

May 1, 2003

Mr. Jack Skolds  
Chairman and CEO of AmerGen  
AmerGen Energy Company, LLC  
4300 Winfield Road  
5<sup>th</sup> Floor  
Warrenville, IL 60555

SUBJECT: OYSTER CREEK GENERATING STATION- NRC INTEGRATED INSPECTION  
REPORT 50-219/03-02

Dear Mr. Skolds:

On March 29, 2003, the NRC completed an integrated inspection at your Oyster Creek reactor facility. The enclosed report presents the results of that inspection. The results of this inspection were discussed on April 7, 2003, with Mr. Ernie Harkness and other members of your staff.

This inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your operating license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

This report documents one NRC-identified finding and one self-revealing finding of very low safety significance (Green), both of which were determined to involve violations of NRC requirements. However, because of the very low safety significance and because they were entered into your corrective action program, the NRC is treating these two findings as non-cited violations (NCVs) consistent with Section VI.A of the NRC Enforcement Policy. Additionally, two licensee identified violations are listed in Section 4OA7 of this report. If you contest any NCV in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-001; with copies to the Regional Administrator, Region I; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-001; and the NRC Resident Inspector at Oyster Creek.

Since the terrorist attacks on September 11, 2001, the NRC has issued five Orders (dated February 25, 2002, January 7, 2003, and April 29, 2003) and several threat advisories to licensees of commercial power reactors to strengthen licensee capabilities, improve security force readiness, and enhance controls over personnel access authorization. The NRC also issued Temporary Instruction 2515/148 on August 28, 2002, that provided guidance to inspectors to audit and inspect licensee implementation of the interim compensatory measures (ICMs) required by the Order dated February 25, 2002. Phase 1 of TI 2515/148 was completed at all commercial nuclear power plants during calendar year (CY) 2002, and the remaining inspections are scheduled for completion in CY 2003. Additionally, table-top security drills were

conducted at several licensee facilities to evaluate the impact of expanded adversary characteristics and the ICMs on licensee protection and mitigative strategies. Information gained and discrepancies identified during the audits and drills were reviewed and dispositioned by the Office of Nuclear Security and Incident Response. For CY 2003, the NRC will continue to monitor overall safeguards and security controls, conduct inspections, and resume force-on-force exercises at selected power plants. Should threat conditions change, the NRC may issue additional Orders, advisories, and temporary instructions to ensure adequate safety is being maintained at all commercial power reactors.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room). We appreciate your cooperation.

Sincerely,

*/RA/*

Neil S. Perry, Chief  
Projects Branch 7  
Division of Reactor Projects

Docket No. 50-219  
License No. DPR-16

Enclosure: Inspection Report 50-219/03-02  
w/Attachment: Supplemental Information

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U. S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No.: 50-219

License No.: DPR-16

Report No: 50-219/03-02

Licensee: AmerGen Energy Company, LLC (AmerGen)

Facility: Oyster Creek Generating Station

Location: Forked River, New Jersey

Dates: December 29, 2002 - March 29, 2003

Inspectors: Steve Dennis, Senior Resident Inspector  
Steve Shaffer, Resident Inspector  
Joseph D'Antonio, Operations Engineer  
Steve Pindale, Senior Reactor Inspector

Approved By: Neil S. Perry, Chief  
Projects Branch 7  
Division of Reactor Projects

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## SUMMARY OF FINDINGS

IR 05000219-2003-002; AmerGen Energy Company, LLC; on 12/29/02-03/29/03; Oyster Creek Generating Station; Post Maintenance Testing, Identification and Resolution of Problems.

The inspection covered a 13-week period and was conducted by resident and region based inspectors. There were two findings during this inspection. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using IMC 0609 "Significance Determination Process" (SDP). Findings for which the SDP does not apply may be "green" or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 3, dated July 2000.

### A. Inspector Identified Findings

#### Cornerstone: Barrier Integrity

- Green. The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI (Corrective Action) because the licensee failed to adequately correct a significant condition adverse to quality such that a subsequent repeat problem occurred. This deficiency relates to the licensee's insufficient corrective actions following the trip of an exhaust fan in the standby gas treatment system (SGTS). Two weeks after corrective actions were completed, the fan tripped again under similar circumstances.

This finding is more than minor because the licensee failed to adequately identify and correct the cause of the fan trip, which resulted in the train not being capable of performing its intended function for its required 30 day mission time. This finding is similar to Example 4.f of NRC Manual Chapter 0612, Appendix E, in that the failure to implement adequate corrective actions affected the function of the SGTS train. However, this finding was determined to be of very low safety significance (Green) using Phase 1 of the At-Power Reactor Safety Significance Determination Process because the finding only represented a degradation of the radiological barrier function provided by the standby gas treatment system. (Section 4OA2)

- Green. A self-revealing non-cited violation of Oyster Creek Technical Specification 6.8, Procedures and Programs, was identified for failure to have an adequate operating procedure for the Standby Gas Treatment System. The procedure did not ensure that system operability was maintained while the system was in a standby alignment.

