

# Oyster Creek

## 2Q/2008 Plant Inspection Findings

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### Initiating Events

**Significance:**  Jun 30, 2008

Identified By: Self-Revealing

Item Type: FIN Finding

#### **Improper Valve Reassembly Results in Instrument Air Transient**

A self-revealing finding was identified when AmerGen improperly reassembled the inlet valve actuator on the 'C & D' instrument air dryers which damaged its o-ring and subsequently resulted in an instrument air transient on March 24, 2008. This finding was determined not to be a violation of NRC requirements. AmerGen's corrective actions included repairing the air dryer inlet valve by replacing the failed o-ring and providing training on o-ring installation to maintenance personnel.

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. In accordance with inspection manual chapter (IMC) 0609.04, "Phase 1 – Initial Screen and Characterization of Findings," the inspectors conducted a Phase 1 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 the Phase 2 evaluation. The performance deficiency had a cross-cutting aspect in the area of human performance because training was not adequate to ensure proper reassembly of the valve actuator by maintenance personnel [H.2(b)]. (Section 1R12)

Inspection Report# : [2008003](#) (*pdf*)

**Significance:**  Jun 30, 2008

Identified By: Self-Revealing

Item Type: FIN Finding

#### **Instrument Air Transient Due to Insufficient Preventive Maintenance on Service Air Compressors**

A self-revealing finding occurred when the suction air filters to the '1-1' and '1-2' service air compressors became clogged with debris which affected the availability and reliability of the compressors on April 25, 2008. In 2001, AmerGen implemented a modification which involved replacing the service air compressors. During the modification process, AmerGen removed preventive maintenance tasks for the suction air filters without adequate technical justification. AmerGen's corrective actions included replacing the inlet air filters, taking action to create a PM to inspect/replace the air filters and reviewing the extent of condition with respect to similar plant modifications. This finding was of very low safety significance and determined not to be a violation of NRC requirements.

The finding was more than minor because it was associated with the equipment performance attribute of the initiating events cornerstone and affected the cornerstone objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. The finding was assessed in accordance with IMC 0609.04, "Phase 1 – Initial Screen and Characterization of Findings." The inspectors performed a Phase 1 screening and determined that a Phase 2 evaluation was required to assess safety significance because the finding contributed to both the likelihood of a reactor trip and the likelihood that mitigation equipment would not be available. 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 inspectors did not identify a cross-cutting aspect for this finding because the performance deficiency had occurred several years ago and is not indicative of current performance. (Section 1R12)

Inspection Report# : [2008003](#) (*pdf*)

**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:**  Jun 30, 2008

Identified By: NRC

Item Type: FIN Finding

### **Potential Preconditioning of Core Spray Valves Prior to ASME In-service Test**

The inspectors identified that AmerGen had scheduled surveillance tests in a sequence that would have resulted in unacceptable preconditioning of valves within the core spray system on May 19, 2008. This finding was determined not to be a violation of NRC requirements. AmerGen's corrective actions involved reordering the scheduling sequence of the tests and reviewing upcoming (next 60 days) work control schedules to identify potential preconditioning.

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 reliability and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, preconditioning of valves could mask their actual as-found condition and result in an inability to verify their operability, as well as make it difficult to determine whether the valves would perform their intended safety function during an event. In accordance with IMC 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," the finding was determined to be of very low safety significance because it was not a design or qualification deficiency which resulted in a loss of operability or functionality, did not represent a loss of system safety function, did not represent an actual loss of safety function of a single train for greater than its technical specification allowed outage time, did not represent an actual loss of safety function of one or more non-technical specification trains of equipment designated as risk-significant for greater than 24 hours, and was not potentially risk significant due to a seismic, flooding or severe weather initiating event. The performance deficiency had a cross-cutting aspect in the area of human performance because AmerGen did not appropriately coordinate work activities to support long term equipment reliability [H.3(b)]. (Section 1R22)

Inspection Report# : [2008003](#) (*pdf*)

**Significance:**  Jun 30, 2008

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

### **Diesel Driven Fire Pump Unavailable Due to Improper Testing**

A self revealing finding occurred when AmerGen did not properly implement a functional test procedure for the '1-1' diesel driven fire pump on November 7, 2007. Specifically, operations personnel did not accurately measure the speed of the pump while performing the functional test which resulted in the pump being declared inoperable and unavailable for greater than three weeks during troubleshooting by AmerGen personnel. This finding was of very low safety significance and determined to be a non-cited violation (NCV) of technical specification 6.8, "Procedures and Programs." AmerGen's corrective actions included providing additional training to operators to accurately monitor speed of the diesel with a stroboscope and revising the procedure to include vendor guidance for measuring diesel speed.

