

Three Mile Island 1

1Q/2012 Plant Inspection Findings

Initiating Events

Significance:  Mar 31, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Inspection of RCP Flanges

Green. The inspectors identified a non-cited violation of 10 CFR 50, Appendix B, Criterion V, Instructions, Procedures and Drawings, because Exelon did not specify, in writing, the exact inspection scope and criteria for boric acid inspections of the reactor coolant pump bolted flanges during plant refueling outages. Lack of specific procedural guidance contributed to the failure to detect reactor coolant system leakage from the thermal barrier flange of the 'B' reactor coolant pump (RC-P-1B) prior to November 2011. Exelon's failure to ensure that both the upper and lower RCP thermal barrier flanges were visually inspected for the complete 360 degrees for all RCPs is a performance deficiency within Exelon's ability to foresee and prevent. Exelon completed a boric acid evaluation which showed there was reasonable assurance that the flange could safely operate until the next refueling outage. Additionally, Exelon prepared an adverse condition monitoring plan and is performing periodic remote monitoring of the affected flange for changes in leakage from the degraded gasket. Exelon entered this issue into the corrective action program as IR 01344561.

The finding is more than minor because it is associated with the Equipment Performance attribute (a degraded RCP flange gasket) 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. Also, this finding is similar to the more than minor example 4.a in Inspection Manual Chapter (IMC) 0612, "Power Reactor Inspection Reports," Appendix E. The inspectors completed IMC 0609.04, "Phase 1- Initial Screening and Characterization of Findings," and screened the finding as very low safety significance (Green). This finding has a cross-cutting aspect in the area of Human Performance, Work Control, because Exelon did not ensure supervisory and management oversight of work activities, including contractors, such that nuclear safety is supported [H.4(c)].

Inspection Report# : [2012002](#) (*pdf*)

Significance:  Mar 31, 2012

Identified By: NRC

Item Type: FIN Finding

Inadequate System Monitoring Results in Multiple IA-P-4 Trips

Green. A self-revealing finding was identified for inadequate performance monitoring of instrument air compressor number four (IA-P-4) in accordance with ER-AA-2003, System Performance Monitoring and Analysis. Specifically, performance monitoring action levels established for loaded and unloaded times in procedure 1104-25, "Instrument and Control Air System," were not adequate to identify the adverse trend in performance and resulted in

4

Enclosure

recurring drive-motor overload trips and unplanned accrued unavailability of IA-P-4 on September 28, October 8 and November 29, 2011. Maintenance technicians repaired the air leaks and subsequent IA-P-4 air loading decreased. Corrective actions were implemented to trend loaded and unloaded times of IA-P-4 in the system monitoring plan and implement acoustic monitoring for identification of system air leakage (IR 1295235). This finding is more than minor because it was associated with the equipment performance

attribute of the initiating events cornerstone and affected the cornerstone objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. In accordance with Inspection Manual Chapter 0609.04, "Phase 1 - Initial Screen and Characterization of Findings," the inspectors conducted a phase 1 SDP screening and determined that a detailed phase 2 evaluation was required to assess the safety significance because the finding contributed to both the likelihood of a reactor trip and the likelihood that mitigation equipment would not be available. The inspectors consulted a senior risk analyst (SRA) to perform a detailed phase 2 analysis. The SRA performed a bounding risk analysis using five days of IA-P-4 unavailability. The phase 2 analysis concluded that the significance of the finding was of very low safety significance (Green). This finding has a cross-cutting aspect in the area of Problem Identification and Resolution, Corrective Action Program, because Exelon failed to thoroughly evaluate the cause of the IA-P-4 trips such that the resolution addressed the cause [P.1(c)].

Inspection Report# : [2012002](#) (pdf)

Significance:  Dec 31, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Identify a Non-Conservative Technical Specification following Revision to River Stage Discharge Analysis

An NRC identified non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion XVI, Corrective Actions, was identified because Exelon did not identify and correct a condition adverse to quality regarding the impact of a revised river stage discharge analysis result on Technical Specifications (TSs). Specifically, Exelon did not recognize that the revised river discharge analysis resulted in a lower flow-based river shutdown level, resulting in a non-conservative TS. The inspectors determined this was a performance deficiency because Exelon personnel did not promptly identify and correct a condition adverse to quality regarding the non-conservative TS 3.14.2. Exelon entered the issue into their corrective action program under IR 1272726.

The finding is more than minor because the finding is associated with the protection against external factors attribute of the Initiating Event cornerstone to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. The inspectors evaluated the finding in accordance with IMC 0609, Attachment 4, Phase 1 – Initial Screening and Characterization of Findings, and determined it was of very low safety significance (Green) because the issue did not increase the likelihood of a fire or internal/external flood event.