The finding is considered greater than minor in that the issue was associated with Barrier Integrity Cornerstone due to the inadequate procedure leading to SGTS1 being inoperable for five days. The finding is of very low safety significance because it only represented a degradation of the radiological barrier function provided for by the standby gas treatment system. In addition, standby

gas treatment system 2 was operable during the entire time period system 1 was inoperable. (Section 1R19)

B. Licensee Identified Violations

Violations of very low safety significance, which were identified by the licensee, have been reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program. These violations and corrective action tracking numbers are listed in section 4OA7.

## REPORT DETAILS

### Summary of Plant Status

Oyster Creek began the inspection period at full power. On February 16, 2003, a power reduction to approximately 50% occurred during a winter storm. The storm resulted in intake canal icing, low intake levels, and also caused the grass diverter bridge to break from its moorings and lodge near the front of the intake (Section 1R14 describes this event). Oyster Creek returned to full power on February 19, 2003, and remained there for the duration of the inspection period with the exception of several occasions during which reactor power was decreased for brief periods of time for control rod adjustments, condenser backwashing, and condenser air in-leakage testing.

#### 1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

#### 1R01 Adverse Weather Protection

##### Cold Weather Preparation Verification

##### a. Inspection Scope

The inspectors verified the ability of risk significant systems and equipment important to safety to function in the winter climate. During the snowstorm on February 16, 2003, a large body of ice accumulated in the intake canal causing the grass diverter bridge to break loose from its moorings, break apart, and float toward the intake structure (issue is described further in Section 1R14). The inspectors reviewed winter readiness and abnormal procedures in order to determine if they adequately addressed the canal icing event and its effect on the diverter bridge and safety significant systems at the intake. The inspectors also reviewed outstanding winterization action requests, the status of corrective actions, and walked down portions of the Fire Water, Circulating Water, Dilution, Plant Heating, and Outdoor Roof Mounted Ventilation systems. Additionally, the inspectors verified that building and room temperatures were maintained within technical specification and Updated Final Safety Analysis Report (UFSAR) requirements during emergent work outages of the plant heating system. The following documents were reviewed.

- Exelon Seasonal Readiness Procedure - OP-AA-108-109 Rev.1
- Winter Readiness Plan - 2000-PLN-3000.02
- Corrective Action Program Document - CAP No.02002-1735 - Review of Winter Readiness.
- Winter Readiness Matrix of Work Requests - dated January 11, 2003
- Corrective Action Program Document - CAP No.02003-0317 - Effect of snowstorm on Emergency Water System.

##### b. Findings

No findings of significance were identified.

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1R04 Equipment Alignmenta. Inspection Scope

The inspectors performed three partial walkdown inspections during this inspection period on the systems listed below. The walkdowns were performed during scheduled maintenance activities on the associated redundant systems or trains. Each walkdown included a random sampling of valve and breaker positions in the field that were verified to be properly aligned in accordance with associated system operating procedures. Control room indications and controls were verified to be appropriate for the standby or operating status of the system and system maintenance action requests were reviewed to verify that no degraded conditions existed adversely affecting operability. Documents reviewed are listed in the attachment.

- Emergency Diesel Generator #2, week of January 13, 2003
- Core Spray Systems I and II, week of January 27, 2003
- Emergency Diesel Generator #1, week of February 10, 2003

b. Findings

No findings of significance were identified.

1R05 Fire Protectiona. Inspection Scope

The inspectors conducted fire protection inspection activities consisting of plant walkdowns, discussions with fire protection personnel, and reviews of procedure 333, "Plant Fire Protection System," and the Oyster Creek Fire Hazards Analysis Report to verify that the fire program was implemented in accordance with all conditions stated in the facility license. Plant walkdowns included observations of combustible material control, fire detection and suppression equipment availability, and compensatory measures. The inspectors conducted fire protection inspections in the following areas due to the potential to impact mitigating systems:

- RB-FZ-1E, Reactor Building 23' Elevation
- RB-FZ-1D, Reactor Building 51' Elevation
- RB-FZ-1A & RB-FZ-1B, Reactor Building 95' Elevation
- RB-FZ-1C, Reactor Building 75' Elevation
- RB-FZ-1A, Reactor Building 119' Elevation
- OB-FZ-6A, "A" 480V Switchgear Room
- OB-FZ-6B, "B" 480V Switchgear Room
- OB-FA-5, Main Control Room
- FW-FA-18, Diesel Fire Pump House

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification

.1 Review of Requalification Examination Results

a. Inspection Scope

A review was conducted of licensee requalification exam results for the annual operating testing cycle. The inspection assessed whether pass rates were consistent with the guidance of NUREG-1021, Revision 8, "Operator Licensing Examination Standards for Power Reactors" and NRC Manual Chapter 0609, Appendix I, "Operator Requalification Human Performance Significance Determination Process (SDP)."

The inspector verified that:

- Crew pass rate was greater than 80%. (Pass rate was 100%)
- Individual pass rate on the walk-through (JPMs) was greater than 80%. (Pass rate was 100%)
- More than 75% of the individuals passed all portions of the exam. (95% of the individuals passed all portions of the exam)

b. Findings

No findings of significance were identified.

