Three Mile Island 1
2Q/2014 Plant Inspection Findings

Initiating Events

Mitigating Systems

Significance: G Jun 30, 2014
Identified By: NRC
Item Type: NCV NonCited Violation
Risk Mitigation Actions Not Performed for Excavation of Nuclear River System Cable Conduits
The inspectors identified a finding of very low safety significance (Green) involving a non-cited violation (NCV) of 10 CFR Part 50.65(a)(4), "Requirements for monitoring the effectiveness of maintenance at nuclear power plants," because Exelon did not implement risk management actions (RMAs) to manage risk associated with the nuclear service river pump B (NR-P-1B) during excavation for fire service piping replacement. Specifically, the excavation exposed a cable conduit duct bank containing safety-related cables for nuclear service river valve 1B (NR-V-1B) without having adequate RMAs in place to ensure NR-V-1B cabling would remain protected from a tornado generated missiles. Exelon entered the condition into their corrective action program as IR 1670876 and took immediate corrective actions to modify the work instructions to include RMAs for soil restoration over the conduit duct bank in the event of a tornado. The performance deficiency is more than minor because it is associated with the Protection Against External Factors attribute of the Mitigating Systems cornerstone, and adversely affected the cornerstones objective to ensure the availability and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors evaluated the findings using IMC 0609.04, "Initial Characterization of Findings." The finding involved the licensee's management of risk in accordance with 10 CFR 50.65(a)(4) therefore, the inspectors evaluated the significance using IMC 0609, Appendix K, "Maintenance Risk Assessment and Risk Management Significance Determination Process." The inspectors determine that this performance deficiency was of very low safety significance (Green) because the finding was associated with RMAs only and the incremental core damage probability (IDCP) was not >1E-6. This finding has a cross-cutting aspect in the area of Human Performance, Work Management; because Exelon did not manage risk associated with the underground piping replacement project and did not effectively communicate job activities between work groups to ensure the RMAs would be implemented as required. (H.5) (Section 1R13)

Inspection Report# : 2014003 *(pdf)*

Significance: G Mar 31, 2014
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to Perform a 10 CFR 50.59 Evaluation for the BWST Seismic Qualification
Green/SL-IV. The inspectors identified a Severity Level IV (SL-IV), Non-Cited Violation of 10 CFR 50.59, "Changes, Tests, and Experiments," and an associated finding of very low safety significance (Green) for Exelon's failure to perform a 50.59 evaluation review to determine whether a license amendment was required to align the borated water storage tank (BWST) to non-seismic piping. Specifically, Exelon staff's 50.59 screening accepted the alignment of the seismically qualified BWST to a non-seismically qualified clean-up system. The inspectors

determined the alignment would involve a change to the BWST
that adversely affects its Updated Final Safety Analysis Report chapter 5.1.1, “Classes of Structures and Systems for Seismic Design”, described design function of being seismically qualified. Additionally, the inspectors determined that following the 50.59 review Exelon placed the line-up in service. The inspectors determined these two actions were performance deficiencies that were reasonably within Exelon’s ability to foresee and prevent. Furthermore, the 50.59 screening credited unapproved operator manual actions
to ensure functionality of the BWST. Exelon documented this as issue report 1631468 and implemented interim corrective actions to isolate the BWST from the clean-up system until a permanent resolution is determined and implemented.

The inspectors determined the 50.59 violation regarding the failure to perform an evaluation was more than minor because the inspectors could not reasonably determine that the alignment would not have ultimately required NRC prior approval, because the BWST alignment was not in accordance with the current licensing basis and the evaluation credited the use of unapproved operator manual actions. The inspectors also determined that the performance deficiency of accepting and aligning the adverse clean-up line-up, challenging the BWST seismic qualification, was more than minor because it adversely affected the Mitigating Systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors evaluated the finding using IMC 0609, Attachment 4, “Initial Characterization of Findings,” and Appendix A, “The Significance Determination Process for Findings At-Power,” and determined that this finding required a detailed risk evaluation. The detailed evaluation was performed which determined that the performance deficiency was a finding of very low safety significance (Green). Additionally, In accordance with Section 6.1.d.2 of the NRC Enforcement Policy, the 50.59 violation is categorized as a Severity Level IV.
This finding has a cross-cutting aspect in the area of Problem Identification and Resolution, Operating Experience, in that the station did not effectively evaluate and internalize relevant external operating experience (Information Notice (IN) 2012-01) regarding connections between safety-related seismic and non-seismic qualified piping and components (P.5) (Section 1R04)

