

# Oyster Creek

## 2Q/2007 Plant Inspection Findings

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### Initiating Events

**Significance:**  Mar 31, 2007

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

#### **'D' EMRV Adverse Trend Not Properly Identified**

A self-revealing finding was identified when AmerGen did not properly identify an adverse trend on the 'D' electromatic relief valve (EMRV) pressure switch between May 2006 and December 2006, which resulted in an opening of the 'D' EMRV below its actuation setpoint at full power. This finding was determined to be an NCV of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action." AmerGen's corrective actions for this issue involved replacing the pressure switch, developing an improved trending method for the EMRV pressure switches, and evaluating the need to utilize a different style pressure switch or changing the surveillance procedure.

The finding was more than minor because it was associated with the equipment performance attribute of the initiating events cornerstone and affected the objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during power operations. The inspectors conducted a Phase 1 SDP screening in accordance with IMC 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," and determined the finding was of very low safety significance (Green). The finding was of very low safety significance because no initiating event or transient actually occurred and the finding did not contribute to the likelihood that mitigating equipment or functions would be unavailable. The performance deficiency had a cross-cutting aspect in the area of problem identification and resolution because AmerGen did not identify an adverse trend and assess information from the corrective action program and surveillance tests to identify a problem with the 'D' EMRV pressure switch [P.1.(b)]. (Section 4OA3)

Inspection Report# : [2007002](#) (*pdf*)

**Significance:**  Dec 31, 2006

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

#### **Clearance Activity Performed Out of Sequence And Causes Trip of 'A' Shutdown Cooling Pump**

A self-revealing finding was identified regarding inadequate procedure adherence when work activities on the 480 V '1A2' switchgear during 1R21 refueling outage resulted in a trip of a reactor building closed cooling water (RBCCW) and shutdown cooling (SDC) pump on October 22, 2006. Specifically, the steps in the clearance order were performed out of sequence. This finding was determined to be a non-cited violation of technical specification 6.8.1a, "Procedures and Programs." AmerGen's corrective actions for this issue involved re-mediating the operators involved; and senior management lead training sessions with all operations personnel which reviewed management's expectations for use of error prevention tools such as procedural compliance, peer checking, and questioning attitude.

The finding was more than minor because it was associated with the configuration control attribute of the initiating events cornerstone and affected the objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown operations. This finding was evaluated using IMC 0609, Appendix G, "Shutdown Operations Significance Determination Process," attachment 1, checklist 7 because it occurred during a refuel outage and reactor coolant system level in the reactor vessel was greater than 23 feet. The finding was of very low safety significance because the issue did not degrade the licensee's ability to recover decay heat removal once it was lost. The performance deficiency had a cross-cutting aspect in the area of human performance because operators did not follow procedures. (Section 1R20)

Inspection Report# : [2006005](#) (*pdf*)

**Significance:**  Sep 30, 2006

Identified By: Self-Revealing

Item Type: FIN Finding

### **Inadequate Work Planning Results in #1 Air Compressor Trip**

A self-revealing finding was identified when AmerGen did not implement adequate work planning to ensure the availability and reliability of the #1 air compressor. This resulted in a trip of the air compressor on September 7, 2006. This finding was determined not to be a violation of NRC requirements. AmerGen's corrective actions included repairing the air compressor by replacing several valves internal to the air compressor.

The finding was more than minor because it was associated with the equipment performance attribute of the initiating events cornerstone and affected the objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during power operation. In accordance with Inspection Manual Chapter (IMC) 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," the inspectors conducted a Phase I SDP screening and determined that a detailed Phase 2 evaluation was required to assess the safety significance because the finding contributed to both the likelihood of a reactor trip and the likelihood that mitigation equipment would not be available. The finding was determined to be of very low safety significance based upon a Phase 2 evaluation. The performance deficiency had a human performance cross-cutting aspect. (Section 1R12)

Inspection Report# : [2006004](#) (*pdf*)

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## **Mitigating Systems**

**Significance:**  May 25, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

### **Inadequate Acceptance Criteria In Emergency Diesel Generator Battery Service Test Procedures**

The team identified a finding of very low safety significance (Green) involving a non-cited violation of 10 CFR 50, Appendix B, Criterion XI, "Test Control," in that, AmerGen did not incorporate the requirements and acceptance limits contained in applicable design documents into the EDG battery service test procedures.