.2 Training Observation

a. Inspection Scope

The inspectors observed licensed operator simulator training on February 26, 2003, to verify that the Oyster Creek (OC) operator requalification program adequately evaluated how well operators have mastered the training objectives, including training on high-risk operator actions. The inspectors reviewed the critical tasks associated with the simulated control room exercise, observed the operators performance during the exercise and observed the post-exercise critique to assess the licensee's effectiveness in evaluating and correcting any observed deficiencies. The inspector also reviewed licensee conformance with procedure 2611-PGD-2612, OC Licensed Operator Requalification Training Program.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness

.1 Quarterly Inspection Samples

a. Inspection Scope

The inspectors reviewed the licensee's implementation of the maintenance rule as described in Oyster Creek procedure, ER-AA-310, "Implementation of the Maintenance Rule." The inspectors verified that the selected systems, structures, and/or components (SSCs) were properly classified as (a)(1) in accordance with 10 CFR 50.65. The inspectors reviewed action requests (ARs), corrective action program reports (CAPs), engineering change requests (ECRs) and (a)(1) corrective action plans. The inspectors also compared unavailability data with control room log entries to verify (a)(1) trending and goals were updated. The documents reviewed are listed in the attachment. The SSCs were reviewed during the inspection period.

- Core Spray System #1
- Emergency Diesel Generator #2

b. Findings

No findings of significance were identified.

.2 Biennial Inspection

a. Inspection Scope

The inspectors conducted a review of Oyster Creek's periodic evaluation of implementation of the Maintenance Rule as required by 10 CFR 50.65 (a)(3). The evaluation covered a period from January 1999 to December 2001. The purpose of this review was to ensure that Oyster Creek has effectively assessed its (a)(1) goals, (a)(2) performance criteria, system monitoring, and preventive maintenance activities. This review also verified that industry operating experience has been utilized where applicable. Additionally, the inspectors verified that Oyster Creek has appropriately balanced equipment reliability with unavailability/availability when planning maintenance activities.

The inspectors selected a sample of safety and risk significant systems in (a)(1) and (a)(2) status to verify that: (1) failed structures, systems, and components were properly characterized, (2) goals and performance criteria were appropriate, (3) corrective action plans were adequate, and (4) performance was being effectively monitored in accordance with Oyster Creek procedure 2000-ADM-1220.01, "Implementation of the Maintenance Rule." The following systems were selected for this detailed review:

- Reactor Building Ventilation (including the Standby Gas Treatment System)
- Isolation Condenser System
- Core Spray and Automatic Depressurization System
- Main Feed System
- Reactor Vessel
- Reactor Building Closed Cooling Water System

Two of these systems, Reactor Building Ventilation and Reactor Vessel, were in (a)(1) status at the end of the evaluation period. The other systems were in (a)(2) status at the end of the evaluation period, but had been moved from (a)(1) to (a)(2) during the evaluation period. The inspectors reviewed corrective action documents for malfunctions and failures of these systems to determine if: (1) they had been correctly categorized at functional failures, (2) they were correctly categorized as maintenance preventable, and (3) their performance was adequately used to determine if moving a system to (a)(1) status was appropriate.

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessment and Emergent Work Evaluation

.1 "A" Control Room Ventilation - Damper Failure

a. Inspection Scope

On January 27, 2003, during the performance of surveillance procedure 654.4.003, "Control Room HVAC System A Flow and Differential Pressure Test," one of the system dampers failed to reposition as required during the test and the system was declared inoperable (CAP 02003-0158). The inspectors verified that the licensee evaluated the risk associated with the inoperability of the system along with other ongoing maintenance work. Additionally, compliance with technical specifications was verified. The documents associated with the troubleshooting plan, repair, and retest of the system were also reviewed.

b. Findings

No findings of significance were identified.

.2 Feedwater Heater 1C2 Trip and Subsequent Load Reduction

a. Inspection Scope

On February 5, 2003, the normal drain valve for feedwater heater 1C2 failed closed and the heater tripped on high level. Subsequently, to maintain core thermal limits, reactor power and turbine load were reduced (CAP 02003-0214). Troubleshooting on the valve found a problem with the valve positioner. The inspectors verified that the licensee evaluated the risk associated with reduced feedwater heating, and operated the plant in accordance with abnormal and operating procedures as appropriate during the power reduction. The documents associated with the troubleshooting plan, repair, and retest of the valve were also reviewed.

b. Findings

No findings of significance were identified.

.3 4160V Bus C - Unexpected Undervoltage Alarm During Grid Undervoltage Test

a. Inspection Scope

During performance of the Grid Undervoltage Channel Functional Test on March 6, 2003, control room operators observed the bus undervoltage alarm come in twice unexpectedly. The test was suspended and a troubleshooting plan was prepared and implemented. The inspectors reviewed the troubleshooting plan, the troubleshooting results, the replacement of the 27-13C relay, and the post maintenance testing of the affected component. Adherence to technical specifications was also verified by the inspectors.

b. Findings

No findings of significance were identified.

.4 Loss of Power to 4160V Bus 1E1

a. Inspection Scope

On March 6, 2003, a grid disturbance caused a loss of power to the 1E1 4160V bus from its normal power supply. The alternate power supply breaker failed to close and power to the bus was lost (CAP No.02003-0407). The loss of power resulted in the inoperability of the unidentified and identified containment leak rate monitors and entry into a technical specification (TS) 12 hour shutdown Limiting Condition for Operation (LCO). A temporary modification (see section 1R23) was installed to supply power to the affected instrumentation and the TS required shutdown was averted. Normal power was later restored to the 1E1 bus and the malfunction on the alternate feeder breaker was entered in the corrective action system by the licensee. The inspectors verified TS compliance and adherence to the troubleshooting and repair plans written to address the issue.

b. Findings

No findings of significance were identified.

