UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
475 ALLENDALE ROAD
KING OF PRUSSIA, PA 19406-1415

August 9, 2010

Mr. Michael J. Pacilio
Senior Vice President, Exelon Generation Company, LLC
President and Chief Nuclear Officer, Exelon Nuclear
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: OYSTER CREEK GENERATING STATION - NRC INTEGRATED INSPECTION REPORT 05000219/2010003

Dear Mr. Pacilio:

On June 30, 2010, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Oyster Creek Generating Station. The enclosed integrated inspection report documents the inspection findings, which were discussed on July 22, 2010, with Mr. M. Massaro, Site Vice President, and other members of your staff.

The 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 license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

The report documents four NRC-identified findings of very low safety significance (Green). Three of these findings were determined to involve violations of NRC requirements. However, because of the very low safety significance and because they are entered into your corrective action program, the NRC is treating these findings as non-cited violations (NCVs) consistent with Section VI.A.1 of the NRC Enforcement Policy. If you contest any NCV, 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 20555-0001; with copies to the Regional Administrator, Region I; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at Oyster Creek Generating Station. In addition, if you disagree with the cross-cutting aspect assigned to any finding in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region I, and the NRC Resident Inspector at Oyster Creek Generating Station.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) 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 Website at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

We appreciate your cooperation. Please contact me at (610) 337-5200 if you have any questions regarding this letter.

Sincerely,

Ronald R. Bellamy

Ronald R. Bellamy, Ph.D., Chief
Projects Branch 6
Division of Reactor Projects

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

Enclosure: Inspection Report 05000219/2010003
w/Attachment: Supplemental Information

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We appreciate your cooperation. Please contact me at (610) 337-5200 if you have any questions regarding this letter.

Sincerely,
/RA/
Ronald R. Bellamy, Ph.D., Chief
Projects Branch 6
Division of Reactor Projects

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

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**U. S. NUCLEAR REGULATORY COMMISSION**

REGION I

| | |
|---|---|
| Docket No.: | 50-219 |
| License No.: | DPR-16 |
| Report No.: | 05000219/2010003 |
| Licensee: | Exelon Nuclear |
| Facility: | Oyster Creek Generating Station |
| Location: | Forked River, New Jersey |
| Dates: | April 1, 2010 – June 30, 2010 |
| Inspectors: | J. Kulp, Senior Resident Inspector<br>J. Ambrosini, Resident Inspector<br>S. Hammann, Senior Health Physicist<br>J. Nicholson, Health Physicist<br>O. Masnyk-Bailey, Health Physicist<br>S. Barr, Senior Emergency Preparedness Inspector<br>R. Nimitz, Senior Health Physicist |
| Approved By: | Ronald R. Bellamy, Ph.D., Chief<br>Projects Branch 6<br>Division of Reactor Projects |

Enclosure

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## SUMMARY OF FINDINGS

IR 05000219/20010003; April 1, 2010 to June 30, 2010; Exelon Energy Company, LLC, Oyster Creek Generating Station; Post Maintenance Testing, Operability Evaluation, Event Response, Problem Identification and Resolution.

The report covered a three month period of inspection by resident inspectors, health physicists, senior health physicists and a senior emergency preparedness inspector. Four Green findings, including three non-cited violations (NCV), were identified. The significance of most findings is indicated by their color (Green, White, Yellow, or Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). The cross-cutting aspects were determined using IMC 0310, "Components Within the Cross Component Areas." Findings for which the SDP does not apply may be Green or be assigned a severity level (SL) 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 4, dated December 2006.

A. NRC-Identified and Self-Revealing Findings

**Cornerstone: Mitigating Systems**

- Green: The inspectors identified a Green finding when Exelon cycled valves for maintenance prior to performing scheduled quarterly in-service testing (IST), which resulted in unacceptable preconditioning of valves within the isolation condenser system on April 7. This finding was of very low safety significance and was determined not to be a violation of NRC requirements. Exelon entered this issue into their corrective action system as IR 1053801.

  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. 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 Exelon did not appropriately coordinate work activities to support long term equipment reliability. [H.3(b)]. (Section 1R19)

- Green: The inspectors identified a SL IV, Green non-cited violation (NCV) of 10CFR50.55(a) when Exelon did not properly implement the ASME code

requirements for the core spray system check valves. Specifically, Exelon did not properly implement the ASME Check Valve Condition Monitoring Program, improperly extended the inspection interval when working under the condition monitoring program, and did not restore compliance with the ASME code for check valve testing once the condition monitoring program requirements were not met. Exelon entered this issue into their corrective action system as IR 1093256.

This finding is more than minor because it affects the equipment performance attribute of the mitigating system cornerstone to ensure the reliability and availability of the core spray system. Specifically, ASME testing assesses the operational readiness of certain valves required to perform a specific safety function. 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 inspectors determined that the finding also involved traditional enforcement because Exelon did not seek NRC approval prior to using alternate means to demonstrate the core spray check valves could perform their intended function, which impacted the regulatory process. In accordance with Supplement I, Reactor Operations, of the NRC Enforcement Policy, the NRC determined that the safety significance of this violation was SL IV because the situation, per example 3 of a SL IV violation, was a matter with more than a minor safety or environmental significance.

This finding has a cross-cutting aspect in the area of human performance because Exelon did not use conservative assumptions in decision making and assumed the core spray system check valves would be in compliance with the ASME code despite using a non-approved testing method (H.1(b)). (Section 1R15)

**Cornerstone: Emergency Preparedness (EP)**

- Green: The inspectors identified a Green NCV of 10 CFR 50.54(q), "Conditions of Licenses," because Exelon did not properly maintain the conditions of the Oyster Creek Emergency Plan. Specifically, Exelon did not implement timely compensatory actions for the Plan and its implementing procedures when the Oyster Creek main stack radioactive gaseous effluent monitoring system (RAGEMS) was discovered to have a faulted sample supply line. The licensee entered this issue into their corrective action program and implemented corrective actions, including revising site procedures to provide for an alternate sampling plan and the repair of the sample line.

The finding was more than minor because it affected the Emergency Response Organization Performance attribute of the EP Cornerstone to ensure that the licensee is capable of implementing adequate measures to protect the public health and safety in the event of a radiological emergency. In accordance with Inspection Manual Chapter (IMC) 0609, Appendix B, "Emergency Preparedness Significance Determination Process," the inspectors determined the finding to be of very low safety significance (Green), because other methods of performing the dose assessment function were functional while the RAGEMS was unavailable.

The performance deficiency had a cross-cutting aspect in the area of corrective action, because although there were indications that the RAGEMS sample line had not been sufficiently repaired, Exelon did not implement compensatory actions in a timely manner to assure the RAGEMS dose assessment function was still available. Specifically, the RAGEMS was out of service for 12 days from the time of the sample line defect identification, yet an adequate alternate sampling plan was not in place until 8 days after that discovery [P.1(d)]. (Section 4OA2)

- Green: The NRC identified a SL IV Green NCV of 10 CFR 50.72 when Exelon did not make the required initial notification within 8 hours of the occurrence of the condition. Specifically, on the morning of April 7th, a maintenance technician found the stack radioactive gas effluent monitoring system (RAGEMS) sampling line disconnected, which rendered it inoperable and Exelon did not make the required report until 1535 on April 8. The licensee entered this issue into their corrective action program with an action to review this issue for lessons learned and to incorporate them into an ongoing apparent cause evaluation on technical human performance.

  The finding was more than minor because it is similar to Inspection Manual Chapter 0612, Appendix E, example 2.d. The finding was determined to be subject to traditional enforcement because the NRC's ability to perform its regulatory function was potentially impacted by the licensee's failure to report the event within the eight hour time requirement of 10 CFR 50.72. The finding was determined to be a SL IV violation in accordance with Section D of Supplement I of the NRC Enforcement Policy. The finding was not suitable for evaluation using the significance determination process, but has been reviewed by NRC management and is determined to be a finding of very low safety significance.

  This finding has a cross-cutting aspect in the area of human performance, decision-making. Specifically, Exelon's delay in determining that the reported condition of the stack RAGEMS sampling line constituted a loss of monitoring capability, and did not demonstrate that the licensee uses conservative assumptions in decision making and adopts a requirement to demonstrate that the proposed action is safe in order to proceed, rather than a requirement to demonstrate that it is unsafe in order to disapprove the action. [H.1(b)]. (Section 4OA3)

B. Licensee Identified Findings

None.

## REPORT DETAILS

Summary of Plant Status

The Oyster Creek Generating Station (Oyster Creek) began the inspection period operating at full power.

On April 3, operators performed a planned downpower to 80% to perform a control rod pattern adjustment and insert rods for hydraulic control unit (HCU) maintenance. The plant returned to full power later that day.

On April 28, operators performed a planned reactor shutdown and entered a planned maintenance outage. The maintenance outage is described in section 1R20 of this report. The plant returned to full power on May 3.

On May 3, operators performed a planned downpower to 80% to perform a rod pattern adjustment. The plant returned to full power later that day.

On May 14, operators performed a planned downpower to 85% to perform a rod pattern adjustment. The plant returned to full power on May 15.

On May 28, operators performed a planned downpower to 60% to perform a rod pattern adjustment, turbine control valve testing and control rod testing. The plant returned to full power on May 29.

On June 5, operators performed an unplanned downpower to 54% to perform a main condenser backwash. The plant returned to full power on June 5.

On June 6, 7, 22, 27 and 28, operators performed unplanned downpowers to between 80% and 91% power to perform main condenser backwashes. The plant returned to full power on the same days, following completion of the backwash procedures.

On June 26, operators performed a planned downpower to 85% to perform a rod for flow swap. The plant returned to full power later that day.

Oyster Creek operated at 100% (full) power for the remainder of the inspection period.

## 1. REACTOR SAFETY

**Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity**

1R01 Adverse Weather Protection (71111.01)

a. Inspection Scope (3 samples)

The inspectors performed one adverse weather preparation, one power system readiness and one site specific weather-related condition inspections.