Specifically, the design requirement of the EDG batteries to supply adequate voltage to the EDG output breakers was not incorporated into the service test load profile for the EDG batteries. This prevented verification within the test of the capability of the batteries to close the output breakers which is a design requirement during events with a postulated loss-of-offsite power. AmerGen entered the issue into their corrective action program to revise the EDG battery sizing calculation and evaluate the appropriate incorporation of the design requirements into the service test procedure.

The finding is more than minor because it is associated with the procedure quality 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. The finding has very low safety significance, based on a Phase 1 review of the SDP, documented in NRC Inspection Manual Chapter 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," because it did not represent the loss of safety function of the EDG batteries. (Section 1R21.2.1.15)

Inspection Report# : [2007006](#) (*pdf*)

**Significance:**  May 25, 2007

Identified By: NRC

Item Type: FIN Finding

### **Inadequate Containment Hardened Vent Valve Accumulator Test Criteria**

The team identified a finding of very low safety significance (Green), in that, the licensee did not correctly translate the design of the containment hardened vent valve accumulators into test procedures. Specifically, the acceptance criteria for allowable accumulator pressure drop within the periodic test procedure was not consistent with the original design criteria and did not ensure the assumed design capability of the valves during loss of instrument air events. The valves provide a method of permitting a controlled depressurization of primary containment during severe accident

sequences that involve loss of decay heat removal. AmerGen entered this issue into their corrective action program to revise the test criteria to be consistent with the original design of the valve accumulators.

The finding is more than minor because it is associated with the procedure quality attribute of the Mitigating Systems cornerstone and affected the cornerstone's objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. In accordance with NRC Inspection Manual Chapter 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," the team conducted a Phase 1 SDP screening and conservatively determined a more detailed Phase 2 SDP evaluation was required to assess the safety significance because the finding affected the mitigation system containment vent function. The finding was determined to be of very low safety significance (Green) based upon the Phase 2 SDP evaluation. There was no violation of NRC requirements because the performance deficiency was associated with postulated beyond design basis events. (Section 1R21.2.2.2)

Inspection Report# : [2007006](#) (*pdf*)

**Significance:**  Mar 31, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

### **Improper Identification of an Inoperable Fire Barrier Door**

The inspectors identified that AmerGen did not properly implement fire protection plan requirements on January 11 and January 16, 2007. Specifically, AmerGen did not identify that a fire barrier door for the safety-related 'B' 480 volt room was obstructed, preventing the door from closing if a fire was detected in the area. This finding was determined to be an NCV of license condition 2.C(3), "Fire Protection." AmerGen's corrective actions involved issuing a site wide communication reinforcing the requirements of not blocking open fire doors.

The finding was more than minor because it was associated with the protection against external factors (fires) attribute of the mitigating systems cornerstone and affected the objective to maintain the reliability and capability of systems that respond to initiating events to prevent undesirable consequences. In accordance with IMC 0609, Appendix F, "Fire Protection Significance Determination Process," the inspectors conducted a Phase I SDP screening and determined the finding to be of very low safety significance (Green). The finding was of very low safety significance because although the issue was assigned a degradation rating of moderate, there were no appreciable combustibles or ignition sources in the stairway adjacent to the inoperable fire door. The performance deficiency had a cross-cutting aspect in the area of problem identification and resolution because AmerGen did not identify completely and accurately, and in a timely manner that the fire barrier door was obstructed from closing (inoperable); and therefore did not meet the requirements of the Oyster Creek fire protection plan [P.1.(a)]. (Section 1R05)

Inspection Report# : [2007002](#) (*pdf*)

**Significance:**  Dec 31, 2006

Identified By: NRC

Item Type: FIN Finding

### **Inadequate Operability Determination Associated With Elevated Isolation Condenser Shell Temperatures**

The inspectors identified that AmerGen did not perform an adequate operability determination to assure the 'A' isolation condenser (IC) could meet its design bases requirements with elevated shell temperatures on October 6, 2006. This finding was determined not to involve a violation of regulatory requirements. AmerGen's corrective actions included repairing the valve, operator training on operability determinations, and revising procedures and calculations.

