

# Oyster Creek

## 1Q/2008 Plant Inspection Findings

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### Initiating Events

**Significance:**  Dec 31, 2007

Identified By: Self-Revealing

Item Type: FIN Finding

#### **Service Water Pump Motor Failure Due to Inadequate Refurbishment Process**

A self revealing finding occurred when the '1-1' service water pump motor failed on August 15, 2007 due to an inadequate motor refurbishment by a vendor. AmerGen previously noted a problem with the motor refurbishment process used by the vendor in July 2005, however they did not take actions to address this issue. This finding was determined not to be a violation of NRC requirements. AmerGen's corrective actions for this issue included replacing the motor and informing the vendor of the issue.

The finding is more than minor because it was associated with the equipment performance attribute of the initiating events cornerstone and affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. In accordance with Inspection Manual Chapter (IMC) 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," the inspectors conducted a significance determination process (SDP) Phase 1 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 (Green) based upon the Phase 2 evaluation. The performance deficiency had a cross-cutting aspect in the area of problem identification and resolution because AmerGen did not take appropriate corrective actions to address the issues identified with the quality of vendor practices [P.1(d)]. (Section 1R12)

Inspection Report# : [2007005](#) (*pdf*)

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### Mitigating Systems

**Significance:**  Dec 31, 2007

Identified By: Self-Revealing

Item Type: FIN Finding

#### **Degraded Fuel Oil in the 1-1 Fire Diesel Fuel Oil Storage Tank Not Identified**

A self revealing finding occurred when AmerGen did not identify a degraded fuel oil condition on the '1-1' diesel driven fire pump in September 2007. This resulted in the pump being unable to maintain adequate discharge pressure on October 1, 2007 during testing due to restricted fuel flow caused by clogged fuel filters. The finding was determined not to be a violation of regulatory requirements. AmerGen's corrective actions included removing the fuel oil sludge from the system; and proposed actions to revise the fuel oil tank cleaning procedure, providing administrative limits for particulate contamination in the chemistry procedure, and briefing chemistry personnel on the importance of properly trending data.

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. In accordance with IMC 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," the inspectors conducted a SDP Phase I screening and determined that a detailed Phase 2 evaluation was required to assess the safety significance because the finding involved an actual loss of safety function of one or more non-technical specification trains of equipment designated as risk significant per 10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," for greater than 24 hours. The finding was determined to be of very low safety significance based upon a Phase 2 evaluation. The performance deficiency had a cross-cutting aspect in the area

of problem identification and resolution because AmerGen did not identify an adverse trend in fuel oil particulate which impacted the safety function on the '1-1' diesel driven fire pump [P.1(a)]. (Section 1R12)

Inspection Report# : [2007005](#) (pdf)

**Significance:**  Dec 31, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

### **Operations Personnel Did Not Appropriately Implement Reactor Startup Procedure**

The inspectors identified that AmerGen did not properly implement procedures during a reactor startup on July 20, 2007. Specifically, operations personnel withdrew source range monitors (SRM) from the core without first ensuring adequate overlap with the intermediate range monitors (IRM) as prescribed by procedures. The finding was of very low safety significance and determined to be a NCV of technical specification 6.8.1, "Procedures and Programs."

AmerGen's proposed corrective actions for this issue involve revising the operating procedure and providing training to operations personnel on this issue.

The finding is more than minor because it was associated with the human performance attribute (pre-event) of the mitigating systems cornerstone and affected the cornerstone objective to ensure the availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors conducted a SDP Phase 1 screening in accordance with IMC 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations." The finding was determined to be of very low safety significance (Green) because the finding was not a design or qualification deficiency, did not represent a loss of system safety function or loss of a single train for greater than its allowed technical specification time, and did not screen as potentially risk significant due to seismic, flooding, or severe weather initiating events. The performance deficiency had a cross-cutting aspect in the area of human performance because operations personnel did not follow procedures when they continued with the plant startup even though they did not meet the operating procedures requirements [H.4(b)]. (Section 4OA2)

Inspection Report# : [2007005](#) (pdf)

**Significance:**  Dec 31, 2007

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

### **Inadequate Evaluation of IRM Channels Prior to Reactor Startup**

A self-revealing finding occurred when AmerGen operated in a condition prohibited by technical specifications on July 20, 2007. Specifically, AmerGen did not identify that intermediate range monitor (IRM)-16 was inoperable and ensure that the required number of IRM channels for the reactor protection system were available for a reactor startup.

This finding was of very low safety significance and determined to be a NCV of Oyster Creek technical specification 3.1, "Protective Instrumentation." AmerGen's corrective actions for this issue included replacing IRM 16 detector and developing lessons learned for reviewing operability of IRMs.

The finding is more than minor because it was associated with the equipment performance attribute of the mitigating systems cornerstone and affected the cornerstone objective to ensure the reliability and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors conducted a SDP Phase 1 screening in accordance with IMC 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations." The finding was determined to be of very low safety significance (Green) because the finding was not a design or qualification deficiency, did not represent a loss of system safety function or loss of a single train for greater than its allowed technical specification time, and did not screen as potentially risk significant due to seismic, flooding, or severe weather initiating events. The performance deficiency had a cross-cutting aspect in the area of problem identification and resolution because AmerGen did not thoroughly evaluate the operability of IRM-16 prior to a reactor startup as requested [P.1(c)]. (Section 4OA3)

Inspection Report# : [2007005](#) (pdf)

**Significance:**  Sep 28, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

### **Degraded Condition on the Remote Shutdown Panel Not Properly Identified.**

The inspectors identified that AmerGen did not properly identify that the remote shutdown panel (RSP) was not

capable of performing its design function when the 'B' isolation condenser (IC) makeup valve control power indicating status light was not illuminated on June 21, 2007. This finding was of very low safety significance (Green) and determined to be a non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action." AmerGen's corrective actions included repairing the RSP and discussing this issue with operations personnel on the adequacy of operability evaluations.

