

# Three Mile Island 1

## 1Q/2005 Plant Inspection Findings

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### Initiating Events

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### Mitigating Systems

**Significance:**  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:**  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\(pdf\)](#)

**Significance:** SL-IV Dec 31, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Untimely Licensee Event Report for Both Trains of High Pressure Injection Being Inoperable**

A non-cited violation of 10 CFR 50.73 was identified for untimely submittal of a licensee event report (LER). In March 2004, station personnel had all necessary information available to identify that both trains of high pressure injection (HPI) had been inoperable for a brief period in 2003. The issue was not reported until December 2004, following identification by the inspectors. A contributing cause of this finding is a shortcoming in problem identification in the cross-cutting area of PI&R in that station personnel did not consider unavailability of the emergency power supply to the second HPI train and associated technical specification requirements when determining reportability of this condition. Additionally, the original operability determination did not correctly address seismic qualification of HPI support systems until identified by the inspectors. Corrective actions included submittal of the condition report, training for station personnel, and entering the issue

into the corrective action program as issue report 267630.

Inspection Report# : [2004005\(pdf\)](#)

**G**

**Significance:** Dec 31, 2004

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

**Inadequate Configuration Control - Incorrect Material for MS-PI-22 Causes Main Steam Leak**

A self-revealing Green NCV was identified for not maintaining control of materials as required by 10 CFR 50, Appendix B, Criterion VIII, "Identification and Control of Materials, Parts, and Components." Use of incorrect material (brass) for an instrument line cap near main steam (MS) pressure instrument MS-PI-22 resulted in a steam leak, a plant transient, and subsequent isolation of safety-related components. Not identifying the visible difference in materials is considered a cross-cutting issue in the area of problem identification, because technicians and operators missed several opportunities to identify the problem prior to the steam leak. Corrective actions included replacement of the fitting with stainless steel per design specifications, extent of condition evaluations, and issue entry to the corrective action program as issue report 281003.

This issue is more than minor because it affected the Mitigating System cornerstone objective by reducing availability of mitigating systems when operators isolated mitigating system components (one steam supply train to EFW turbine pump, turbine bypass valves, an atmospheric steam dump valve) in order to isolate the steam leak. The finding had very low safety significance due to the short duration of train inoperability during the leak isolation procedure. In each case, the single train loss of safety function existed for much less than the TS allowed outage time.

Inspection Report# : [2004005\(pdf\)](#)

**G**

**Significance:** Dec 31, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

**Degraded Main Steam Isolation Valve Snubber MS-225 Not Identified and Corrected**

The inspectors identified a non-cited violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," for not identifying a degraded main steam isolation valve snubber (MS-225) during extent of condition review walkdowns following a steam leak in the intermediate building. Specifically, the inspectors identified that the snubber hydraulic oil reservoir was empty when conducting inspections after plant personnel had performed area walkdowns after the steam leak. A contributing cause of this finding is related to the cross-cutting area of problem identification, because system engineers did not identify the empty hydraulic snubber reservoir during inspections intended to look for this type of condition. Corrective actions included replacement of the degraded snubber and extent of condition walkdowns of all similar safety-related snubbers located in the intermediate building.

This issue is considered more than minor because it affected the mitigating system cornerstone by reducing the reliability of the 'B' main steam isolation valve [MSIV], a mitigating system component used during a loss of the normal heat sink or a steam generator tube rupture. Additionally, this issue resulted in the snubber being declared inoperable, thereby affecting its availability during replacement activities. This finding is of very low safety significance because the loss of hydraulic snubber fluid did not result in a failed snubber, nor did it cause the 'B' MSIV to become inoperable.

Inspection Report# : [2004005\(pdf\)](#)

**G**

**Significance:** Sep 30, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Identify and Correct a Degraded 'A' EDG Fuel Injection Line**

The inspectors identified a non-cited violation of 10 CFR 50, Appendix B, Criterion XVI "Corrective Action" for failure to identify a degraded 'A' emergency diesel generator (EDG) common header fuel injector tube. In addition, after the condition was identified by the inspectors, station personnel failed to document, evaluate and correct this degraded condition, which had the potential to degrade further and adversely affect the operability of the 'A' EDG, until prompted by the inspectors. The tube degradation was caused by rubbing between the tube and the fuel oil duplex filter metal cover plate and resulted in a 40 percent reduction in tube wall thickness. (This finding is considered a cross-cutting issue in the area of problem identification and evaluation, because station personnel failed to identify the degraded fuel injector tube and) the initial assessment of this degraded condition was untimely and lacked technical rigor. The duplex filter cover plate was ultimately modified to establish proper clearance and prevent further tube degradation. In addition, corrective actions were initiated to replace the degraded fuel ejector tube during the next 'A' EDG outage.