Inspection Report# : 2014002 *(pdf)*

Significance: G Mar 31, 2014
Identified By: NRC
Item Type: NCV NonCited Violation
Loss of Air Intake Tunnel Sump Pump Function due to Inadequate Work Execution
Green. The inspectors identified a finding of very low safety significant (Green) for Exelon’s failure to follow work order instructions in accordance with MA-AA-716-011, “Work Execution and Close Out,” during planned maintenance activities on the air intake tunnel (AIT) deluge sump pump (SD-P-7). Specifically, in May 2013, a maintenance worker applied epoxy to the sump pump’s float switch contrary to work order instructions. Inspectors identified that the float switch was fixed in the OFF position, rendering the pump unavailable, during a system walkdown in March 2014. Exelon documented this as issue report 1628577 and performed prompt corrective actions to remove the epoxy coating from the float switch. In addition, corrective actions were performed to replace the float ball that likely was submerged and filled with water as a result of the float switch being stuck. Exelon successfully post-maintenance tested the float switch and pump on March 6, 2014, and returned it to service.

The inspectors determined the performance deficiency associated with this finding involved Exelon’s failure to follow work order instructions in accordance with MA-AA-716-011, “Work Execution and Close Out,” during planned maintenance activities on SD-P-7 was more than minor because it was associated with mitigating systems cornerstone adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, in May 2013, a technician applied epoxy to SD-P-7’s float switch, contrary to work order instructions, rendering the pump non-functional. The inspectors evaluated the finding using IMC 0609, Attachment 4, “Initial Characterization of Findings,” and Appendix

A, "The Significance Determination Process for Findings At-Power," Exhibit 4, "External Events Screening Questions," and determined, based on operator response to an air intake tunnel deluge alarm, this finding to be of very low safety significance (Green).

This finding has a cross-cutting aspect in the area of Human Performance because the worker did not follow work order instructions and incorrectly applied epoxy to the SD-P-7 float switch assembly, rendering the pump non-functional and unavailable (H.8). (Section 1R05)

Inspection Report# : 2014002 *(pdf)*

Significance: G Mar 31, 2014
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to Restore Station Blackout Diesel Generator Cooling Water Lineup following Maintenance and Testing Activities
Green. A self-revealing non-cited violation (NCV) of 10 CFR 50.63, "Loss of All Alternating Current Power," was identified for Exelon's failure to properly restore the station blackout (SBO) diesel generator system following maintenance and testing activities, rendering the SBO diesel generator unable to be available in 10 minutes of and cope for 4 hours after a postulated SBO event. Specifically, during the restoration from SBO switchgear maintenance during the previous Fall 2013 refueling outage, operators failed to remove a blocking device (gag) from the SBO diesel generator fire service water cooling isolation valve (FS-V-646) as part of its restoration to an automatic, standby configuration. As a result the SBO diesel generator was not in the configuration required by 10 CFR 50.63 (c) (2), which describes acceptable capability standards for alternate AC power systems. Exelon entered this issue into their corrective action program as IR 1608625. Exelon restored the valve configuration and revised affected and related procedures.

The inspectors determined this performance deficiency in that Exelon failed to remove the blocking devise from FS-V-646 prior to restoring the SBO diesel to service was more than minor because it is associated with the mitigating systems affecting the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, in the event of a station blackout, the SBO diesel generator was not able to be started and operated from the control room with no local operations required to allow the prompt restoration of electrical power to at least one vital bus as assumed in the TMI SBO analysis. The inspectors evaluated the finding using IMC 0609, Attachment 4, "Initial Characterization of Findings", and Appendix A, "The Significance Determination Process for Findings At-Power," and determined that this finding required a detailed risk evaluation because, with FS-V-646 gagged, the SBO diesel was not capable of performing its safety function. The detailed risk evaluation determined the finding to be of very low safety significance (Green).