The finding was more than minor because it was associated with the protection against external factors (fire and toxic hazard) 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. In accordance with Inspection Manual Chapter (IMC) 0609, Appendix F, "Fire Protection Significance Determination Process (SDP)," the inspectors conducted a Phase I SDP screening utilizing Figure F.1 in Appendix F. Per the Phase I screening criteria, the finding was assigned the category of "post-fire safe shutdown." The inspectors assigned a low degradation rating in accordance with Attachment 2 of Appendix F. A low degradation rating was assigned, because procedures existed and operators were trained at operating the 'B' IC makeup valve locally; and operators have a significant amount of time to complete the local operation. Therefore, in accordance with Appendix F step 1.3.1, "Qualitative Screening for All Finding Categories," this finding screened as very low safety significance because the finding was assigned a low degradation rating. The 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 [P.1.(c)]. (Section 1R15)

Inspection Report# : [2007004](#) (pdf)

**Significance:**  Sep 28, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

### **Improper Repair of a Fire Rated Penetration Seal**

The inspectors identified that AmerGen did not properly implement fire protection plan requirements on June 22, 2007. Specifically, AmerGen did not repair fire penetration 762 in accordance with procedures and resulted in an unqualified configuration of sealing materials being installed in the plant. This finding was determined to be a NCV of license condition 2.C(3), "Fire Protection." AmerGen's corrective actions involved evaluating the as-found penetration seal for effectiveness in preventing the spread of a fire and procuring a fire seal qualification test that qualified the installed configuration; and evaluating the process and programs used to repair fire penetration seals in the plant.

The finding was more than minor because it was associated with the external factors (fires) attribute of the mitigating systems cornerstone and affected the objective of ensuring the availability, 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 utilizing Figure F.1. Per the Phase I screening criteria the finding was assigned the category of "Fire Confinement." The inspectors assigned a "Moderate B" degradation rating to the installed fire penetration seal in accordance with Attachment 2, Table A2.2 of Appendix F, because the installed seal configuration was between 6 and 9 inches and there was no test or evaluation available to qualify its fire rating. Therefore in accordance with Appendix F, step 1.3.2, "Supplemental Screening for Fire confinement Findings," screening criteria 3, this finding screened as very low safety significance because both sides of the wall were protected by a non-degraded automatic water based fire suppression system. The performance deficiency had a cross-cutting aspect in the area of human performance because AmerGen did not assure that accurate work packages were available to ensure that a qualified fire penetration seal was installed in the plant [H.2(c)]. (Section 1R19)

Inspection Report# : [2007004](#) (pdf)

**Significance:**  Sep 28, 2007

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

### **Inadequate Procedure Implementation During Response to a Reactor Feedpump Trip and Reactor Scram**

A self-revealing finding was identified when AmerGen personnel did not properly implement procedural guidance during a response to a reactor feedwater pump (RFP) trip and a reactor scram on July 17, 2007. Specifically, the operating crew did not properly reduce reactor power as directed by an abnormal operating procedure; and did not properly implement EOP support procedures which challenged reactor water level control during recovery activities. This finding was determined to be a NCV of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and

Drawings.” AmerGen's corrective actions included revising the abnormal procedure to provide enhanced instructions, providing all operations personnel remedial training sessions in the simulator on this event, and issuing a standing order communicating operation's management expectations on operator response.

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 ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The finding was assessed in accordance with IMC 0609, Appendix A, Significance Determination of Reactor Inspection Findings for At-Power Situations.” The inspectors performed a Phase 1 screening and determined that a Phase 2 evaluation was required to assess safety significance because the failure to properly implement procedure guidance in response to and during the event affected both the initiating and mitigating cornerstones. A Region 1 senior reactor analyst (SRA) determined that a Phase 2 evaluation was not suited to assess this event. A Phase 3 analysis was performed by the SRA and the finding was determined to be of very low safety significance. The performance deficiency had a cross-cutting aspect in the area of human performance because the operating crew did not follow procedures during their response to the event [H.4(b)]. (Section 40A3)

Inspection Report# : [2007004](#) (pdf)

**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)

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## Barrier Integrity

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## Emergency Preparedness

**Significance:**  Sep 27, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Require State PAR Notifications Within 15 Minutes of Emergency Declaration.**

A NRC-identified non-cited violation (NCV) of 10 CFR 50.47(b)(5) and 10 CFR Part 50, Appendix E, Section IV.D.3, was identified for failure of the licensee's state and local notifications procedures to require that the notifications of protective action recommendations (PARs) be made to the state within 15 minutes of the declaration of a General Emergency. The licensee's procedures required that the state be notified of a PAR within 15 minutes of the PAR determination, which would occur at some point after the declaration of the General Emergency. The licensee entered the deficiency with the procedures into their corrective action program.

This finding is greater than minor because it is associated with the Emergency Response Organization Performance attribute and affected the objective of the Emergency Preparedness Cornerstone to ensure that the licensee is capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. In accordance with the Emergency Preparedness Significance Determination Process, this finding is of very low safety significance because licensee expectations and training have resulted in the state being notified of PARs within 15 minutes, and the procedure deficiencies did not affect the outcome of protecting the health and safety of the public. (Section 1EP1)

Inspection Report# : [2007502](#) (pdf)

**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*)

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## 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

