UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
2100 RENAISSANCE BLVD., SUITE 100
KING OF PRUSSIA, PA 19406-2713

May 14, 2015

Mr. Bryan Hanson
Senior Vice President, Exelon Generation
President and Chief Nuclear Officer, Exelon Nuclear
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: OYSTER CREEK NUCLEAR GENERATING STATION - NRC INTEGRATED INSPECTION REPORT 05000219/2015001

Dear Mr. Hanson:

On March 31, 2015, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Oyster Creek Nuclear Generating Station. The enclosed inspection report documents the inspection results, which were discussed on April 17, 2015, with Garey Stathes, 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.

This report documents three violations of NRC requirements, all of which were of very low safety significance (Green and/or Severity Level IV). Additionally, two licensee-identified violations, which were determined to be of very low safety significance, are listed in this report. 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, consistent with Section 2.3.2.a of the NRC Enforcement Policy. If you contest the non-cited violations in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN.: Document Control Desk, Washington, DC 20555-0001; 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 Nuclear Generating Station. In addition, if you disagree with the cross-cutting aspect assigned to any finding 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 Nuclear Generating Station.

In accordance with Title 10 of the *Code of Federal Regulations* (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's Public Document Room or from the Publicly Available Records component of the NRC's Agencywide Documents Access Management System (ADAMS). ADAMS is accessible from the NRC website at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Silas R. Kennedy, Chief
Reactor Projects Branch 6
Division of Reactor Projects

Docket Nos. 50-219
License Nos. DPR-16

Enclosure:
Inspection Report 05000219/2015001
w/Attachment: Supplementary Information

cc w/encl: Distribution via ListServ

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Sincerely,

/RA/

Silas R. Kennedy, Chief
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Division of Reactor Projects

Docket Nos. 50-219
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U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket Nos.:	50-219
License Nos.:	DPR-16
Report No.:	05000219/2015001
Licensee:	Exelon Nuclear
Facility:	Oyster Creek Nuclear Generating Station
Location:	Forked River, New Jersey
Dates:	January 1, 2015 – March 31, 2015
Inspectors:	A. Patel, Senior Resident Inspector J. Kulp, Senior Resident Inspector E. Andrews, Resident Inspector B. Bollinger, Project Engineer E. Burket, Emergency Preparedness Inspector N. Floyd, Reactor Inspector P. Kaufman, Senior Reactor Inspector T. O'Hara, Reactor Inspector M. Orr, Reactor Inspector J. Patel, Reactor Inspector
Approved By:	Silas R. Kennedy, Chief Reactor Projects Branch 6 Division of Reactor Projects

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SUMMARY

IR 05000219/2015001; 01/01/2015 – 03/31/2015; Exelon Energy Company, LLC, Oyster Creek Generating Station; Post Maintenance Testing, Problem Identification and Resolution, Follow-Up of Events

This report covered a three-month period of inspection by resident inspectors and announced inspections performed by regional inspectors. Inspectors identified one Severity Level IV non-cited violation (NCV) and two findings of very low safety significance (Green), which were NCVs. The significance of most findings are indicated by their color (i.e., greater than Green, or Green, White, Yellow, Red) and determined using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP) dated June 2, 2011. Cross-cutting aspects are determined using IMC 0310, "Aspects Within Cross-Cutting Areas," dated December 4, 2014. All violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy, dated February 4, 2015. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 5.

Cornerstone: Barrier Integrity

- Green. The inspectors identified an NCV of 10 CFR Part 50, Appendix B, Criterion XI, "Test Control," when Exelon did not document and adequately evaluate test results to assure that test requirements had been satisfied. Specifically, Exelon did not perform the proper post maintenance test procedure to assure that the requirements of Technical Specification 4.5.G.3 were satisfied following installation of a temporary modification to secondary containment. Exelon entered this issue into the corrective action program for resolution as issue report (IR) 2440643. Corrective actions include revising the process to perform the correct post maintenance test to ensure Technical Specification 4.5.G.3 is met.

  This finding is more than minor because it is associated with the configuration control (Standby Gas Trains) attribute of the Barrier Integrity cornerstone and adversely affected the cornerstone objective of providing reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. The inspectors evaluated the finding using IMC 0609.04, "Initial Characterization of Findings," issued June 19, 2012, and IMC 0609, Appendix G, Attachment 1, "Shutdown Operations Significance Determination Process: Phase 1 Initial Screening and Characterization of Findings," issued May 9, 2014. Because the finding degraded the ability to close or isolate secondary containment, the inspectors were required to further assess the finding using IMC 0609, Appendix H, "Containment Integrity Significance Determination Process," issued May 6, 2004. The inspectors determined that this finding is of very low safety significance (Green) because the decay heat values were low, given that the unit had been shut down for approximately three days, and reactor water level was greater than that required for movement of irradiated fuel assemblies within the reactor pressure vessel. This finding has a cross-cutting aspect in the area of Human Performance, Procedure Adherence, because Exelon personnel did not perform the post maintenance test specified by the work order. [H.8] (Section 1R19)

- Severitv Level IV. The inspectors identified a Severity Level IV NCV of 10 CFR 50.9(a) in that Exelon did not provide complete information in reports submitted per 10 CFR 50.72 and 10 CFR 50.73. Specifically, a licensee event report (LER) submitted on November 18, 2014, did not discuss a separate, partially opened secondary containment door that was

discovered during the same time frame, which could have prevented the fulfillment of the safety function of secondary containment, and therefore was required to be discussed in the original LER. Exelon entered this issue into their corrective action program as IR 2440641. Planned corrective actions include revising the original LER to add a discussion of the partially opened secondary containment door.

The inspectors determined that not providing a complete report in accordance with 10 CFR 50.9(a) is a performance deficiency that was reasonably within Exelon's ability to foresee and correct and should have been prevented. Because the issue had the potential to affect the NRC's ability to perform its regulatory oversight function, the inspectors evaluated this performance deficiency in accordance with the traditional enforcement process. In accordance with Section 2.2.2.d of the NRC Enforcement Policy, the inspectors determined that the performance deficiency identified with the reporting aspect of the event is a Severity Level IV violation because it is of more than minor concern with relatively inappreciable potential safety significance and is related to findings that were determined to be more than minor issues. In accordance with IMC 0612, Appendix B, this issue was not assigned a cross-cutting aspect. (Section 4OA3)

Cornerstone: Mitigating Systems

- Green. The inspectors identified an NCV of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings" for Exelon's failure to develop an adequate post maintenance test to determine operability of the 'A' emergency service water pump breaker. Specifically, the corrective maintenance work performed on April 16, 2013, did not correct the cause of the failure and Exelon did not perform an adequate post maintenance test to verify conditions had been corrected. As a result, the emergency service water system was returned to service even though it did not meet all the requirements for operability. The issue was not identified and resolved until a subsequent surveillance test on April 17, 2013, which identified a failed breaker. Exelon entered this issue into their corrective action program (IR 2471069). Planned corrective actions include revising work order activities to specify the correct post maintenance test.

  This performance deficiency is more than minor because it is associated with the Equipment Performance attribute of the Mitigating Systems cornerstone, and adversely affected its objective to ensure the availability and reliability of the systems that respond to initiating events. Specifically, the inadequate post maintenance test for 'A' emergency service water pump breaker on April 16, 2013, led to the 'A' emergency service water pump failing to perform its function during the subsequent surveillance testing on April 17, 2013. The inspectors assessed this finding in accordance with the IMC 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power." The inspectors concluded that this finding did not represent an actual loss of function of the emergency service water system for greater than its technical specification allowed outage time (15 days). Therefore, the inspectors determined that this finding is of very low safety significance (Green). The inspectors determined that this finding had a cross-cutting aspect in the area of Human Performance, Work Management, in that Exelon's work planning and executing of work activities did not include documented instructions for performing an adequate post maintenance test. [H.5] (Section 4OA2)

Other Findings

Two violations of very low safety significance that were identified by Exelon were reviewed by the inspectors. Corrective actions taken or planned by Exelon have been entered into Exelon's corrective action program. These violations and corrective action tracking numbers are listed in Section 4OA7 of this report.

REPORT DETAILS

Summary of Plant Status

Oyster Creek began the inspection period at 100 percent power. On March 22, 2015, an automatic reactor scram occurred due to high average power range monitor flux caused by an electronic pressure regulator failure. After repairs to the electronic pressure regulator, operators commenced plant startup on March 25, 2015, and returned to full power operation on March 28, 2015.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01 – 2 samples)

.1 Readiness for Impending Adverse Weather Conditions

a. Inspection Scope

The inspectors reviewed Exelon's response to a blizzard warning issued by the National Weather Service for the period of January 26 – 27, 2015, and to the declaration of a cold weather alert by the grid operator on February 15 – 16, 2015. The inspectors verified that Exelon implemented its adverse weather procedures and that operators reviewed applicable emergency procedures and performed procedural briefs for the expected adverse weather conditions. The inspectors performed independent walkdowns of the site to verify the site was ready for the onset of adverse weather. Documents reviewed for each section of this inspection report are listed in the Attachment.

b. Findings

No findings were identified.

1R04 Equipment Alignment

.1 Partial System Walkdowns (71111.04Q – 4 samples)

a. Inspection Scope

The inspectors performed partial walkdowns of the following systems:

- 'B' isolation condenser while 'A' isolation condenser was out of service on January 5, 2015
- Containment spray system II while containment spray system I was out of service on January 20, 2015
- Emergency diesel generator No. 2 while emergency diesel generator No. 1 was out of service on March 2, 2015
- Reactor building closed cooling water system II while reactor building closed cooling water heat exchanger 1-1 was out of service on March 18, 2015

The inspectors selected these systems based on their risk-significance relative to the reactor safety cornerstones at the time they were inspected. The inspectors reviewed applicable operating procedures, system diagrams, the Updated Final Safety Analysis Report (UFSAR), technical specifications, work orders, condition reports, and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have impacted system performance of their intended safety functions. The inspectors also performed field walkdowns of accessible portions of the systems to verify system components and support equipment were aligned correctly and were operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no deficiencies. The inspectors also reviewed whether Exelon staff had properly identified equipment issues and entered them into the corrective action program for resolution with the appropriate significance characterization.

b. Findings

No findings were identified.