.5 'A' Control Rod Drive Pump Breaker Failure

a. Inspection Scope

On March 19, 2003, during performance of surveillance procedure 617.4.001, "CRD Pump Operability Test," the control room received the CRD (Control Rod Drive) Pump 'A' overload alarm and the pump failed to start. The 'A' CRD pump was declared inoperable (CAP 02003-0473). The inspectors verified that the licensee evaluated the risk associated with the inoperability of the pump along with other ongoing maintenance

work. Additionally, compliance with technical specifications was verified. The documents associated with the troubleshooting plan, repair, and retest of the system were also reviewed.

b. Findings

No findings of significance were identified.

1R14 Personnel Performance During Non-routine Plant Evolutions

.1 Intake Canal Icing Event and Unplanned Power Reduction

a. Inspection Scope

On February, 17, 2003, adverse weather conditions and subsequent plant equipment issues resulted in Oyster Creek reducing reactor power to approximately 35 percent. A large ice buildup in the intake canal, along with high winds, heavy snow, and low tides caused water level at the intake structure to decrease to abnormally low levels affecting the net positive suction head of the Service Water (SW), Emergency Service Water (ESW), and Circulating Water Pumps as well as the function of the Service Water Screen and Screen Wash System. Additionally, the ice buildup in the intake canal caused the grass diverter bridge to break free from its moorings and lodge about 10 feet from the intake structure.

The inspectors verified that abnormal and normal operating procedures were adhered to during the event, reviewed control room narrative logs to ensure critical reactor parameters were maintained within required technical specifications (TS), and walked down the intake structure to further assess the storms impact. The inspectors also verified that operator actions taken subsequent to the event were within procedural and TS requirements. Additionally, the inspectors reviewed the engineering documentation available related to the grass diverter bridge (originally installed in the early 1970's and modified in 1990), the operability evaluation associated with the effect of low intake levels on ESW operability, the Apparent Cause Evaluation (ACE) written to identify and provide corrective actions in response to the event, and the adequacy of the winterization and seasonal readiness procedures. The following documents were reviewed.

- CAP No's 02003-0312, 0315, 0317, 0321, and 0441
- Control Room Narrative Logs Dated - February 16, 2003, to February 19, 2003
- Supporting Operability Documentation for ESW - CR # 2003-0317
- Apparent Cause Evaluation for the event - Part of CAP No. 02003-0317
- Procedure 2000-ABN-3200.18 - Service Water Failure Response
- Procedure 2000-ABN-3200.19 - RBCCW Failure Response
- Procedure 2000-ABN-3200,32 - Response to Low Intake Level
- Procedure OP-AA-108-109 - Seasonal Readiness
- Procedure 2000-PLN-3000.02 - Winter Readiness Plan
- Engineering Evaluation for Diverter Bridge- File No. 244-90 dated June 13, 1990

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- Engineering Evaluation for Diverter Bridge- File No. 169-96 dated May 10, 1996
- Updated Final Safety Analysis Report Sections 2.4.7, 2.4.9.2, 10.4.5.2, and 15

b. Findings

No findings of significance were identified.

.2 Power Ascension to 100 Percent Following Intake Icing Event

a. Inspection Scope

On February 19, 2003, reactor power was returned to 100 percent power following a power reduction that had been implemented during the winter storm event starting on February 16, 2003. The inspectors evaluated the licensee's risk evaluation of the impact of the diverter bridge on intake water levels prior to the implementation of power ascension. The inspectors also reviewed the licensee's "Core Maneuvering Plan - Intake Load Drop Recovery (0308)." Additionally, during the power ascension, the inspectors observed control room communications, operator response to alarms, and supervisory command & control.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations

a. Inspection Scope

The inspectors reviewed operability evaluations in order to verify that they were performed as required by Oyster Creek procedure LS-AA-105, Operability Determinations. The inspector assessed the accuracy of the evaluations, the use and control of compensatory measures if needed, and where a component was determined to be inoperable, the inspectors verified that the Technical Specification limiting conditions for operation were properly addressed. The selected samples are listed below.

- Liquid Poison System "A" - on January 4, 2003, the Liquid Poison System "A" squib valve open alarm was received in the main control room. The licensee verified through wiring and continuity checks that the system would still function as designed and the alarm was caused by a faulty meter relay. The repair work was performed under Work Order A2051865 and the evaluation is described in CAP 02003-0055.
- Emergency Diesel Generator (EDG) No. 1 Battery and Charger - on January 27, 2003, a surveillance test being performed on EDG #1 identified a short duration battery voltage oscillation. Additionally, operators observed increased amperage on the battery charger on consecutive days. The operability evaluation found the

battery and associated charger would be able to perform their function and were operable, however, overall battery life may be shortened but would be detected via testing prior to exceeding TS limitations. AR A2054700 and CAP 02003-0270 further describe the issue.

