

Limerick 1

3Q/2010 Plant Inspection Findings

Initiating Events

Significance:  Sep 30, 2010

Identified By: NRC

Item Type: FIN Finding

Failure to Identify Incorrectly Adjusted Control Power Relay Resulting in Unit 1 Manual Scram

A self-revealing Green finding was identified for the failure to identify that the latching mechanism on a bus 114A/124A control power auxiliary relay (27X) was incorrectly adjusted during prior post-maintenance testing activities. Specifically, proper post-maintenance testing activities in 1992 and 2004 should have identified that the latching mechanism was incorrectly adjusted. The incorrectly adjusted latching mechanism prevented the automatic swap of control power to the alternate source (bus 124A) when preferred power (bus 114A) was lost due to an electrical fault. This resulted in a loss of stator water cooling runback signal that would have caused the trip of both recirculation motor-generator sets and resulted in operators having to manually initiate a reactor scram. Exelon's corrective actions taken or planned included verifying the latching mechanism adjustment on the site's other similarly designed control power auxiliary relays, testing the automatic undervoltage transfer circuit on a periodic basis, and performing a failure analysis on the faulted underground supply cable which initiated the event.

The finding was more than minor because it was associated with the Equipment Performance attribute of the Initiating Events cornerstone and affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. The finding was determined to have very low safety significance (Green) in accordance with NRC IMC 0609, Attachment 4, "Phase 1- Initial Screening and Characterization of Findings," because it did not contribute to both the likelihood of a reactor trip and the likelihood that mitigating equipment or function would not be available. Because the opportunities to identify the incorrectly adjusted latching relay occurred in 1992 and 2004, the inspectors determined that this finding was not reflective of current licensee performance, and, therefore, did not have a cross-cutting aspect. Enforcement action does not apply because the performance deficiency did not involve a violation of regulatory requirements

Inspection Report# : [2010004](#) (*pdf*)

Mitigating Systems

Significance:  Sep 30, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Take Compensatory Action for Inoperable Fire Door

The inspectors identified a Green NCV of Limerick Generating Station operating License Condition 2.C.3, in that Exelon failed to take compensatory actions for an inoperable fire door. Specifically, on two occasions a required fire door was found in a condition where the latching mechanism did not function. Although issue reports (IRs) were written which identified this door to be a Technical Requirements Manual (TRM) fire door, actions were not taken to station the required hourly fire watch. Corrective actions included setting the required hourly fire watches, distributing guidance to all senior licensed operators, and implementing procedural changes to clarify the requirements of fire doors for future operability determinations.

The finding was more than minor because it was associated with the protection against external events (fire) 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. This issue was found

to be of very low safety significance (Green) based upon a Phase 2 SDP screening. The inspectors determined that this finding did not have a cross-cutting because the incorrect operability decisions were based on a 1999 engineering evaluation and, therefore, was not reflective of current licensee performance.

Inspection Report# : [2010004](#) (pdf)

Significance:  Sep 30, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Perform Adequate PM on EDGs

The inspectors identified a Green NCV of Limerick Unit 2 Technical Specification (TS) 6.8.1, “Procedures and Programs,” in that Exelon did not provide an adequate procedure for preventive maintenance (PM) of the Limerick Emergency Diesel Generator (EDG) lube oil (LO) filter bypass valves. As a result, Exelon did not identify that the EDG D23 LO filter bypass valves were degraded and allowed oil to bypass the filter during engine operation. This condition, combined with historical foreign material in the LO system, led to the failure of the EDG D23 number 5 upper piston assembly during a 24-hour endurance test run on May 5, 2010. Corrective actions implemented included repairing the damage to D23, performing a flush of the D23 LO system, revising the applicable PM procedure to include specific instructions for inspecting the LO filter bypass valves, and revising performance monitoring guidance to ensure spuriously lifting LO filter bypass valves would be identified in the future.

The finding was more than minor because it was associated with the Equipment Performance attribute of the Mitigating System cornerstone and affected the cornerstone objective of ensuring 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 (Green) in accordance with Inspection Manual Chapter (IMC) 0609, Appendix A, “Determining the Significance of Reactor Inspection Findings for At-Power Situations,” using SDP Phases 1, 2, and 3. This finding has a cross-cutting aspect in the area of Human Performance, Resources, because Exelon did not provide complete, accurate and up-to-date design documentation, procedures, and work packages [H.2 (c)]. Specifically, Exelon did not provide site engineers with complete and accurate resources to ensure performance centered maintenance (PCM) template revisions were thoroughly reviewed and implemented.