.2 Full System Walkdown (71111.04S – 1 sample)

a. Inspection Scope

On February 9, 2015, the inspectors performed a complete system walkdown of accessible portions of the reactor building to torus vacuum breaker system to verify the existing equipment lineup was correct. The inspectors reviewed operating procedures, surveillance tests, drawings, equipment line-up check-off lists, and the UFSAR to verify the system was aligned to perform its required safety functions. The inspectors also reviewed electrical power availability; component lubrication and equipment cooling; hangar and support functionality; and operability of support systems. The inspectors performed field walkdowns of accessible portions of the systems to verify system components and support equipment were aligned correctly and operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no deficiencies. Additionally, the inspectors reviewed a sample of related condition reports and work orders to ensure Exelon appropriately evaluated and resolved any deficiencies.

b. Findings

No findings were identified.

1R05 Fire Protection

.1 Resident Inspector Quarterly Walkdowns (71111.05Q – 6 samples)

a. Inspection Scope

The inspectors conducted tours of the areas listed below to assess the material condition and operational status of fire protection features. The inspectors verified that Exelon controlled combustible materials and ignition sources in accordance with administrative procedures. The inspectors verified that fire protection and suppression equipment was available for use as specified in the area pre-fire plan, and passive fire

barriers were maintained in good material condition. The inspectors also verified that station personnel implemented compensatory measures for out of service, degraded, or inoperable fire protection equipment, as applicable, in accordance with procedures.

- New cable spreading room on January 20, 2015
- Turbine lube oil storage area on January 20, 2015
- Turbine operating floor on January 20, 2015
- Motor-generator set room on March 11, 2015
- 'A' and 'B' 4160V switchgear rooms and 'C' battery room on March 11, 2015
- 'C' and 'D' 4160V switchgear rooms on March 11, 2015

b. Findings

No findings were identified.

1R07 Heat Sink Performance (71111.07T – 3 Samples)

.1 Triennial Review of Heat Sink Performance

a. Inspection Scope

The inspectors reviewed completed surveillances, associated calculations, performance test results, and heat exchanger inspection results associated with the containment spray and the reactor building closed cooling water heat exchangers. These heat exchangers were chosen based on their risk significance in the probabilistic safety analysis and their important safety-related mitigating system support functions.

For the containment spray exchangers, loop 1, H-21-001A and H-21-001B, the inspectors determined whether the testing, inspection, maintenance, and monitoring of biotic fouling were adequate to ensure proper heat transfer. This was accomplished by determining whether the testing methods used were consistent with accepted industry practices, or equivalent, the test conditions were consistent with the selected methodology, and the test acceptance criteria were consistent with the design basis values. The inspectors also determined whether the test results appropriately considered differences between testing conditions and design conditions, the frequency of testing based on trending of test results was sufficient to detect degradation prior to loss of heat removal capabilities below design basis values, and test results considered test instrument inaccuracies and differences.

For the reactor building closed cooling water heat exchangers, system 1, H-5-1-1 and H-5-1-2, the inspectors reviewed the methods and results of heat exchanger performance inspections. By field observation and review of photographs of the tube bundle conditions, the inspectors determined whether the methods used to inspect and clean the reactor building closed cooling water 1-2 heat exchanger were consistent with as-found conditions identified and expected degradation trends and industry standards. The inspectors further determined whether Exelon's inspection and cleaning activities had established acceptance criteria consistent with industry standards, and whether the as-found results were recorded, photographed, evaluated, and appropriately dispositioned so that the as-left condition was acceptable.

The inspectors determined whether the condition and operation of the heat exchangers were consistent with design assumptions in heat transfer calculations, and as described in the UFSAR. This included determining whether the number of plugged tubes was within pre-established limits based on capacity and heat transfer assumptions. In addition, eddy current test reports and visual inspection records and photographs were reviewed to determine the structural integrity of the heat exchangers.

As a third sample, the inspectors determined whether the performance of the ultimate heat sink and subcomponents such as piping, intake screens, pumps, and valves were appropriately evaluated by tests or other equivalent methods to ensure availability and accessibility to the in-plant cooling water systems. The inspectors determined whether Exelon's chemical treatment programs for corrosion control were consistent with industry standards and implemented accordingly.

The inspectors reviewed the operation of emergency service water system and ultimate heat sink. This included a review of procedures for a loss of the emergency service water system or ultimate heat sink and the verification that instrumentation, which is relied upon for decision making, was available and functional. In addition, the inspectors determined whether macrofouling was adequately monitored, trended, and controlled to prevent clogging. The inspectors determined whether Exelon's biocide treatments for biotic control were adequately conducted and whether the results were adequately monitored, trended, and evaluated.

The inspectors reviewed the performance testing of emergency service water system and ultimate heat sink results. This included a review of the performance test results for key components. The inspectors also determined whether Exelon ensured adequate isolation during design basis events, consistency between testing methodologies and design basis leakage rate assumptions, and proper performance of risk significant non-safety related functions.

The inspectors performed walkdowns of accessible portions of the emergency service water, service water, and reactor building closed cooling water systems to determine whether Exelon's assessment of structural integrity was adequate. In addition, the inspectors reviewed testing and inspections results, disposition of any active through-wall pipe leaks, and the history of through-wall pipe leakage to identify any adverse trends. For the reactor building closed cooling water system, the inspectors reviewed operating logs, system health reports, and interviewed the system manager, to identify adverse make-up trends that could be indicative of excessive leakage out of the closed system.

The inspectors performed a walkdown of the emergency service water and service water intake structure to determine that structural integrity and component functionality was adequate and ensured proper functioning of traveling screens and strainers, and structural integrity of component mounts. In addition, the inspectors determined whether service water pump bay silt accumulation was maintained at an acceptable level, and that water level instruments were functional and routinely monitored.

In addition, the inspectors reviewed IRs related to the heat exchangers and heat sink performance issues to determine whether Exelon had an appropriate threshold for identifying issues and to evaluate the effectiveness of the corrective actions.

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification Program (71111.11 – 4 samples)

.1 Quarterly Review of Licensed Operator Requalification Testing and Training

a. Inspection Scope

The inspectors observed licensed operator simulator training on January 7, 2015, which included a seismic event with a loss of offsite power and failure of installed safety systems. The inspectors evaluated operator performance during the simulated event and verified completion of risk significant operator actions, including the use of abnormal and emergency operating procedures. The inspectors assessed the clarity and effectiveness of communications; implementation of actions in response to alarms and degrading plant conditions; and the oversight and direction provided by the control room supervisor. The inspectors verified the accuracy and timeliness of the emergency classification made by the shift manager and the technical specification action statements entered by the shift technical advisor. Additionally, the inspectors assessed the ability of the crew and training staff to identify and document crew performance problems.

b. Findings

No findings were identified.

.2 Quarterly Review of Licensed Operator Performance in the Main Control Room

a. Inspection Scope

The inspectors observed control room operator performance during a containment spray surveillance on February 20, 2015. The inspectors also observed control room operator performance during a scheduled downpower evolution to bring the D recirculation loop back in service following maintenance on February 27, 2015. The inspectors also observed control room operator performance during plant startup from forced outage 36 (1F36) on March 26, 2015. The inspectors observed infrequently performed test or evolution briefings, shift turnover briefings, alarm response, and operator control during performance of surveillance and post maintenance testing. Additionally, the inspectors observed operators to verify that procedure use, crew communications, and coordination of activities between work groups similarly met established expectations and standards.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12 – 4 samples)

a. Inspection Scope

The inspectors reviewed the samples listed below to assess the effectiveness of maintenance activities on structure, system or component performance and reliability. The inspectors reviewed system health reports, corrective action program documents, maintenance work orders, and maintenance rule basis documents to ensure that Exelon was identifying and properly evaluating performance problems within the scope of the maintenance rule. For each sample selected, the inspectors verified that the structure, system or component was properly scoped into the maintenance rule in accordance with 10 CFR 50.65 and verified that the (a)(2) performance criteria established by Exelon staff was reasonable. As applicable, for a structure, system or component classified as (a)(1), the inspectors assessed the adequacy of goals and corrective actions to return the structure, system or component to (a)(2). Additionally, the inspectors ensured that Exelon staff was identifying and addressing common cause failures that occurred within and across maintenance rule system boundaries.

- 125 volt breaker maintenance on January 30, 2015
- Reactor building to torus vacuum breakers on February 5, 2015
- Drywell purge and vent valves on February 12, 2015
- Hardened torus vent valve accumulators on February 19, 2015

b. Findings

No findings were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13 – 5 samples)

a. Inspection Scope

The inspectors reviewed station evaluation and management of plant risk for the maintenance and emergent work activities listed below to verify that Exelon performed the appropriate risk assessments prior to removing equipment for work. The inspectors selected these activities based on potential risk significance relative to the reactor safety cornerstones. As applicable for each activity, the inspectors verified that Exelon personnel performed risk assessments as required by 10 CFR 50.65(a)(4) and that the assessments were accurate and complete. When Exelon performed emergent work, the inspectors verified that operations personnel promptly assessed and managed plant risk. The inspectors reviewed the scope of maintenance work and discussed the results of the assessment with Exelon's risk analyst to verify plant conditions were consistent with the risk assessment. The inspectors also reviewed the technical specification requirements and inspected portions of redundant safety systems, when applicable, to verify risk analysis assumptions were valid and applicable requirements were met.

- 'A' standby liquid control system and 'A' isolation condenser out of service for planned maintenance on January 5, 2015
- Containment spray system I and emergency service water system I out of service for planned maintenance on January 20, 2015
- Core spray system II out of service for planned maintenance on February 10, 2015

- Emergency diesel generator No. 1 out of service for planned maintenance on March 2, 2015
- Reactor building closed cooling water heat exchanger 1-1 out of service for planned maintenance on March 18, 2015

b. Findings

No findings were identified.

1R15 Operability Determinations and Functionality Assessments (71111.15 – 5 samples)

a. Inspection Scope

The inspectors reviewed operability determinations for the following degraded or non-conforming conditions:

- Reactor head flange area temperature monitor degraded on January 5, 2015
- 'B' control room heating ventilation and air conditioning during low control temperature on January 6, 2015
- Hardened torus vent low accumulator pressure on February 12, 2015
- 'A' emergency service water pump motor lower bearing oil sample results on March 3, 2015
- Emergency diesel generator No. 2 circulating lube oil pump degraded on March 12, 2015

The inspectors selected these issues based on the risk significance of the associated components and systems. The inspectors evaluated the technical adequacy of the operability determinations to assess whether technical specification operability was properly justified and the subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors compared the operability and design criteria in the appropriate sections of the technical specifications and UFSAR to Exelon's evaluations to determine whether the components or systems were operable. Where compensatory measures were required to maintain operability, the inspectors determined whether the measures in place would function as intended and were properly controlled by Exelon. The inspectors determined, where appropriate, compliance with bounding limitations associated with the evaluations.

b. Findings

No findings were identified.