- Drywell Sump Flow Integrator - on February 5, 2003, the DW Sump Hi Leak/PWR Fail annunciator alarmed. The alarm was cleared and then alarmed two additional times prior to being left in the locked in position. The operability evaluation found the drywell sump flow integrator to be operable as described in AR A2054532 and CAP 02003-215.
- EDG No. 1 - during performance of PM01792E, Emergency Diesel Generator #1 Functional Checks, on February 11, 2003, the DC Turbocharger Lube Oil Pump failed to start as required. The operability evaluation found the system to be operable and is described in CAP 02003-0266.
- Emergency Service Water - during the snowstorm which began on February 16, 2003, canal intake levels became abnormally low due to the tidal flow and ice in the canal. The licensee assessed the effect of the low intake levels on Emergency Service Water operability by reviewing past events, the Update Final Safety Analysis Report (UFSAR), abnormal procedures, and TS. It was determined through this review that canal levels never were low enough to affect operability during the storm. The operability evaluation concluded that the system was operable and is described in CAP 02003-0317.

b. Findings

No findings of significance were identified.

1R16 Operator Work-Arounds

a. Inspection Scope

The inspectors reviewed the operator work-around database and associated corrective action items to identify conditions that could adversely affect the operability of mitigating systems or impact human reliability in responding to initiating events. The inspector reviewed the licensee's implementation of procedure OP-AA-102-103, "Operator Work-Around Program." The inspector also reviewed CAP Nos. 02003-0423 & 02003-0483 dated March 11 and March 21, 2003, respectively. These CAPs address deficiencies in the implementation of the operator work-around procedure.

b. Findings

No findings of significance were identified.

1R19 Post Maintenance Testing



a. Inspection Scope

The inspector reviewed and observed portions of the post maintenance testing associated with the following maintenance activities because of their function as mitigating systems and their potential role in increasing plant transient frequency. The inspectors reviewed the post maintenance test documents to verify that they were in accordance with the licensee's procedures and that the equipment was restored to an operable state. The following post maintenance tests were reviewed

- Emergency Diesel Generator (EDG) #1 - Post Maintenance Test (PMT) 636.4.003, "Diesel Generator #1 Load Test" was performed on January 13, 2003. The PMT was a cold start test to confirm that adjustments to the governor would ensure that the diesel output breaker would close, on a fast diesel start, within the 20 second acceptance criteria.
- "A" Control Room Ventilation - On January 27, 2003, during the performance of surveillance procedure 654.4.003, "Control Room HVAC System A Flow and Differential Pressure Test," one of the system dampers failed to reposition as required during the test. Repairs were made on the damper linkage and the surveillance test was performed successfully on January 28, 2003, as the post maintenance test.
- Service Water Pump #2 - During the week of February 4, 2003, the Service Water Pump and Motor were replaced per Work Order R080587101. Surveillance test 641.4.001, "Service Water Pump Operability," was performed on February 9, 2003, as the PMT.
- Emergency Diesel Generator #2 - On February 12, 2003, the licensee began a 24 month inspection of EDG #2 in accordance with procedure 636.1.010, "Diesel Generator Inspection (24 month)." The licensee performed the PMT using procedure 636.4.013, "Diesel Generator #2 Load Test," on February, 16, 2003.
- Turbine Building Closed Cooling Water Heat Exchanger (TBCCW HX) 1-1- On February 25, 2003, TBCCW HX 1-1 was cleaned per AR A2013696. The licensee performed the PMT using procedure 2400-SMM-3900.08, "Initial Service Leak Test," on February 26, 2003.
- Standby Gas Treatment System 1 - On March 3, 2003, Standby Gas Treatment System (SGTS) 1 fan EF-1-8 was inspected and lubricated per work order R2012900. The licensee performed the PMT using procedure 651.4.001, "Standby Gas Treatment System Test," on March 8, 2003.

b. Findings

Introduction. A Green, self-revealing NCV was identified involving failure to maintain procedures as required by Technical Specification 6.8.1. Failure to maintain the procedure resulted in Standby Gas Treatment System 1 (SGTS1) being inoperable

following maintenance. The procedure incorrectly listed the inlet damper to the exhaust fan for SGTS1 as locked open for standby alignment. The damper must be throttled to maintain required flow rates for system operability.

Description. On March 7, 2003, the licensee performed a ten hour run and surveillance test of SGTS1 using procedure 651.4.001, "Standby Gas Treatment System Test." During the test it was determined that flow through the system was 3077 cfm which exceeded the acceptance criteria of 2600 +/- 260 cfm. The licensee declared SGTS1 inoperable, immediately verified that Standby Gas Treatment System 2 (SGTS2) was operable, and entered the seven day action statement to restore SGTS1 to operability. The licensee determined that system flow was too high due to system inlet damper DM-28-49 being positioned improperly following maintenance and restoration of a system tagout performed on March 3, 2003. The operating procedure used for the PMT was Procedure 330 Rev. 40, "Standby Gas Treatment System." The damper is maintained throttled to ensure proper system flow rates, however, the licensee operating procedure and system drawing GU 3E-822-21-1000 Rev. 10, both have inlet damper DM-28-49 listed as locked open and not locked throttled. The licensee entered this issue into their corrective action program with CAP 02003-0413.