The inspectors reviewed Exelon's activities associated with seasonal readiness for hot weather conditions. The inspectors reviewed the updated final safety analysis report

(UFSAR) for Oyster Creek to identify risk significant systems that require protection from hot weather conditions. The inspectors assessed the readiness of the service water, emergency service water, feed pump room ventilation, and emergency diesel generator systems, to seasonal susceptibilities to hot weather. The inspectors performed a walkdown of the intake structure, emergency diesel generator 1 and 2, the turbine building roof, and the feed pump room. The inspectors reviewed Exelon's hot weather preparation activities to assess their adequacy and to verify they were completed in accordance with procedure requirements. The inspectors also reviewed applicable corrective action program condition reports to assess their reliability and material condition of their systems.

The inspectors reviewed Exelon's response to the declaration of a severe thunderstorm warning on June 24. The inspectors verified that operators properly monitored important plant equipment that could have been affected by the adverse weather conditions. The inspectors verified that the licensee entered the applicable abnormal procedures and took the prescribed preparatory and compensatory actions as required.

The inspectors evaluated Exelon's readiness to address issues that could impact offsite and alternate AC power systems. The inspectors reviewed Exelon's procedures and programs which discussed the operation and availability/reliability of offsite and alternate AC power systems during adverse weather. The inspectors verified that communication protocols between the transmission system operator and Exelon existed, and the appropriate information would be conveyed when potential grid stress and disturbances occurred. The inspectors also verified that Exelon's procedures contained actions to monitor and maintain the availability/reliability of offsite and onsite power systems prior to and during adverse weather conditions. The inspectors conducted a walk down of the switchyard to observe the material condition of the offsite power sources.

Documents reviewed for this inspection activity are listed in the Supplemental Information attachment to this report.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment (71111.04)

a. Inspection Scope (4 samples)

The inspectors performed one complete and three partial equipment alignment inspections. The partial equipment alignment inspections were completed during conditions when the equipment was of increased safety significance such as would occur when redundant equipment was unavailable during maintenance or adverse conditions, or after equipment was recently returned to service after maintenance. The inspectors performed a partial walkdown of the following systems, and when applicable, the associated electrical distribution components and control room panels, to verify the equipment was aligned to perform its intended safety functions:

- 'A' control rod drive (CRD) system with 'B' CRD system unavailable for planned maintenance on June 2;

- #2 emergency diesel generator (EDG) with #1 EDG unavailable due to planned maintenance on June 9; and
- 'B' Standby Liquid Control (SLC) System with 'A' SLC system unavailable due to planned maintenance on June 23.

On May 18th, the inspectors performed a complete system alignment inspection on core spray system #1 to determine whether the system was aligned and capable of providing emergency electrical power in accordance with design basis requirements. The inspectors reviewed operating procedures, the surveillance test procedure, pipe and instrument drawings, and the applicable equipment lineup list, to determine if the equipment was aligned to perform its safety function upon actuation.

Documents reviewed for this inspection activity are listed in the Supplemental Information attachment to this report.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05)

a. Inspection Scope (71111.05Q 6 samples)

During plant walkdowns, the inspectors observed combustible material control, fire detection and suppression equipment availability, visible fire barrier configuration, and the adequacy of compensatory measures (when applicable). The inspectors reviewed "Oyster Creek Fire Hazards Analysis Report" and "Oyster Creek Pre-Fire Plans" for risk insights and design features credited in these areas. Additionally, the inspectors reviewed corrective action program condition reports documenting fire protection deficiencies to verify that identified problems were being evaluated and corrected. Documents reviewed for this inspection activity are listed in the Supplemental Information attachment to this report. The following plant areas were inspected:

- Condenser Bay Area (TB-FZ-11E) on April 30;
- 119' Elevation (RB-FZ-1A) on May 4;
- RB-FZ-1F3, NW Corner Room (RB-FZ-1F3) on May 20;
- New Cable Spreading Room (OB-FZ-22A) on June 2;
- -19' Elevation SE Corner Room (RB-FZ-1F1) on June 2; and
- Fire Water House (FW-FA-18) on June 16;

b. Findings

No findings of significance were identified.

1R07 Heat Sink Performance (71111.07)

a. Inspection Scope (1 sample)

The inspectors verified acceptable heat exchanger performance by reviewing the results of one heat exchanger maintenance activity. The inspectors reviewed the results of the

containment spray system 2 heat exchanger functional test on April 20 to verify that the heat exchanger met cleanliness and performance requirements. Documents reviewed for this inspection activity are listed in the Supplemental Information attachment to this report.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program (71111.11)

a. Inspection Scope (1 sample)

The inspectors observed one simulator training scenario to assess operator performance and training effectiveness on June 8. The inspectors observed training scenario "2612CREW.10 – 4.01". The inspectors assessed whether the simulator adequately reflected the expected plant response, operator performance met Exelon's procedural requirements, and the simulator instructor's critique identified crew performance problems. Documents reviewed for this inspection activity are listed in the Supplemental Information attachment to this report.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12)

a. Inspection Scope (3 samples)

The inspectors performed three maintenance effectiveness inspection activities. The inspectors reviewed the following degraded equipment issues in order to assess the effectiveness of maintenance by Exelon:

- Periodic 10CFR50.65(a)(3) evaluation on April 5,
- Reactor building crane on May 6; and
- Chlorination system on June 1.

The inspectors also verified that the systems or components were being monitored in accordance with Exelon's maintenance rule program requirements. The inspectors compared documented functional failure determinations and unavailable hours to those being tracked by Exelon. The inspectors reviewed completed maintenance work orders and procedures to determine if inadequate maintenance contributed to equipment performance issues. The inspectors also reviewed applicable work orders, corrective action program condition reports, operator narrative logs, and vendor manuals. Documents reviewed for this inspection activity are listed in the Supplemental Information attachment to this report.

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13)

a. Inspection Scope (5 samples)

The inspectors reviewed five on-line risk management evaluations through direct observation and document reviews for the following plant configurations:

- Standby gas treatment system (SGTS) 2 unavailable due to planned maintenance during a heavy lift while moving a spent fuel cask on May 5;
- Bank 6 startup transformer inoperable during reactor startup on May 2;
- 125 VDC out during static charger swap on May 14;
- Core spray system 1 unavailable due to planned maintenance and electromagnetic relief valve unavailable due to testing during a heavy lift while moving a spent fuel cask on May 17; and
- Core spray system 2 and STGS 1 unavailable due to planned maintenance on May 25.

The inspectors reviewed the applicable risk evaluations, work schedules, and control room logs for these configurations to verify the risk was assessed correctly and reassessed for emergent conditions in accordance with Exelon's procedures. Exelon's actions to manage risk from maintenance and testing were reviewed during shift turnover meetings, control room tours, and plant walkdowns. The inspectors also used Exelon's on-line risk monitor (Paragon) to gain insights into the risk associated with these plant configurations. Additionally, the inspectors reviewed corrective action program condition reports documenting problems associated with risk assessments and emergent work evaluations. Documents reviewed for this inspection activity are listed in the Supplemental Information attachment to this report.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope (5 samples)

The inspectors reviewed five operability evaluations for degraded or non-conforming conditions associated with:

- Core spray system check valve V-20-9 due to missed in-service test on April 15 (IR 1056730);
- Rod worth monitor following corrective maintenance prior to reactor startup on May 1;
- Four of six phases on bank 5/6 startup transformer voltage regulators has VLC (voltage level control) found off on May 2 (IR 1064529);

- Non-destructive evaluation results of core spray system 2 on June 2 (IR 1076164); and
- 1-8 sump integrator missed pump down on June 16 (IR 1080887).

The inspectors reviewed the technical adequacy of the operability evaluations to ensure the conclusions were technically justified. The inspectors also walked down accessible portions of equipment to corroborate the adequacy of Exelon's operability evaluations. Documents reviewed for this inspection activity are listed in the Supplemental Information attachment to this report.

The inspectors performed an inspection of Exelon's activities to return the rod worth minimizer (RWM) to an operable status as a followup to a non-cited violation described in inspection report 05000219/2010002 (NCV 04000219201002-02, Failure to Declare the Rod Worth Minimizer Inoperable at the Time Operability Criteria Was Not Met And Enter the Correct Technical Specification Action Statement). Technical specification 3.2.B.2(b) requires that "A startup without the RWM as described in this subsection shall be reported in a special report to the Nuclear Regulatory Commission (NRC) within 30 days of the startup stating the reason for the failure of the RWM, the action taken to repair it and the schedule for completion of the repair." Contrary to the requirement, Exelon failed to submit the special report to the NRC within 30 days of the startup. The inspectors determined the failure to submit the special report constituted a minor violation based upon Exelon's actions to repair the rod worth minimizer prior to the May 2010 startup and the length of time that had passed between the original RWM failure and the documentation of NCV 04000219201002-02.

b. Findings

Introduction: The inspectors identified a SL IV, Green NCV of 10CFR50.55(a) when Exelon did not properly implement the ASME code requirements for the core spray system check valves. Specifically, Exelon did not properly implement the ASME Check Valve Condition Monitoring Program, improperly extended the inspection interval when working under the condition monitoring program, and did not restore compliance with the ASME code for check valve testing once the condition monitoring program requirements were not met.

Description: On October 14, 2002, Exelon entered the core spray pump discharge valves V-20-8, V-20-9, V-20-16, and V-20-22 into the ASME Check Valve Condition Monitoring Program. Exelon continued the practice of opening and inspecting each check valve as the condition monitoring method to monitor wear and degradation over time using the following schedule:

| Valve | Last Recorded Inspection Date Prior to Transition to Condition Monitoring | Recorded Inspection Date After Transition to Condition Monitoring | Required (Based on 8 year inspection frequency) |
|---|---|---|---|
| V-20-8 | 1R18 (2000) | Deferred to 1R23 (2010) | 1R22 (2008) |
| V-20-9 | 1R17 (1998) | Descoped 1R22 | 1R21 (2006) |

| | | | |
|---|---|---|---|
| | | (2008) Planned 1R24 (2012) | |
| V-20-16 | 1R16 (1996) | 1R21 (2006) | 1R20 (2004) |
| V-20-22 | 1R15 (1994) | 1R19 (2002) | 1R19 (2002) |

The inspection for V-20-8 has been deferred to 1R23 in 2010. The inspection for V-20-9 was descoped from 1R22 (2008) and has been deferred to 1R24 in 2012.