This finding has a cross-cutting aspect, as described in IMC 0310, in the area of Problem Identification and Resolution, Corrective Action Program, because Exelon failed to identify issues completely, accurately and in a timely manner commensurate with their safety significance. Specifically, Exelon failed to identify the non-conservative TS in a timely manner.

Inspection Report# : [2011005](#) (pdf)

Mitigating Systems

Significance:  Mar 31, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Implement Compensatory Actions for Out-of-Service Appendix 'R' Heat Exchanger

Green. The inspectors identified a non-cited violation of license condition DPR-50 section 2.C.(4), Fire Protection, for Exelon's failure to implement compensatory actions during planned maintenance on the 'A' nuclear service heat exchanger (NS-C-1A). Specifically, on May 10, 2010, Exelon failed to return Appendix R breakers to their correct position within the

seven day allowed outage time and implement compensatory actions in accordance with administrative procedure (AP) 1038, Fire Protection Program. The inspectors determined Exelon's failure to implement compensatory actions during planned maintenance on NS-C-1A in accordance with AP 1038 was a performance deficiency that was within Exelon's ability to foresee and correct. Exelon performed an extent of condition review and created a requirement to review the fire hazard analysis report for applicability before removing equipment from service. Exelon has entered this issue in the corrective action program for resolution as IR 1347403.

This finding is more than minor because it was associated with the protection against external factors attribute of the Mitigating Systems cornerstone and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. In accordance with Inspection Manual Chapter 0609.04, "Phase 1 – Initial Screen and Characterization of Findings," the inspectors conducted a phase 1 SDP screening using Appendix F, Fire Protection Significance Determination Process, and determined that a detailed phase 2 analysis was required due to the elevated calculated delta core damage frequency. The inspectors performed a detailed walkdown of the control cables associated with the nuclear river system valves and identified no fire ignition sources and concluded that the finding was very low safety significance (Green). This finding has a cross-cutting aspect in the area of Human Performance, Resources, because Exelon failed to ensure complete, accurate, and up-to-date procedures were used to determine if compensatory actions were required for planned work activities [H.2(c)].

Inspection Report# : [2012002](#) (pdf)

Significance:  Mar 31, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Perform an Adequate Maintenance Risk Evaluation for DH-V-3 Planned Maintenance

Green. The inspectors identified a non-cited violation of 10 CFR 50.65 (a)(4), Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants, for Exelon's failure to adequately assess and manage the impact to plant risk during a planned maintenance activity. Specifically, Exelon did not recognize an elevated online maintenance risk activity and implement appropriate risk management actions (RMAs) during maintenance on the decay heat removal (DHR) drop line valve (DH-V-3) on January 16, 2012. The inspectors determined that the failure to perform an adequate risk assessment and implement appropriate RMA's for the planned maintenance on DH-V-3 is a performance deficiency that was within Exelon's ability to foresee and correct. Immediate corrective actions included operator and work planning training on risk evaluations and an extent of condition review to ensure planned maintenance activities that could impact DHR system operability were identified. Exelon entered this issue into the corrective action program for resolution as IR 1314551.

This finding was determined to be more than minor since it is similar to more than minor example 7.e of Inspection Manual Chapter (IMC) 0612, "Power Reactor Inspection Reports," Appendix E because the risk assessment, when adequately performed, resulted in an elevated station risk condition and required RMAs. The finding was evaluated in accordance with Appendix K, Maintenance Risk Assessment and Risk Management Significance Determination Process, of IMC 0609, "Significance Determination Process". The inspectors, in consultation with a senior risk analyst, performed a phase 1 analysis and concluded that the incremental core damage probability deficit for DH-V-3 with an out-of-service time of 8 hours was less than 1E-6. Therefore, the finding was determined to be of very low safety significance (Green). This finding has a cross-cutting aspect in the area of Human Performance, Work Control, because Exelon failed to incorporate appropriate risk insights into the planning and execution of the DH-V-3 maintenance activity [H.3(a)].

(Section 1R13)

Inspection Report# : [2012002](#) (pdf)

Significance:  Mar 30, 2012

Identified By: NRC

Item Type: FIN Finding

Nonconservative Differential Pressure Value used in DHR/LPI Motor Operated Valves Design Analysis

The team identified a finding of very low safety significance (Green) involving a non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, Design Control, because Exelon had not verified the adequacy of their design with respect to ensuring the capability of the emergency core cooling system piggyback mode of operation during sump recirculation in response to postulated small break loss-of-coolant accident (SBLOCA) conditions. Specifically, the decay heat system low pressure injection (LPI) piggyback motor operated valves (DH-V-7A/B) and containment isolation sump valves (DH-V-6A/B) had not been evaluated to ensure they would open against the maximum expected differential pressures assuming the maximum allowable technical specification (TS) backleakage of system pressure isolation valves (PIVs). Exelon entered the issue into their corrective action program to evaluate the current design and ensure the valves required for piggyback operation could be opened in response to SBLOCA scenarios which may require the transfer to the sump recirculation mode of operation.