This issue is more than minor since the failure to identify and correct the degraded EDG fuel ejector tube reduced the reliability of a mitigating system component. In addition, if left uncorrected, the condition could have degraded further and affected the operability of the 'A' EDG. This finding is of very low safety significance (Green) because it did not result in an actual failure of the 'A' EDG fuel injector tubing, nor did it cause the 'A' EDG to be inoperable.

Inspection Report# : [2004004\(pdf\)](#)

**G****Significance:** Jun 30, 2004

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

**Failure to Identify Abnormally High River Pump Vibrations**

The inspectors identified a non-cited violation of 10 CFR 50, Appendix B, Criterion XVI, Corrective Action. On March 9, 2004, AmerGen did not recognize that vibration levels on the 1C Nuclear River (NR) Pump (NR-P-1C) motor exceeded predictive maintenance program alert levels. [The finding is considered a cross-cutting issue in the area of problem identification, because] the failure to recognize the elevated vibration and take corrective actions resulted in the pump vibration levels continuing to increase. Subsequent vibration resulted in the inoperability of the pump. The pump shaft and bearings were ultimately replaced.

This self-revealing finding is more than minor since the failure to take timely action reduced the reliability and availability of a mitigating systems component. Corrective action to address the slowly degrading motor bearings could have been commenced prior to the vibration levels exceeding the fault level. This finding was determined to be of very low safety significance because at least two NR pumps remained available.

Inspection Report# : [2004003\(pdf\)](#)

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## Barrier Integrity

**G****Significance:** Dec 31, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

**Untimely Investigation and Repair of a Degraded Control Building Ventilation Exhaust Fan AH-E-19B**

The inspectors identified a non-cited violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," for not investigating and repairing a degraded control building air return ventilation fan AH-E-19B in a timely manner. Elevated fan vibrations were identified in December 2001, but not sufficiently evaluated until September 2004, following concerns raised by the inspectors. This untimely response resulted in a cracked hub where the bolt holes penetrate the hub and attach to the motor. A contributing cause of this finding is related to the cross-cutting area of problem identification and resolution, because engineers and component maintenance optimization personnel missed several opportunities to evaluate, and prevent or correct the degraded condition based on prior internal and external operating experience with similar fans. Corrective actions include complete replacement of the fan/motor assembly and entering this issue into the corrective action program as issue reports 258108 and 197544.

This issue is considered more than minor because it affected the control room envelope Barrier Integrity cornerstone since the cracked fan hub could cause a partial loss of control building ventilation. This finding is of very low safety significance since the condition did not result in an actual failure of the control room ventilation system.

Inspection Report# : [2004005\(pdf\)](#)**G****Significance:** Dec 31, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

**Computer-calculated Reactor Power Malfunctions Not Promptly Corrected**

A self-revealing, non-cited violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Actions" occurred on February 6, 2004, when the reactor had an unplanned power increase from full power, in which reactor power increased 0.9 percent over 17 minutes. The power increase resulted when the input signal for calculated reactor power was removed from the integrated control system with reactor power control in automatic. A contributing cause of this finding is related to the cross-cutting area of problem identification and resolution, because problems with computer-calculated reactor power had occurred previously, but corrective actions to address the problem were untimely, and corrective actions to address the consequences of the problem were ineffective. Additionally operators were slow to identify and respond to the overpower condition.

This finding is more than minor because it potentially affected the reactivity control attribute of the barrier integrity cornerstone objective of providing reasonable assurance that physical barriers (i.e., fuel cladding) protect the public from radionuclide releases caused by overpower events. Specifically, the integrated control system escalated reactor power automatically upon loss of an input signal during scheduled maintenance. This finding is considered to be of very low safety significance, because all mitigating systems remained functional and other barriers would not have been affected.