Exelon's code of record for Oyster Creek is ASME OM Code 1995 edition with the 1996 addenda. For licensees who implement Appendix II, Check Valve Condition Monitoring Program for this code edition, 10CFR50.55(a)3.(B)iv.(B) states "the initial interval for tests and associated examinations may not exceed two fuel cycles or 3 years, whichever is longer; any extension of this interval may not exceed one fuel cycle per extension with the maximum interval not to exceed 10 years; trending and evaluation of existing data must be used to reduce or extend the time interval between tests." Exelon did not complete the necessary testing and examinations for all the valves of this valve group within the two fuel cycles required by the CFR.

Additionally, while operating under the Check Valve Condition Monitoring Program, Exelon did not follow 10 CFR 50.55a requirements, ASME code requirements or corporate procedural guidance when extending the check valve inspection interval from 8 years to 10 years. 10 CFR 50.55(a)3.(B)iv.(B) states "trending and evaluation of existing data must be used to reduce or extend the time interval between tests" and Exelon did not perform this analysis prior to extending the time between inspections to ten years. Exelon procedure ER-AA-321-1005, Condition Monitoring for Inservice Testing of Check Valves, further states "test intervals cannot be extended until data at the current interval has been collected for all the check valves in the group." This was also not done prior to extending the time between inspections to ten years.

10CFR50.55(a)3.(B)iv.(C) states that if the condition monitoring program for a valve or valve group is discontinued, as would be the case when Exelon did not complete the required (prerequisite) testing, examination and analysis within two fuel cycles, the requirements of ISTC 4.5.1 through 4.5.4 apply. The requirements of ISTC 4.5.4 require observation that the valve obturator has traveled to either the full open position or to the position required to perform its intended function, and verification that on cessation or reversal of flow, the obturator has traveled to the seat. This can be completed by observing valve position indication, by performing full-flow quarterly testing of the valve which passes the maximum required accident flow, or by opening and inspecting one valve in the group each refueling outage. These valves do not have position indication and the test conditions limit flow to less than the maximum required accident flow, so Exelon must open and inspect one valve from this group during each refueling outage, with all valves being inspected within an 8 year interval, or submit a relief request for an alternative method to prove code compliance. Exelon believed the valves to still be under the requirements of condition monitoring, so they did not submit a relief request. Additionally, V-20-8 and V-20-9 are beyond the required 8 year inspection frequency (see chart above) and are not in compliance with the code.

Exelon procedure 116, Surveillance Testing Program states that "if an ASME code required test cannot be performed by the end of its grace period on equipment required

to be operable, then the equipment shall be declared inoperable and the appropriate action shall be entered as required by the controlling document." The inspectors determined that V-20-8 and V-20-9 have missed their ASME code required tests when Exelon failed to open and inspect these valves in 2008 and 2006 respectively.

Exelon performed an operability evaluation and declared V-20-9 operable based upon calculations that demonstrate that the quarterly surveillance test passes enough flow to meet the minimum velocity necessary to keep the check valve fully open as discussed in EPRI Check Valve Application Guide NP-5479, Rev. 1. Exelon also has information provided by the valve vendor, Flowserve, which asserts that the surveillance test passes enough flow to achieve full obturator travel. These alternative methods are not approved for use in meeting ASME code requirements without a relief request. Additionally, in May 2010, Exelon performed non-intrusive testing on V-20-9, which appeared to show the valve in the full open position. However, without a recent inspection to validate the non-intrusive testing data, Exelon is vulnerable to situations similar to those described in NRC Information Notice 2000-21, "Detached Check Valve Disc Not Detected by Use of Acoustic and Magnetic Non-intrusive Test Techniques", where valve failures went undetected despite positive results from non-intrusive testing.

Analysis: Exelon's failure to follow the requirements of the ASME OM Code is a performance deficiency that is reasonably within Exelon's ability to foresee and prevent. There are no similar examples in IMC 0612, Appendix E, Examples of Minor Issues. This finding is more than minor because it affects the equipment performance attribute of the mitigating system cornerstone to ensure the reliability and availability of the core spray system. Specifically, ASME testing assesses the operational readiness of certain valves required to perform a specific safety function. 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 inspectors determined that the finding also involved traditional enforcement because Exelon did not seek NRC approval prior to using alternate means to demonstrate the core spray check valves could perform their intended function, which impacted the regulatory process. In accordance with Supplement I, Reactor Operations, of the NRC Enforcement Policy, the NRC determined that the safety significance of this violation was SL IV because the situation, per example 3 of a SL IV violation, was a matter with more than a minor safety or environmental significance.

This finding has a cross-cutting aspect in the area of human performance because Exelon did not use conservative assumptions in decision making and assumed the core spray system check valves would be in compliance with the ASME code despite using a non-approved testing method (H.1(b)).

Enforcement: 10CFR50.55(a) states, in part, that there are requirements to implement the ASME OM code for condition monitoring, valve testing, and interval extension. Contrary to the above, Exelon failed to implement the requirements as specified in the CFR, ASME Code, and station procedures when they did not appropriately transition out of the Condition Monitoring program in 2006, did not request relief prior to using an unapproved method to prove compliance, and inappropriately extended the testing interval.

Because this violation was of very low safety significance and it was entered into Exelon's corrective action program as IR 1093256 this violation is being treated as an NCV, consistent with the Enforcement Policy. **(NCV 05000219/2010-003-04, Core Spray ASME Code Compliance Issues).**

1R18 Plant Modifications (71111.18)

a. Inspection Scope (1 temporary and 1 permanent plant modification sample)

The inspectors reviewed one temporary and one permanent plant modification that were implemented by Exelon personnel at Oyster Creek. The inspectors reviewed the following modifications:

- TCCP to lift lead to lock in alarm B-3-G, EMRV open (temporary modification: ECR 10-00284); and
- Removal of flapper valve from steam packing exhauster (permanent modification: ECR 10-00181).

The inspectors reviewed the engineering/procedure change packages, design basis, and licensing basis documents associated with each of the modifications to ensure that the systems associated with each of the modifications would not be adversely impacted by the change. The inspectors walked down portions of the systems associated with the modification when applicable and prudent. The inspectors reviewed the modifications to ensure they were performed in accordance with Exelon's modification process. The inspectors also ensured that revisions to licensing/design basis documents and operating procedures were properly revised to support implementation of the modification. The inspectors also reviewed Exelon's 10 CFR 50.59 screening for each of the modifications. Documents reviewed for this inspection activity are listed in the Supplemental Information attachment to this report.

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing (71111.19)

a. Inspection Scope (7 samples)

The inspectors observed portions of and/or reviewed the results of seven post-maintenance tests for the following equipment:

The inspectors observed portions of and/or reviewed the results of seven post-maintenance tests for the following equipment:

- "B" Isolation Condenser on April 7 (R2155520);
- EDG 1 on June 11 (R2163318);
- Diesel fire pump 1-2 on June 19 (R2163780);
- Emergency service water (ESW) system 1 keep fill check valve to containment spray heat exchanger on April 12 (R2156445);
- Rod worth minimizer repairs on May 1 (M2243705);
- Replacement of V-19-54 on June 23 (C2023538); and
- Containment spray/ESW system 2 on April 20 (R2142201).

The inspectors verified that the post-maintenance tests conducted were adequate for the scope of the maintenance performed and that they ensured component functional capability. Documents reviewed for this inspection activity are listed in the Supplemental Information attachment to this report.

b. Findings

Introduction: The inspectors identified that Exelon cycled valves for maintenance prior to performing scheduled quarterly in-service testing (IST) which resulted in unacceptable preconditioning of valves within the isolation condenser system on April 7. This finding was of very low safety significance and was determined not to be a violation of NRC requirements. Exelon entered this issue into their corrective action system as IR 1053801.

Description: During plant status reviews on April 7, the inspectors identified that the sequence of maintenance and testing in the work control schedule resulted in cycling of valves just prior to the accomplishment of their quarterly IST and constituted unacceptable preconditioning. Specifically, Exelon scheduled and performed work on the 'B' isolation condenser steam inlet valve (V-14-32) packing prior to the performance of the quarterly IST (609.4.001), Isolation Condenser Valve Operability and In-Service Test. As part of the clearance for the packing adjustment work, operators closed a valve for the steam inlet (V-14-33) and cycled the valve for condensate return (V-14-35). This sequence of work and testing resulted in cycling valves just prior to their in-service stroke time test.

Exelon personnel evaluated the inspector's concerns (IR 1053801) and reviewed plant process computer data for the V-14-33 valve closure time obtained when the valve was cycled during the clearance application for the packing adjustment work. The valve closure time was within the IST acceptance criteria.

The inspectors noted in NRC IMC Part 9900 Technical Guidance, "Maintenance - Preconditioning of Structures, Systems, and Components before Determining Operability", and in Exelon Procedure ER-AA-321, "Administrative Requirements for In-service Testing," manipulation of valves during or just prior to surveillance or ASME code testing constitutes unacceptable preconditioning. IMC Part 9900 further states preconditioning of valves could mask their actual as-found condition and result in an

The performance deficiency associated with this finding involved scheduling work in a sequence that resulted in unacceptable preconditioning of isolation condenser system valves, which was not in accordance with Exelon's procedural guidance regarding in-service testing.

Analysis: 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. 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 Exelon did not appropriately coordinate work activities to support long term equipment reliability. [H.3(b)].

Enforcement: This issue does not constitute a violation of NRC requirements. The finding was of very low safety significance (Green) and Exelon documented this issue in corrective action program condition report IR 1053801. **(FIN 05000219/2010-003-01, Preconditioning of Isolation Condenser Valves Prior to ASME In-service Test)**

1R20 Refueling and Other Outage Activities (71111.20)

a. Inspection Scope (1 sample)

The inspectors monitored Exelon's activities associated with the outage activities described below. Documents reviewed for this inspection activity are listed in the Supplemental Information attachment to this report.

On April 27, operators initiated and completed a plant shutdown to support a planned maintenance outage to conduct repairs on the 1A3 feedwater heater. The inspectors observed portions of the shutdown from the control room, and reviewed plant logs to ensure that technical specification requirements were met for placing the reactor in "hot shutdown" and "cold shutdown." The inspectors monitored Exelon's controls over outage activities to determine whether they were in accordance with procedures and applicable technical specification requirements.