The finding was more than minor because it was associated with the equipment performance attribute of the mitigating systems cornerstone and affected the objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. This finding is also similar to more than minor example 3.I in NRC Inspection Manual Chapter 0612, Appendix E, "Examples of Minor Issues," in that calculations had to be re-performed to assure design requirements were met. In accordance with IMC 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," the inspectors conducted a Phase I SDP screening and determined the finding to be of very low safety significance (Green). The finding was of very low safety significance because the issue was not a design or qualification deficiency that resulted in a loss of function, did not result in an actual loss of safety function for a single train of equipment for a period of time greater than allowed by technical specifications, did not result in an actual loss of safety function of non-technical

specification equipment considered risk significant in the maintenance rule program for greater than 24 hours, and was not screened as potentially risk significant from external events. This performance deficiency had a cross-cutting aspect in the area of problem identification and resolution because AmerGen did not thoroughly evaluate a problem for operability. (Section 1R15)

Inspection Report# : [2006005](#) (*pdf*)

**Significance:**  Dec 31, 2006

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

### **Inadequate Procedure Implementation Results in Loss of Power to the 'B' 125V DC Distribution Center**

A self revealing finding was identified regarding inadequate procedure implementation when the 'B' 125 VDC battery main breaker was inadvertently operated and resulted in a loss of power to the 'B' DC distribution center on October 10, 2006. This finding was determined to be a non-cited violation of technical specification 6.8.1, "Procedures and Programs." AmerGen's corrective actions included disqualifying and re-mediating the operators involved, re-communicating management's expectations that self and peer checks and other error prevention tools should be utilized, and revising the operating procedure.

The finding was more than minor because it was associated with the human performance attribute of the mitigating systems cornerstone and affected the objective to maintain the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. In accordance with Inspection Manual Chapter (IMC) 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," the inspectors conducted a Phase I SDP screening and determined the finding to be of very low safety significance (Green). The finding was of very low safety significance because the issue was not a design or qualification deficiency that resulted in a loss of function, did not result in an actual loss of safety function for a single train of equipment for greater than allowed by technical specifications, did not result in an actual loss of safety function of one or more non-technical specification trains of equipment considered risk significant in the maintenance rule program for greater than 24 hours, and was not screened as potentially risk significant from external events. The performance deficiency had a cross-cutting aspect in the area of human performance because operations personnel did not properly utilize human error prevention techniques such as self and peer checking. (Section 4OA3)

Inspection Report# : [2006005](#) (*pdf*)

**Significance:**  Sep 30, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

### **Fire Protection Plan Requirements Not Implemented**

The inspectors identified that AmerGen did not implement fire protection plan requirements on August 17, 2006. Specifically, AmerGen did not identify that a low pressure condition existed on the 4160 Volt carbon dioxide (CO2) suppression system which resulted in the system being inoperable, and a continuous fire watch was not established in accordance with fire protection procedures. This finding was determined to be a non-cited violation of License Condition 2.C(3), "Fire Protection." AmerGen's proposed corrective actions included changing the analog gauge to a digital gauge, implementing an alarm response procedure for the local alarm, and operator training on proper gauge reading.

The finding was more than minor because it was associated with the protection against external factors (fires) attribute of the mitigating systems cornerstone and affected the objective to maintain the reliability and capability of systems that respond to initiating events to prevent undesirable consequences. In accordance with IMC 0609, Appendix F, "Fire Protection Significance Determination Process," the inspectors conducted a Phase I SDP screening and determined the finding to be of very low safety significance (Green). The finding was of very low safety significance because the issue was assigned a degradation rating of low since the fire protection program element would have only minimally impacted the reliability and performance of the system. The performance deficiency had a human performance cross-cutting aspect. (Section 1R05)

Inspection Report# : [2006004](#) (*pdf*)