1R18 Plant Modifications (71111.18 – 1 sample)

.1 Permanent Modifications

a. Inspection Scope

The inspectors reviewed the temporary modification listed below to determine whether the modification affected the safety functions of systems that are important to safety. The inspectors reviewed 10 CFR 50.59 documentation and post-modification testing

results, and conducted field walkdowns of the modifications to verify that the temporary modifications did not degrade the design bases, licensing bases, and performance capability of the affected systems.

- Engineering Change Request 15-00064 – Abandon Old Cable and Replace with New Cable for Turbine Acceleration Relay Pressure Switch (PSL-A) on February 7, 2015

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19 – 7 samples)

a. Inspection Scope

The inspectors reviewed the post-maintenance tests for the maintenance activities listed below to verify that procedures and test activities ensured system operability and functional capability. The inspectors reviewed the test procedure to verify that the procedure adequately tested the safety functions that may have been affected by the maintenance activity, that the acceptance criteria in the procedure was consistent with the information in the applicable licensing basis and/or design basis documents, and that the procedure had been properly reviewed and approved. The inspectors also witnessed the test or reviewed test data to verify that the test results adequately demonstrated restoration of the affected safety functions.

- 'B' isolation condenser following steam admission valves (V-14-30 and V-14-31) and condensate return valve (V-14-34) preventive maintenance on January 6, 2015
- 'B' standby liquid control pump following relief valve (V-19-43) replacement on January 8, 2015
- Containment spray system I following containment spray system I heat exchanger cleaning on January 23, 2015
- Turbine acceleration relay pressure switch (PSL-A) following cable replacement on February 9, 2015
- 'C' electromatic relief valve pressure switch following replacement on February 26, 2015
- Secondary containment following installation of trunnion room temporary modification on March 8, 2015
- Electronic pressure regulator following electronic pressure regulator cable replacement on March 26, 2015

b. Findings

Introduction. The inspectors identified a Green NCV of 10 CFR Part 50, Appendix B, Criterion XI, "Test Control," when Exelon did not document and adequately evaluate test results to assure that test requirements had been satisfied. Specifically, Exelon did not perform the proper post maintenance test procedure to assure that the requirements of Technical Specification 4.5.G.3 were satisfied following installation of a temporary modification to secondary containment.

Description. On September 16, 2014, Exelon installed a temporary modification to the trunnion room in accordance with work order R2211902. The purpose of the temporary modification was to move the secondary containment boundary from the trunnion room door to the temporary fittings on drain lines and ventilation ducts in the trunnion room. This configuration was allowed by Technical Specification 3.5, "Containment," during refueling outages to allow technicians to keep the trunnion room door open to run temporary services required for conducting maintenance. To ensure that the temporary modification maintains the integrity of the secondary containment boundary, Technical Specification 4.5.G.3 requires that testing be performed as stated:

"When in COLD SHUTDOWN CONDITION or REFUEL MODE, with the trunnion room door open after the secondary containment boundary has been moved to the penetrations inside the trunnion room and the trunnion room is isolated from the secondary containment in support of outage activities, Standby Gas Treatment System testing shall be performed to demonstrate the capability to maintain a 1/4 inch of water vacuum under calm wind conditions with a Standby Gas Treatment System Filter train flow rate of not more than 4000 cfm."

On September 18, 2014, Exelon personnel recorded the completion of the post maintenance test for the installation of the temporary modification completed under work order R2211902. R2211902, activity 7, specified performing Exelon procedure 651.4.001, "Standby Gas Treatment Auto Actuation Test," to demonstrate that the temporary modification was installed correctly and met the requirements of Technical Specification 4.5.G.3.

Also, scheduled for completion on September 18, 2014, was work order R2244647, Exelon procedure 651.4.002, "Standby Gas Treatment System 15-Minute Run – System 1." Procedure 651.4.002 tests for proper operation of standby gas treatment system 1 by testing the mechanical response of the system fans and valves. This test does not set conditions or record data to verify proper differential pressure or system flow rates as required by Technical Specification 4.5.G.3. The inspectors determined operators should have performed procedure 651.4.001, which would have satisfied Technical Specification 4.5.G.3.

The inspectors reviewed work orders, as well as the operations and the outage control center logs for September 18, 2014. The inspectors determined that Exelon only completed procedure 651.4.002, and that reactor building ventilation had not been secured on September 18, 2014, as required by Surveillance Procedure 651.4.001 (R2211902). The inspectors noted that documentation in work order R2211902 only indicated that the door to the trunnion room was opened while the standby gas treatment system was operating, and that reactor building differential pressure remained negative. Exelon did not record actual values for reactor building differential pressure and standby gas treatment system flow rate, which would have been used to satisfy the requirements of Technical Specification 4.5.G.3. Exelon entered the issue into their corrective action program as IR 2440643. Corrective actions include revising the process to perform the correct post maintenance test to ensure Technical Specification 4.5.G.3 is met.

Analysis. The inspectors determined that not documenting and adequately evaluating test results to assure that test requirements have been satisfied in accordance with 10 CFR 50, Appendix B, Criterion XI, "Test Control," is a performance deficiency that was within Exelon's ability to foresee and correct. This finding is more than minor

because it is associated with the configuration control (Standby Gas Trains) attribute of the Barrier Integrity Cornerstone and adversely affected the cornerstone objective of providing reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. Specifically, the post maintenance test conducted did not assure that the standby gas treatment system could have drawn 0.25 inch of water vacuum as required by Technical Specification 4.5.G.3.

The inspectors evaluated the finding using IMC 0609.04, "Initial Characterization of Findings," issued June 19, 2012, and IMC 0609, Appendix G, Attachment 1, "Shutdown Operations Significance Determination Process: Phase 1 Initial Screening and Characterization of Findings," issued May 9, 2014. Because the finding degraded the ability to close or isolate secondary containment, the inspectors further assessed the finding using IMC 0609, Appendix H, "Containment Integrity Significance Determination Process," issued May 6, 2004. The inspectors determined that this finding is of very low safety significance (Green) because the decay heat values were low, given that the unit had been shut down for approximately 3 days, and reactor water level was greater than that required for movement of irradiated fuel assemblies within the reactor pressure vessel.

This finding has a cross-cutting aspect in the area of Human Performance, Procedure Adherence because Exelon personnel did not perform the post maintenance test specified by the work order. [H.8]

Enforcement. 10 CFR Part 50, Appendix B, Criterion XI, "Test Control," requires, in part, that test results shall be documented and evaluated to assure that test requirements have been satisfied. Contrary to the above, on September 18, 2014, Exelon did not adequately document and evaluate the results of the post maintenance test data for the temporary modification in the trunnion room to assure that the test requirements satisfied Technical Specification requirement 4.5.G.3. Specifically, Exelon did not perform the required post maintenance test specified by the work order for installation of a temporary modification to the secondary containment and the post maintenance test that was performed did not demonstrate that the test results met the requirements of Technical Specification 4.5.G.3. Because this issue is of very low safety significance (Green) and Exelon entered this issue into their corrective action program as IR 2440643, this finding is being treated as an NCV consistent with Section 2.3.2 of the NRC Enforcement Policy. **(NCV 05000219/2015001-01, Post Maintenance Test Results were not Evaluated to Assure that Technical Specifications Requirements were Satisfied)**

1R20 Refueling and Other Outage Activities (71111.20 – 1 sample)

a. Inspection Scope

The inspectors reviewed the station's work schedule and outage risk plan for Oyster Creek forced outage (1F36), which was conducted March 22 through March 27, 2015. The inspectors reviewed Exelon's development and implementation of outage plans and schedules to verify that risk, industry experience, previous site-specific problems, and defense-in-depth were considered. During the outage, the inspectors observed portions of the shutdown and cooldown processes and monitored controls associated with the following outage activities:

- Configuration management, including maintenance of defense-in-depth, commensurate with the outage plan for the key safety functions and compliance with the applicable technical specifications when taking equipment out of service
- Implementation of clearance activities and confirmation that tags were properly hung and that equipment was appropriately configured to safely support the associated work or testing
- Installation and configuration of reactor coolant pressure, level, and temperature instruments to provide accurate indication and instrument error accounting
- Status and configuration of electrical systems and switchyard activities to ensure that technical specifications were met
- Monitoring of decay heat removal operations
- Impact of outage work on the ability of the operators to operate the spent fuel pool cooling system
- Reactor water inventory controls, including flow paths, configurations, alternative means for inventory additions, and controls to prevent inventory loss
- Activities that could affect reactivity
- Maintenance of secondary containment as required by technical specifications
- Fatigue management
- Identification and resolution of problems related to outage activities

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22 – 8 samples)

a. Inspection Scope

The inspectors observed performance of surveillance tests and/or reviewed test data of selected risk-significant structures, systems, and components to assess whether test results satisfied technical specifications, the UFSAR, and Exelon procedure requirements. The inspectors verified that test acceptance criteria were clear, tests demonstrated operational readiness and were consistent with design documentation, test instrumentation had current calibrations and the range and accuracy for the application, tests were performed as written, and applicable test prerequisites were satisfied. Upon test completion, the inspectors considered whether the test results supported that equipment was capable of performing the required safety functions. The inspectors reviewed the following surveillance tests:

- ‘A’ standby liquid control pump in-service test on January 6, 2015
- Emergency diesel generator No. 1 battery surveillance test on January 12, 2015
- Emergency diesel generator No. 2 load test on January 29, 2015
- Transverse in core probe ball valve primary containment isolation valve test on February 3, 2015
- Reactor building to torus vacuum breaker test on February 18, 2015
- Diesel driven fire pump No. 2 operability test on February 26, 2015
- Emergency diesel generator No. 1 load test on March 2, 2015
- Main steam isolation valve closure tests on March 24, 2015

b. Findings

No findings were identified.

Cornerstone: Emergency Preparedness

1EP4 Emergency Action Level and Emergency Plan Changes (IP 71114.04 – 1 Sample)

a. Inspection Scope

Exelon implemented various changes to the Oyster Creek Emergency Action Levels (EALs), Emergency Plan, and implementing procedures. Exelon had determined that, in accordance with 10 CFR 50.54(q)(3), any change made to the EALs, Emergency Plan, and its lower-tier implementing procedures, had not resulted in any reduction in effectiveness of the Plan, and that the revised Plan continued to meet the standards in 10 CFR 50.47(b) and the requirements of 10 CFR 50 Appendix E.