The inspectors verified that cool down rates during the plant shutdown were maintained within technical specification requirements. The inspectors performed a walkdown of portions of the condenser bay on April 30 to verify there was no evidence of leakage or visual damage to passive systems contained in these areas. The inspectors verified that Exelon assessed and managed the outage risk. The inspectors confirmed on a sampling basis that tagged equipment was properly controlled and equipment configured

to safely support maintenance and plant operations. During control room tours, the inspectors verified that operators maintained reactor vessel level and temperature within the procedurally required ranges for the operating condition. The inspectors also verified that the decay heat removal function was maintained through monitoring shutdown cooling (SDC) parameters.

The inspectors monitored restart activities that began on May 1, to ensure that required equipment was available for operational condition changes, including verifying technical specification requirements, license conditions, and procedural requirements. Portions of the startup activities were observed from the control room to assess operator and equipment performance. The inspectors further verified that unidentified leakage and identified leakage rate values were within expected values and within technical specification requirements.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope (3 inservice test (IST) samples and 3 routine surveillance samples)

The inspectors observed portions of and/or reviewed the results of six surveillance tests:

- Isolation Condenser "B" Shell Water Level Instrument Calibration on April 6;
- Isolation Condenser "B" Valve Operability and IST on April 7;
- Standby Liquid Control Pump 'A' Pump and Valve Operability and IST on April 1;
- Main Turbine Surveillance on April 8;
- Drywell Equipment Drain Sump Isolation Valve and IST on April 12; and
- EDG 1 battery test surveillance on April 19.

The inspectors verified that test data was complete and met procedural requirements to demonstrate the systems and components were capable of performing their intended function. The inspectors also reviewed corrective action program condition reports that documented deficiencies identified during these surveillance tests. Documents reviewed for this inspection activity are listed in the Supplemental Information attachment to this report.

b. Findings

No findings of significance were identified.

**Cornerstone: Emergency Preparedness [EP]**

1EP6 Drill Evaluation (71114.06)

a. Inspection Scope (1 sample)

The inspectors observed an operator requalification activity on June 8th, which counted as an input into the NRC's emergency response drill and exercise performance indicator (PI). The inspectors observed Exelon's critique of the training activity to verify that weaknesses and deficiencies were adequately identified. The inspectors specifically focused on ensuring Exelon identified operator performance issues associated with event classification, notification, and protective action recommendations.

Documents reviewed for this inspection activity are listed in the Supplemental Information attachment to this report.

b. Findings

No findings of significance were identified.

## 2. RADIATION SAFETY

**Cornerstone: Public Radiation Safety [PS]**

RS08 Radioactive Solid Waste Processing and Radioactive Material Handling, Storage, and Transportation (71124.08)

a. Inspection Scope

The inspector selectively reviewed the implementation of the Radioactive Solid Waste Processing and Radioactive Material Handling, Storage, and Transportation Program to verify the effectiveness of the licensee's programs for processing, handling, storage, and transportation of radioactive material. The review was with respect to10 CFR 20, 49 CFR, applicable licensee procedures, and Technical Specifications.

Radioactive Material Storage

The inspector selected three areas where containers of radioactive waste were stored, and verified that the containers were labeled in accordance with 10 CFR 20.1904, "Labeling Containers," or controlled in accordance with 10 CFR 20.1905, "Exemptions to Labeling Requirements," as appropriate.

The inspector verified that radioactive materials storage areas were controlled and posted in accordance with the requirements of 10 CFR Part 20, "Standards for Protection against Radiation."

The inspector evaluated the licensee established process for monitoring the impact of long-term storage (e.g., buildup of any gases produced by waste decomposition, chemical reactions, container deformation, loss of container integrity, or re-release of free-flowing water) to identify potential unmonitored, unplanned releases or nonconformance with waste disposal requirements.

The inspector selectively reviewed at least ten containers of stored radioactive materials to verify there were no signs of swelling, leakage, or deformation. The inspector relied, in part, on camera surveillance to view some storage areas.

Shipment Preparation

The inspector observed shipment packaging (OC-4005-10) surveying, labeling, marking, placarding emergency instructions, disposal manifest, shipping papers for the driver, and licensee verification of shipment readiness. The inspector verified that the requirements of any applicable transport cask certificate of compliance (CoC) had been met.

The inspector observed radiation workers during conduct of radioactive waste shipment preparation (OC-4005-10). The inspector selectively determined that the shippers were knowledgeable of the shipping regulations and that shipping personnel demonstrated adequate skills to accomplish the package preparation requirements for public transport with respect to NRC Bulletin 79-19, "Packaging of Low-Level Radioactive Waste for Transport and Burial," and 49 CFR Part 172, "Hazardous Materials Table, Special Provisions, Hazardous Materials Communication, Emergency Response Information, Training Requirements, and Security Plans," Subpart H, "Training." The inspector made direct observation of non-exempt package (cask) loading and closure and verified completion of training for the conduct of radioactive material shipment preparation activities.

Shipping Records

The inspector selected one non-excepted package shipment (OC-0609-13856) for record review. The inspector verified that the shipping documents indicated the proper shipper name; emergency response information and a 24-hour contact telephone number; accurate curie content and volume of material; and appropriate waste classification, transport index (as applicable), and UN number, and disposal considerations. The inspector verified the shipment placarding was consistent with the information in the shipping documentation.

c. Findings

No findings of significance were identified.

## 4. OTHER ACTIVITIES [OA]

### Independent Spent Fuel Storage Installation

a. Inspection Scope (60855, 60855.1)

The inspectors observed activities associated with loading of a dry cask canister to ensure that Technical Specifications were met, equipment operated properly, and personnel were properly trained. The inspectors reviewed documents and records associated with the operation of the Oyster Creek Nuclear Generating Station independent spent fuel storage installation (ISFSI). Documents reviewed for this inspection activity are listed in the Supplemental Information attachment to this report. The inspectors met with reactor engineering personnel to review the fuel selection process and associated documentation. The inspectors discussed how the cask loading computer program was implemented for each cask loading. The video recording of the

fuel bundles placed into the canister was reviewed to ensure that each bundle was placed into the proper location. The inspectors observed work activities on the refuel floor associated with the fuel selection and loading of fuel into the cask. The Inspectors also observed the movement of the loaded canister from the refuel floor to the ISFSI storage pad.

b. Findings

No findings were identified.

4OA1 Performance Indicator Verification (71151)

a. Inspection Scope (4 samples)

The inspectors reviewed performance indicator (PI) data associated with four PIs. The inspectors used the guidance provided in Nuclear Energy Institute (NEI) 99-02, Revision 5, "Regulatory Assessment Performance Indicator Guideline" to assess the accuracy and completeness of the PI data reported by Exelon. Documents reviewed for this inspection activity are listed in the Supplemental Information attachment to this report.

The inspectors reviewed the following PIs:

- "Unplanned Scrams per 7000 Critical Hours" between April 1, 2009 and March 31, 2010.
- "Scrams with Complications" between April 1, 2009 and March 31, 2010.
- "Unplanned Transients per 7000 Critical Hours" between April 1, 2009 and March 31, 2010.
- "Safety System Functional Failures" between April 1, 2009 and March 31, 2010.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems (71152)

.1 Review of Items Entered Into the Corrective Action Program

The inspectors performed a daily screening of items entered into Exelon's corrective action program to identify repetitive equipment failures or specific human performance issues for follow-up. This was accomplished by reviewing hard copies of each condition report, attending daily screening meetings, or accessing Exelon's computerized database.

.2 Semi-Annual Review to Identify Trends

a. Inspection Scope (1 sample)

The inspectors performed one semi-annual trend review. The inspectors reviewed Exelon's corrective action program documents to identify trends that could indicate the

existence of a more significant safety issue. The inspectors also performed a walkdown of equipment important to safety to ensure issues were being properly identified and corrected in the corrective action program. The review was focused on repetitive equipment problems, human performance issues, and program implementation issues. The results of the trend review by the inspectors were compared with the results of normal baseline inspections. The review included issues documented outside the normal corrective action system, such as in system health reports and Oyster Creek monthly management reports. The review considered a six-month period of November 2009 through May 2010.

b. Assessment and Observations

No findings of significance were identified.

.3 Annual Sample Review

a. Inspection Scope (1 Annual sample)

Stack RAGEMS Sample Line Found Disconnected.

The inspectors reviewed Exelon's evaluation and corrective actions associated with corrective action program condition report IR 01053577, which involved the discovery of a disconnected stack sample line. The faulted sample line rendered the main stack Radioactive Gaseous Effluent Monitoring System (RAGEMS) inoperable. The inspection related to the initial failure of the RAGEMS sample line, and its effects, is documented in Section 4OA3 of this report; this PI&R sample inspection focused on the emergency preparedness aspects of Exelon's response to the discovery of the sample line failure. The inspectors reviewed the licensee's actions to compensate for and to resolve the problem once it was identified.

The inspection included a review of corrective action program condition reports and work orders associated with the RAGEMS system, interviews with site chemistry and emergency preparedness personnel, analysis of Oyster Creek Radiological Emergency Plan commitments, and a review of a newly-developed stack alternate sampling plan which compensated for the unavailability of the stack RAGEMS monitor under emergency event conditions. The inspector reviewed the licensee actions taken in accordance with the emergency preparedness planning standards in 10 CFR 50.47(b) and the commitments found in the Oyster Creek Emergency Plan.

b. Findings and Observations

Introduction The inspectors identified a Green non-cited violation (NCV) of 10 CFR 50.54(q), "Conditions of Licenses," because Exelon did not properly maintain the conditions of the Oyster Creek Radiological Emergency Plan required by planning standard 10 CFR 50.47(b)(9), Dose Assessment, which calls for adequate methods, systems, and equipment for assessing and monitoring actual or potential offsite consequences of a radiological emergency condition. Specifically, Exelon did not implement timely compensatory actions when the stack RAGEMS was discovered to have a faulted sample supply line. The stack RAGEMS was installed to comply with

10 CFR 50.47(b)(9) and NRC NUREG-0737 requirements. The purpose of the system is to provide for a continuous monitoring of noble gas releases, and continuous particulate and iodine samples. Exelon's ultimate corrective actions included revising site procedures to provide for an alternate sampling plan and the repair of the sample line.