**Significance:**  Sep 30, 2006

Identified By: Self-Revealing

Item Type: FIN Finding

### **Inadequate Foreign Material Control Results in #1 Emergency Diesel Generator Unavailability**

A self-revealing finding was identified regarding inadequate foreign material control during performance of a maintenance activity on the #1 emergency diesel generator (EDG) on July 10, 2006. During performance of vibration data collection, a vibration probe cable became entangled with the shaft of the EDG intake air bin blower, resulting in the unit being secured, and the EDG being unavailable for inspection and retrieval of foreign material. This finding was determined not to involve a violation of NRC requirements. AmerGen's corrective actions included taking the EDG out of service to remove all foreign material, and a subsequent post maintenance test to verify operability of the EDG.

The finding was more than minor because it was associated with the human performance attribute of the mitigating systems cornerstone and affected the objective to maintain the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. In accordance with IMC 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," the inspectors conducted a Phase I SDP screening and determined the finding to be of very low safety significance (Green). The finding was of very low safety significance because the issue was not a design or qualification deficiency that resulted in a loss of function, did not result in an actual loss of safety function for a single train of equipment for a period of time greater than allowed by technical specifications, did not result in an actual loss of safety function of equipment considered risk significant in the maintenance rule program for greater than 24 hours, and was not screened as potentially risk significant for external events. The performance deficiency had a human performance cross-cutting aspect. (Section 1R22)

Inspection Report# : [2006004](#) (*pdf*)



**Significance:** Sep 30, 2006

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

### **Untimely Corrective Actions for the 'A' ESW pump breaker**

A self-revealing finding was identified when AmerGen did not take timely corrective actions for a degraded condition on the 'A' emergency service water (ESW) pump. Specifically, a corrective action identified in February 2006 was not completed in a timely manner and resulted in the pump not starting on July 14, 2006. This finding was determined to be a non-cited violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action." AmerGen's corrective actions included performing resistance checks on the contacts which could impact proper operation of the other ESW pump breakers.

The finding was more than minor because it was associated with the equipment performance attribute of the mitigating systems cornerstone and affected the objective to maintain the reliability of systems that respond to initiating events to prevent undesirable consequences. In accordance with IMC 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," the inspectors conducted a Phase I SDP screening and determined the finding to be of very low safety significance (Green). The finding was of very low safety significance because the issue was not a design or qualification deficiency that resulted in a loss of function, did not result in an actual loss of safety function for a single train of equipment for a period of time greater than allowed by technical specifications, did not result in an actual loss of safety function of non-technical specification equipment considered risk significant in the maintenance rule program for greater than 24 hours, and was not screened as potentially risk significant from external events. The performance deficiency had a problem identification and resolution cross-cutting aspect. (Section 1R22)

Inspection Report# : [2006004](#) (*pdf*)

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## **Barrier Integrity**

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## **Emergency Preparedness**

**Significance:** N/A Jun 08, 2007

Identified By: NRC

Item Type: FIN Finding

### **NRC Emergency Preparedness Supplemental Inspection 95001 Results**

The NRC performed this supplemental inspection to assess AmerGen's evaluation for an issue associated with Oyster Creek operators not recognizing during an August 2005 event that plant parameters met the Emergency Action Level threshold for declaring an Unusual Event and a subsequent Alert. This performance issue was characterized as having low to moderate risk significance (White) in NRC Inspection Report No. 05000219/2005011. The licensee determined that human performance issues related to procedural compliance were a primary causal factor that led to the performance problems identified during the August 2005 event. The licensee's root cause evaluation of the issue was assessed by the NRC in June 2006, during a 95002 supplemental inspection (Report No. 05000219/2006010). During this inspection, the NRC concluded that licensed operators continued to demonstrate weaknesses associated with understanding of management expectations and site requirements for procedure use and adherence. As a result, the White finding was maintained open pending completion of an additional follow-up NRC supplemental inspection to review additional AmerGen corrective actions to improve the licensed operators' knowledge of and adherence to procedural usage requirements.

