

Three Mile Island 1

1Q/2010 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: 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)

Barrier Integrity

Emergency Preparedness

Occupational Radiation Safety

Significance:  Mar 12, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Use Process or Engineering Controls Caused Airborne Radioactivity

A self-revealing non-cited violation (NCV) of 10 CFR 20.1701 was identified because Exelon did not use process or other engineering controls, to the extent practicable, to control the concentration of radioactive materials in air. Specifically, process or engineering controls were not used to the extent practicable, during vacuuming of a Unit 1 reactor coolant system cold leg, of the "A" steam generator, on November 21, 2009. The vacuum was unfiltered and caused generation of airborne radioactivity, subsequent internal and/or external contamination of 145 personnel; dispersal of airborne radioactivity to the Containment work areas, and release of low-level contamination to the offsite environment. Workers were evacuated from Containment, the source of the radioactivity was stopped, and the issue was documented in the corrective action program (AR 996823).

This finding is more than minor because it adversely affected the Occupational Radiation Safety Cornerstone objective to ensure adequate protection of worker health and safety. Using the IMC 0609, Appendix C, Occupational Radiation Safety Significance Determination Process, the finding was determined to be of very low safety significance because it did not involve: (1) as low as is reasonably achievable collective exposure planning and controls, (2) an overexposure, (3) a substantial potential for overexposure, or (4) an impaired ability to assess dose. The cause of the finding is related to the cross-cutting area of Human Performance, Work Control aspect H.3(a), in that radiological controls requirements, developed for this task, were not adequately planned, coordinated, or incorporated to preclude its occurrence.

Inspection Report# : [2010007](#) (*pdf*)

Public Radiation Safety

Significance:  Mar 12, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

Deficient Design Change Implementation and Controls Resulted In Unfiltered Radioactivity Release to the Environment

A self-revealing NCV of Technical Specification 6.8 was identified because Exelon did not properly establish and implement procedures for control of radioactivity to limit materials released to the environment and limit personnel exposure as specified in Appendix A of Regulatory Guide 1.33, 1978. Specifically, from November 12 to November 21, 2009, Exelon did not effectively manage Unit 1 Containment openings and ventilation system flows, following removal of a section of the Containment liner, to maintain inward airflow and promptly detect and minimize the release of radioactivity from the construction opening as required by Engineering Change Request TM-06-00816. As a result, an uncontrolled airborne radioactivity release occurred from the construction opening on November 21 at about 3:45 p.m. Further, airborne radioactivity was released from the opening during periods of outward airflow following the removal of a section of the Containment construction opening liner on November 12 through the time of the uncontrolled release, until midnight on November 21 when inward airflow was re-established. Exelon documented this issue in its corrective action program. (ARs 994989 and 1000819)

This finding is more than minor because, if left uncorrected the issue had the potential to lead to a more significant safety concern. Using the Public Radiation Safety Significance Determination Process (IMC 0609, Appendix D), the finding was of very low safety significance because the licensee was able to assess the dose impact to members of the public and the dose impact to a member of the public from the radiological release was less than the dose values specified in both Appendix I, to 10 CFR Part 50, and 10 CFR 20.1301(e). The cause of the finding is related to the

cross-cutting area of Human Performance, Resources aspect H.2(c), because procedures developed for both control and timely detection of radioactive effluents from the Containment construction opening were inadequate.

Inspection Report# : [2010007](#) (*pdf*)

Significance:  Mar 12, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

Untimely Corrective Action to Stop Unfiltered Radiological Release

The inspectors identified an NCV of Technical Specification 6.11 because from November 16 through November 21, 2009, Exelon did not implement timely follow-up and corrective action to minimize radioactivity released to the environment as required radiation protection procedures, RP-AA-1, RP-AA-10, and RP-AA-14. Specifically, upon discovery on November 16 of an unplanned, unfiltered radioactive release pathway from the Containment construction opening to the environment, station personnel did not promptly initiate a condition report or assign appropriate significance to the issue. Consequently, an unfiltered release pathway from the Containment existed until appropriate control of Containment openings and the ventilations system were re-established on November 21. Condition reports 1041529 and 1042874 were initiated to evaluate timeliness of actions to stop the unfiltered radioactive release to the environment.

This finding is more than minor because, if left uncorrected the issue had the potential to lead to a more significant safety concern. Using the Public Radiation Safety Significance Determination Process (IMC 0609, Appendix D), the Finding was of very low safety significance because the licensee was able to assess the dose impact to members of the public and the dose impact to a member of the public from the radiological release was less than the dose values specified in both Appendix I, to 10 CFR Part 50, and 10 CFR 20.1301(e). The cause of the finding is related to the cross-cutting area of Problem Identification and Resolution, Corrective Action Program aspect P.1(d), because appropriate corrective actions to assess and correct the cause of the outward air flow from the Containment construction opening were not properly prioritized and implemented in a timely manner commensurate with their safety significance and complexity.

Inspection Report# : [2010007](#) (*pdf*)

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

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