Description On April 7, when an instrument and controls (I&C) technician was performing a calibration of the main stack flow transmitters, the technician discovered that the stack RAGEMS sample line had become separated at a union at the 260' elevation. The sample line was disconnected such that the two ends were separated by several inches, and the sample line was open to the atmosphere. The technician reconnected the two ends of the sample line and hand-tightened the union. On April 12, during an inspection of the sample line, the licensee confirmed an additional connection in the line had also become separated. At that time, Exelon repaired each connection using the appropriate tools and parts. On April 19, Exelon declared the stack RAGEMS operable following completion of all the actions of the Stack RAGEMS Recovery Team, including a satisfactory tightness check of the sample line connections.

The delay between April 7, when the defect was first discovered, and April 12, when the system was inspected, was due to getting the proper equipment to the site for the repair work and due to poor weather conditions. The licensee believed that the hand-tight repair implemented by the I&C technician on April 7 had made the system functional, despite reports from the technician that he believed an additional lower union was also loose. The basis for the licensee's conclusion was an increase in the observed RAGEMS count rate when the upper union had been hand-tightened. However, the inspection of the sampling line on April 12 validated the technician's report, when the second separated connection was discovered. Exelon recognized as a result of the April 7 discovery that the RAGEMS may not have been able to fulfill its Emergency Plan dose projection function, and initiated the development of an alternate sampling plan that would compensate for the unavailability of the RAGEMS. The alternate sampling plan was not approved for use until April 15, 2010.

The inspectors concluded that for the time between the discovery of the RAGEMS sample line being disconnected and the acceptance of the alternate sampling plan, the licensee was in violation of the Radiological Emergency Plan licensing basis for obtaining an accurate stack RAGEMS sample under accident conditions. Although corrective actions were promptly initiated following the discovery of the sample line defect, Oyster Creek personnel did not provide for timely compensatory measures commensurate with the Radiological Emergency Plan requirements. For the period from April 7 through April 15, the site did not have adequate equipment or procedures in place to assess an emergency release which may have occurred through the main stack.

The performance deficiency associated with this finding involved Exelon failing to implement timely corrective or compensatory actions when the RAGEMS was out of service, which resulted in Exelon not maintaining the Oyster Creek Emergency Plan in a manner to meet the standards in 10 CFR 50.47(b)(9). Exelon's ultimate corrective actions included revising site procedures to provide for an alternate sampling plan and the repair of the sample line.

Analysis: The inspectors determined that Exelon did not implement timely corrective or compensatory actions once the RAGEMS sample line was discovered to be disconnected. The finding was more than minor because it affected the Emergency Response Organization Performance attribute of the EP Cornerstone to ensure that the licensee is capable of implementing adequate measures to protect the public health and safety of the public in the event of a radiological emergency.

The inspectors assessed the finding using Inspection Manual Chapter (IMC) 0609, Appendix B, "Emergency Preparedness Significance Determination Process," and determined the finding to be of very low safety significance (Green). Specifically, the inspectors utilized IMC 0609, Appendix B, section 4.9 and Sheet 1, "Failure to Comply," and determined that the failure to comply with an aspect of the Radiological Emergency Plan related to dose assessment (10 CFR 50.47(b)(9)) was a risk-significant planning standard (RSPS) problem; specifically equipment or systems used for dose projection were not functional for longer than 24 hours from the time of discovery without compensatory measures. It was not a RSPS functional failure of the Oyster Creek dose assessment process because other dose assessment systems and methods were still available for use. Therefore, the inspectors determined that the RSPS function had not been degraded and the inaccurate readings from RAGEMS ultimately would not have affected the outcome of protecting the health and safety of the public.

The performance deficiency had a cross-cutting aspect in the area of problem identification and resolution, because Exelon did not take appropriate corrective actions to address this safety issue in a timely manner commensurate with its safety significance and complexity. Specifically, the stack RAGEMS sampling system was not able to satisfy the functions required by the Oyster Creek Radiological Emergency Plan for eight days from the date of problem identification before Exelon implemented adequate compensatory actions to account for the RAGEMS being out of service [P.1(d)].

Enforcement: 10 CFR 50.54(q) requires, in part, that a licensee "shall follow and maintain in effect emergency plans which meet the standards in 10 CFR 50.47(b) and the requirements in Appendix E of this part." 10 CFR 50.47(b)(9) requires, in part, that "adequate methods, systems, and equipment for assessing and monitoring actual or potential offsite consequences of a radiological emergency condition are in use."

Contrary to the above, from April 7-15, 2010, Exelon did not have an adequate method or equipment in place for assessing and monitoring an actual or potential offsite release through the plant main stack. As a result, this could have resulted in an unnecessary delay in obtaining an adequate dose assessment, which would be necessary to validate emergency action level declarations and to make appropriate protective action recommendations. By failing to meet the requirements of 10 CFR 50.47(b)(9), Exelon was in violation of 10 CFR 50.54(q) for not properly maintaining the conditions of the Oyster Creek Emergency Plan. Because this finding is of very low safety significance, and because it was entered into Exelon's corrective action program, this violation is being treated as an NCV, consistent with Section VI.A of the NRC Enforcement Policy. **(NCV 005000219/2010003-02, Failure to Provide for Adequate Compensatory Actions for the RAGEMS Being Out Of Service)**

.4 Identification and Resolution of Problems

a. Inspection Scope (71153, 71124.06, 71124.08)

The inspector selectively reviewed corrective action documents written since the previous inspection. The documents reviewed are presented in the list of documents reviewed included with this report. The review was against criteria contained in 10 CFR 20, Technical Specifications, and applicable station audit and surveillance procedures.

b. Findings

No findings of significance were identified.

4OA3 Event Followup (71153) (1 sample)

The inspectors performed one event followup inspection activity. Documents reviewed for this inspection activity are listed in the Supplemental Information attached to this report.

.1 Stack Radioactive Gas Effluent Monitoring System (RAGEMS) Sample Line Separated at Fitting

a. Inspection Scope

On April 7, a maintenance technician noted that the stack RAGEMS sample line tubing was disconnected at a fitting and open to the atmosphere. The technician performed a temporary repair by inserting the tube back into the fitting, but did not have the proper tools to tighten the fitting. The technician documented the condition in the corrective action program as IR 1053577. On April 8, Exelon made an initial report in accordance with 10 CFR 50.72 as event notice 45824. On April 15, Exelon instituted compensatory measures to monitor gaseous effluents while performing repairs. Exelon completed repairs and returned the stack RAGEMS to service on April 19.

The inspectors observed the response of Exelon personnel by reviewing control room narrative logs, corrective action program condition reports, and through interviews of Exelon maintenance, operations and chemistry department personnel. The inspectors reviewed technical specification requirements, the Oyster Creek Radiological Emergency Plan and the Oyster Creek Offsite Dose Calculation Manual (ODCM) to evaluate Exelon's response to the degraded condition and to ensure that Oyster Creek was operated in accordance with its operating license. The event is described and evaluated in corrective action program condition report IR 1053577.

b. Findings

Introduction

The inspectors identified a SL IV NCV of 10 CFR 50.72 when Exelon did not make the required initial notification within 8 hours of the occurrence of the condition. Specifically, on the morning of April 7th, a maintenance technician found the stack radioactive gas

effluent monitoring system (RAGEMS) sampling line disconnected, which rendered it inoperable and Exelon did not make the required report until 1535 on April 8.

Description

On the morning of April 7, a maintenance technician ascended the stack to perform a scheduled replacement of the stack sample flow transmitter. Upon reaching the work platform on the stack, the technician noticed that the stack sample line tubing was disconnected at a fitting and open to the atmosphere, which rendered the stack RAGEMS inoperable. Of note, the stack sample line serves both the stack RAGEMS and the sample path for manual sampling of the stack effluent. The stack sample flow transmitter is served by its own tubing and is not connected to, or affected by, the stack sample line tubing. The maintenance technician temporarily inserted the disconnected stack sample line tubing into the fitting, as best he could without the appropriate tools, but could not adequately tighten the fitting. The maintenance technician completed the installation of the sample flow transmitter and descended the stack. At 1346 on April 7, the technician submitted a condition report describing the disconnected stack sample line tubing into the corrective action program (IR 1053577). The IR documented the original problem and also noted that the stack sample line tube appeared to be disconnected at a second location below the stack work platform. Exelon evaluated these conditions and decided at 1535 on April 8th, approximately 26 hours after discovery of the disconnected stack sample line tubing, that the conditions described in IR 1053577 constituted a major loss of monitoring capability and made the required verbal notification (event number 45824) to the NRC as required by 10 CFR 50.72(b)(3)(xiii).

Analysis

Exelon's failure to notify the NRC of an event in the time required by 10 CFR 50.72 was a performance deficiency. The finding was more than minor because it is similar to Inspection Manual Chapter 0612, Appendix E, example 2.d.

The finding was determined to be subject to traditional enforcement because the NRC's ability to perform its regulatory function was potentially impacted by the licensee's failure to report the event within the eight hour time requirement of 10 CFR 50.72. The finding was determined to be a SL IV violation in accordance with Section D of Supplement I of the NRC Enforcement Policy. The finding is not suitable for evaluation using the significance determination process, but has been reviewed by NRC management and is determined to be a finding of very low safety significance.

This finding has a cross-cutting aspect in the area of human performance (H.1.b), decision-making. Specifically, Exelon's delay in determining that the conditions reported in IR 105377 constituted a loss of monitoring capability, and did not demonstrate that the licensee uses conservative assumptions in decision making and adopts a requirement to demonstrate that the proposed action is safe in order to proceed, rather than a requirement to demonstrate that it is unsafe in order to disapprove the action.

Enforcement

10 CFR 50.72 (b)(3)(xiii) states in part, that "the licensee shall notify the NRC as soon as practical and in all cases within eight hours of the occurrence of any event that results in a major loss of emergency assessment capability, offsite response capability, or offsite communications capability." Additionally, the guidance contained in NUREG-1022, "Event Reporting Guidelines 10 CFR 50.72 and 50.73 states, in part, that "reporting times in 10 CFR 50.72 are keyed to the occurrence of the event or condition."

