Three Mile Island 1
4Q/2005 Plant Inspection Findings

Initiating Events

Significance: G Dec 16, 2005
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to Implement Hot Work Procedural Requirements
The team identified a non-cited violation (NCV) with multi-examples for failure to document fire prevention activities during hot work as required by the administrative control procedures, and for fire watch personnel not being adequately qualified. Specifically: 1) there were numerous cases where hot workers, fire watch personnel, and associated supervisors failed to document, as required, the hot work, fire watching and inspection activities respectively in accordance with OP-MA-201-004, Fire Prevention for Hot Work, and AP-1038, and Administrative Control - Fire Protection Program; and, 2) there were three cases where the fire watchers were not adequately trained as required by the procedures. The licensee generated three condition reports and entered this issue into their corrective action program.

The finding is more than minor because it is associated with the Initiating Events Cornerstone attribute of protection against external factors and affected the cornerstone objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Under Manual Chapter 0609, Significance Determination Process, Appendix F, Fire Protection, the finding was found to represent a low degradation and as such was of very low safety significance in accordance with the Fire Protection Significance Determination Process. The cause of the finding is related to the cross-cutting element of human performance (attention to detail) because hot work personnel repetitively failed to follow procedural instructions in the documentation of their hot work activities.
Inspection Report# : 2005012*(pdf)*

Mitigating Systems

Significance: G Dec 31, 2005
Identified By: NRC
Item Type: NCV NonCited Violation
Deficient Procedural Compliance Resulted in Inadequate Control of Materials Brought into the Reactor Building Containment (Section 1R20)
The inspectors identified a non-cited violation (NCV) of Technical Specification (TS) 6.8.1.a for multiple failures to properly implement procedural requirements and engineering instructions to ensure control of materials brought into the reactor building containment while the plant was at power. The procedural violation resulted in multiple deficient conditions that challenged plant safety, including; the potential for hydrogen generation beyond design due to significant amounts of stored scaffolding, aluminum toe plates, unqualified materials (lead insulation blankets, painted scaffolding, plastic bags) with potential for reactor building sump clogging, and unrestrained stored materials inside containment. The licensee entered these issues into the corrective action program (issue reports 387939, 388006, 388791, 388916, 388407, and 395100), performed a prompt investigation, an extent of condition review, and an operability determination for each of the issues identified.

This finding is more than minor because it affected the reliability objective of the equipment performance attribute under the mitigating systems cornerstone. The finding is also associated with the barrier integrity cornerstone and the respective containment configuration control attribute. The finding is of very low safety significance because no equipment was rendered inoperable, and no actual open pathway in the physical integrity of the reactor containment occurred. The cause of the finding is related to the cross-cutting area of human performance, because station personnel did not comply with engineering instructions and established procedures for control of materials inside containment.
Inspection Report# : 2005009*(pdf)*

Significance: SL-IV Dec 31, 2005
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to Report Medical Conditions for Three Licensed Operators
The inspectors identified a Green (Severity Level IV) non-cited violation of 10 CFR 50.74 for failure to report changes in medical conditions per Section 3.2.1 of Exelon administrative procedure OP-AA-105-101, "Administrative Process For NRC License And Medical Requirements," Rev. 8. As a result, potentially disqualifying medical conditions for three operators were not reported to the NRC within the required 30-day time frame. In addition, for one of the operators, the medical condition ultimately required a change on his license. The licensee promptly entered this issue into their corrective action program (issue reports 164042, 189592, and 195798).

This violation is more than minor because it had the potential to impact the NRC's ability to perform its regulatory function, and it was evaluated using the traditional enforcement process. This finding is of very low safety significance because at no time did the individual stand watch without the medical condition being satisfied. In addition, the facility licensee was timely in their reporting of the medical conditions to the NRC when they received the pertinent information. The cause of the finding is related to the cross-cutting area of corrective actions, because it occurred after completion of actions to address a previous NCV for the failure to notify NRC of change in medical status of licensed operators. The cause of the finding is also related to the cross-cutting area of human performance, because multiple station operators did not comply with established procedures for reporting of potentially disqualifying medical conditions.
Inspection Report# : 2005009*(pdf)*

Significance: G Sep 30, 2005
Identified By: NRC
Item Type: NCV NonCited Violation
No Procedures or Acceptance Criteria to Ensure Visual Inspections of Reactor Building Fan Air Side Emergency Cooling Coils were Performed and Documented
The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings." Neither procedures or acceptance criteria were established, nor were visual inspection results documented, to support verification that the reactor building fan emergency cooling coils were sufficiently maintained to perform their intended safety function. Consequently, AmerGen did not fulfill their NRC Generic Letter (GL) 89-13, "Service Water System Problems Affecting Safety-Related Equipment," commitment to perform visual inspections and trend the material condition of the air side of the cooling coils each refueling outage.