Inspection Report# : [2010004](#) (pdf)

Significance:  Dec 31, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Ensure Adequate Cooling Water Flow to Residual Heat Removal Room Unit Cooler

The inspectors identified a Green NCV of 10 CFR Part 50, Appendix B, Criterion XI, “Test Control,” for improperly positioning the Emergency Service Water (ESW) throttle valve to the Unit 1 ‘A’ Residual Heat Removal (RHR) room unit cooler during an ESW flow balance surveillance test in April 2008. During the test, Exelon failed to adequately evaluate ESW flow data, and established ESW flow to the unit cooler at less than the minimum required. This rendered the ‘A’ RHR room unit cooler incapable of removing its design heat load for a period of approximately 13 months. Exelon entered this issue into their corrective action program for resolution.

This finding is greater than minor because it is associated with the Equipment Performance attribute of the Mitigating Systems cornerstone, and it impacted the cornerstone objective of ensuring the availability and capability of systems that respond to initiating events to prevent undesirable consequences. Exelon’s failure to accurately evaluate test data resulted in an inadequate ESW flow rate through the ‘A’ RHR room unit cooler, rendering it incapable of removing its design heat load. The finding is of very low safety significance because it did not represent a loss of safety function of a TS train or risk-significant non-TS train. The cause of the finding is related to the cross-cutting aspect of Human Performance, Work Practices Component because Exelon personnel did not utilize adequate human error prevention techniques, such as self and peer checking, to ensure work activities were performed properly. [H.4(a)]

Inspection Report# : [2009005](#) (pdf)

Significance:  Dec 31, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Identify Degraded Instrument Line in Emergency Service Water System

The inspectors identified a Green non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Actions," for Exelon's failure to identify a condition adverse to quality associated with the 'A' ESW pump discharge pressure instrument line. Specifically, Exelon had previous opportunity to identify and repair a degraded 'A' ESW instrument line following a leak on a similar instrument line in August 2008. However, the degraded condition of the 'A' instrument line was not detected until it resulted in a through-wall leak on November 7, 2009. In response to the leak, Exelon was required to isolate the 'A' ESW pump and enter the associated 45-day TS action statement. Exelon entered this issue into their corrective action program as Issue Report (IR) 990204 and IR 993012. Corrective actions included performing an investigation and scheduling extent of condition testing on the remaining 18 similar instrument lines.

The finding is greater than minor because it is associated with the Equipment Performance attribute of the Mitigating Systems cornerstone, and it impacted the cornerstone objective of ensuring the availability of systems that respond to initiating events to prevent undesirable consequences. Specifically, upon discovery of the through wall leak, Exelon was required to isolate the 'A' ESW pump and enter the associated 45 day TS action statement. The finding is of very low safety significance because it did not represent the loss of a TS train for greater than its allowed outage time. The cause of the finding is related to the cross-cutting aspect of Problem Identification and Resolution, Corrective Action Program, because Exelon did not take appropriate corrective actions to address a safety issue regarding corrosion in the ESW instrument lines. [P.1(d)]

Inspection Report# : [2009005](#) (*pdf*)

Significance:  Oct 30, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Verify Battery Capacity to Recover from Station Blackout

The team identified a finding of very low safety significance involving a non-cited violation of 10 CFR 50.63, "Loss of All Alternating Current (AC) Power," because Exelon's coping analysis did not determine whether the battery capability and capacity was sufficient to recover AC power at the end of the required coping period. Specifically, Exelon's battery sizing and station blackout (SBO) load profile calculation did not include those loads necessary to recover AC power, such as starting an emergency diesel generator (EDG) or closing 4 kV switchgear breakers. As a result, the calculation did not verify there was adequate direct current (DC) voltage available to critical equipment during the SBO coping period. Exelon entered the issue into their corrective action program and performed an operability assessment which determined the battery was operable.

This issue 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. The team determined the finding was of very low safety significance because it was a design deficiency subsequently confirmed not to result in a loss of operability or functionality. The finding did not have a cross-cutting aspect because it was determined to be a legacy issue not considered to be indicative of current licensee performance. (Section 1R21.2.1.1)

Inspection Report# : [2009006](#) (*pdf*)

Barrier Integrity

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

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.

Miscellaneous

Last modified : November 29, 2010