Contrary to the above, Exelon did not notify the NRC within 8 hours after the discovery that the stack sample line tubing was disconnected, that a condition that constituted a major loss of assessment capability existed. The NRC was notified of the event approximately 26 hours after the condition was entered into the corrective action program.

Because this violation was of very low safety significance, was not repetitive or willfull, and was entered into Exelon's corrective action program (IR 1092319), this violation is being treated as an NCV, consistent with the NRC Enforcement Policy. **(NCV 05000219/201003-03, Failure To Notify the NRC within the time requirements of 10 CFR 50.72)**

.2 Ground Water (Pipe Vault No. 1)

a. Inspection Scope (71153, 71124.06)

On May 14, the licensee made a notification to the NRC and the State of New Jersey that, upon opening Pipe Vault No. 1, approximately 2,000 to 3,000 gallons of water was present in the vault and that a sample of the water indicated a tritium concentration of about 18,000 pCi/l. The vault is located on the southeast corner of the Reactor Building (RB) and was being inspected as part of Exelon's buried pipe remediation program. The vault is approximately 8 feet square and 20 feet deep (below grade).

The inspectors conducted a preliminary review of the circumstances and licensee on-going evaluations associated with detection of tritium in the vault. As part of this review, the inspectors performed walk-downs of the area and entered the vault to review material conditions therein. The inspectors interviewed personnel and evaluated the likely causes of tritium. The inspectors selectively reviewed the following items:

- Preliminary assessments as to the source of the tritium,
- Records of the site characterization of geology and hydrology,
- Systems, structures, and/or components that contain or could contain licensed material in the area and evaluations of work practices that involved licensed material for which there is a credible mechanism for the licensed material to reach the groundwater at that location,
- Implementation of the onsite groundwater monitoring program,
- Groundwater monitoring results,
- Records of leaks and spills,
- Dose projections available,
- Disposition of water, and
- Reporting and notification

The inspectors confirmed that the licensee is exploring the possibility that the source of the tritium was a result of condensate associated with a July 2007 actuation of the station's Isolation Condensers (ICs). The ICs are part of the station's means to control temperature during reactor shut down and are part of the plant's licensing basis as described in Oyster Creek's Updated Final Safety Analysis Report (UFSAR). The licensee reported the release of tritium from the ICs in its 2007 Annual Effluent Release Report and made dose calculations associated with release. The calculations did not indicate any significant dose consequences. No tritium was detected in the vault prior to the July 2007 event. The inspectors did not identify any immediate safety concerns as regards radiological controls or plant operations. The licensee pumped out and collected the water for processing

The inspectors confirmed that prior to the 2008 outage, the ICs were filled with condensate water which contained tritium. In order to preclude the release of tritium, the licensee installed, during the 2008 refueling outage, a new demineralized water tank and subsequently flushed and refilled both ICs to remove the tritium. Although condensate water is credited as part of the licensing bases, demineralized water is now the preferred (but not credited) source of IC water. Additionally, the inspectors confirmed that the licensee also initiated the use of the demineralized water to maintain system level, as needed.

The inspectors directly observed the licensee pumping out and collecting the water for processing. Further, the inspectors entered and visually inspected the vault and observed that 1) the pipes that travel through the vault did not show any apparent leakage and were dry, 2) the piping penetrations through the walls of the vault did not show any signs of previous leakage such as rust streaks or corrosion, and 3) the piping coating appeared intact. Additionally, the inspectors' review of well data for monitoring wells surrounding this vault did not identify any tritium above detection limits

b. Findings

No findings of significance were identified, to date. At the close of this inspection period the inspectors were continuing to review on-going licensee evaluations and licensee efforts including excavation of the area in the vicinity of the pipe vault and evaluation of the condition of underground piping and to identify the source of the tritium.

.3 Stack Radioactive Gaseous Effluent Monitoring System (RAGEMS) Review

a. Inspection Scope (71153, 71124.06)

During scheduled replacement of the stack flow transmitter on April 7, technicians identified that the stack radioactive effluent sample line for the stack Radioactive Gaseous Effluent Monitoring System (RAGEMS) was disconnected at a pipe union at about the 260 foot elevation of the stack. The sample line was found to be displaced approximately 6 inches laterally resulting in the interruption of the flow path. The stack sample line is used to deliver a sample to the stack RAGEMS sample and monitoring system located in the RAGEMS Building at the base of the stack and provides for

monitoring of radioactive effluents discharged from the stack. The technician discovering the piping discontinuity re-connected the fitting. The RAGEMS system was declared inoperable on April 7.

The inspectors selectively reviewed the on-going efforts by the licensee to evaluate the cause of the separation of the stack sample line, to evaluate operability of the sampling system as regards effluents, and to implement compensatory sampling, as appropriate. The inspectors also reviewed plant stack RAGEMS data and reportability, as applicable. The licensee placed this issue into its corrective action program and completed a Root Cause Analysis of the event.

The review was with respect to station Technical Specifications and the Offsite Dose Calculation Manual.

The inspectors confirmed that the licensee initiated a prompt investigation to determine the cause and the consequences of the stack sample line deficiency, entered the issue into the Corrective Action Program (IR 1053577), and initiated periodic grab samples and compensatory sampling within the station, via an established schedule, to compensate for detection deficiencies associated with the stack sampling system. The licensee evaluated reportability and subsequently made a 10 CFR.50.72 notification on April 8.

The inspectors identified that the licensee subsequently completed the inspection of the sample line and determined there were three fittings affected, with two disconnected and one loose. The licensee repaired each connection and installed tube supports to support the sample line and to prevent wind induced motion of the line causing stress at the fittings. The licensee declared the Stack RAGEMS system (including the sample line) operable on April 20, after conducting a satisfactory tightness check of the sample line.

The inspectors confirmed that the licensee conducted a preliminary review of the potential dose impact of this matter and did not identify any indication that public doses may have exceeded 10 CFR 50 Appendix I ALARA dose limits. The inspectors also confirmed that the licensee initiated action to review environmental monitoring data to determine if there was any evidence or indication of a previous elevated release during the period when stack sample line integrity was questionable. The licensee's on-going reviews did not identify any indication that elevated releases occurred during periods of potential degradation of the sampling capability.

b. Findings

No findings of significance were identified, to date. At the end of the inspection period, the inspectors were continuing the review the licensee's Root Cause of the event, the licensee's dose assessment for the period when the sample line integrity was questionable, and the licensee's extent of condition review.

4OA5 Other

.1 (Closed) URI 05000219/2009007-03, Declassification of the Service Water System from ASME Class 3 to a non-Class Designation

a. Inspection Scope

This issue was opened as an unresolved item to determine the applicability NRC Regulatory Guide 1.26 "Quality Group Classifications and Standards for Water, Steam, and Radioactive Waste Containing Components of Nuclear Power Plants," for classifying the service water system, and the acceptability of a modification (08-00041) that reclassified the service water system from an ASME Section XI Class 3 system to a non-Class system.

This issue was discussed with various NRC Nuclear Reactor Regulation (NRR) technical branches, and it was determined the service water system classification was in accordance with the ASME Code and NRC Regulatory Guide 1.26. No performance deficiency was identified, and the URI is closed.

b. Findings

No findings of significance were identified.

4OA6 Meetings, Including Exit

Resident Inspector Exit Meeting. On July 22, the inspectors presented their overall findings to members of Exelon's management led by Mr. M. Massaro, Site Vice President, and other members of his staff who acknowledged the findings. The inspectors confirmed that proprietary information reviewed during the inspection period was returned to Exelon.

Regional Administrator Site Visit and 2009 Annual Assessment Meeting. On May 25, a site visit was conducted by Mr. S. Collins, Regional Administrator, for the Region 1 office. During Mr. Collins' visit, he toured the plant and met with Exelon managers.

The NRC conducted a meeting with Exelon on May 25 to discuss the NRC's assessment of safety performance at Oyster Creek for calendar year 2009. The meeting was open for public observation and included a question and answer session between the public and the NRC staff. A copy of the meeting notice, slide presentation and meeting summary can be found in ADAMS under Accession reference numbers ML101230079, ML101230049, and ML101540150, respectively.

The inspector presented the inspection findings to members of Exelon Nuclear management on June 10, 2010. Exelon personnel acknowledged the inspection findings. No proprietary information is contained in this report.

4OA7 Licensee-Identified Violations

None.

ATTACHMENT: SUPPLEMENTAL INFORMATION

## SUPPLEMENTAL INFORMATION

## KEY POINTS OF CONTACT

Licensee Personnel
M. Massaro, Site Vice-President
K. Barnes, Regulatory Assurance Specialist
J. Barstow, Manager, Regulatory Assurance
D. Benson, Site Communications
G. Busch, Reactor Services Manager
J. Carter, Reactor Services Manager
P. Colgan, Director, Maintenance
D. DiCello, Work Management Director
J. Dostal, Director, Operations
W. Emberger, Refuel Services
A. Farenga, Manager Emergency Preparedness
L. Felleppi, Effluent/Environmental Chemist
M. Floyd, Project Engineer
J. Kandasamy, Manager, Environmental/Chemistry Manager
T. Keenan, Manager, Security
J. Kerr, Manager, Corrective Action Program
K. Leonard, Program Engineer
M. McKenna, Shift Operations Superintendent
R. Milos, Regulatory Assurance Engineer
M. Nixon, Chemistry Supervisor
P. Orphanos, Plant Manager
R. Peak, Director, Engineering
H. Ray, Senior Manager, Design Engineering
R. Reiner, Director, Training
J. Renda, Manager, Radiation Protection
J. Renoa, Radiation Protection Manager
C. Rocha, Manager, Nuclear Oversight
R. Skelsky, Design Engineer Senior Manager
S. Sklenar, Environmental Manager, Mid-Atlantic
A. Sparks, ISFSI Project Manager
C. Taylor, Regulatory Assurance Specialist
W. Trombley, Project Management Manager
L. Tschantre, Reactor Services Manager
K. Wally, Health Physicist
R. Wiebenga, Senior Manager, System Engineering
J. Wieging, Engineering Programs Manager

Others:
State of New Jersey, Bureau of Nuclear Engineering

## LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

| | | |
|---|---|---|
| Opened/Closed | | |
| 05000219/2010003-01 | FIN | Preconditioning of Isolation Condenser Valves Prior to ASME In-service Test (Section 1R19) |
| 05000219/2010003-02 | NCV | Failure to Provide Adequate Compensatory Actions for the RAGEMS Being Out Of Service (Section 4OA2) |
| 05000219/2010003-03 | NCV | Failure to Notify the NRC within the Time Requirements of 10 CFR 50.72 (Section 4OA3) |
| 05000219/2010003-04 | NCV | Core Spray ASME Code Compliance Issues (Section 1R15 ) |
| Closed | | |
| 05000219/2009007-03 | URI | Declassification of the Service Water System from ASME Class 3 to a non-Class Designation (Section 4OA5) |

## LIST OF DOCUMENTS REVIEWED

In addition to the documents identified in the body of this report, the inspectors reviewed the following documents and records.

