

Three Mile Island 1

1Q/2009 Plant Inspection Findings

Initiating Events

Mitigating Systems

Significance:  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:  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:  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*)

Significance:  Apr 18, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Stage Equipment Required by Abnormal Operating Procedures

The inspectors identified a NCV of Technical Specification (TS) 6.8.1, which requires that written procedures be implemented as recommended in Appendix A of Regulatory Guide (RG) 1.33, including abnormal operating procedures (AOPs) for loss of service water. Specifically, the AOP for loss of river water was inadequately implemented when equipment required was not staged to support the AOP implementation.

The finding is more than minor because it is associated with the procedure quality attribute of the Mitigating Systems Cornerstone, and the associated cornerstone objective of ensuring the reliability of systems (and personnel) that respond to initiating events to prevent undesirable consequences. Specifically, this finding reduced the reliability of the operators to complete the AOP. This finding was of very low safety significance (Green) because the finding is not a design or qualification deficiency, does not represent a loss of safety function, and does not screen as potentially risk significant due to external hazards. Although the operators would be delayed without the staged hoses, the inspectors concluded that the alternative cooling safety function could be provided to the Nuclear Services Closed Cooling Water (NSCCW) system within the time limit specified by AmerGen's calculations.

The finding has a cross-cutting aspect related to the area of PI&R, corrective action program component, in that, AmerGen identified that the hoses were missing in January 2008, and did not implement CAs to replace the hoses required by the AOP until identified by the inspectors. [P1.(d)] (Section 4OA2.a.3.a)

Inspection Report# : [2008006](#) (pdf)

Significance:  Apr 18, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Include Increased EDG Fuel Oil Consumption Into Design Basis Calculations

The inspectors identified a NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control." Specifically, AmerGen did not ensure that fuel consumption calculations included the additional fuel needed for allowable emergency diesel generator (EDG) frequency variations of up to 61 Hertz (Hz). The increased fuel consumption was not accurately translated into the TS used to verify operability of the EDGs.

This finding is considered to be more than minor because it is associated with the design control attribute of the Mitigating Systems Cornerstone and the associated cornerstone objective of ensuring the capability of systems that respond to initiating events to prevent undesirable consequences. This finding was of very low safety significance (Green) because the finding is not a design or qualification deficiency, does not represent a loss of safety function, and does not screen as potentially risk significant due to external hazards.

The issue has a cross-cutting aspect related to the area of PI&R, corrective action program component, in that, AmerGen did not thoroughly evaluate the extent of condition for a previous NRC NCV (reference IR 581933) regarding inadequate design control of EDG loading calculations. Specifically, the cause of the problem, not adequately considering the effect on EDG loading due to operating at the maximum frequency allowed by station procedures, was not resolved for other EDG parameters, such as EDG fuel oil consumption. [P1.(c)] (Section 4OA2.a.3.b)

Inspection Report# : [2008006](#) (pdf)

Significance:  Apr 18, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Meet ASME OM Code Data Collection Requirement for Comprehensive IST

The inspectors identified a NCV of TS 4.2.2 for the failure to implement applicable American Society of Mechanical Engineers (ASME) Operation and Maintenance (OM) Code requirements for comprehensive in-service testing (IST) of the 'A' and 'B' decay heat removal (DH) pumps. Specifically, AmerGen used differential pressure gauges that did not meet the data collection requirements for instrument accuracy.

This finding is more than minor because it is similar to IMC 0612, Appendix E, example 2C, in that, the issue was repetitive (2005 and 2007 comprehensive tests). Additionally, this finding is associated with 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 PI&R, corrective actions program component, because AmerGen personnel identified the issue in 2005, but did not take appropriate CAs in a timely manner prior to testing the pumps in 2005 and 2007. [P.1(d)] (Section 4OA2.a.3.c)

Inspection Report# : [2008006](#) (pdf)

Significance:  Apr 18, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Require Emergency Lighting Units (ELUs)

The inspectors identified a NCV of License Condition 2.c(4) and 10 CFR 50, Appendix R, Section III.J, which require that emergency lighting units (ELUs) with at least an eight-hour battery power supply be provided in areas needed for operation of safe shutdown (SSD) equipment and in access and egress routes thereto. Specifically, Fire Hazards Analysis Report (FHAR) Attachment 3-7 specifies a post fire safe shutdown (SSD) action for operators to manually operate valve IC-V-4 within four hours for a fire in fire zone AB-FZ-9, and ELUs were not provided at valve IC-V-4 and portions of the adjacent access and egress routes.

The finding is more than minor because it was associated with the Mitigating Systems Cornerstone attribute of protection against external factors (i.e. fire) and affects the cornerstone objective of ensuring reliability and capability of systems that respond to initiating events. Specifically, the finding adversely affected to some degree the ability to carry out local operator actions required to achieve and maintain a SSD condition following a severe fire. This finding was of very low significance because it involved a low degradation of SSD capability. The conclusion of low degradation was based on the fact that the procedure step in question has a four hour completion time per FHAR Attachment 3-7.

The finding has a cross-cutting aspect in the area of PI&R, Self and Independent Assessments Component, because AmerGen did not take the appropriate corrective actions to address this issue commensurate with its safety significance. Specifically, as part of an extent of condition review for missing ELUs identified by a fire safe shutdown self assessment conducted in 2003, AmerGen identified that emergency lighting was needed at valve, IC-V-4, to meet the requirements of 10 CFR 50, Appendix R, but has not evaluated and corrected the issue in a timely manner. [P.3(c)] (Section 4OA2.c.3)

Inspection Report# : [2008006](#) (*pdf*)

Barrier Integrity

Significance:  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 : May 28, 2009