Analysis. A self-revealing, Green finding was identified due to the use of an inadequate operating procedure. This finding is associated with the Barrier Integrity Cornerstone objective of limiting radioactive releases to the environment. This finding is greater than minor because the inadequate procedure led to SGTS1 being inoperable for a period of five days without the licensee's knowledge. However, the finding was determined to be of very low safety significance (Green) using Phase 1 of the At-Power Reactor Safety Significance Determination Process because the finding only represented a degradation of the radiological barrier function provided by the standby gas treatment system.

Enforcement. Technical Specification 6.8.1 in part states that written procedures shall be established, implemented, and maintained for surveillance and test activities of equipment that affect nuclear safety. Contrary to the above, Procedure 330 Rev. 40, "Standby Gas Treatment System," did not adequately maintain the inlet damper to the exhaust fan (DM-28-49) in a throttled position to ensure system operability. The procedure incorrectly listed the damper as locked open. This resulted in SGTS1 being inoperable from March 3 to March 8, 2003. Because the failure to adequately maintain the system operating procedure is of very low safety significance and has been entered into the licensee's corrective action program via CAP 02003-0413, this violation is being treated as a Non-Cited Violation, consistent with Section VI.A of the NRC Enforcement Policy: NCV 50-219/03-002-02, Failure to Maintain a Technical Specification Surveillance Test Procedure for SGTS I.

## 1R22 Surveillance Testing

### a. Inspection Scope

The inspector observed pre-test briefings and portions of surveillance test (ST) performance for procedural adherence, and verified that the resulting data associated

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with the test met the requirements of the plant technical specifications and the OC Updated Final Safety Analysis Report. The inspector also reviewed the results of past test performance of the selected STs to verify that degraded or non-conforming conditions were identified and corrected, if needed. The following STs were observed:

- Isolation Condenser Valve Operability and In Service Test - surveillance procedure 609.4.001, performed on January 16, 2003
- Core Spray System I - surveillance procedure 610.3.115, performed on January 27, 2003
- Core Spray System II - surveillance procedure 610.3.215, performed on January 28, 2003
- Local Shutdown Panel LSP-1A2 Functional Test - surveillance procedure 680.4.004, performed February 26 through February 28, 2003
- "B" Control Room HVAC - surveillance procedure 654.4.003, performed on March 25, 2003

b. Findings

No findings of significance were identified.

1R23 Temporary Plant Modifications

a. Inspection Scope

On March 6 & 7, 2003, the inspectors reviewed a temporary modification installed under AR A2056529. The temporary modification was to restore power to the 1E14 Motor Control Center (MCC). Three of the six cables supplying the 1E14 MCC had failed. The original configuration was two cables per phase and the modification used the remaining three functional cables in a single cable per phase configuration. The inspectors walked down the temporary modification and reviewed the evaluation package (AR A2056529 Eval 01). Additionally the inspectors verified that the temporary modification was performed in accordance with OC procedure CC-OC-112-1001, Rev. 1, "Temporary Configuration Change Implementation."

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness (EP)

1EP6 Drill Evaluation

a. Inspection Scope

On February 26, 2003, the inspector observed a licensed operator training assessment that included an emergency activation level classification. The inspector verified that the appropriate emergency classification was identified and external notifications to

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responsible parties were made in a timely manner.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES (OA)

4OA1 Performance Indicator (PI) Verification

a. Inspection Scope

The inspectors reviewed the Oyster Creek performance indicator (PI) data against applicable criteria specified in Nuclear Energy Institute (NEI) document 99-02, to verify that all conditions that met the NEI criteria were recognized and identified as PI occurrences. The inspectors verified the accuracy of the reported data through reviews of monthly operating reports, shift operating logs, Licensee Event Reports (LERs) and additional records. The inspectors reviewed 12 months of reported data (January 2002 - December 2002) for the following PIs:

- Unplanned Scrams per 7,000 Critical Hours
- Unplanned Power Changes per 7,000 Critical Hours

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems

.1 Inadequate Correction Actions for Failure of SGTS Fan EF-1-8

a. Inspection Scope

The inspectors reviewed the corrective action documents for equipment failures and problems associated with the six systems listed in section 1R12 of this report. The review focused on the licensee's actions to effectively correct equipment problems and prevent recurrence. One finding related to the licensee's inadequate corrective actions for a trip of Standby Gas Treatment System (SGTS) fan EF-1-8 was identified and is discussed below.

b. Findings

Introduction

A Green non-cited violation of 10 CFR 50, Appendix B, Criterion XVI (Corrective Action) was identified for the licensee's inadequate corrective actions for a significant condition adverse to quality. The licensee's corrective actions following the trip of an exhaust fan

in the SGTS were ineffective in preventing a similar subsequent trip.

### Description

During preventive maintenance activities on SGTS fan EF-1-8 on September 12, 1998, the licensee identified a misalignment between the fan and motor pulleys. While the licensee was aware of this deficiency, it remained uncorrected for over three years.

On December 19, 2001, SGTS fan EF-1-8 was being run to provide a negative pressure in the Reactor Building during maintenance on Reactor Building ventilation heating coils. After approximately four hours of operation, the fan tripped on thermal overload. The redundant SGTS fan was started to restore proper ventilation and the licensee initiated an investigation to determine the cause of the trip. Electricians, dispatched to the motor control center, found the controller warm to the touch and they were unable to reset the overload relay until it had cooled. The fan was restarted after resistance checks and manual fan/motor rotation, but it was shut down shortly thereafter due to an abnormal noise from the motor bearing on the pulley side.