Inspection Report# : [2004005\(pdf\)](#)**G****Significance:** Sep 30, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Perform Testing of the Reactor River Water Pumps in Accordance with ASME OM Code**

The inspectors identified a self-revealing non-cited violation of 10 CFR 50.55a.(f)(4)(ii) "Codes and Standards" which requires, in part, that testing of safety-related pumps meet the requirements of the American Society of Mechanical Engineers (ASME) Operation and Maintenance Code. Contrary to this requirement, AmerGen did not perform quarterly Inservice Testing of the reactor river water (RR) pumps in accordance with the ASME OM-6 Code. Specifically, the quarterly test procedure did not set pump differential pressure or flow at a reference value which was readily duplicated during subsequent tests. Additionally, the test throttle valve position, which could significantly influence pump d/p, was not monitored, documented or analyzed. The inspectors determined that over the last five years, the quarterly RR pump test was not in accordance with the Code and would not have detected a degraded pump hydraulic condition.

This issue is more than minor because it affected the Barrier Integrity cornerstone objective and the containment barrier performance attribute. Failure to test the pumps in accordance with the code did not ensure the availability of the RR system's safety function to provide containment cooling and pressure suppression in the event of a design basis accident. However, because full flow testing had been satisfactorily conducted in November 2003 and testing performed subsequent to the identification of the issue determined that the pumps were operable, this violation was determined to have a very low safety significance. Corrective actions included revision of the test method to meet code requirements as documented in Issue Report 244066.

Inspection Report# : [2004004\(pdf\)](#)

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## Emergency Preparedness

**Significance:** SL-IV Dec 31, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

### **Plant Modification Decreased Effectiveness of Emergency Plan Without Prior NRC Approval, Deficient 10 CFR 50.54(q) Evaluation**

A non-cited violation of 10 CFR 50.54(q) was identified for not properly maintaining the TMI Radiological Emergency Plan (the Plan) up-to-date to address a modification made within the owner controlled area. Specifically, plant modifications which blocked the south gate access bridge resulted in a decrease in effectiveness in the Plan without prior NRC approval. Corrective actions included discussions with the local railroad company to establish a memorandum of understanding, establishment of a shift night order, training for emergency directors, reassessment of south gate accessibility, and entry of the issue into the licensee's corrective action program as issue reports 260849, 260697, 266937, 269032, 282239 and 282851.

A contributing cause of this finding is related to the cross-cutting area of problem identification and resolution, because (1) the 10 CFR 50.54 (q) evaluation did not identify the potential that a train (or crossing gate) malfunction could occur and cause delays in accessing or leaving the site, despite several such occurrences; (2) evaluation of the issue following three train (or crossing gate) malfunctions in October 2004 was cursory in that it did not take positive actions to verify contingency actions were identified, understood, and trained upon; and (3) substantive corrective actions such as establishing a memorandum of understanding with the railroad and establishing written guidance shift manager/emergency director guidance for this contingency were not developed until repeatedly questioned by the inspectors. This finding was of very low safety significance, because it did not constitute a loss of a planning standard function required by 10 CFR 50.47(b)(2) or (b)(3).

Inspection Report# : [2004005\(pdf\)](#)

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## Occupational Radiation Safety

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## Public Radiation Safety

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## Physical Protection

[Physical Protection](#) information not publicly available.

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## Miscellaneous

**Significance:** N/A May 10, 2004

Identified By: NRC

Item Type: FIN Finding

**Identification and Resolution of Problems - Team Summary**

The team concluded that AmerGen Energy Company, LLC (AmerGen) was generally effective at identifying problems and entering them into the corrective action program. AmerGen's effectiveness at problem identification was evidenced by the relatively few deficiencies identified by external organizations (including the NRC) that had not been previously identified by AmerGen during the review period. AmerGen effectively used risk in prioritizing the extent to which individual problems would be evaluated and in establishing schedules for implementing corrective actions. Corrective actions, when specified, were generally implemented in a timely manner. AmerGen audits and assessments were found to be effective and identified areas for improvement. On the basis of interviews conducted during this inspection, workers at the site utilized the corrective action program to identify problems.

Inspection Report# : [2004006\(pdf\)](#)

Last modified : June 17, 2005