This finding is greater than minor because it affected the reactor safety cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Additionally, if left uncorrected, the finding could become a more significant safety concern in that inspections of the reactor building emergency cooling coils were not performed and trended as committed to in the licensee's NRC GL 89-13 response. The finding was of very low safety significance because the reactor building emergency cooling coils remained capable of performing their safety function. This finding has been entered into the licensee's corrective action program as issue report 371356.

A contributing cause of this finding is related to the cross-cutting area of human performance, because AmerGen did not develop sufficient resources, such as complete and accurate procedures, to ensure the visual heat exchanger inspections were performed and trended. The finding is also cross-cutting in the area of problem identification in that station personnel had completed several periodic reviews and self assessments of the GL 89-13 program, and did not identify that some of the required inspections had not been performed, had no procedures or acceptance criteria, and were not documented.
Inspection Report# : 2005005*(pdf)*

Significance: G Jun 30, 2005
Identified By: NRC
Item Type: NCV NonCited Violation
Deficient Maintenance Procedures Result in Undetected Expansion Joint Degradation and Safety-Related Expansion Joints Exceeding Service Life
The inspectors identified a non-cited violation (NCV) of Technical Specification (TS) 6.8.1.a for deficient maintenance procedures on safety-related system expansion joints, and for not performing engineering evaluations when in-service safety-related expansion joints exceeded their recommended service life. The maintenance procedure and scheduling inadequacies resulted in station personnel being unaware of the age or condition of numerous expansion joints that had exceeded their recommended service life by an unknown period of time.

This finding was more than minor because it affected the mitigating systems cornerstone and affected the reliability of two trains of a nuclear river water mitigating safety system. In all three systems that were reviewed, expansion joints would have continued to degrade if left uncorrected. Additionally, two expansion joints in the condensate system were degraded. The complete failure of these partially collapsed expansion joints would likely result in an initiating event. The finding is of very low safety significance since no equipment was rendered inoperable due to the aged expansion joints.

A contributing cause of this finding is related to the cross-cutting area of human performance, because maintenance and testing procedures were insufficient to provide reasonable assurance that safety related and important-to-safety expansion joints would continue to remain capable of performing their design functions. Specifically, procedures did not address expansion joint service life, incorporate industry experience, or specify vendor recommended inspections be performed to support the continued use beyond the established service life.
Inspection Report# : 2005004*(pdf)*

Significance: G Jun 30, 2005
Identified By: NRC
Item Type: NCV NonCited Violation
Deficient Procedure and Personnel Error While Replacing ‘B' 125/250 Volt Battery Cell
The inspectors identified a non-cited violation of TS 6.8.1.a for deficient maintenance procedures that did not contain sufficient work instruction or acceptance criteria to ensure the safety related ‘B' 125/250 volt battery was properly reassembled following replacement of

battery cell #2. Additionally, workers did not properly follow the procedure instructions in that certain steps were performed out of order.

This issue affected the mitigating systems cornerstone and was more than minor because it affected the reliability of the 'B' train of the 125/250 volt power system to perform its accident mitigation functions in response to initiating events. The deficiency affected the procedure quality and equipment performance attributes of the mitigating system cornerstone. The finding is of very low safety significance because the 'B' 125/250 volt battery bank was not inoperable for greater than the TS allowed outage time.

A contributing cause of this finding is related to the cross-cutting area of human performance, because operators did not follow procedure 1420-DC-3 steps in the order specified and procedure quality was deficient because it did not provide instruction to perform intercell battery resistance checks or torque the battery rack connection bolts to verify seismic qualification prior to declaring the battery operable. Additionally, procedure usage level was insufficient based upon the potential impact of an error.
Inspection Report# : 2005004*(pdf)*

Significance: G Jun 30, 2005
Identified By: NRC
Item Type: NCV NonCited Violation
Deficient Procedure and Operator Error Degrade Two-Hour Emergency Air Supply to Emergency Feedwater and Main Steam Systems
The inspectors identified a non-cited violation of TS 6.8.1.a in that on March 29, 2005, operators did not properly implement procedural requirements for recharging the two-hour emergency air system, and mispositioned valve IA-V-1769. The mispositioned valve caused both air banks to partially depressurize and reduced the reliability of the supported mitigating systems (emergency feedwater (EFW) and main steam (MS)) to perform their decay heat removal function. Operators identified and repressurized the air banks, but did not recognize and correct the cause of the degraded condition until the inspectors identified the causes.