The inspectors performed an in-office review of all EAL and Emergency Plan changes submitted by Exelon as required by 10 CFR 50.54(q)(5), including the changes to lower-tier emergency plan implementing procedures, to evaluate for any potential reductions in effectiveness of the Emergency Plan. This review by the inspectors was not documented in an NRC Safety Evaluation Report and does not constitute formal NRC approval of the changes. Therefore, these changes remain subject to future NRC inspection in their entirety. The requirements in 10 CFR 50.54(q) were used as reference criteria.

b. Findings

No findings were identified.

1EP6 Drill Evaluation (71114.06 – 1 sample)

.1 Training Observations

a. Inspection Scope

The inspectors observed a simulator training evolution for licensed operators on January 7, 2015, which required emergency plan implementation by an operations crew. Exelon planned for this evolution to be evaluated and included in performance indicator data regarding drill and exercise performance. The inspectors observed event classification and notification activities performed by the crew. The inspectors also attended the post-evolution critique for the scenario. The focus of the inspectors' activities was to note any weaknesses and deficiencies in the crew's performance and ensure that Exelon evaluators noted the same issues and entered them into the corrective action program.

b. Findings

No findings were identified.

2. RADIATION SAFETY

Cornerstone: Occupational and Public Radiation Safety

2RS1 Radiological Hazard Assessment and Exposure Controls

During the period January 26 – 29, 2015, the inspector reviewed and assessed Exelon's performance in assessing and controlling radiological hazards in the workplace. The review was against criteria contained in 10 CFR Part 20, technical specifications, applicable Regulatory Guides, and Exelon procedures.

a. Inspection Scope

Inspection Planning

The inspector reviewed 2013 and 2014 performance indicators for the occupational radiation safety cornerstone, radiation protection program audits, and reports of operational occurrences in occupational radiation safety since the last inspection.

Radiological Hazard Assessment

The inspector conducted this inspection and reviewed the following hazard assessment aspects and associated documentation:

- reviewed changes in radiological hazards for onsite workers or members of the public and potential impact of the changes; and
- conducted walk-downs and made independent radiation measurements and reviewed survey documentation to determine thoroughness and frequency of the surveys.

Instructions to Workers

The inspector conducted inspection and reviewed available occurrences where a worker's electronic personal dosimeter malfunctioned or alarmed and workers response.

Contamination and Radioactive Material Control

The inspector conducted inspection and reviewed the recent transactions involving nationally tracked category 2 radioactive sources.

Radiological Hazards Control and Work Coverage

The inspector evaluated that radiation dosimeters were worn in location of maximum dose and for areas with significant dose gradients verified that multi-badging and effective dose equivalents are being measured properly.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

4OA2 Problem Identification and Resolution (71152 – 3 samples)

.1 Routine Review of Problem Identification and Resolution Activities

a. Inspection Scope

As required by Inspection Procedure 71152, "Problem Identification and Resolution," the inspectors routinely reviewed issues during baseline inspection activities and plant status reviews to verify that Exelon entered issues into the corrective action program at an appropriate threshold, gave adequate attention to timely corrective actions, and identified and addressed adverse trends. In order to assist with the identification of repetitive equipment failures and specific human performance issues for follow-up, the inspectors performed a daily screening of items entered into the corrective action program and periodically attended condition report screening meetings.

b. Findings

No findings were identified.

.2 Annual Sample: Review of 'A' and 'C' Emergency Service Water Pump Breaker Failures

a. Inspection Scope

The inspectors performed an in-depth review of Exelon's equipment apparent cause evaluations and corrective actions associated with IR 1511787 and IR 1614019, regarding the failure of the emergency service water pump breakers to close. IR 1511787 documented the 'A' emergency service water pump breaker failure to close during the performance of monthly surveillance, 607.4.016, "Containment Spray/Emergency Service Water Operability and In-service Test," on April 17, 2013. IR 1614019 documented the 'C' emergency service water pump breaker failure to close during the performance of a monthly surveillance run on January 29, 2014. Exelon's immediate corrective actions included initiating work orders to troubleshoot the issues and understand the cause of the failures.

The inspectors assessed Exelon's problem identification threshold, causal analysis, extent of condition reviews, and the prioritization and timeliness of Exelon's corrective actions to determine whether Exelon was appropriately identifying, characterizing, and correcting problems associated with these issues and whether the planned or completed corrective actions were appropriate. The inspectors compared the actions taken to the requirements of Exelon's corrective action program and 10 CFR 50, Appendix B. In addition, the inspectors reviewed documentation associated with this issue, interviewed engineering and maintenance personnel, and performed a visual inspection of the breaker.

b. Findings

Introduction. The inspectors identified a Green NCV of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for Exelon's failure to develop an adequate post maintenance test to determine operability of the 'A' emergency service water pump breaker.

Description. On April 15, 2013, the 'A' emergency service water pump breaker experienced mechanical binding while the breaker was being racked out in support of a tagging clearance for work on emergency service water system. IR 1502012 was written, which documented that the breaker closing spring did not discharge as it was being racked out of the cubicle, as expected. It was noted that the breaker trip latch crank pin was slightly bent and the breaker spring discharge linkage assembly appeared to be bound. The breaker was subsequently repaired under a corrective maintenance work order (C2020132).

Exelon performed post maintenance testing on April 16, 2013, by starting and stopping the pump from the control room. The post maintenance testing did not include inspection of the breaker by racking it in and out to verify that the closing coil would properly de-energize.

On April 17, 2013, during performance of the monthly in-service test surveillance and emergency service water system pump operability test, the control room operator attempted to start the 'A' emergency service water pump, but the 'A' emergency service water pump breaker did not close on demand. IR1503270 was written, which documented that the breaker closing spring was found in a discharge state. Further visual inspection identified that the breaker was mechanically bound and the pivot arm was raised such that the breaker could not be removed from the switchgear cubicle. The failed breaker was replaced with a spare, and sent for forensic analysis.

Exelon performed an equipment apparent cause evaluation for the April 17, 2013 failure, after receiving the results from the forensic analysis. The analysis revealed that:

1. The breaker spring discharge linkage assembly was binding
2. The discharge crank pin was deformed, and
3. The anti-pump relay coil was found to be fully degraded as the coil was burned up and the relay would not function

As a result, the inspectors identified that Exelon did not correct the failure that occurred on April 15, 2013, and that Exelon's post maintenance testing for the corrective maintenance work order was inadequate because it did not verify whether the breaker would experience further mechanical binding during its functional operations. The purpose of a post maintenance test is to provide assurance that a component and its associated subsystems are functional after completion of maintenance. The level of post maintenance testing performed should be appropriate for the scope of maintenance work performed. The post maintenance test performed for the corrective maintenance work order on April 16, 2013, only cycled the breaker and did not verify whether the breaker spring discharge linkage assembly was binding. The binding did not allow the closing coil to properly charge. It also appears from the forensic analysis that the anti-pump relay coil failed when the breaker closing spring charging motor failed to charge

the closing spring following the breaker operation. This placed the emergency service water pump in an inoperable condition. The inspectors determined that the breaker failure on April 17, 2013, could have been prevented if adequate post-maintenance testing had been performed following the corrective maintenance activities. Though Exelon identified the failure as a result of subsequent surveillance testing on April 17, 2013, the inspectors considered this finding to be NRC-identified because Exelon's equipment apparent cause evaluation did not address these organizational or human performance weaknesses in the cause evaluation.

The inspectors determined that prior to the failure on April 15, 2013, the breaker would have performed its safety function because on April 15, the breaker was found with the closing spring in a fully charged state. In this condition, the closing spring would have been able to close the breaker on demand.

Exelon entered the issue into their corrective action program as IR 2471069. Planned corrective actions include revising work order activities to specify the correct post maintenance test.

Analysis. The inspectors determined that Exelon's failure to develop an adequate post maintenance test for the emergency service water pump in accordance with 10 CFR 50, Appendix B, Criterion V, is a performance deficiency that was reasonably within Exelon's ability to foresee and prevent. The performance deficiency is more than minor because it is associated with the Equipment Performance attribute of the Mitigating Systems Cornerstone and adversely affected its objective to ensure the availability and reliability of systems that respond to initiating events. Specifically, the inadequate post maintenance testing for 'A' emergency service water pump breaker on April 16, 2013, led to the emergency service water pump failing to perform its function during subsequent surveillance testing on April 17, 2013. The inspectors assessed this finding in accordance with IMC 0609 Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," issued June 19, 2012. The inspectors concluded that this finding does not represent an actual loss of function of the emergency service water system for greater than its technical specification allowed outage time (15 days). Therefore, the finding is of very low safety significance (Green).

This finding has a cross-cutting aspect in the area of Human Performance, Work Management, in that Exelon's work planning and executing of work activities did not include documented instructions for performing an adequate post maintenance test [H.5].

Enforcement. 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedure, and Drawings," requires, in part, that activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings. Contrary to above, on April 16, 2013, following corrective maintenance on the 'A' emergency service water pump breaker, Exelon failed to prescribe appropriate documented instructions and proper acceptance criteria for performing an adequate post-maintenance test. As a result, the 'A' emergency service water pump failed to start on April 17, 2013, which appeared to be caused by the same defective breaker mechanism that the corrective maintenance was intended to repair. Because this violation was of very low safety-significance and was entered into

Exelon's corrective action program as IR 2471069, this violation is being treated as an NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy. **(NCV 05000219/2015001-02, Inadequate Post-Maintenance Testing for Emergency Service Water Pump Breaker)**

c. Observations

The inspectors concluded that Exelon took appropriate actions to identify the cause of the breaker failures on April 17, 2013, and January 29, 2014. The inspectors concluded that each breaker failure was not a common issue. However, the inspectors did determine that the April 17, 2013 breaker failure was caused by inadequate corrective maintenance and post maintenance testing performed on April 16, 2013.

For the breaker failure on April 27, 2013, Exelon determined the apparent cause to be misalignment of the breaker to the switchgear cubicle components. Exelon's determination was based on forensic analysis performed on the failed breaker for the 'A' emergency service water pump. As stated in the forensic analysis report and in Exelon's equipment apparent cause evaluation, the breaker spring discharge crank pin mechanically interfered with the spring discharge cam that is mounted in the switchgear cubicle. This interfering condition was sufficient to reposition the adjusting clevis and spring release crank. This condition degraded the spring release interlocking design feature, which is provided to discharge the closing and opening springs when the breaker is inserted into or withdrawn from the metal-clad switchgear. As stated in the report, this condition would not allow the spring discharge crank to move.