During this 95001 supplemental inspection, the inspectors determined that AmerGen had performed a comprehensive evaluation of the procedure use and adherence issue. The licensee's evaluation determined that the root cause for the issue to be that Operations Management had failed to provide clear expectations for, and had failed to consistently enforce, standards related to procedure use and adherence to all levels of the site staff. AmerGen implemented corrective actions to ensure that management expectations for procedure use are consistently communicated to, and reinforced with, licensed operators at Oyster Creek. As a result of their root cause determination, AmerGen broadened their extent-of-condition review to apply the corrective actions regarding management expectations for procedure use across all organizations at the site.

Based on the results of this inspection, the inspectors concluded that AmerGen adequately completed a root cause evaluation of the procedure use performance deficiency associated with this White finding. Additionally, the inspectors concluded that the planned and completed corrective actions appeared reasonable to address the related causes. Given AmerGen's acceptable performance in addressing the procedure use and adherence issue, the White finding associated with this issue will only be considered in assessing plant performance through the second quarter of 2007, in accordance with the guidance in IMC 0305, "Operating Reactor Assessment Program." Further implementation of the licensee's corrective actions may be reviewed during future inspections.

Inspection Report# : [2007007](#) (*pdf*)

**Significance:** **W** Sep 23, 2005

Identified By: NRC

Item Type: VIO Violation

### **EAL Matrix Not Reviewed For Declaring an Alert**

An NRC-identified notice of violation (NOV) of 10 CFR 50.47(b)(4) was identified. This NOV, which has low to moderate safety significance, occurred because the Oyster Creek E-Plan EAL matrix was not properly utilized to determine if a plant parameter met the EAL threshold for declaring an emergency classification. This resulted in not recognizing during an actual event, that plant parameters met the EAL thresholds for declaring a UE and a subsequent Alert. Immediate corrective actions were taken in which shift crews were retrained on the implementation of E-Plan requirements.

The finding is greater than minor because it is associated with the EP cornerstone attribute of response organization (RO) performance (actual event response). 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 licensee did not use the Oyster Creek E-Plan EAL matrix when plant parameters met the EAL thresholds for declaring a UE and a subsequent Alert. As a consequence, both the onsite and offsite EROs were not activated during actual Alert conditions. Had the event degraded further, the onsite ERO would not have been readily available to assist in the mitigation of the event and the offsite agencies could have been prevented from taking initial offsite response measures. This finding is of low to moderate safety significance because it constituted a failure to implement a Risk Significant Planning Standard during an actual event in which plant conditions met an Alert. The cause of the finding is related to the cross-cutting element of human performance (personnel).

## Occupational Radiation Safety

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## Public Radiation Safety

**Significance:**  Jun 29, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

### **Inadequate Identification of Unacceptable Quality Assurance Test Results for Effluent Monitoring**

The inspectors identified that quality assurance test results for effluent monitoring of Sr-89 and Sr-90 in the first quarter of 2006 did not meet test acceptance criteria and AmerGen had not evaluated the condition as of April 27, 2007. This finding was determined to be a non-cited violation of technical specification 6.8.1i, "Procedures and Programs." AmerGen's corrective actions involved evaluating the test results to understand their potential impact to the public.

The finding was more than minor because it was associated with the effluent measurement quality control attribute of the public radiation cornerstone and affected the objective to ensure adequate protection of public health and safety from exposure to radioactive materials released into the public domain as a result of routine civilian nuclear reactor operations. In accordance with Inspection Manual Chapter 0609, Appendix D, "Public Radiation Safety Significance Determination Process," this finding was determined to be of very low safety significance (Green), the issue was not a radioactive material control issue, it involved the effluent release program, there was no impaired ability to assess dose, and public radiation doses did not exceed 10 CFR 50, Appendix I, "Numerical Guides for Design Objectives and Limiting Conditions for Operation to Meet the Criterion 'As Low As Reasonably Achievable' for Radioactive Material in Light-Water-Cooled Nuclear Power Reactor Effluents," values. The performance deficiency had a cross cutting aspect in the area of problem identification and resolution because AmerGen did not identify completely, accurately, and in a timely manner that the test results did not meet their acceptance criteria [P.1(a)].

Inspection Report# : [2007003](#) (*pdf*)

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## 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.

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## Miscellaneous

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