

# Limerick 2

## 1Q/2008 Plant Inspection Findings

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### Initiating Events

**Significance:**  Feb 01, 2008  
**Identified By:** Self-Revealing  
**Item Type:** FIN Finding

#### **Inadequate Maintenance Procedure for the 2A Main Transformer**


A self-revealing finding was identified for an inadequate maintenance procedure regarding electrical connections associated with the Unit 2A Main Transformer bushings. The procedure was not clear as to the appropriate method to prepare the surface for an aluminum bushing terminal and did not provide adequate information on torque requirements and the use of anti-oxidant grease. This resulted in the failure of the bushing connection and a Unit 2 reactor scram on February 1, 2008. Exelon entered this issue into the corrective action program (CAP), performed repairs, and revised the procedure to reflect the appropriate information to successfully assemble the connection.

The issue is more than minor because it is associated with procedure quality attribute of the Initiating Events cornerstone and affected the objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during power operations. The inspectors evaluated the finding using Phase 1 of IMC 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations." This finding was determined to be of very low safety significance (Green) because it did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would be unavailable. (Section 1R12)

Inspection Report# : [2008002](#) (*pdf*)

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### Mitigating Systems

**Significance:**  Nov 09, 2007  
**Identified By:** NRC  
**Item Type:** NCV NonCited Violation

#### **Required Voltage for Load Tap Changer Motor**

The team identified a non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion III, Design Control. Specifically, the licensee did not ensure the automatic load tap changer (LTC) controls and motor for the 101 and 201 safeguards, 10 station auxiliary, and 20 regulating transformers had adequate voltage to operate during design basis events. As a result of a new voltage study, Exelon performed modifications to change the load tap changers response time in 2006 and credited the LTCs for offsite power source operability. The team questioned whether there was sufficient voltage supplied to the LTC motor to prevent it from stalling during the worst case degraded voltage conditions of the transient. In response, the licensee performed a number of calculations, revised existing calculations and received additional information from the LTC vendor to demonstrate that sufficient voltage was available during the worst case degraded voltage levels. The team reviewed and agreed with the conclusion.

The finding was more than minor because it is associated with the design control attribute of the Mitigating Systems Cornerstone and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. In accordance with IMC 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," the team conducted a Phase 1 screening and determined the finding was of very low safety significance (Green) because it was a design deficiency that did not result in a loss-of-offsite power operability. This

This issue has a cross-cutting aspect in the area of Human Performance - Resources which requires licensees to ensure that equipment is adequate to assure nuclear safety, specifically: complete, accurate and up to date design documentation.

Inspection Report# : [2007007 \(pdf\)](#)

**Significance:**  Aug 09, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

### **Inadequate Fire safe Shutdown Procedure for Securing HPCI**

The team identified a finding of very low safety significance (Green) involving a non-cited violation of the Limerick Generating Station operating license, in that the procedure for shutting down the plant in response to a fire in the cable spreading room was not consistent with the safe shutdown analysis. Specifically, impediments related to the safe shutdown procedure would have prevented the operators from securing the high pressure coolant injection (HPCI) system within the design time limit. Fire induced cable failures in the cable spreading room could allow HPCI to overfill the reactor vessel which would adversely affect the operation of the reactor core isolation cooling (RCIC) system and the main steam relief valves (MSRVs).

This issue was more than minor because it affected the procedure quality attribute associated with the mitigating systems cornerstone as related to the objective of ensuring the reliability and availability of the RCIC system and MSRVs under postulated fire scenarios. The finding was of very low safety significance based on a Phase 2 Significance Determination Process (SDP) evaluation performed in accordance with IMC 0609, Appendix F, "Fire Protection Significance Determination Process."

Inspection Report# : [2007006 \(pdf\)](#)

**Significance:**  Apr 24, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

### **Inadequate HPCI/RCIC Flow Controller Tuning Procedure**

The inspectors identified a Green, self-revealing, non-cited violation (NCV) of 10 CFR 50 Appendix B Criterion V, "Instructions Procedures and Drawings," due to an inadequate maintenance procedure for flow controller settings for the High Pressure Coolant Injection (HPCI) and Reactor Core Isolation Cooling (RCIC) systems which resulted in severe system flow oscillations during vessel injection following a reactor scram.

This finding is more than minor because it affects the equipment performance attribute of the mitigating systems cornerstone whose objective is to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The performance deficiency associated with this event is an inadequate maintenance procedure that resulted in HPCI and RCIC flow oscillations during reactor vessel injection. Traditional enforcement does not apply because the issue did not have any actual safety consequence or potential for impacting the NRCs regulatory function, and was not the result of any willful violation of NRC requirements or Exelon procedures. The Region I SRA determined that this issue was of very low safety significance (Green) based on a Phase 3 risk evaluation.

This issue has a cross-cutting aspect in the Human Performance area for resources. Specifically, the HPCI/RCIC flow controller tuning procedure did not specify the acceptable values to prevent flow oscillations.

Inspection Report# : [2007003 \(pdf\)](#)

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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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## 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

Last modified : June 05, 2008