Exelon determined that this may have prevented the breaker closing spring from recharging after the breaker was operated. Exelon promptly replaced the failed breaker and updated preventive maintenance procedure, 2400-SME-3915.03, to include steps to check alignment of the spring discharge cam and the spring discharge crank. Exelon also performed an extent of condition review and determined that there were no other breakers that were experiencing a similar issue. The inspectors determined that the failure was related to inadequate corrective maintenance performed on April 16, 2013, and an inadequate post maintenance test as discussed in Section 4OA2.2b.

For the breaker failure on January 29, 2014, Exelon performed an equipment apparent cause evaluation and determined the apparent cause of this failure was degradation of the 52HH switch from wear and dirty contacts. The 52HH switch is a SBM-type switch that is mounted inside the switchgear cubicle. The switch is actuated by the breaker elevator when the breaker is in the fully raised position. When the breaker is fully raised up, the switch contacts are closed, which provides a permissive to close the breaker from the control room or locally at the breaker. Exelon determined that the 52HH switch degradation could have been identified if steps were added to the preventive maintenance procedure 2400-SME-3915.03. Exelon took prompt corrective action to replace the switch. In addition, Exelon completed an extent of condition review and created corrective actions to perform continuity checks on 52HH switch in other similar breakers. The inspectors determined that adding steps to the preventive maintenance procedure was an enhancement.

The inspectors determined that Exelon's overall response to breaker failure issues was commensurate with safety significance, and the actions taken and planned were reasonable to restore the nonconforming conditions.

.3 Annual Sample: No. 2 Emergency Diesel Generator Cylinder No. 15 Degraded Piston Wrist Pin Bearing

a. Inspection Scope

The inspectors performed an in-depth review of Exelon's evaluations and corrective actions associated with the emergency diesel generator No. 2 degraded piston wrist pin bearing. Specifically, during the performance of a 24-month preventive maintenance lubricating oil system inspection on emergency diesel generator No. 2 on October 21, 2013, foreign material in the form of silver metal shavings was found in the main lubricating oil filter housing. Subsequent inspection activities revealed silver metal shavings in the engine sump below cylinder No. 15 and indications of a degraded wrist pin bearing, which necessitated replacement of the power pack assembly. Exelon entered the issue into the corrective action program as IR 01575045, "1343 Emergency Diesel Generator Discovery: Metal Shavings in Lubricating Oil." Exelon initiated a prompt investigation and performed an equipment apparent cause evaluation and mitigating system performance indicator failure determination evaluation to address the degraded conditions and past operability of emergency diesel generator No. 2.

The inspectors assessed Exelon's problem identification threshold, associated apparent cause analyses and evaluations; extent of condition reviews; and the prioritization and timeliness of actions to evaluate whether Exelon was appropriately identifying, characterizing, and correcting problems associated with this issue and whether the planned or completed corrective actions were appropriate and met the requirements of their corrective action process. The inspectors reviewed the applicable condition reports and associated documents, work orders, maintenance procedures, engine log readings, and as-found test results. The inspectors reviewed Exelon's actions to address other possible or contributing causes. The inspectors compared the actions taken to the requirements of Exelon's corrective action process and 10 CFR 50, Appendix B. Additionally, the inspectors interviewed engineering and maintenance personnel to assess the effectiveness of the implemented corrective actions and performed field walkdowns to assess the material condition of the emergency diesel generator No. 2.

b. Observations

Oyster Creek is equipped with two identical General Motors Corporation, Electromotive Division Model EMD 20-645E4, 20 cylinder, emergency diesel generator units. The function of these emergency diesel generators is to provide safety-related alternating current power to the class 1E busses upon a loss of off-site power while the reactor is critical, including during post-accident conditions. Upon demand, the emergency diesel generator must be able to start, achieve rated speed and voltage, and provide power to the Class 1E busses within 10 seconds. Further, the emergency diesel generator must be able to sustain power production for a minimum of 24 hours.

The emergency diesel generators were modified in 1986 to include prelubricating/ prewarm oil systems which operate continuously to maintain the diesels in a standby condition to reduce engine wear during fast starts. The prelubricating/prewarm system provides direct lubrication to the crankshaft surfaces and turbocharger bearings during standby conditions, but does not provide direct application to the wristpin bearings. However, the time to initiation of wristpin lubrication has been minimized by maintaining

the lubricating oil headers full via the prelubricating system. Additionally, procedural enhancements were instituted to reduce the number of fast starts on the emergency diesel generators during testing to enhance bearing and other component life.

The inspectors concluded that Exelon staff generally conducted a thorough and appropriate technical review as documented in their equipment apparent cause evaluation and corrective action reports. Past operability of emergency diesel generator No. 2 was addressed in the mitigating system performance indicator failure determination evaluation. The inspectors noted that the mitigating system performance indicator evaluation included detailed discussions on operability of the emergency diesel generator with the degraded bearing. The inspectors determined that the maintenance and repairs conducted by Exelon's staff following the inspection and discovery of the metal flakes were commensurate with their programs and procedures as well as vendor and Electromotive Division owners' group guidance and recommendations. The inspectors further noted that Exelon used relevant operating experience in their response to the issue and determination regarding operability. Exelon was not able to identify a specific factor that led to the wrist pin bearing failure. However, Exelon noted that operating history and industry experience suggested that the most likely cause of the bearing damage involved the wrist pin bearing and lubrication delivery system coupled with a combination of factors including multiple starts and excessive high or low load operation. The inspectors determined that Exelon's conclusion that no definitive cause for this occurrence could be found was reasonable.

Additionally, the inspectors determined that Exelon staff appropriately identified latent organizational weaknesses as contributors to the event. Lubricating oil analysis is a major indicator of machinery degradation; however, the vendor contracted by Exelon to perform the oil analysis did not possess the capability of measuring silver content to the 0.1 parts per million (ppm) tolerance required. Silver is a layered element within the diesel engine piston wrist pin bearings and as the wrist pin bearing degrades, the silver content in the lubricating oil system increases. Exelon further identified that engineering staff failed to review analysis results in a timely manner and did not take the required actions following receipt of ten oil analysis reports indicating silver content exceeding the procedural guidance as described in maintenance procedure MA-AA-716-230-1001, "Oil Analysis Interpretation Guideline," Section 3. These issues have been entered into Exelon's corrective action program as IR 1575045. This performance deficiency and violation of regulatory requirements is dispositioned in Section 4OA7 of this report.

The failure to identify the high out-of-specification silver content readings at 1.0 ppm in the lubricating oil results occurred on ten occasions over thirteen months between samples taken from two separate emergency diesel generator No. 2 locations. 1.0 ppm of silver should have triggered additional actions for levels above 0.3 and 0.7 ppm per the procedure including, but not limited to: resampling immediately to verify abnormal results; performing confirmatory testing using more accurate methods if required; reviewing all vibration and thermography data immediately for adverse trends; and contacting the equipment manufacturer for additional assistance. The inspectors noted that the original vendor had retained an oil sample taken before the October 21, 2013 two year overhaul. This sample was sent to a new vendor who possessed the required analysis accuracy and resulted in an actual silver content of 0.5 ppm.

Despite Exelon's equipment apparent cause evaluation, the inspectors had two additional observations regarding corrective actions. First, while Exelon considered

other emergency diesel generator analyses regarding the accuracy of the vendor's results relative to required action levels, Exelon did not look further to other components to see if the same extent-of-cause issue existed in other safety-related systems. For instance, various safety-related closed loop cooling systems at the station have routine chemical analyses performed, but Exelon's corrective actions did not review these analyses to verify that the vendor was performing the tests to the required accuracy. Second, from a procedural point of view, the only individual required to review emergency diesel generator oil analysis results was an engineer in the Component Maintenance Optimization group. The inspectors observed that no second check or peer check was procedurally in-place to minimize any delays in identifying out-of-specification results. The inspector's observations were entered into the corrective action process as IR 2486351.

Regarding operability of the 2B emergency diesel generator with a silver content of 0.5 ppm in the lubricating oil, the inspectors reviewed operating experience with the same make and model emergency diesel generator in other nuclear applications. The inspectors found two instances where other emergency diesel generators were able to perform the intended safety function with elevated silver contents at 2.0 and 1.3 ppm over comparable time periods. In addition, examinations of Oyster Creek's No. 2 emergency diesel generator cylinder No. 15 removed wrist pin bearing demonstrated that although the bearing had been degraded, some material remained in place which was capable of carrying the applied loads. Furthermore, pressure/volume combustion chamber diagnostics from 2011 and 2013, as well as engine log reviews, revealed no issues that would impact the emergency diesel generator's ability to perform the intended safety function.

Overall, the inspectors determined that Exelon's overall response to the issue was commensurate with the safety significance, was timely, and generally included appropriate follow-up actions.

.4 Annual Sample: Sand Bed Water Intrusion

a. Inspection Scope

The inspectors performed an in-depth review of the Exelon staff's identification, evaluation and corrective actions related to the identification of water intrusion into polyethylene bottles attached to three sandbed bays during a non-outage period. A total of approximately 8.5 gallons of water was found in the three bottles. This condition was discovered on September 10, 2013.

Exelon chemically sampled the water to identify the origin of the water but the analysis was not definitive. The results did identify the water was not reactor coolant.

The inspectors assessed the problem identification threshold, extent of condition reviews, and the prioritization and timeliness of corrective actions to determine whether Exelon personnel were appropriately identifying, characterizing, and correcting problems associated with the water intrusion and its effect on the integrity of the drywell liner and the coating in the sandbed regions and whether the planned and completed corrective actions were appropriate.

The inspectors reviewed a sample of relevant corrective action documents, IRs, implementing test control procedures, structural inspections of the drywell shield wall, and the potential for water to migrate through concrete in the drywell shield wall. Recent structural inspections of the drywell shield wall have not identified cracks which were large enough to allow water to migrate through to the sandbed areas. The inspectors reviewed the subsequent inspections of the drywell liner completed during the 1R25 refueling outage. The results of the visual and ultrasonic inspections of the sandbed bays and the drywell coating and wall thickness in the sandbed bays showed that there had been no measurable corrosion on the drywell surfaces since the previous refueling outage inspections. The inspectors compared the actions taken to verify compliance with Exelon's corrective action program procedure and 10 CFR 50, Appendix B, regulatory requirements.

b. Findings and Observations

No findings were identified.

The inspectors determined that extent-of-condition reviews of the water in the sandbed drain bottles did not identify additional water in other drain bottles or other sandbed drains, previous occurrences of water in the sandbeds or bottles during non-refueling outages, and did not identify generic implications. The inspectors reviewed Exelon's corrective actions to ensure timely identification of non-conforming conditions. The inspectors determined that Exelon's overall response to identify the causes of the condition to evaluate the impact, and initiate corrective actions met the standards of Exelon's corrective action program. The scope and timing of the corrective actions was determined to be commensurate with the safety significance of the problem.

