

Three Mile Island 1

4Q/2011 Plant Inspection Findings

Initiating Events

Significance: G 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

Introduction: An NRC-identified NCV of very low safety significance 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 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.

Description: Exelon revised TMI's river stage discharge analysis on account of the significant input external flooding events have on their core damage frequency. The design basis and licensing basis is based on Susquehanna River flow, which the analysis also uses as an input and then derives a corresponding river level. Specifically, the river stage discharge analysis uses an input of flow in cubic feet per second (cfs) as measured in Harrisburg, Pa and converts the flow into an elevation at the intake screen and pump house (ISPH) at TMI. The licensing basis uses a maximum flow of 1,625,000 cfs which previously correlated to an elevation of 310' at the ISPH. TS 3.14.2 states a river level when TMI is to be shutdown and placed in hot standby. This level is based in a corresponding river flow of 1,000,000 cfs. This flow previously corresponded to 302'.

TMI-1 TS 3.14.2, Amendment 157, "If the river stage reaches elevation 302 feet at the River Water Intake Structure [aka ISPH], corresponding to 1,000,000 cfs river flow, the unit will be brought to the hot standby condition."

The original plant design river stage discharge detailed analysis was unable to be identified in historical records and a new analysis was performed using current methodology. On September 26, 2011, Exelon completed the revised analysis and concluded that the licensing basis flow of 1,625,000 cfs would correlate to a probable maximum flood (PMF) water level at the intake of 313.3'. The new level for a corresponding flow of 1,000,000 cfs is 299.8'.

Exelon performed a review for impact of applicable regulatory and site specific procedures. Specifically, Exelon reviewed TSs and failed to identify that the new river discharge analysis necessitated a lower shutdown elevation during an external flooding event.

Since the licensing basis of TMI relies on river flow and derives a river elevation, the inspectors noted that the technical specification elevation needed to be based upon the river height at 1,000,000 cfs. Therefore, based upon the revised analysis, a river flow of 1,000,000 cfs corresponds to a lower elevation of 299.8'. As a result, Exelon entered the issue into their corrective action program (IR 1272726) and implemented actions commensurate to guidance in NRC Administrative Letter AL 98-10 to address non-conservative TSs.

The inspectors noted the revised PMF resulted in an increase of 3.3' from the current Final Safety Analysis Report (FSAR) value of 310'. Based upon analysis results, Exelon had previously completed modifications to the flood barrier system to mitigate external flooding effects to 313.5'.

Analysis: The inspectors determined there 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. The inspectors determined 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. Specifically, Exelon personnel did not promptly identify and correct the non-conservative TS, 3.14.2, such that a timely plant shutdown would be initiated to ensure plant stability and not challenge critical safety functions. 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 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 [P1(a)].

Enforcement: 10 CFR 50, Appendix B, Criterion XVI, Corrective Action, requires in part, that measures be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and non-conformances are promptly identified and corrected. Contrary to the above, Exelon failed to identify that TS 3.14.2 was non-conservative based upon the revised river stage discharge analysis results. Because this violation was of very low safety significance and was entered into Exelon's corrective action program, this violation is being treated as an NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy.

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

Mitigating Systems

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.

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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:  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 : March 02, 2012