This finding has a cross-cutting aspect in the area of Human Performance, Documentation, because Exelon's procedure for restoration from the maintenance and testing (OP-TM-731-510, Rev. 5) was not adequate to specify actions to return the cooling water isolation valve (FS-V-646) to its normal automatic condition [H.7]. (Section 1R22)

Inspection Report# : 2014002 *(pdf)*

Significance: G Dec 31, 2013
Identified By: NRC
Item Type: NCV NonCited Violation
Inadequate Material Storage in Reactor Building
Green. The inspectors identified a Green non-cited violation of Technical Specification 6.8.1 for Exelon's failure to implement procedure requirements governing storage of equipment in Class 1 structures. Specifically, Exelon stored

unsecured material, one (1) roll of plastic sheeting and three (3) plastic sheets, in the Reactor Building (RB) during power operations, contrary to Exelon Procedure 1015, “Equipment Storage Inside Class 1 Buildings.” This resulted in unsecured material in a location that had the potential, during a large break loss of coolant accident, to be transported to and adversely impact the performance of the emergency core cooling system (ECCS) suction sump. Exelon documented the issue in their corrective action program under issue report (IR) 1577437 and took immediate corrective actions to remove the unsecured plastic from the RB.

This finding is more than minor because it is associated with the availability and reliability 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. Specifically, the unsecured plastic had the potential to impact the reliability and availability of the ECCS recirculation suction flow path, due to the potential increased debris loading. The inspectors evaluated the finding using Inspection Manual Chapter 0609, Attachment 4, “Initial Characterization of Findings,” and Appendix A, “The Significance Determination Process for Findings At-Power,” Exhibit 2, and determined this finding is very low safety significance (Green) because the degraded condition is a design deficiency that affects system operability, but did not represent an actual loss of function of a system; did not represent an actual loss of function of a single train or two separate trains for greater than its technical specification allowed outage time and did not represent an actual loss of function of one or more non-technical specification trains of equipment designated as high safety significant. The finding has a cross-cutting aspect in the area of Problem Identification and Resolution, Corrective Action Program, because Exelon did not take adequate corrective actions to address the cause of improperly staged material in the RB (IR 1577100), resulting in a subsequent recurrence of improper staging of additional material in the RB identified by the inspectors (IR 1577437). [P.1(d)]. (Section 1R20)

Inspection Report# : 2013005 *(pdf)*

Barrier Integrity

Significance: G May 23, 2014
Identified By: NRC
Item Type: NCV NonCited Violation
Inadequate Corrective Actions for a Condition Adverse to Quality that Caused the Failure of Two Primary Isolation Valaves
The inspectors identified a finding of very low safety significance involving an NCV of Title 10 of the Code of Federal Regulations (10 CFR) 50, Appendix B, Criterion XVI, “Corrective Action,” because Exelon did not take adequate corrective actions to address a condition adverse to quality that caused the failure of two primary containment isolation valves. Specifically, the corrective actions implemented after the failure of CA-V-13 in 2010 and WDL-V-303 in 2013 did not ensure that the deficient basic work practices that resulted in the valve failures were corrected. Exelon documented this issue in the corrective action program as issue report (IR) 1664529 and took prompt actions to validate the operability of valves with similar actuators that had been worked since refueling outage T1R19. In addition, Exelon is performing a cause evaluation to fully understand the causes of the issue and implement actions to correct the condition adverse to quality prior to the next valve maintenance window. The finding is associated with the Barrier Integrity cornerstone and is more than minor because if left uncorrected it could lead to a more significant safety concern. Specifically, the uncorrected deficient basic work practices could result in additional primary containment isolation valve failures. In accordance with IMC 0609.04, “Initial Characterization of Findings,” and Exhibit 3 of IMC 0609, Appendix A, “The Significance Determination Process for Findings At-Power,” issued June 19, 2012, the inspectors determined that the finding was of very low safety significance (Green) because it does not represent an actual open pathway in the containment and did not impact the hydrogen igniters. The finding has a

cross-cutting aspect of evaluation in the problem identification and resolution area because Exelon did not thoroughly evaluate the condition to ensure that corrective actions addressed the cause. Specifically, Exelon identified that deficient basic work practices during valve actuator reassembly were the probable cause of the WDL-V-303 failure in 2013 and had been previously identified as the cause of the CA-V-13 failure in 2010, but Exelon did not evaluate the effectiveness of the corrective actions completed after the CA-V-13 failure or the need for additional corrective actions to address the probable cause. [P.2 Evaluation] [Section 4OA2.1.c.(1)]

Inspection Report# : 2014009 *(pdf)*

Significance: G Dec 31, 2013
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to Perform Leak Rate Testing on Close Loop Piping
Green. The inspectors identified a Green non-cited violation of 10 CFR 50, Appendix J, Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors, for Exelon's failure to establish an adequate program that leak tested components penetrating the primary containment pressure boundary. Specifically, Exelon failed to implement leak rate testing of the reactor building (RB) normal closed loop cooling piping to verify piping integrity to support its containment isolation function. As a result, on November 10, 2013, engineering personnel identified an inoperable containment isolation boundary due to a degraded RB closed cooling piping condition. Exelon documented this issue in issue report (IR) 1598590 and took corrective actions to revise the Appendix J test program and address the missed leak rate surveillance test.

