

Three Mile Island 1

4Q/2009 Plant Inspection Findings

Initiating Events

Mitigating Systems

Significance:  Dec 31, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

NCV 05000289/2009005-01, Potential CO2 Migration Outside the Relay Room Fire Area

The inspectors identified a Green, non-cited violation of the Three Mile Island operating license for not adequately considering the effects of CO2 toxicity. Specifically, for a fire in the relay room which causes a CO2 initiation and a control room evacuation, CO2 would migrate into adjacent areas. Because operators must enter these adjacent areas to perform time critical, safe shutdown actions, the potential existed to delay or incapacitate the operators which would negatively impact the ability to safely shutdown the plant. Exelon made procedural and training changes to ensure that operators immediately don self-contained breathing apparatus in the event of a control room evacuation after a CO2 initiation in the relay room.

The finding was more than minor because it was associated with the external factors (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) due to the low degradation rating resulting from the minimal impact on the fire protection program. This finding did not have a cross-cutting aspect because the most significant contributor of the performance deficiency was not reflective of current licensee performance.

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

Significance:  Jun 30, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

Deficient Coordination of Work Activities Resulted in NR-P-1C Becoming Inoperable

A self-revealing NCV of Technical Specification 6.8.1.a was identified for failure to properly plan and coordinate maintenance and operational activities affecting safety related components. Specifically, station personnel did not properly coordinate implementation of work activities which affected the strainer function for all safety related river water pumps. Workers hung a clearance which isolated backwash flow and deenergized the motorized rotating elements for all strainers almost 2 days before the associated valve repair maintenance activity was scheduled. During this period the station performed the semi-annual clam kill evolution which involved starting and stopping several river water pumps. Debris from the river accumulated on the idle strainer for operating nuclear river water pump NR-P-1C. This restricted flow and the pump was declared inoperable. Operators promptly realigned the standby nuclear river water pump, exited the Technical Specification (TS) limiting condition of operation, and entered the issue into the corrective action program (IRs 926712 and 927439).

This finding is more than minor because affected the equipment performance attribute of the Mitigating Systems cornerstone and the associated cornerstone objective of ensuring the availability of systems that respond to initiating events to prevent undesirable consequences. This finding of very low safety significance because it did not represent an actual loss of safety function of a single train for greater than the TS allowed outage time. This finding had a cross-cutting aspect in the area of Human Performance, Work Control component because station personnel did not properly coordinate work activities and assess the impact of hanging the strainer clearance tags prior to the clamicide

evolution such that availability of NR-P-1C was optimized [H.3.b].

Inspection Report# : [2009003](#) (*pdf*)

Significance:  Jun 30, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

Deficient Inspections, Evaluation, and Remediation of Submerged Underground Electrical Cables

The inspectors identified an NCV of 10 Code of Federal Regulations (CFR) 50, Appendix B, Criterion V, Instructions, Procedures, and Drawings, for failure to establish and accomplish appropriate work instructions and procedures to inspect underground electrical cables, vaults, and supports for degradation or adverse affects due to long term repetitive submergence in water. Personnel did not enter the cable vaults and procedures did not require actual visual inspection of the cables, supports, or vaults sufficient to support determination of operability. Actions were not taken to identify or remediate the cause of the repetitive flooding and restore the function of the designed cable vault drain systems. The inspectors observed corroded cable tray supports, damaged galvanized armor protective sleeves on cables, and indications of repetitive long term underground cable submergence in water. Corrective actions included revising electrical vault inspection procedures and entering each safety related and maintenance rule scope electrical vault to perform visual inspections and assessment. Related issues and corrective actions were addressed through the corrective action program (IRs 804151, 845936, 918356, 918427, 920420, 926416, 926420, 927870, 928120, 930739).

This finding is more than minor because it affected the equipment performance attribute of the Mitigating Systems cornerstone and the associated cornerstone objective of ensuring the reliability of systems that respond to initiating events to prevent undesirable consequences. This finding was of very low safety significance because it did not represent an actual loss of safety function or contribute to external event core damage sequences. This finding had a cross-cutting aspect in the area of Problem Identification and Resolution, operating experience component, because station personnel did not implement and institutionalize industry operating experience regarding hazards of submerged electrical cables into station processes and procedures [P.2.b].

Inspection Report# : [2009003](#) (*pdf*)

Significance:  Jun 26, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Assess Seismic Qualification of Stop Logs

The team identified a non-cited violation of 10 CFR 50, Appendix B, Criterion III, Design Control. The team determined Exelon did not evaluate the adequacy of the river water stop logs in the Intake Screen and Pump House (ISPH) structure, to ensure that logs would not fail when exposed to seismically-induced loads. The team determined that failure of the logs would impact the capability of the safety related nuclear river water, decay river water, and reactor river water pumps to perform their design function following the seismic event. FSAR section 5.1.1 describes the ISPH and the river water systems as a Seismic Class I structure systems and components and states that this equipment should be evaluated in accordance with the methodologies described in the FSAR. The licensee entered this issue into the corrective action program and performed analysis which indicated the stop logs would remain in place following a seismic event.