During subsequent troubleshooting, both fan and motor bearings were inspected and the licensee determined that the pulley side motor bearing needed to be replaced. The licensee determined that the most probable cause of the overload trip of fan EF-1-8 was the original misalignment of the fan and motor pulleys (as documented in 1998). This placed additional radial load and wear on the bearings, causing them to heat up and draw additional current. Electrical tests and inspections conducted on the fan, motor, controller, and thermal overloads did not reveal any additional potential contributors to the trip. The motor bearings and the fan belt were replaced, and the fan and motor pulleys were aligned.

Following repairs, post maintenance testing on the fan was conducted, which consisted of a belt run-in of approximately two hours, a four-hour period when the fan was shut down for belt retensioning, and a subsequent six hour system run. During that run, 1) an abnormal noise was noted from the pulley side fan bearing, 2) the fan bearing temperature was approximately 202° F (normal temperature is around 100° F above ambient), and 3) the fan bearing was vibrating in the "rough range" (up to 0.81 inches per second). While the licensee recognized that the fan bearings were in a degraded condition, they were not replaced because only one replacement for the required two bearings was available onsite. The licensee completed an operability determination, which concluded that fan EF-1-8 was operable but degraded. The scheduled replacement of the fan bearings was moved up from later in 2002 to the middle of January 2002.

On January 2, 2002, SGTS fan EF-1-8 was again started to maintain a negative pressure in the Reactor Building. This was the first time the fan was run following the post maintenance testing associated with the December 2001 failure. After approximately four and a half hours of runtime, the fan tripped on thermal overload immediately after the operator moved the fan's control switch to the "OFF" position. The fan was again declared inoperable and a root cause team was convened. The

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licensee's root cause team concluded that the most likely cause of this failure was excessive friction in the fan bearings, causing the fan to draw additional current, once again tripping the fan on thermal overload. While this was determined to be the most likely cause, the licensee could not definitively identify this as the source of the fan trip. The thermal overloads were tested satisfactorily following each trip. The licensee planned on sending the overloads out for further testing, but they were lost before this could be done. Consequently, the licensee was not able to thoroughly evaluate whether the overloads contributed to either of the fan trips.

Following the January 2002 trip of fan EF-1-8, the fan bearings were replaced and post maintenance testing consisting of 16 hours of fan runtime was conducted. The fan bearing temperature was 100° F and fan vibration was likewise significantly reduced. No abnormal noises were noted during the run. At that point, the licensee declared the fan operable.

### Analysis

The deficiency associated with this finding is the inadequate corrective action for a significant condition adverse to quality. The SGTS is a safety-related system. The inspectors concluded that the licensee's corrective actions for the failure of EF-1-8 following its trip on December 19, 2001, were inadequate. The fan was declared operable in spite of insufficient evidence that all the causes of the trip had been properly identified and corrected; and a similar trip resulted the next time it was run, about two weeks later. The inspectors concluded that the licensee did not demonstrate reasonable assurance that the fan, in its degraded condition, was capable of functioning for its mission time of 30 days. Further, the licensee's operability evaluation did not properly predict that the abnormal indications could have prevented sustained SGTS operation.

This finding is associated with the Barrier Integrity Cornerstone objective of limiting radioactive releases to the environment. This finding is more than minor because the licensee failed to adequately identify and correct all causes of the fan trip, which resulted in the train not being capable of performing its intended function for its required 30 day mission time. This finding is similar to Example 4.f of NRC Manual Chapter 0612, Appendix E, in that the failure to implement adequate corrective action affected the function of the SGTS train. However, this finding was determined to be of very low safety significance (Green) using Phase 1 of the At-Power Reactor Safety Significance Determination Process because the finding only represented a degradation of the radiological barrier function provided by the standby gas treatment system.

### Enforcement

10 CFR 50, Appendix B, Criterion XVI (Corrective Action) requires that measures be established to assure that conditions adverse to quality, such as malfunctions, deficiencies, deviations, and defective material and equipment are promptly identified and corrected. Additionally, in the case of a significant condition adverse to quality, these measures shall ensure that the cause of the condition is determined and

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corrective action is taken to preclude repetition. Insufficient evidence existed following post maintenance testing for the December 2001 failure of SGTS fan EF-1-8 to indicate the fan was capable of performing its intended function for its required 30-day mission time. Accordingly, the failure to adequately implement corrective actions to preclude a repeat failure of fan EF-1-8 is a violation of 10 CFR 50, Appendix B, Criterion XVI. However, because of the very low safety significance of this issue and because it has been entered into your corrective action program (CAP No. O2003-0385), it is being treated as a non-cited violation, consistent with Section VI.A.1 of the NRC Enforcement Policy: NCV 50-219/03-002-01, Inadequate Corrective Actions for Failure of SGTS Fan EF-1-8.

#### 40A3 Event Follow-up

(Closed) LER 50-219/01-001-00. Completion of Reactor Shutdown Required by Technical Specifications.

On November 11, 2001, a 4160V cable failure ultimately resulted in a technical specification required shutdown. The shutdown was completed successfully, within the time required, on November 12, 2001. The failed portion of the cable was replaced and the plant was restarted on November 18, 2001. The LER was reviewed by the inspectors and no findings of significance were identified. The licensee documented the cable failure and subsequent corrective actions in CAP 02001-1718. This LER is closed.