The performance deficiency was determined to be more than minor because it was associated with the design control attribute of the Mitigating Systems Cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The team evaluated the finding in accordance with IMC 0609, Significance Determination Process, Attachment 4, "Phase 1 - Initial Screening and Characterization of Findings." The finding was determined to be of very low safety significance because it was a design deficiency confirmed not to result in a loss of operability. This finding was not assigned a cross-cutting aspect because it was a historical design issue not indicative of current performance.

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

Significance:  Mar 30, 2012

Identified By: NRC

Item Type: FIN Finding

Inadequate TOL Sizing Evaluation for Jogging/Throttling Valves

The team identified a finding of very low safety significance (Green) involving a non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, Design Control, because Exelon had not verified the adequacy of the design regarding motor operated valve (MOV) thermal overload relay (TOL) sizing. Specifically, Exelon had not verified that TOL relays on safety-related low pressure injection (LPI) MOV circuits for the LPI injection valves, DH-V-4A(B), were properly sized to support the design function of repetitive jogging and throttling of the MOVs in response to design basis accidents. Exelon entered the issue into their corrective action program to evaluate the condition that the existing design analysis did not address TOL sizing for jogging MOVs. Exelon performed an initial review for operability of the LPI injection valves and included an extent-of-condition review for other engineered safeguards (ES) MOVs that are operated in a jogging mode to ensure the MOVs would not inadvertently trip under reasonable assumptions.

The performance deficiency was determined to be more than minor because it was associated with the design control attribute of the Mitigating Systems Cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The team evaluated the finding in accordance with IMC 0609, Significance Determination Process, Attachment 4, "Phase 1 - Initial Screening and Characterization of Findings." The finding was determined to be of very low safety significance because it was a design deficiency confirmed not to result in a loss of operability. This finding was not assigned a cross-cutting aspect because it was a historical design issue not indicative of current performance.

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

Significance:  Mar 30, 2012

Identified By: NRC

Item Type: FIN Finding

Inadequate Design Control for Battery Sizing Calculation

The team identified a finding of very low safety significance (Green) involving a non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, Design Control, because Exelon did not verify the adequacy of design with respect to the Battery 1A sizing calculation. Specifically, non-conservative design inputs and incorrect methodologies were used for the safety related Battery 1A sizing calculation which reduced the battery capacity margin. Exelon entered this issue into the corrective action program and concluded that the issues identified did not render any of the batteries inoperable, based on the magnitude of the errors and currently available aging margin.

The performance deficiency was determined to be more than minor because it was associated with the design control attribute of the Mitigating Systems Cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The team evaluated the finding in accordance with IMC 0609, Significance Determination Process, Attachment 4, "Phase 1 - Initial Screening and Characterization of Findings." The finding was determined to be of very low safety significance because it was a design deficiency confirmed not to result in a loss of operability. The finding had a cross-cutting aspect in the area of Human Performance, Resources Component, because Exelon did not ensure that accurate design documentation was available. Specifically, Exelon inadequately revised the battery sizing calculation in 2009.

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

Significance:  Mar 30, 2012

Identified By: NRC

Item Type: FIN Finding

Inadequate Design and Maintenance of SBO Diesel Generator Battery

The team identified a finding of very low safety significance (Green) involving a non-cited violation of 10 CFR 50.63, "Loss of all Alternating Current Power," because Exelon did not ensure that necessary support systems had sufficient capability to mitigate a station blackout (SBO). Specifically, Exelon did not ensure that the design and maintenance of the SBO diesel generator starting battery was adequate to ensure that the SBO diesel generator would be able to start and load within the required time following an SBO. Exelon entered this issue into the corrective action program and concluded that the issues identified did not render the SBO emergency diesel generator (EDG) inoperable, based on testing performed during the inspection to validate the operability of the SBO EDG output breaker, the adequate performance of the battery during SBO diesel generator surveillances, the adequate acceptance test results, and adequate monthly monitoring.

The performance deficiency was determined to be more than minor because it was associated with the design control and procedure quality attributes of the Mitigating Systems Cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The team evaluated the finding in accordance with IMC 0609, Significance Determination Process, Attachment 4, "Phase 1 - Initial Screening and Characterization of Findings." The finding was determined to be of very low safety significance (Green) because it 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. This finding was not assigned a cross-cutting aspect because the most significant causal factor of the finding was the inadequate design verification for adequate voltage to the battery loads, which was not reflective of current performance. The design calculation was last revised in March 2008.