**Section 1R01: Adverse Weather Protection**

Procedures

OP-OC-108-109-1001, "Preparation for Severe Weather T&RM for Oyster Creek"
OP-AA-108-111-1001, "Severe Weather and Natural Disaster Guidelines"
WC-AA-107, "Seasonal Readiness"
OP-OC-108-1001, "Preparation for Severe Weather T&RN for Oyster Creek"
ABN-60, "Grid Emergency"
OP-AA-108-107-1001, "Station Response to Grid Capacity Conditions"
OP-OC-108-107-1002, "Interface Between FIRSTENERGY/JCP&L and EXELON Generation for OC Switchyard Operations"
336.1, "24KV Main Generator Electrical System"

Condition Reports (IR)

| | | | | | |
|---|---|---|---|---|---|
| 1077571 | 1065245 | 1077571 | 969507 | 971510 | 998251 |
| 1024356 | 1044064 | 1066537 | 1066742 | 1070462 | 1022041 |
| 1028497 | 1047244 | 935450 | 971117 | 943106 | 1073245 |
| 1075174 | 1039266 | 1039316 | 1022733 | 1036966 | 1073750 |
| 1077572 | 1065245 | 1077959 | | | |

Work Orders (AR)
A2203699 C2023612 A2250385 A2250184 M2250184

Other Documents
Standing Order 2009-201, "Voltage Monitoring per Procedure 336.1, Rev 1"

**Section 1R04: Equipment Alignment**
Procedures
341, "Emergency Diesel Generator Operation"
304, "Standby Liquid Control System Operation"
308, "Emergency Core Cooling System Operation"
610.3.006, "Core Spray Isolation Valve Actuation Test and Calibration"
610.4.003, "Core Spray Valve Operability and IST"
610.4.002, "Core Spray Pump Operability and IST"
610.4.007, "Core Spray System Firewater Valve Test"
610.4.008, "Core Spray Testable Check Valve Operability"
610.4.011, "Core Spray System Testable Check Valve Leakage and IST"
617.4.001, "CRD Pump Operability Test"
302.1, "CRD System"

Drawings
GE 148F723, "Liquid Poison System Flow Diagram"
GE 237E487, "Control Rod Drive System Flow Diagram"
GE 885D781, "Core Spray System Flow Diagram"

Condition Reports (IR)
818069 839557 845699 564126 103091 456939
853894 1036616 899881

Other
Technical Specification 3.4.D
Technical Specification 4.4.E.1

**Section 1R05: Fire Protection**
Procedures
ABN-29, "Plant Fires"
101.2, "Oyster Creek Site Fire Protection Program"
CC-AA-211, "Fire Protection Program"
333, "Plant Fire Protection System"

Condition Reports (IR)
1065417 1081215

Other Documents
TB-FZ-11E, Oyster Creek Generating Station Pre-Fire Plan, "Condenser Bay, Elev. 3' 6""
RB-FZ-1A, Oyster Creek Generating Station Pre-Fire Plan, "119' Elevation"
FW-FA-18, Oyster Creek Generating Station Pre-Fire Plan, "Fire Water House (Pond Area)"
C-1302-153-E310-113, "Tipping Analysis of NUHOMS-61B Canister at El. 119'-3""
OB-FZ-22A, "New Cable Spread Room (Mechanical Equipment Room), Elev. 63' 6""
RB-FZ-1F1, "-19' Elevation Southwest Corner Room"

**Section 1R07: Heat Sink Performance**

Procedures

ER-AA-340-2000, "Balance Of Plant Heat Exchanger Inspection, Testing, and Maintenance Guide"
665.4.010, "Containment Spray Leak Reduction Procedure"
607.4.017, "Containment Spray and Emergency Service Water Pump System 2 Operability and Quarterly IST"

Work Orders (AR)

R2123672 R2131294 R2142201

Other Documents

EPRI NP-7552, "Heat Exchanger Performance Monitoring Guidelines"

**Section 1R11: Licensed Operator Requalification Program**

Procedures

Other Documents

EOP User's Guide (2000-BAS-3200.02)

**Section 1R12: Maintenance Effectiveness**

Procedures

ER-AA-310, "Implementation of Maintenance Rule"
ER-AA-310-1005, "Maintenance Rule - Disposition Between (a)(1) and (a)(2)"
LS AA-125-1003, "Apparent Cause Evaluation Manual"

Condition Reports (IR)

| | | | | | |
|---|---|---|---|---|---|
| 839793 | 970251 | 790294 | 804766 | 1064432 | 729762 |
| 973549 | 972836 | 461807 | 1060015 | 796853 | 796873 |
| 534852 | 916870 | 793831 | 839159 | 825602 | 812587 |
| 776467 | 953172 | 958015 | 950980 | 1074563 | 827100 |
| 1068247 | 489065 | 672752 | | | |

Work Orders (AR)

| | | | | | |
|---|---|---|---|---|---|
| R2105552 | R2143858 | C2018467 | R2143855 | R2105552 | C2021696 |
| R2159654 | | | | | |

Other Documents

NEI 93-01, "Industry Guideline for monitoring the Effectiveness of Maintenance at Nuclear Power Plants"
OCGS Maintenance Rule Periodic (a)(3) Assessment: July 1, 2007 – June 30, 2009
VM-OC-0044, "Reactor Building Crane Service Manual"
Calculation 101-017-01, "Seismic Stability of OS197 Cask 61BT DSC on Trailer"
NUREG-0612, "Control of Heavy Loads at Nuclear Power Plants"
MA-AA-716-022, "Control of Heavy Loads Program"
131, "Oyster Creek Load Lift Management Procedure"
MA-AA-716-210, "Performance Centered Maintenance (PCM) Process"
ER-AA-410-1000, "Air Operated Valve Categorization"
ER-AA-310, "Implementation of the Maintenance Rule"
System 561 – Chlorination Maintenance Rule Performance Review April/May 2010

**Section 1R13: Maintenance Risk Assessments and Emergent Work Control**

Procedures

ER-AA-600-1042, "On-line Risk Management"
ER-AA-600-1021, "Risk Management Application Methodologies"
ER-AA-600-1014, "Risk Management Configuration Control"
ER-AA-600-1011, "Risk Management Program"
WC-OC-101-1001, "On-line Risk Management and Assessment"

Condition Report (IR)

Other Documents

602.3.004, EMRV Pressure Sensor Test and Calibration
Technical Specification 2.3(D)
Technical Specification 3.4(B)
Technical Specification 4.5(K)

**Section 1R15: Operability Evaluations**

Procedures

OP-AA-108-115, "Operability Determination"
351.1, "The Chemical Waste/Floor Drain System Operating Procedure"
RAP-C3h, "DW Sump Hi Leak/Pwr Fail"
337, "4160 Volt Electrical System"

Drawings

Condition Reports (IR)

| | | | | |
|---|---|---|---|---|
| 1080887 | 1064529 | 1076164 | 1076534 | 1074840 |

Work Orders (AR)

| | | | |
|---|---|---|---|
| A2252346 | C2023415 | R2158047 | R2152274 |

Other Documents

NRC Inspection Manual - Part 9900 Technical Guidance, "Operability Determinations & Functionality Assessments for Resolution of Degraded or Nonconforming Conditions Adverse to Quality or Safety
Rod Worth Minimizer Operability Determination
Rod Worth Minimizer Message Log, dated May 1, 2010.
Oyster Creek Nuclear Generating Station, Updated Final Safety Analysis Report, Section 8.3.1.1.1, "4.16kV Distribution System"
AmerGen letter, "60-day response to NRC Generic Letter 2006-02, Oyster Creek Generating Station", dated April 3, 2006.
C-1302-731-E510-015, "OC Degraded Grid Undervoltage Relay (DVR) Setpoint Evaluation Study"
VM-OC-5134, "JFR Distribution Step Voltage Regulator and MJ-XL Voltage Regulator Control Panel"
OC-2010-OE-0004, "Operability Evaluation for Core Spray System 2 Piping"
2010-002-038, "NDE Data Report: Core Spray System Piping System 2"
Ultrasonic thickness accuracy calculation for NDE Report 2010-002-038
Oyster Creek Nuclear Generating Station Updated Final Safety Analysis Report, Sec 3.9.3.1.3
1064529-23, Technical Evaluation "Four of six phases on bank 5/6 regulators had voltage level control found off."