The finding was more than minor because the degraded two-hour air system pressure affected the reliability of the EFW and MS systems to perform their accident mitigation functions in response to initiating events. The deficiency affected the configuration control, equipment performance, and human performance attributes of the mitigating system cornerstone. The finding is of very low safety significance because bank air pressure did not drop below the value required for operability and, therefore, the system remained capable of performing its safety function.

A contributing cause of this finding is related to the cross-cutting area of human performance, because operators did not follow procedural instructions to open IA-V-1769 and procedure quality was deficient in that procedure usage category 3 (informational use only) was insufficient to ensure the procedure was properly followed step-by-step for this important safety-related activity. The finding is also cross-cutting in the area of problem resolution in that AmerGen's initial assessment of the event did not determine or correct the actual causes of the degraded air bank pressure.
Inspection Report# : 2005004*(pdf)*

Significance: G Jun 30, 2005
Identified By: NRC
Item Type: NCV NonCited Violation
Deficient Maintenance Procedures and Personnel Error Degrade Safety-Related Emergency Diesel Generator
A self revealing non-cited violation of TS 6.8.1.a was identified for not properly implementing maintenance procedures that affected the performance of the safety-related 'B' emergency diesel generator (EDG). Licensee staff did not properly apply lubricant and torque the exhaust manifold bolts to the EDG turbocharger. This caused an exhaust leak and degraded the EDG during a monthly surveillance run due to loose and missing bolts in an exhaust manifold extension. Maintenance personnel performed an extent-of-condition investigation and documented the occurrence in their corrective action program.

This finding is more than minor because it affects the mitigating systems cornerstone objective of ensuring reliability of systems that respond to initiating events and is associated with the equipment performance reliability attribute. The finding is of very low safety significance since the missing bolt did not cause the EDG to become inoperable.

A contributing cause of this finding is a cross-cutting issue in the area of human performance, because maintenance personnel did not follow work instructions to apply lubricant and torque the turbocharger exhaust manifold bolts, document final torque values, or document lubrication used in completed work orders. A second contributing cause affected the cross-cutting area of problem resolution, because the initial engineering evaluation was too narrowly focused. Engineers did not use technical calculations or modeling to support conclusions regarding the quantity of leaking exhaust and its associated impact on diesel loading capability and room design temperature until challenged by the inspectors.
Inspection Report# : 2005004*(pdf)*

Significance: G Mar 31, 2005
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to Maintain Fire Barriers for the 'A' and 'B' Makeup Pump Rooms

The inspectors identified a non-cited violation of TMI-1, Facility Operating License Condition 2.C(4), "Fire Protection." Station personnel breached fire barrier doors that separated two of three safety related makeup pump rooms from a common hallway and did not implement compensatory measures as required by the TMI Fire Protection Program.
This finding is more than minor because it affects the mitigating systems cornerstone objective of ensuring the availability of systems that respond to initiating events and is associated with the protection against the external factors attribute (fire). This finding is of very low safety significance because the combustible load for the affected areas was small, concrete walls located immediately outside the rooms help minimize potential fire propagation, and there is no credible scenario by which a fire on one side of the barrier could propagate through both degraded fire doors to affect equipment in both fire areas. In addition, the fire detectors on each of the rooms affected were operable.
A contributing cause of this finding is related to the cross-cutting area of human performance, because station personnel did not implement a TMI Fire Protection Program procedure (AP-1038) despite being trained on its requirements to maintain fire barriers. A second contributing cause is related to the cross-cutting area of problem identification and resolution, because station personnel did not implement adequate corrective actions to prevent recurrence of the inoperable fire barriers.
Inspection Report# : 2005002*(pdf)*

