

Contrary to the above, from February 20, 1991, to November 21, 2012, the licensee failed to establish a written procedure to address the effect of an external flooding scenario on the plant. Specifically, prior to November 21, 2012, procedure DOA 0010-04, Floods, did not account for reactor vessel inventory make-up during an external flooding scenario up to and including the probable maximum flood event which could result in reactor vessel water level lowering below the top of active fuel.

The inspectors determined that this finding has a cross-cutting aspect in the area of Problem Identification and Resolution, Corrective Action Program, Self and Independent Assessments, since it involves the failure to identify the lack of procedural steps to address a critical function during a comprehensive self assessment of the flooding strategy. (P.3(a))

The NRC could not conclude that the methods identified for reactor pressure vessel inventory make-up were feasible under the spectrum of plant conditions that could exist during a flood event. The lack of integrated procedures, combined with the lack of flood level predictive capabilities, could result in variable plant conditions at the onset of significant flood impacts. By letter dated July 31, 2013, the NRC concluded that the finding is appropriately characterized as White, a finding of low to moderate risk significance.

The NRC performed a supplemental inspection in December 2013 to assess the adequacy of the licensee's evaluation, extent of condition/cause review and associated corrective actions. The inspector determined that the licensee performed an adequate evaluation of the specific performance issue and that comprehensive corrective actions were completed to address each of the specific causes.

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

Inspection Report# : [2013009](#) (*pdf*)

Inspection Report# : [2013010](#) (*pdf*)

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## Barrier Integrity

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## Emergency Preparedness

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## Occupational Radiation Safety

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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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