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

Barrier Integrity

Emergency Preparedness

Significance:  Aug 31, 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 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, 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.

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.

Inspection Report# : [2011503](#) (*pdf*)

Significance:  Aug 31, 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, 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.

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.

Inspection Report# : [2011503](#) (*pdf*)

Occupational Radiation Safety

Significance: G Dec 31, 2011

Identified By: Self-Revealing

Item Type: FIN Finding

Inadequate Control of Reactor Coolant Let-down and Clean-up to Minimize Occupational Radiation Dose

A self-revealing finding was identified because Exelon did not effectively manage and control Unit 1 reactor coolant let-down and clean-up during shutdown and cool-down in support of the 2011 TMI Unit 1 refueling and maintenance outage (T1R19) to maximize clean-up and thereby minimize ambient radiation dose rates for affected outage work. Specifically, during reactor shutdown and cooldown on October 25, 2011, reactor coolant letdown flow rate decreased for a 20-hour period resulting in less clean-up volume. This reduction in flow, and clean-up, resulted in radioactive crud (from fuel deposits) being deposited at higher levels within the steam generators than previously encountered causing elevated occupational radiation dose rates and unintended occupational radiation exposure. Exelon entered the issue into their corrective action program under IR 1284066.

The finding is more than minor because it is associated with the IMC 0612 (Appendix B) Occupational Radiation Safety Cornerstone attribute of program and process (As Low As Reasonably Achievable [ALARA] Planning), and the finding adversely affected the cornerstone objective of ensuring the adequate protection of the worker health and safety from exposure to radiation from radioactive material during routine reactor operations. The finding is also similar to the more-than-minor example (6,i) provided in IMC 0612 (Appendix E) since it involved an actual collective exposure for work activities greater than five person-rem and exceeded the planned, intended dose by more than 50 percent. Using IMC 0609 (Appendix C), the finding was determined to have very low safety significance (Green), because the finding involved an ALARA planning issue and the three-year rolling average collective dose history was less than 135 person-rem (approximately 93 person-rem average annual exposure for 2008-2010).

The finding has a cross-cutting aspect, as described in IMC 0310, in the area of human performance (H) associated with a work control component aspect because Exelon's management and control of reactor shutdown and cool-down did not adequately incorporate effective measures to ensure occupational radiation exposures during the outage would be as low as reasonably achievable (ALARA).

Inspection Report# : [2011005](#) (*pdf*)

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

Significance: N/A Oct 17, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Declare Arrest

The referenced inspection report and transmittal letter documented the results of an OI investigation that was completed on July 7, 2011. The investigation was conducted to determine whether a contractor individual deliberately failed to report a June 13, 2010 arrest involving drug-related and driving under the influence charges, on a personal history questionnaire (PHQ) when he applied for unescorted access authorization (UAA) at TMI on July 28, 2010. Based on the evidence gathered during the OI investigation, including: (1) the individual's statement to Exelon; (2) Exelon's procedure regarding the processing of PHQs; and, (3) Exelon records which indicated that the individual had attended an in-processing orientation class at TMI, during which the students were instructed regarding how to correctly fill out a PHQ, and specifically the criminal history section, the NRC concluded that the contractor deliberately caused Exelon to violate 10 CFR 50.9, "Completeness and accuracy of information." Specifically, the individual created an inaccurate record (the PHQ) by failing to include on it that he had been arrested. The PHQ was required to be maintained by the licensee per TMI implementing procedure SY-AA-103-502, "Arrest Reporting," and the site Physical Security Plan. Because the violation was caused by the deliberate action of the individual, it was evaluated under the NRC's traditional enforcement process as set forth in the NRC Enforcement Policy. The NRC considered that the violation involved the willful action of a non-supervisory individual, and therefore determined that the violation is appropriately classified as SL IV in accordance with the NRC Enforcement Policy. The NRC considered issuance of a Notice of Violation for this issue. However, after assessing the factors set forth in Section 2.3.2 of the NRC Enforcement Policy, the NRC determined that a non-cited violation (NCV) is appropriate in this case because, subsequent to the violation being identified, Exelon took appropriate corrective actions, including: placing the individual into "PADS," noting that his UAA was denied, and making a one-hour report to the NRC in accordance with 10 CFR Part 73 (since due to the specific charges filed against the individual, Exelon would not have granted UAA to him, had it known the information). Based on the actions taken to date, this item is closed
Inspection Report# : [2011010](#) (*pdf*)

Last modified : May 29, 2012