#### 40A6 Meetings, Including Exit

##### Exit Meeting Summary

On April 7, 2003, the resident inspectors presented the inspection results to Mr. E. Harkness and other members of licensee management. The licensee acknowledged the findings presented. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

#### 40A7 Licensee-Identified Violations

The following violations of very low safety significance (Green) were identified by the licensee and are violations of NRC requirements which meet the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600, for being dispositioned as NCVs.

- Oyster Creek Technical Specification 6.13.1 requires, in part, that each high radiation area shall be barricaded. Oyster Creek procedure RP-AA-460, "Controls for High or Very High Radiation Areas," states, in part, at step 4.1.1.2 that barricades shall not be left open or defeated unless measures are provided for positive control over each individual entry. On January 2, 2003, two high radiation area barricade doors were found open in the New Rad Waste building without measures for positive control over each individual entry. This event is

documented in CAP 02003-0010. This finding is only of very low safety significance because it did not involve a very high radiation area or personnel over-exposure.

- Oyster Creek Technical Specification 6.13.1 requires, in part, that each high radiation area shall be barricaded. Oyster Creek procedure RP-AA-460, "Controls for High or Very High Radiation Areas," states, in part, at step 4.1.1.2 that barricades shall not be left open or defeated unless measures are provided for positive control over each individual entry. On January 31, 2003, a swing gate barricade was found stuck open at the entry to the Reactor Water Cleanup Pump area which was posted as a High Radiation Area. No measures for positive control over each individual entry were in place. This event is documented in CAP 02003-0191. This finding is only of very low safety significance because it did not involve a very high radiation area or personnel over-exposure.



## SUPPLEMENTAL INFORMATION

### KEY POINTS OF CONTACT

#### Licensee personnel

M. Fillipone, Electrical Systems Manager  
M. Godknecht, Maintenance Rule Coordinator  
E. Harkness, Vice President  
J. Magee, Director, Engineering  
M. Massaro, Plant Manager  
D. McMillan, Director, Training  
M. Newcomer, Assistant Engineering Director  
T. Powell, BOP System Manager  
J. Rogers, Senior Licensing Engineer  
D. Slear, Manager, Regulatory Assurance  
H. Trimble, Manager, Chemistry & Rad Protection  
C. Wilson, Director, Operations

### LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

#### Opened and Closed

50-219/03-002-01	NCV	Inadequate Corrective Actions for Failure of SGTS Fan EF-1-8.
50-219/03-002-02	NCV	Failure to maintain operating procedure for Standby Gas Treatment System I.

#### Closed

05-219/02-001-00	LER	Completion of Reactor Shutdown Required by Technical Specifications.
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### LIST OF DOCUMENTS REVIEWED

OCNGS Procedure Number 341 Rev. 66  
Drawing Number 3E-862-21-1000  
NRC IP 71111.04  
OCNGS Fire Hazards Analysis Report  
2000-ADM-1220.01, "Implementation of the Maintenance Rule," Revision 4  
Action Request (AR) A2022474  
EF-1-8 Review of Operability Determination on December 21, 2001  
Evaluation of SGTS Maintenance Preventable Functional Failures for Repeat Failures  
Maintenance Rule Guideline Book  
Maintenance Rule Technical Basis Document, TDR-1196, Revision 1  
NUMARC 93-01, "Industry Guideline for Monitoring the Effectiveness of Maintenance at

Nuclear Power Plants”

Oyster Creek Generating Station Maintenance Rule Periodic (a)(3) Assessment  
(January 1, 2000 - December 31, 2001)

Oyster Creek Generating Station Procedure 651.4.001, “Standby Gas Treatment  
System Test”

Oyster Creek Nuclear Generating Station Amendment No. 52 to Facility Operating  
License No. DPR-16 (Changes to Technical Specifications regarding testing on the  
Standby Gas Treatment System)

Oyster Creek Work Performance Standard, OC-7, Maintenance Rule, Revision 4  
Updated Final Safety Analysis Report for Oyster Creek Generating Station

ECR 01-00990

AR A2049910

AR A2019664

CAP Reports

CAP 02003-0215	CAP 02003-0266	CAP 02003-0270
CAP 01999-0303	CAP 02000-1724	CAP 02002-1582
CAP 01999-0315	CAP 02000-1908	CAP 02002-1583
CAP 01999-1198	CAP 02001-0534	CAP 02002-1594
CAP 01999-1255	CAP 02001-0968	CAP 02002-1597
CAP 01999-1516	CAP 02001-1024	CAP 02002-1659
CAP 02000-0093	CAP 02001-1319	CAP 02002-1663
CAP 02000-0160	CAP 02001-1908	CAP 02002-1697
CAP 02000-0470	CAP 02002-0006	CAP 02002-1718
CAP 02000-1001	CAP 02002-0973	CAP 02002-1801
CAP 02000-1075	CAP 02002-1354	CAP 02002-1951
CAP 02000-1624	CAP 02002-1573	CAP 02002-1916
CAP 02002-1798	CAP 02002-1951	CAP 02002-1466
CAP 02002-1489	CAP 02002-1573	