This finding is more than minor because it is associated with the Barrier Performance attribute of the Barrier Integrity cornerstone and affected the cornerstone objective to provide reasonable assurance that physical barriers, as designed, protect the public from radionuclide releases caused by accidents or events. Specifically, Exelon failed to perform leak rate testing of the RB normal closed loop cooling piping and failed to identify the degraded piping condition that impacted the containment isolation function. In accordance with IMC 0609.04, "Initial Characterization of Findings," and Exhibit 3 of IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," issued June 19, 2012, the inspectors determined that the finding did not represent an actual open pathway in the physical integrity of the reactor containment isolation system nor did it involve an actual reduction in function of hydrogen recombiners for the reactor containment therefore, the finding was of very low safety significance (Green). The finding was not assigned a cross-cutting aspect because the most significant causal factor of the finding was the failure to implement leak rate testing since 1991 and was not indicative of current plant performance. (Section 1R22)

Inspection Report# : 2013005 *(pdf)*

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Significance: **N/A** Jun 30, 2014
Identified By: NRC
Item Type: NCV NonCited Violation
UFSAR Max Hypothetical Dose Not Updated, Consistent with Current Plant Conditions
The inspectors identified a Severity Level lV (SL-lV) NCV of 10 CFR 50.71(e), "Maintenance of Records, Making of Reports," because TMI personnel did not update the Updated Final Safety Analysis Report (UFSAR) with information consistent with plant conditions. Specifically, TMI personnel did not remove reference to or correct information in UFSAR Section 14.2.2.3.4.a, "Environmental Analysis of Loss of Coolant Accidents -Consequences of LOCA Radioactive Releases to the Environment," to reflect current plant conditions with regard to maximum hypothetical accident doses at the main control room, exclusion area boundary, or low population zone. Exelon documented this in issue report 1662515 to address the UFSAR discrepancy. This issue was determined to be within the traditional enforcement process because it had the potential to impede or impact the NRC's ability to perform its regulatory functions. Specifically, the issue was determined to have a material impact on licensed activities and was considered more than minor using section 7.3.D of the NRC Enforcement Manual. Using example d.3 of section 6.1 of the NRC Enforcement Policy, the inspectors determined that the violation was a SL-IV violation because the erroneous information was not used to make an unacceptable change to the facility or procedure. In accordance with inspection manual chapter 0612, section 07.03c, this traditional enforcement violation was not assigned a cross-cutting aspect. (Section 4OA2.1)

Inspection Report# : 2014003 *(pdf)*

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.

Miscellaneous

Significance: **N/A** May 23, 2014
Identified By: NRC
Item Type: FIN Finding
PI&R Assessment
The inspectors concluded that Exelon was generally effective in identifying, evaluating, and resolving problems. Exelon personnel identified problems, entered them into the corrective action program at a low threshold, and prioritized issues commensurate with their safety significance. Exelon appropriately screened issues for operability and reportability, and performed causal analyses that appropriately considered extent of condition, generic issues, and previous occurrences. The inspectors also determined that Exelon typically implemented corrective actions to address the problems identified in the corrective action program in a timely manner. However, the inspectors identified one violation of NRC requirements in the area of effectiveness of corrective actions.
The inspectors concluded that Exelon adequately identified, reviewed, and applied relevant industry operating experience to TMI operations. In addition, based on those items selected for review, the inspectors determined that Exelon's self-assessments and audits were thorough.

Based on the interviews the inspectors conducted over the course of the inspection, observations of plant activities, and reviews of individual corrective action program and employee concerns program issues, the inspectors did not identify any indications that site personnel were unwilling to raise safety issues nor did they identify any conditions that could have had a negative impact on the site's safety conscious work environment.

Inspection Report# : 2014009 *(pdf)*

Last modified : August 29, 2014