Three Mile Island 1
2Q/2009 Plant Inspection Findings

Initiating Events

Mitigating Systems

Significance: G 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: G 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: G 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 decribed 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 changed 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: G 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)*

Significance: G Sep 29, 2008
Identified By: NRC
Item Type: NCV NonCited Violation
Deficient Implementation of Fire Barrier Seal Inspection Procedure
The inspectors identified an NCV of Technical Specification (TS) 6.8.1.e, which requires that written procedures covering the Fire Protection program be properly implemented. Specifically, fire seal inspections performed in August and October 2007 did not properly identify two degraded seismic floor penetration fire seals and initiate corrective measures including an expanded inspection scope as required by procedure 1303-12.9, Fire Barrier Seal Inspection. Consequently, numerous fire seals associated with plant areas containing safety related accident mitigation equipment remained degraded until independently identified by the NRC inspectors and licensee staff in June and July 2008. Upon discovery of the degraded fire seals, operators declared the fire seals inoperable, established appropriate compensatory measures, entered the issue into the corrective action program (Issue Reports 808410, 792382, 791987 and 793088), and implemented seal repairs.

This finding adversely affected the reliability of equipment required to achieve and maintain a safe shutdown condition following a severe fire, because the degraded fire seals adversely affected the confinement defense-in-depth element of fire protection. The finding is greater than minor because it is associated with the protection against external factors attribute of the Mitigating Systems cornerstone. Because the cracks, foam separation, and holes through the seals were small (1/8 to 3/8 inch width and up to full seal length), the finding was determined to have very low safety significance. The finding has a cross-cutting aspect in the area of human performance because AmerGen personnel did not properly implement the fire barrier seal inspection procedure during inspections completed in late 2007, such that degraded fire seals were promptly identified and corrected [H.4(b)].

Inspection Report# : 2008004 *(pdf)*

Significance: G Sep 29, 2008
Identified By: NRC
Item Type: NCV NonCited Violation
Reference Test Conditions for MU-P-1B Not Established in Accordance with ASME OM Code
The inspectors identified an NCV of TS 4.2.2 for improper implementation of applicable American Society of Mechanical Engineers (ASME) Operation and Maintenance (OM) Code requirements for quarterly in-service testing (IST) of the 'B' makeup pump (MU-P-1B). Specifically, the quarterly test procedure did not set pump differential pressure (d/p) or flow at a reference value which was readily duplicated when measuring required vibration data. Additionally, the test procedure allows adjustment of a 1 inch by-pass valve (MU-V-205) which could also influence pump d/p and the test reference value. The NRC inspectors determined that historically, the quarterly MU-P-1B pump test was not in accordance with the ASME Code and could have impacted proper vibration trending to adequately detect a degraded pump condition. Corrective actions included an extent-of-condition review of all IST test procedures, revision of the MU-P-1B test method to establish a fixed reference point for the duration of the test, and establishing a fixed position for the 1 inch bypass valve (IR 807157).

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 involved a qualification deficiency that was confirmed not to result in a loss of operability. This finding has a cross-cutting aspect in the area of problem identification and resolution (PI&R), corrective actions program component, because corrective actions to a prior similar NRC violation (NCV 05000289/2004004-02) regarding IST of the reactor river pumps, did not thoroughly evaluate the problem such that deficient IST testing of MU-P-1B was identified and corrected. As a result, deficient IST testing of MU-P-1B continued until identified by the NRC inspectors in 2008 [P.1(c)].

Inspection Report# : 2008004 *(pdf)*

Significance: G Sep 12, 2008
Identified By: NRC
Item Type: NCV NonCited Violation
Inappropriate Use of Elevators by Fire Brigade Members
The team identified that AmerGen allowed fire brigade members to use elevators during response to a fire, when the power or control to the elevator could be lost as a result of a fire. This finding was determined to be of very low safety significance (Green) and a NCV of the Three Mile Island Nuclear Station, Unit 1 Operating License condition 2.c.(4), "Fire Protection."

The team determined that this finding was more than minor because it was associated with the external factors attribute (fire) of the mitigating systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e. core damage). Specifically, AmerGen allowed fire brigade members to use elevators during fires which could disable the elevator, potentially trapping fire brigade members and delaying their efforts to extinguish fires in safe shutdown areas. The team assessed this finding in accordance with NRC IMC 0609, Appendix M, Significance Determination Process Using Qualitative Criteria because IMC 0609, Appendix F, Fire Protection Significance Determination Process specifically excludes findings associated with the performance of the fire brigade. Therefore this finding required regional branch chief review in accordance with IMC 0612, Power Reactor Inspection Reports. This finding was screened to very low safety significance (Green) based on IMC 0609 Appendix M, Significance Determination Process Using Qualitative Criteria and the following considerations: the limited exposure time when brigade members would be in the elevator and AmerGen's practice that the entire brigade did not enter the elevator all at once. The team determined that this finding had a cross cutting aspect in the area of problem identification and resolution because when the issue of elevator usage by fire brigade members was raised by the NRC residents on November 29, 2007, the issue was not fully evaluated (P.1(c)).
Inspection Report# : 2008009 *(pdf)*

Barrier Integrity

Significance: G 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 : August 31, 2009