4OA3 Follow-Up of Events and Notices of Enforcement Discretion (71153 – 3 samples)

.1 Plant Events

a. Inspection Scope

For the plant events listed below, the inspectors reviewed and/or observed plant parameters, reviewed personnel performance, and evaluated performance of mitigating systems. The inspectors communicated the plant events to appropriate regional personnel, and compared the event details with criteria contained in IMC 0309, "Reactive Inspection Decision Basis for Reactors," for consideration of potential reactive inspection activities. As applicable, the inspectors verified that Exelon made appropriate emergency classification assessments and properly reported the event in accordance with 10 CFR Parts 50.72 and 50.73. The inspectors reviewed Exelon's follow-up actions related to the events to assure that Exelon implemented appropriate corrective actions commensurate with their safety significance.

- Augmented offgas isolation due to deflagration on March 4, 2015
- Reactor scram caused by electronic pressure regulator failure on March 22, 2015

b. Findings

No findings were identified.

.2 (Closed) Exelon LER 05000219/2014-005-00: Secondary Containment Declared Inoperable

On September 19, 2014, during refueling outage 1R25 with the unit in cold shutdown, a technician discovered that a previously authorized and installed temporary modification had been removed from a penetration in the outboard main steam isolation valve room (trunnion room). The purpose of the temporary modification is to isolate the penetration from the reactor building to the trunnion room to allow the reactor building trunnion room door to be maintained open during refueling outages. Per Technical Specifications 3.5.B and 4.5.G, in order to maintain secondary containment integrity with the trunnion room door open, four penetrations connecting the trunnion room to the reactor building must be sealed. The trunnion room door was open when the plug was found removed from a six inch equipment drain hub. The plug was immediately reinstalled, restoring the safety function of the secondary containment. Exelon performed an engineering analysis, which determined that the secondary containment system was capable of performing its safety function with the plug removed.

The apparent cause of the event was determined to be inadequate signage on the trunnion room door, with a contributing cause that the individual who removed the temporary modification to use the equipment drain hub did not understand the importance of the temporary modification. Exelon has revised the temporary modification to require signage not only on the trunnion room door, but to all the plugs installed as part of the temporary modification.

The inspectors determined that the technical specification violation was minor because it was not a precursor to a significant event; did not have the potential to lead to a more significant safety concern; did not relate to a performance indicator that would have exceeded a threshold; and did not adversely affect any of the cornerstone objectives. The inspectors identified other issues concerning the adequacy of the post-maintenance test utilized after the initial temporary modification installation (see Section 1R19); a concurrent loss of secondary containment safety function (see Section 4OA7); and the completeness of the LER and emergency notification system report (see below). This LER is closed.

Findings

Introduction. The inspectors identified a Severity Level IV NCV of 10 CFR 50.9(a) in that Exelon did not provide complete information in reports submitted per 10 CFR 50.72 and 10 CFR 50.73. Specifically, an LER submitted on November 18, 2014, did not discuss a separate, partially-opened secondary containment door that was discovered during the same time frame, which could have prevented the fulfillment of the safety function of secondary containment, and therefore was required to be discussed in the original LER.

Description. At approximately 2200 on September 19, 2014, while the reactor was in cold shutdown for the 1R25 refueling outage, an Oyster Creek technician discovered that a previously installed temporary modification was removed from a penetration that was required to maintain secondary containment in the trunnion room. The purpose of the temporary modification is to isolate the penetration opening from the reactor building and allow the trunnion room door to be maintained open during refueling outages. Technical Specification 3.5 allows this temporary modification to serve as a secondary containment boundary while work activities are occurring in the trunnion room. The

technician immediately reinstalled the temporary modification and entered the issue into the corrective action program as IR 2383820.

At approximately 0630 on September 20, 2014, the shift manager reviewed the IR report, declared secondary containment inoperable and made an 8-hour report (ENS 50476) per 10 CFR 50.72(b)(3), which described the partially-removed temporary modification. The shift manager then set plant conditions to show that secondary containment was operable following reinstallation of the temporary modification. However, the standby gas treatment system could only achieve a differential pressure of negative 0.20 inches of water, which did not meet the Technical Specification 4.5.G.3 criterion of negative 0.25 inches of water. The shift manager entered this issue into the corrective action program as IR 2383852 and commenced troubleshooting efforts to determine why the technical specification could not be met. The troubleshooting efforts identified that a personnel access door embedded in the railroad airlock outer door was not fully closed, and allowed enough air to leak into secondary containment to prevent achieving a negative 0.25 inches of water differential pressure. Technicians shut the personnel access door and secondary containment differential pressure returned to the value required by technical specifications.

Oyster Creek submitted LER 2014-005-00, “Secondary Containment Declared Inoperable” on November 18, 2014. The LER described the partially removed temporary modification and concluded that the safety function of secondary containment was not lost as the cross sectional area of the penetration was bounded by a design calculation that showed it was not large enough to prevent the standby gas treatment system from drawing negative 0.25 inches of water differential pressure.

The inspectors reviewed the LER and ENS and determined that neither report documented the inability of the standby gas treatment system to achieve the technical specification surveillance requirement on September 20, and did not document the discovery of the partially opened personnel access door. Exelon entered the issue into their corrective action program as IR 2440641. Planned corrective actions include revising the original LER to add a discussion of the partially opened secondary containment door.

Analysis. The inspectors determined that not providing a complete report in accordance with 10 CFR 50.9(a) is a performance deficiency that was reasonably within Exelon’s ability to foresee and correct and should have been prevented. Specifically, Exelon did not describe the effectiveness of response measures taken and major occurrences during the event, including all component or system failures that contributed to the event. Because the issue had the potential to affect the NRC’s ability to perform its regulatory oversight function, the inspectors evaluated this performance deficiency in accordance with the traditional enforcement process. The inspectors documented findings related to this event in Section 1R19 and section 4OA7 of this report, which were determined to be of very low safety significance. In accordance with Section 2.2.2.d of the NRC Enforcement Policy, the inspectors determined that the performance deficiency identified with the reporting aspect of the event is a Severity Level IV violation, because it is of more than minor concern, with relatively inappreciable potential safety significance and is related to findings that were determined to be more than minor issues. In accordance with IMC 0612, Appendix B, this issue is not assigned a cross-cutting aspect.

Enforcement. 10 CFR 50.9(a) states "Information provided to the Commission by an applicant for a license or by a licensee or information required by statute or by the Commission's regulations, orders or license conditions to be maintained by the applicant or the licensee shall be complete and accurate in all material respects." Contrary to the above, on November 18, 2014, information provided by Exelon in accordance with 10 CFR 50.72 and 10 CFR 50.73 was not complete in all material aspects because Exelon did not describe the effectiveness of response measures taken and all component or system failures that contributed to the event. The inspectors determined that submission of incomplete reports required by 10 CFR 50.72 and 10 CRF 50.73 is characterized as a Severity Level lV violation. However, because the violation was of very low safety significance and was entered into Exelon's corrective action program (IR 2440641), this violation is being treated as an NCV consistent with Section 2.3.2 of the Enforcement Policy, **(NCV 05000219/2015001-03, Incomplete 50.72 and 50.73 Reports Associated with Secondary Containment Integrity)**

4OA6 Meetings, Including Exit

On April 17, 2015, the inspectors presented the inspection results to Garey Stathes, Site Vice President, and other members of the Exelon staff. The inspectors verified that no proprietary information was retained by the inspectors or documented in this report.

4OA7 Licensee-Identified Violations

The following violations of very low safety significance (Green) were identified by Exelon and were a violation of NRC requirements which meets the criteria of the NRC Enforcement Policy for being dispositioned as an NCV.

- Technical Specification 3.5.B, "Secondary Containment," requires in part, that secondary containment integrity be maintained at all times when the reactor vessel head and the drywell head are in not in place. Technical Specification 1.14, "Secondary Containment Integrity," requires in part, that the standby gas treatment system is operable. Technical Specification 4.5.G.3 specifies that with the trunnion room door open and the trunnion room is isolated from secondary containment in support of outage activities, testing of the standby gas treatment system to be performed to demonstrate the capability to maintain ¼ inch of water vacuum under calm wind conditions and a standby gas treatment system filter train flow rate of not more than 4000 cfm. Contrary to Technical Specification 3.5.B, on September 20, 2014, with the reactor vessel head and drywell head removed for the refueling outage, Exelon determined that they did not have secondary containment integrity when performing testing to demonstrate standby gas treatment system capability in accordance with Technical Specification 4.5.G.3 and subsequently found that the outer railroad air lock personnel access hatch had not been closed properly, which prevented a proper vacuum from being achieved. Exelon entered this issue into the corrective action program as IR 2383852. Using guidance in IMC 0609, Appendices G and H, the inspectors determined that this finding was of very low safety significance (Green) because the decay heat values were low and the reactor water level inventory was above that required to move irradiated fuel.

- Technical Specification 6.8.1b states that, "Written procedures shall be established, implemented, and maintained covering surveillance and test activities of equipment that affects nuclear safety and radioactive waste management equipment."

Contrary to the above, from August 2012 through September 2013, Exelon took no action following receipt of ten lubricating oil analysis report results taken from two emergency diesel generator No. 2 sample locations which indicated silver content at 1.0 ppm, which exceeded procedural action levels. Specifically, Exelon maintenance procedure MA-AA-716-230-1001, "Oil Analysis Interpretation Guideline," Section 3 governs safety system oil analyses and describes actions to be taken when equipment wear metals exceed specific thresholds, as obtained through monthly oil analysis. Section 3 of procedure MA-AA-716-230-1001 lists potential actions to be taken when oil analysis results indicate silver content above 0.3 and 0.7 ppm respectively. These actions include resampling immediately to verify abnormal results, performing confirmatory testing using more accurate methods if required, reviewing all vibration and thermography data immediately for adverse trends, and contacting the equipment manufacturer for additional assistance. Exelon identified this issue on October 21, 2013, during the performance of a 24-month lubricating oil system inspection on the emergency diesel generator No. 2 when silver metal shavings were found in the main lubricating oil filter housing and in the sump below cylinder #15. The inspectors determined that the failure to identify an out-of-specification lubricating oil sample result on numerous occasions was a performance deficiency that was within Exelon's ability to foresee and correct. The inspectors determined that the issue adversely impacted the reliability of the safety-related emergency diesel generator in that the wrist pin bearing was degraded and had partially failed. The inspectors determined that the issue was of very low safety significance (Green) because it did not: affect design or qualification; represent a loss of system or function; exceed technical speciation allowed outage times; and involve external events. Exelon entered this issue into the corrective action program as IR 1575045.