Significance: G Mar 31, 2005
Identified By: NRC
Item Type: NCV NonCited Violation
Construction of Seismic Scaffolding Near Safety-Related Equipment Not Performed in Accordance with Procedure Requirements
The inspectors identified a non-cited violation of TS 6.8.1 in that station personnel did not properly implement station procedures to erect and control the construction of seismic scaffolding in the vicinity of safety-related equipment. The required clearance distance between the seismic scaffold and safety-related equipment was not maintained, resulting in damage to and contact with safety-related building spray (BS) and main steam (MS) system components, respectively.
This issue affected the mitigating systems cornerstone and was more than minor because station personnel did not properly install scaffolding in safety-related areas, and did not perform required engineering evaluations when needed. If left uncorrected it could become a more significant safety concern in that inadequate constructed scaffold could affect the availability and reliability of mitigating systems during plant operations or a seismic event. This finding was determined to be of very low significance because engineers determined the scaffold, as installed, would not prevent the BS and MS systems from performing their safety functions.
A contributing cause of this finding is a cross-cutting issue in the area of human performance, because craft personnel did not adhere to station scaffold procedures on two occasions. A second contributing cause affected the cross-cutting areas of problem resolution and corrective action, because (1) after the procedure violation was identified, station personnel did not initially enter the issue into the corrective action program for evaluation of actions to preclude recurrence and (2) this finding is repetitive, in that the NRC issued a similar Green finding in May 2004 and previous corrective actions were not effective to preclude recurrence.
Inspection Report# : 2005002*(pdf)*

Barrier Integrity

Significance: G Dec 31, 2005
Identified By: NRC
Item Type: NCV NonCited Violation
Equipment Qualification Not Maintained on Four Containment Isolation Valves due to Deficient Procedures or Instructions
The inspectors identified a non-cited violation (NCV) of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," because station procedures did not contain controls to verify and/or maintain the required environmental qualification (EQ) configuration associated with motor-operated valve (MOV) actuator T-drains. As a result, four safety-related containment isolation MOV valve actuators did not have T-drains as required by TI-103, "TMI-1 Environmental Qualification Report," Rev. 5. This finding has been entered into the licensee's corrective action program (issue reports 238918, 267293, 273768, 391720, 391707, and 271819).

The inspectors determined this issue was more than minor because it affected the barrier integrity cornerstone objective and the containment barrier performance attribute. Specifically, the lack of T-drains may allow moisture to enter the motor housing due to a high temperature and pressure steam environment associated with a Loss of Coolant Accident. The moisture and subsequent condensation could electrically short out the motor, which would reduce containment isolation reliability. In addition, if left uncorrected, this issue could become a more significant safety concern in that without procedures to maintain the required EQ configuration, additional MOV actuators could be installed with no T-drains or in an incorrect orientation and thus lead to a failure of the valve to perform its design function. This finding is of very low safety significance because the specific component qualification deficiency did not result in a loss of safety function, and the degraded condition did not cause an actual open pathway in the primary containment. Therefore, system or component operability was not effected. The cause of the finding is related to the cross-cutting area of human performance, because AmerGen did not develop appropriate measures to ensure that required MOV T-drains were properly installed, maintained, and inspected.
Inspection Report# : 2005009*(pdf)*

Significance: G Sep 30, 2005
Identified By: NRC

Item Type: NCV NonCited Violation
Deficient AH-F-3B Functional Failure Assessment and Deficient Maintenance Rule Performance Monitoring and Goal Setting
The inspectors identified a non-cited violation of 10 CFR 50.65(a)(2)/(a)(1) in that the licensee's demonstration of effective control of performance or condition of the control building and machine shop heating and ventilation system had become invalid, and although the licensee had a reasonable number of opportunities, the licensee did not place the system in (a)(1) status in a reasonable amount of time. Consequently, the licensee did not establish goals and monitor the performance or condition of the Control Building & Machine Shop Heating & Ventilation System as required by 10 CFR 50.65(a)(1) when the demonstration of effective control of performance or condition of the system through appropriate preventive maintenance as allowed by 10 CFR 50.65(a)(2) became invalid. The demonstration of effective control of performance or condition in (a)(2) status became invalid as a result of multiple maintenance preventable functional failures within a 3-year period, the most recent of which was a failure on June 28, 2005, that the licensee did not correctly recognize as a maintenance preventable functional failure.

This finding is more than minor because it affects the Barrier Integrity Cornerstone and its design attribute of maintaining the functionality of the control room envelope. Additionally, if left uncorrected it could impact the licensee's ability to properly trend performance and establish goals to provide reasonable assurance that structures, systems, and components (SSCs) within the scope of the Maintenance Rule remain capable of fulfilling their intended functions. This finding was determined to be of very low safety significance because the incorrect functional failure assessment did not, by itself, result in an actual degradation of the radiological barrier function provided for the control room. The licensee has entered the issue into their corrective action program as issue report 349025.