This finding is more than minor because it affected the design control attribute of the mitigating systems 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 (Green) because the design/qualification deficiency did not result in a loss of function. This finding was not assigned a cross-cutting aspect because the underlying cause was not indicative of current performance.

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

Significance: SL-IV Jun 26, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

Unqualified Decay Heat River Water Strainer Due to Deficient Evaluation of Plant Modification

The team identified a Severity Level IV NCV of 10CFR50.59, “Changes, Tests and Experiments,” for the failure to obtain a license amendment pursuant to 10 CFR 50.90 prior to implementing a change to the components credited to be operable for the decay heat river system. The team reviewed a modification and associated safety evaluation that removed the internals of the 'A' decay heat river strainer and credited three non-safety related traveling screens to perform straining function. Exelon 50.59 evaluation concluded that a license amendment was not required prior to this change. The team determined that because the screens were not safety related structures, systems, or components they could not be used to meet the system operability requirements as discussed in Technical Specification 3.3 Emergency Core Cooling, Reactor Building Emergency Cooling and Reactor Building Spray Systems. Use of these components would require a change to the TS, and, therefore, the 50.59 process screening should have determined the process cannot be used because the process is not applicable for TS changes. Following identification of the issue Exelon performed an operability evaluation to ensure the system could respond to credited design basis events and performed an apparent cause evaluation to determine the cause of the performance deficiency.

The team concluded that using the 50.59 process to change the requirements of the technical specifications was a performance deficiency. The failure to submit this change to the NRC for approval prior to implementation prevented the NRC from performing its regulatory function and, therefore, the issue should be evaluated under traditional enforcement guidance. The team determined that this issue was more than minor because there was a likelihood that this activity would have required NRC approval prior to implementation. The severity level of the violation was determined to be Severity Level IV. Additionally, the issue was determined to be of very low safety significance because the issue was determined to be a qualification issue not resulting in inoperability of the system. This finding was determined to have a crosscutting aspect of Human Performance- Decision Making which states the licensee should use conservative assumptions in decision making and adopts a requirement to demonstrate that the proposed action is safe [H.1.b].

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

Significance:  Jun 26, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Install Amptector Bypass Jumper for Load Center Breaker

The team identified a NCV of 10 CFR Part 50, Appendix B, Criterion V, Instructions, Procedures, Drawings, in that Exelon failed to include appropriate quantitative or qualitative acceptance criteria for determining that important activities have been satisfactorily accomplished. Specifically, the team identified that the maintenance and testing procedure E-5.2 for the Westinghouse type DB-50 480V safety-related load center circuit breaker did not include instructions to ensure that a jumper be installed to defeat the Amptector discriminator circuit. The failure to install the jumper resulted in the feeder breaker to a safety related motor control center not meeting the design basis requirement for breaker coordination between safety and non safety related equipment. Following identification of the issue Exelon performed an operability assessment and implemented compensatory actions to ensure breaker coordination was maintained.

This finding is more than minor because it affected the design control attribute of the mitigating systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The finding was of very low safety significance since it was a procedure deficiency determined not to have resulted in the loss of safety function. The finding had a cross cutting aspect in Human Performance – Resources which requires procedures be complete, accurate and up to date.

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

Barrier Integrity

Significance:  Mar 31, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

Instrument Accuracy Not Verified Prior to Performing Containment Penetration Local Leak Rate Testing

The inspectors identified an NCV of Technical Specification 6.8.5 which requires the Reactor Building Leak Rate Testing Program to be properly implemented. Specifically, station personnel repeatedly used temperature instruments that did not meet accuracy and repeatability requirements when performing containment penetration leak rate testing (LRT). Additionally, in some cases, station personnel did not document what temperature instruments were used and therefore the test results did not adequately demonstrate that LRT test requirements had been met. Upon discovery, engineers performed a bounding engineering analysis which verified the containment barrier remained operable and entered the issue into the corrective action program (IR 892386).

This finding is more than minor because the issue is associated with the barrier performance reliability attribute of the Barrier Integrity cornerstone and adversely affected the associated cornerstone objective to provide reasonable assurance that the physical containment barrier protects the public from radionuclide releases. Repeated failure to ensure test instruments met procedure and regulatory requirements was programmatic, affected multiple components, adversely affected LRT test accuracy, and consequently impacted the licensee's ability to verify the reactor building containment barrier remained operable. The finding was of very low safety significance because the finding did not represent an actual open pathway in the physical integrity of the containment barrier and did not result in a loss of containment barrier operability. This finding had a cross-cutting aspect in the area of Human Performance, Work Practices component because station personnel repeatedly did not properly implement procedure requirements to verify material and special prerequisites for instrument accuracy and repeatability were met prior to performing containment penetration LRT [H.4(b)].

Inspection Report# : [2009002](#) (*pdf*)

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 : March 01, 2010