ATTACHMENT: SUPPLEMENTARY INFORMATION

SUPPLEMENTARY INFORMATION

KEY POINTS OF CONTACT

Exelon Personnel

G. Stathes, Site Vice-President
J. Dostal, Plant Manager
P. Bloss, Senior Manager, Plant Engineering
M. Capone, Engineering, System Manager
T. Cappuccino, Senior Regulatory Assurance Specialist
M. Chanda, Emergency Preparedness Manager
Z. Demeke, Program Engineering, Program Manager
D. DiCello, Director, Work Management
D. Chernoky, Director, Maintenance
T. Farenga, Radiation Protection Manager
M. Ford, Director, Operations
T. Keenan, Manager, Site Security
K. Mackown, Nuclear Oversight
G. Malone, Director, Engineering
J. McCarthy, Certified Health Physicist
M. McKenna, Manager, Regulatory Assurance
J. Murphy, Radiation Engineering Manager
J. Parker, CMO Rotating Equipment
H. Ray, Senior Manager, Design Engineering
J. Renda, Manager, Environmental/Chemistry
C. Ricketts, Electrical Systems Manager
H. Tritt, Electrical Design and Systems Manager
S. Schwartz, Engineering, System Manager
E. Swain, Shift Operations Superintendent
C. Symonds, Director, Training
K. Wolf, Health Physics Manager

LIST OF ITEMS OPENED, CLOSED, DISCUSSED, AND UPDATED

Opened/Closed

05000219/2015001-01	NCV	Post Maintenance Test Results Were Not Evaluated to Assure that Technical Specifications Requirements Were Satisfied (Section 1R19)
05000219/2015001-02	NCV	Inadequate Post Maintenance Testing for Emergency Service Water Pump Breaker (Section 4OA2)
05000219/2015001-03	NCV	Incomplete 50.72 and 50.73 Reports Associated with Secondary Containment Integrity (Section 4OA3)

Closed

05000219/2014-005-00	LER	Secondary Containment Declared Inoperable (Section 4OA3)

LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

Procedures
ABN-31, High Winds, Revision 19
ABN-32, Abnormal Intake Level, Revision 24
ABN-60, Grid Emergency, Revision 15
OP-AA-108-111-1001, Severe Weather and Natural Disaster Guidelines, Revision 12
OP-OC-108-109-1001, Severe Weather Preparation T&RM for Oyster Creek, Revision 30
OP-OC-108-109-1002, Cold Weather Freeze Inspections, Revision 4
RAP-K7e, Environ Water Mon, Revision 7

Drawings
3E-168-02-001, General Arrangement Intake Structure Plan and Sections, Revision 10

Condition Reports

2452526	2452534	2452890	2452956	2452957	2452969
2453101	2453131	2453147	2453176	2453177	

Miscellaneous
Oyster Creek Nuclear Generating Station Operating Logs dated February 15 – 16, 2015
Oyster Creek Nuclear Generating Station Updated Final Safety Analysis Report, Section 10.4.5, Circulating Water System, Revision 18
Intake Level Recorder Data for February 15 – 16, 2015
EP-AA-1010 Addendum 3, Emergency Action Levels for Oyster Creek Station, Revision 0

Section 1R04: Equipment Alignment

Procedures
307, Isolation Condenser System, Revision 124
309.2, Reactor Building Closed Cooling Water System, Revision 93
310, Containment Spray System Operation, Revision 109
341, Emergency Diesel Generator Operation, Revision 108
604.3.001, Reactor Building to Torus Power Vacuum Breaker Test and Calibration, Revision 42
604.4.003, Reactor Building to Suppression Chamber Self Actuating Vacuum Breaker Surveillance Test and IST, Revision 22
604.4.015, Reactor Building to Torus Power Vacuum Breaker Check, Revision 20
OP-AA-108-117, Protected Equipment Program, Revision 4
RAP-C8e, RB/Torus Vac Brkr Opn, Revision 2

Calculations
C-1302-852-5360-003, Accumulator Sizing for V-27-1, 2, 3 and 4, Revision 1
C-1302-852-5360-008, Development of Accum Leakage Criteria, Revision 0A
C-1302-852-E310-018, Verification of AOV Accumulator Pressure Drop Criteria, Revision 0
C-1302-852-5322-014, Support Calc for Air Trip Valve V-26-16 & V-26-18, Revision 0
C-1302-622-5350-017, RB to Torus Vacuum Breaker Differential Pressure Switch Errors (DPS-0066A & B), Revision 4
C-1302-243-5310-041, OCNGS 20" T.B. To Suppression Chamber Vacuum Breaker – Verification of Test Procedure # 604.4.003, Revision 0

Drawings
BR 2005, Emergency Service Water System Flow Diagram, Revision 86
3E-243-21-1000, Drywell and Torus Vacuum Relief System, Revision 29
BR 2006 Sh.1, Reactor Building Closed Cooling Water System, Revision 79

Condition Reports

1636994	1644268	1645130	1650157	1662626	1666133
1689797	2060026	1692258	2387208	2390816	2471026

Maintenance Orders/Work Orders
R2210607

Miscellaneous
SP-1302-12-307, Specification for Drywell Vent & Purge Valves, Revision 1

Section 1R05: Fire Protection

Procedures
OP-OC-201-008, Oyster Creek Pre-Fire Plans, Revision 18
OP-OC-201-012-1001, On-Line Fire Risk Management, Revision 2
OP-AA-201-012-1001, Operations On-Line Fire Risk Management, Revision 1
OP-AA-108-117, Protected Equipment Program, Revision 4
WC-AA-101-1006, On-Line Risk Management and Assessment, Revision 1
ER-AA-600-1069, High Risk Fire Area Identification, Revision 1
OP-OC-201-008-1019, New Cable Spreading Room, Revision 1
OP-OC-201-008-1031, Turbine Lube Oil Storage, Pumping Elevation, Revision 4
OP-OC-201-008-1032, Turbine Operating Floor 46' Elevation, Revision 0
OP-OC-201-008-1014, MG Set Room, Revision 0
OP-OC-201-008-1024, 4160V Switchgear Room, "C" Battery Room, Revision 2
OP-OC-201-008-1025, 4160V "C" & "D" Vaults, Revision 1

Condition Reports

2439468	2443477	2441075

Section 1R07: Heat Sink Performance

Procedures:
309.2, Reactor Building Closed Cooling Water System, Revision 79
322, Service Water System, Revision 80
326, Chlorination System, Revision 87
607.4.016, CS/ESW System I Pump Operability & Quarterly In-service Test, Revision 15

ABN-18, Service Water Failure Response, Revision 7
ABN-19, RBCCW Failure Response, Revision 8
ABN-31, High Winds, Revision 16
ABN-32, Abnormal Intake Level, Revision 17
EMG-SP25, Initiation of the Containment Spray System in the Torus Cooling Mode, Revision 0
EMG-SP29, Initiation of the Containment Spray System for Drywell Sprays, Revision 1
ER-AA-335-1006, Heat Exchanger Electromagnetic Testing (ET) Methodology, Revision 3
ER-AA-340, GL 89-13 Program Implementing Procedure, Revision 6
ER-AA-340-1001, GL 89-13 Program Implementation Instructional Guide, Revision 8
ER-AA-340-1002, SW Heat Exchanger and Component Inspection Guide, Revision 6
ER-AA-340-2000, Balance-of-Plant Heat Exchanger Inspection, Testing and Maintenance Guide, Revision 5
ER-OC-340-1001, Oyster Creek Generic Letter 89-13 Program Basis Document, Revision 4

Condition Reports

1343875	1463173	1395902	1485684	1411891	1486185
1424718	1489234	1430432	1490523	1437093	1535775
1437871	2436586	1446159	2384908	1463168	2454788

Completed Tests/Inspections:
607.4.004, Containment Spray and Emergency Service Water Pump System 1 Operability and Comprehensive/Pre-service/Post-Maintenance In-service Test, Revision 87, completed 10/16/2013
641.4.001, Service Water Pump In-Service Test, Revision 77, completed 09/13/2013
A0703677, Containment Spray System 1 HX Performance Test – Evaluation of Data Collected During Heat Exchanger Test Performed in 2014, completed 10/23/2014
A0703678, Containment Spray System 2 HX Performance Test – Evaluation of Data Collected During Heat Exchanger Test Performed in 2014, completed 10/23/2014
WO R2113811, Intake Canal Underwater Structural Inspection – North Side, 10/2014
WO R2118371-03, Eddy Current Testing of H-5-2 (1-2) RBCCW Heat Exchanger Tubes, March 15, 2011
WO R2237275, Clean Heat Exchanger and Replace Anodes for RBCCW HX 1-2, March 13, 2015

Drawings:
BR 2005, Emergency Service Water System, Sh. 4, Revision 86
BR 2006, Reactor Building Closed Cooling Water System, Sheet 1, Revision 79
BR 2006, Reactor Building Closed Cooling Water System, Sheet 2, Revision 44
BR 2006, Reactor Building Closed Cooling Water System, Sheet 3, Revision 58
GE 148F740, Containment Spray System, Revision 44
3E-168-02-001, General Arrangement Intake Structure, Revision 10
DJP 3D-541-29-2001, Sheet 1, Reactor Building Closed Cooling Water Heat Exchanger H-5-2 North Side, Plugged Tubes, Revision 0
DJP 3D-541-29-2001, Sheet 1, Reactor Building Closed Cooling Water Heat Exchanger H-5-2 South Side, Plugged Tubes, Revision 0

Other Documents:
C-1302-241-5450-073, Containment Spray Hx Cleanliness Factor Calculation, Revision 0
C-1302-241-E120-078, Containment Spray Heat Exchanger Performance Evaluation, Revision 1
C-1302-541-5360, RBCCW Heat Exchanger Heat Transfer at Reduced Flows, October 14, 1983