**Section 1R18: Plant Modifications**

Procedures

RAP-B3g, "EMRV Open"
602.3.005, "ADS Actuation Circuit Test and Calibration"

Drawings

GE 719E211, "Main Control Room Panel Electrical Connection Diagram Panel 1F/2F"
3E-611-17-004, "Electrical Elementary Diagram Control Panel 1F/2F Annunciator B"
GE 729E182, "Auto Depressurization System Electrical Elementary Diagram"

Condition Report (IR)

Work Order (AR)

A2233805 A2244235 PM42103M

Other

ECR OC-10-00284, "TCCP to life lead to lock in alarm B-3-G, EMRV Open"
OC-2010-S-0080, 50.59 Screening for ECR 10-00284
2611-PGD-2621, "Automatic Depressurization System"
Oyster Creek Nuclear Generating Station Updated Final Safety Analysis Report, Sec 6.3
Oyster Creek Nuclear Generating Station Updated Final Safety Analysis Report, Sec 7.3
Oyster Creek Nuclear Generating Station Updated Final Safety Analysis Report, Sec 10.4.3
ECR OC 10-00181, Removal of Flapper Bypass from Steam Packing Exhauster

**Section 1R19: Post-Maintenance Testing**

Procedures

MA-AA-716-012, "Post Maintenance Testing
OP-MA-109-101, "Clearance and Tagging"
609.4.001, "Isolation Condenser Valve Operability and In Service Test"
636.4.003, "Diesel Generator #1 Load Test"
MA-OC-741-101, "Diesel Generator Inspection (24 Month) – Electrical"
645.4.036, "Fire Pump #2 Operability Test"
2400-SMM-3900.8, "General Hydrostatic Test, Initial Service Leak Test,
665.4.010, "Containment Spray Leak Reduction Procedure"
607.4.017, "Containment Spray and Emergency Service Water Pump System 2 Operability and Quarterly IST"

Condition Report (IR)

1053801 1081209 1073582 1082340

Work Order (AR)

| | | | | | |
|---|---|---|---|---|---|
| R2155520 | A2243705 | M2243705 | R2163318 | R2125850 | R2124052 |
| R2119354 | R2093964 | A2252156 | R2163780 | C2023538 | R2142201 |
| R2123122 | R2131294 | R2156445 | | | |

Other

Component History Work Order Closure Remarks, System 653, dated May 3, 2010
Rod Worth Minimizer Message Log, dated April 27, 2010
VM-RW-1304, "Rod Worth Minimizer Maintenance Manual"

**Section 1R20: Refueling and Outage Activities**

Procedures

201, "Plant Startup"
203, "Plant Shutdown"
305, "Shutdown Cooling System Operation"
OP-AA-108-108, "Unit Restart Review"

Condition Report (IR)

| | | | | | |
|---|---|---|---|---|---|
| 1064221 | 1063815 | 1062245 | 1062338 | 1062331 | 1063418 |
| 1063411 | 1062903 | 1062867 | 1062829 | 1064529 | 1064586 |
| 1064534 | 1064471 | 1064340 | | | |

Other

"Risk Analysis Report for 1M22 Maintenance Outage", dated April 26.
Rod Worth Minimizer Operability Determination
Rod Worth Minimizer Message Log, dated May 1.

**Section 1R22: Surveillance Testing**

Procedures

SA-AA-129, "Electrical Safety"
MA-AA-1000, "Conduct of Maintenance"
609.3.008, "Isolation Condenser "B" Shell Water Level Instrument Calibration "
609.4.001, "Isolation Condenser Valve Operability and In Service Test"
612.4.001, "Standby Liquid Control Pump and Valve Operability and In-Service Test"
625.4.002, "Main Turbine Surveillance"
315.2, "Turbine Lube Oil System"
RAP-M7d, "Oil Tank Level Hi"
RAP-M8d, "Oil Tank Level Low"
676.4.001, "Drywell Equipment and Floor Drain Sump Isolation Valve Operability and IST"

Condition Reports (IR)

| | | |
|---|---|---|
| 1053801 | 1050924 | 1045640 |

Work Orders (AR)

| | | | | |
|---|---|---|---|---|
| R2158890 | R2155520 | R2155899 | R2156101 | R2156265 |

Other Documents

NRC Inspection Manual Part 9900 Technical Guidance, "Maintenance- Preconditioning of Structures, Systems, and Components Before Determining Operability"
UFSAR 10.2.2.2.6, Turbine Lubricating Oil System

**Section RS08: Radioactive Solid Waste Processing and Radioactive Material Handling, Storage, and Transportation**

- Site Remedial Investigation, dated February 11, 2000
- Remedial Investigation Work Plan, October 2009
- Site Investigation Report, August 2009
- Annual Radiological Environmental and Effluent Monitoring Report - 2008, 2009
- Radiological Groundwater Protection Program Reports
- Offsite Dose Calculation Manual (Revisions 3 and 4)
- 10 CFR 61 Waste Stream Analysis dated December 2009

- Procedure RW-AA-104, Rev. 2, Radioactive Waste Storage facility/Waste Container Inspection
- Procedure RP-AA-500-1001, Rev.2, Requirements for Radioactive Materials Stored Outdoors
- Procedure RP-AA-600-1003, Rev. 6, Radioactive Waste Shipment to Barnwell and the Defense Consolidation facility
- Procedure RPO-AA-600-1006, Rev.5, Notification Requirements for Radioactive Waste Shipment Greater than Radioactive Material Quantities of Concern (RAMQC)
- Procedure RP-AA-601, Rev. 12, Survey of Radioactive Material Shipment
- 10 CFR 50.75(g) history file record
- Piping P&ID- 2195
- Corrective Actions (IR 1078563, IR813967, 1053577)
- Stack RAGEMS Root Cause, dated May 17, 2010

**Section 4OA1: Performance Indicator Verification**

Procedures

Other Documents

**Section 4OA2: Identification and Resolution of Problems**

Procedures

EP-AA-1010, Radiological Emergency Plan Annex for Oyster Creek Station
Oyster Creek Generating Station, Stack Alternate Sampling Plan

Condition Reports

| | | | | | |
|---|---|---|---|---|---|
| 357161 | 643939 | 658467 | 683156 | 690340 | 814754 |
| 993414 | 1053577 | | | | |

Miscellaneous

LS-AA-125-1001, Root Cause Analysis Report, Stack RAGEMS Sample Line Found Disconnected (IR 1053577)

**Section 4OA3: Event Followup**

Procedures

621.3.025, "Stack RAGEMS Noble Gas Monitor Calibration"
621.3.023, "Stack RAGEMS Sample and Effluent Flow Calibration"
621.3.028, "Stack and Turbine Building RAGEMS High Range Monitor - Calibration"
621.3.024, "Stack RAGEMS Sample and Effluent Flow – Functional Test"
831.4, "Post Accident Sampling and Operations: RAGEMS"
406.1, "Operation of the Stack RAGEMS"
CY-OC-170-301, "Offsite Dose Calculation Manual for Oyster Creek Generating Station"

Drawings

GU-3E-661-21-1000, "Radiation Monitoring System RAGEMS I Stack Flow Diagram"
BR2009, "HV Man Stack Flow Diagram"

Condition Reports (IR)

| | | | |
|---|---|---|---|
| 1053577 | 1056898 | 1058486 | 1092319 |

Work Orders (AR)

| | |
|---|---|
| A2248328 | R2124974 |

Other Documents
NUREG-1022, "Event Reporting Guidelines 10 CFR 50.72 and 50.73"
Event Notice 45824, "Stack Sample Line Separated at Fitting"
Exelon Nuclear letter, "Special Report for Inoperablility of Main Stack High Range Radioactive Noble Gas Monitor", dated May 14, 2010
Oyster Creek Operations Log for April 7-8, 2010
2611-PGD-2621, "Plant Radiation Monitoring Systems"

**Section 4OA5: Other**
Procedures
Oyster Creek Site Security Plan, Revision 8
NF-OC-621, "Independent Spent Fuel Storage Process Control Program"
NF-OC-637, "Dry Shielded Canister Recovery"
NF-OC-640, "Preparation For An Independent Spent Fuel Storage Campaign"
NF-OC-641, "Transport And Loading Of Transport Cask And Dry Shielded Canister"
NF-OC-642, "Dry Shielded Canister (61BT) Welding, Vacuum Drying, And Helium Fill"
NF-OC-643, "Transport Of Loaded Transfer Cask And 61BT Dry Shielded Canister To Transfer Trailer, To ISFSI, And Alignment/Insertion Into The Horizontal Storage Module"
NF-OC-644, "Transport Of Empty Transfer Cask To Refuel Floor (119') And Final Placement On Reactor Building 23' Elevation"
NF-OC-626, "Fuel Loading /Unloading Of A Dry Shielded Canister"
NF-OC-638, "Fuel Bundle Selection Process For Loading NUHOMS 61BT Dry Shielded Canister"
NF-OC-636, ISFSI Technical Specification Surveillance Testing Fuel Selection Package for Oyster Creek Campaign 5

Other
2008 Nuclear Oversight Audit Report
Qualification Status Report, dated March 9, 2010
Oyster Creek Generating Station 10CFR72.212 Evaluation, dated April 19, 2010
ISFSI Campaign Dose vs. Dose Estimate, dated May 5, 2010

## LIST OF ACRONYMS

| | |
|---|---|
| AC | Alternating Current |
| ADAMS | Agency-wide Documents Access and Management System |
| Exelon | Exelon Energy Company, LLC |
| CFR | Code of Federal Regulations |
| CRD | Control Rod Drive |
| ECR | Engineering Change Request |
| EDG | Emergency Diesel Generator |
| EMRV | Electromatic Relief Valve |
| EP | Emergency Preparedness |
| ESW | Emergency Service Water |
| FIN | Finding |
| HCU | Hydraulic Control Unit |
| I&C | Instrumentation and Control |
| ISFSI | Independent Spent Fuel Storage Installation |
| IR | Issue Report |
| IST | Inservice Test |
| IMC | Inspection Manual Chapter |
| LLC | Limited Liability Company |
| NEI | Nuclear Energy Institute |
| NCV | Non-cited Violation |
| NRC | Nuclear Regulatory Commission |
| NUREG | NRC technical report designation (Nuclear Regulatory Commission) |
| ODCM | Offsite Dose Calculation Manual |
| Oyster Creek | Oyster Creek Generating Station |
| PI | Performance Indicator |
| PI&R | Problem Identification and Resolution |
| RAGEMS | Radiological Gaseous Effluent Monitoring System |
| RBCCW | Reactor Building Closed Cooling Water |
| RCA | Radiological Controlled Area |
| RP&C | Radiological Protection and Chemistry |
| RSPS | Risk Significant Planning Standard |
| SDC | Shutdown Cooling |
| SDP | Significance Determination Process |
| SGTS | Standby Gas Treatment System |
| SLC | Standby Liquid Control |
| TCCP | Temporary Configuration Change Package |
| TS | Technical Specification |
| UFSAR | Updated Final Safety Analysis Report |
| URI | Unresolved Item |
| VDC | Voltage Direct Current |
| VLC | Voltage Level Control |
| WO | Work Order |