A contributing cause of this finding is a cross-cutting issue in the area of human performance, because maintenance personnel did not properly perform procedure 1400-F-1, to achieve the required AH-F-3B filter gasket compression. The inspectors determined this was also a cross-cutting issue in the area of problem resolution, because the maintenance rule functional failure review was too narrowly focused. It did not address why the bypassed filters' gaskets did not show signs of compression, did not address criteria for post event inspection of the failed filters, and did not consider potential procedural compliance aspects. As a result, corrective actions identified to prevent recurrence were too narrowly focused.
Inspection Report# : 2005005*(pdf)*

Emergency Preparedness

Significance: W May 18, 2005
Identified By: NRC
Item Type: VIO Violation
Emergency Response Organization Qualifications Expired Due to Untimely Training
An apparent violation associated with EP planning standard 10 CFR 50.47(b)(15) was identified. This apparent violation, which has low to moderate safety significance, occurred because AmerGen did not conduct annual required radiological response classroom retraining for approximately 50 percent of the ERO as specified in the TMI Annex Emergency Plan (E-Plan).

The finding is more than minor because it is associated with the EP cornerstone attribute of ERO readiness (training). It affects the cornerstone objective of ensuring the capability to implement measures to protect the health and safety of the public during an emergency. The ERO, including several key responders, had not received the training necessary to maintain familiarity with their specific emergency response duties. As a consequence, for an approximate five month period (June-November 2004), those individuals would not have been considered available to respond to a radiological emergency. This resulted in some key ERO positions not being filled by qualified ERO members in accordance with AmerGen's TMI E-Plan requirements. (1EP3)

Using Inspection Manual Chapter 0609, Appendix B, "Emergency Preparedness Significance Determination Process, Section 4.15 and Sheet 1," this finding was determined to be of low to moderate safety significance because it was considered to be a loss of an EP planning standard function because several key responders were not trained as required.

(Following exerpt from Inspection Report 2005-004:)
(A contributing cause of) this finding is related to the cross-cutting area of human performance, because the TMI emergency preparedness department staff did not follow applicable requirements, specified in the TMI Annex Emergency Plan, when scheduling ERO training. Additionally, AmerGen corporate emergency preparedness supervision was deficient, because they did not ensure required ERO training periodicity was properly understood and implemented.
Inspection Report# : 2005004*(pdf)*
Inspection Report# : 2005006*(pdf)*

Occupational Radiation Safety

Public Radiation Safety

Significance: G Jun 30, 2005
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to Conduct Radiological Evaluation to Support Waste Transfer
The inspectors identified a non-cited violation of 10 CFR 20.1501 associated with failure to evaluate the adequacy of a change to the procedure for collecting samples of radioactive spent resin for analysis to support transfer of radioactive material to a waste processor for ultimate disposal. Specifically, in December 1998, AmerGen reduced the tank recycle requirements, prior to sample collection, from three tank volumes to 15 minutes, and did not evaluate the effect of this change on the representativeness of the sample. Consequently, the spent resin tank sample procedure instruction was not evaluated to ensure a representative sample, and therefore AmerGen could not validate that the total radionuclide activity was accurately determined and provided to the waste processor prior to the shipment in accordance with 10CFR20, Appendix G.

The finding is greater than minor in that it affected the public radiation safety cornerstone objective. Specifically, the issue involved an occurrence in the radioactive material transportation program that was contrary to NRC or Department of Transportation regulations. Using the Public Radiation Safety SDP flow chart, this finding is of very low safety significance, because it involved a radioactive material control issue, it did involve transportation, no radiation limit was exceeded, it did not involve a breach of packaging, it did not involve a Certificate of Compliance finding, it did not involve a low-level burial ground issue, and it did not involve a failure to make an emergency notification issue. AmerGen reviewed previous shipments and concluded that, due to the generally low radioactivity of the shipments made, there was no likelihood that a shipment was improperly packaged for shipment or would have been misclassified per 10 CFR 61. Consequently, no actual safety consequence was identified.

A contributing cause of this finding is related to the cross-cutting area of problem identification in that AmerGen did not identify this problem during routine self-assessments and audits of its radioactive waste transportation and disposal program.
Inspection Report# : 2005004*(pdf)*

Physical Protection

Physical Protection information not publicly available.

Miscellaneous

Last modified : March 03, 2006