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 and reliability of systems that respond to initiating events to prevent undesirable consequences. In accordance with IMC 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," the inspectors conducted a Phase I SDP screening and determined that the finding was of very low safety significance (Green). The finding was of low safety significance because there was no loss of safety function due to the availability of the redundant diesel driven fire pump. The inspectors also reviewed this issue in accordance with IMC 0609, Appendix F, "Fire Protection Significance Determination Process," to confirm the above results. The finding was determined to be of very low safety significance (green) because it was assigned a low degradation rating due to availability of other fire protection pumps. The performance deficiency had a cross-cutting aspect in the area of human performance because training was not adequate to ensure the proper use of the stroboscope by operations personnel during testing [H.2 (b)]. (Section 4OA2)

Inspection Report# : [2008003](#) (pdf)

**Significance:**  Jun 27, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Failure to Review the Impact of Site Staffing Changes to the Fire Protection Program**

The team identified that in July 2002, AmerGen failed to review a change to personnel resources that would increase the time necessary to complete an NRC approved hot shutdown repair after a fire in the A 480V switchgear room. Specifically, AmerGen eliminated the need for onsite electrical or instrument and controls technician staffing at all times. This finding was determined to be of very low safety significance (Green) and a NCV of Oyster Creek Nuclear Generating Station Facility Operating License condition 2.C.(3) Fire Protection. AmerGen's immediate corrective actions for this issue included assessing current call-in processes to verify the hot shutdown repair would be completed by qualified personnel within the safe shutdown analysis time requirement.

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 did not analyze the reduction in personnel readiness for an adverse impact on implementing a hot shutdown repair to Bus USS 1B2 within the safe shutdown analysis time requirement. This finding was also similar to more than minor example 3.i in NRC Inspection Manual Chapter (IMC) 0612, Power Reactor Inspection Reports, Appendix E, Examples of Minor Issues. The team assessed this finding in accordance with NRC IMC 0609, Appendix F, Fire Protection Significance Determination Process. This finding screened to very low safety significance (Green) in phase 1 of the SDP because it was assigned a low degradation rating. A low degradation rating was assigned because actual emergency response organization call-in and drive-in data demonstrated that the hot shutdown repair would most likely be completed within the safe shutdown analysis time requirement. (Section 1R05.01)

Inspection Report# : [2008008](#) (pdf)

**Significance:**  Mar 31, 2008

Identified By: NRC

Item Type: FIN Finding

#### **Inadequate Risk Assessment Identified Prior to Commencement of Maintenance**

The inspectors identified that AmerGen performed an inadequate risk assessment for a planned, but not yet commenced, maintenance activity on the Bank 6 startup transformer in February 2008; which resulted in an underestimation of the risk associated with performing the activity. This finding was determined not to be a violation of NRC requirements. AmerGen's corrective actions for this issue included reassessing the risk for the activity and

discussing this issue with work management personnel.

The finding was more than minor because the risk assessment did not account for the unavailability of a single train of a system that provides a shutdown key safety function. This finding was also similar to more than minor example 7.e in NRC Inspection Manual Chapter (IMC) 0612, "Power Reactor Inspection Reports," Appendix E, "Examples of Minor Issues," because when the activity was correctly assessed the plant would have been in a higher, licensee-established risk category. In accordance with IMC 0609, Appendix K, "Maintenance Risk Assessment and Risk Management Significance Determination Process," the inspectors evaluated the significance of this issue and determined that the incremental core damage probability deficit (ICDPD) associated with this activity was less than  $1.0 \times 10^{-6}$  and noted that the incorrectly assessed maintenance activity did not occur. Therefore, in accordance with Appendix K this finding screened as very low safety significance. The performance deficiency had a cross-cutting aspect in the area of human performance because AmerGen did not plan a maintenance activity, consistent with nuclear safety because risk insights were not properly incorporated into the work planning. [H.3(a)] (Section 1R13)  
Inspection Report# : [2008002](#) (pdf)

**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 40A2)

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

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**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 40A3)

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

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**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:** **G** 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:** **G** 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 4OA3)

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

## 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*)

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## Occupational Radiation Safety

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## Public Radiation Safety

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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

Last modified : August 29, 2008