Electric Power Research Institute, EPRI NP-7552, Heat Exchanger Performance Monitoring Guidelines, Final Report, December 1991
Focused Area Self-Assessment (FASA) Generic Letter 89-13 Program, October 31, 2014
Generic Letter 89-13, Service Water System Problems Affecting Safety-Related Equipment, Supplement 1, 04/04/1990
Oyster Creek Nuclear Generating Station, Pipe Integrity Inspection Program, TDR No. 829, Revision 10
Program Health Reports, GL 89-13 Program, 3rd Quarter 2014
System Design Basis Document OC-241, Containment Spray System, Revision 5
System Design Basis Document OC-532, Emergency Service Water System, Revision 4
System Health Reports, Containment Spray System and Reactor Building Closed Loop Cooling System, 4th Quarter 2012, 2013, 2014 and 1st Quarter 2015
System Health Reports, Emergency Service Water System and Service Water System, 4th Quarter 2012, 2013, 2014, and 1st Quarter 2015
TDR-1063, Evaluation of Heat Transfer Capability of Safety-Related Heat Exchangers, Revision 0
Technical Evaluation Report No. 01432554-02, American Society of Mechanical Engineers (ASME) Code Class 3 ESW System Piping Corrosion Rates

Section 1R11: Licensed Operator Requalification Program

Miscellaneous
NF-AB-720-F-1, Control Rod Sequence Review and Approval Sheet

Section 1R12: Maintenance Effectiveness

Procedures
2400-SME-3915.01, Motor Control Center Preventive Maintenance, Revision 19
310, Containment Spray System Operation, Revision 109
604.3.001, Reactor Building to Torus Power Vacuum Breaker Test and Calibration, Revision 42
604.4.003, Reactor Building to Suppression Chamber Self Actuating Vacuum Breaker Surveillance Test and IST, Revision 22
604.4.015, Reactor Building to Torus Power Vacuum Breaker Check, Revision 20
ER-AA-310-1001, Maintenance Rule Scoping, Revision 4
ER-AA-310-1004, Maintenance Rule – Performance Monitoring, Revision 12
PI-AA-120, Issue Identification and Screening Process, Revision 1
PI-AA-125, Corrective Action Program (CAP) Procedure, Revision 0
RAP-C8e, RB/Torus Vac Brkr Opn, Revision 2

Calculations
C-1302-852-5360-003, Accumulator Sizing for V-27-1, 2, 3 and 4, Revision 1
C-1302-852-5360-008, Development of Accum Leakage Criteria, Revision 0A
C-1302-852-E310-018, Verification of AOV Accumulator Pressure Drop Criteria, Revision 0
C-1302-852-5322-014, Support Calc for Air Trip Valve V-26-16 & V-26-18, Revision 0
C-1302-622-5350-017, RB to Torus Vacuum Breaker Differential Pressure Switch Errors (DPS-0066A & B), Revision 4
C-1302-243-5310-041, OCNGS 20" T.B. To Suppression Chamber Vacuum Breaker – Verification of Test Procedure # 604.4.003, Revision 0

Condition Reports
2442341 2437096 2438727 2433545

Drawings
3E-243-21-1000, Drywell and Torus Vacuum Relief System, Revision 29

Maintenance Orders/Work Orders
R2119318 C2007322

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

Procedures
304, Standby Liquid Control, Revision 48
307, Isolation Condenser System, Revision 124
308, Emergency Core Cooling, Revision 95
310, Containment Spray System, Revision 109
341, Emergency Diesel Generator Operation, Revision 108
ER-AA-600-1042, Online Risk Management, Revision 9
OP-AA-108-117, Protected Equipment Program, Revision 4
WC-AA-101, On-Line Work Control Process, Revision 24
WC-OC-101-1001, Online Risk Management and Assessment, Revision 18

Miscellaneous
Oyster Creek Morning Report for March 18, 2014
Oyster Creek Paragon Results for March 18, 2014

Section 1R15: Operability Determinations and Functionality Assessments

Procedures
681.4.004, Technical Specification Log Sheet, Revision 30
EMG-SP26, Support Procedure 26 Determining Bulk Drywell Temperatures, Revision 1
OP-AA-108-115, Operability Determinations, Revision 15
OP-AA-108-115-1002, Supplemental Consideration for On-Shift Immediate Operability Determinations, Revision 3
MA-AA-716-230-1001, Oil Analysis Interpretation Guideline, Revision 17

Condition Reports

2424160	2425255	1649198	2394230	2432809	2433545
2461906	1564416	1564417	1492013	0799753	2467827
2443995	1667842	2465654			

Maintenance Orders/Work Orders
A2019430 R2200889

Drawings
3E-861-21-1002, Emergency Diesel Generator Lube Oil System, Sheet 1, Revision 12

Miscellaneous
Oyster Creek Nuclear Generating Station Technical Specifications Section 3.4, Containment Spray System and Emergency Service Water System, Amendment 247
Oyster Creek Nuclear Generating Station Updated Final Safety Analysis Report Section 6.2, Containment Systems, Revision 18
VM-OC-0137, Vertical Induction Motors, Revision 5

VM-OC-0095, Diesel Generators, Revision 12
Oyster Creek Nuclear Generating Station Updated Final Safety Analysis Report Section 8.3, Onsite Power Systems, Revision 18

Section 1R18: Plant Modifications

Procedures
EP-059, Conduit Support Design and Installation, Revision 2
SP-9000-41-005, Installation Specification for Cables & Raceways at Oyster Creek Nuclear Generating Station, Revision 5
CC-AA-103, Configuration Change Control for Permanent Physical Plant changes, Revision 25

Drawings
GE 237E566, Reactor Protection System Electrical Elementary Diagram Channel 1, Sheet 1, Revision 45
GE 237E566, Reactor Protection System Electrical Elementary Diagram Channel 1, Sheet 3, Revision 15

Condition Reports
2448320 2451785

Maintenance Orders/Work Orders
C2033871 C2033863 A2373135

Miscellaneous
ECR 15-00064-000, Abandon Old Cable and Pull New Cable for PSL-A, Revision 0000
Oyster Creek Nuclear Generating Station Technical Specifications Table 3.1.1 – Protective Instrumentation Requirements, Amendment 208
Oyster Creek Nuclear Generating Station Updated Final Safety Analysis Report Section 7.2, Reactor Trip System, Revision 16

Section 1R19: Post-Maintenance Testing

Procedures
MA-AA-716-012, Post Maintenance Testing, Revision 19
WC-AA-101, On-Line Work Control Process, Revision 24
609.4.001, Isolation Condenser Valve Operability and In Service Test, Revision 79
651.4.001, Standby Gas Treatment System Auto Actuation Test, Revision 70
651.4.001, Standby Gas Treatment System Auto Actuation Test, Revision 71
651.4.002, Standby Gas Treatment System 15-Minute Run – System 1, Revision 14
MA-AA-716-011, Work Execution & Close Out, Revision 19
OP-AA-108-104, Technical Specification Compliance, Revision 1
WC-AA-111, Surveillance Program Requirements, Revision 4
602.3.004, Electromatic Relief Valve Pressure Sensor Test and Calibration, Revision 54
2400-SMM-3219.03, Removal Installation of Liquid Poison Relief Valves V-19-42 and V-19-43, Revision 8

Drawings

GE 237E566, Reactor Protection System Electrical Elementary Diagram Channel 1, Sheet 1, Revision 45
GE 237E566, Reactor Protection System Electrical Elementary Diagram Channel 1, Sheet 3, Revision 15
607.4.004, Containment Spray and Emergency Service Water Pump System 1 Operability and Comprehensive/Pre-Service/Post-Maintenance Inservice Test, Revision 93

Condition Reports

2448320	2448996	2451785	1484833	2440643	2060027

Maintenance Orders/Work Orders

R2214807	R2213081	R2221719	C2033871	C2033863	A2373135
R2212850	R2211906	R2190413	R0800966	R2244647	R2211902
R2215497	R2208830	C2033158			

Calculations

C-1302-622-E510-060, PS-IA-0083 EMRV High Pressure Relief Calibration and Instrument Loop Error, Revision 0

Miscellaneous

VM-OC-0134, Anchor Darling Valves Operating & Maintenance Instruction Manual, Revision 13
ECR 15-00064, Abandon Old Cable and Pull New Cable for PSL-A, Revision 0
Oyster Creek Nuclear Generating Station Technical Specifications Table 3.1.1 – Protective Instrumentation Requirements, Amendment 208
Oyster Creek Nuclear Generating Station Updated Final Safety Analysis Report Section 7.2, Reactor Trip System, Revision 16
ECR 13-00238, Update SP-1302-12-186 Test of Liquid Poison Relief Valves, Revision 0
SP-1302-12-186, Oyster Creek Specification for Test of Liquid Poison Relief Valves, Revision 2
Oyster Creek Nuclear Generating Station Outage Control Center Logs, dated September 18-20, 2014
Oyster Creek Nuclear Generating Station Control Room Logs, dated September 18-20, 2014
Oyster Creek Nuclear Generating Station Technical Specification 4.5, Containment System, Amendment 200
Oyster Creek Nuclear Generating Station Technical Specification 3.5, Containment, Amendment 196
Component History for System 822, Reactor Building Ventilation System, dated January 15, 2015
Oyster Creek Nuclear Generating Station Technical Specification 3.4, Emergency Cooling, Amendment 247
Oyster Creek Nuclear Generating Station Updated Final Safety Analysis Report Section 6.3, Emergency Core Cooling System, Revision 18
Complex Troubleshooting 2473044, MPR – Mechanical Pressure Regulator
Complex Troubleshooting 2472372, EPR – Electronic Pressure Regulator

Section 1R20: Refueling and Other Outage Activities

Procedures

OP-AA-108-114, Post Transient Review, Revision 11
OP-AA-108-108, Unit Restart Review, Revision 16
ABN-9, Electric Pressure Regulator Malfunction, Revision 8

203.4, Plant Cooldown Following Reactor Scram, Revision 55
201, Plant Startup, Revision 97

Condition Reports (IRs)

2475725	2471342	2475432	2475114	2475561	2475574
2475641	2475747	2476834	2473561	2474409	2474403
2474385	2474379	2474359	2474338	2473834	2473656
2473641	2473580	2473159	2473665	2473100	2473287
2472230	2472176	2472427	2472415	2472372	2472063

Maintenance Orders/Work Orders

C2033216	C2034003	C2033572	C203330	C2033158

Miscellaneous
Complex Troubleshooting 2473044, MPR – Mechanical Pressure Regulator
Complex Troubleshooting 2472372, EPR – Electronic Pressure Regulator

Section 1R22: Surveillance Testing

Procedures
636.4.013, Diesel Generator #2 Load Test, Revision 44
636.2.005, Diesel Generator #1 Weekly Battery Surveillance, Revision 25
678.4.001, Primary Containment Isolation Valve Operability and IST, Revision 45
612.4.001, Standby Liquid Control Pump and Valve Operability and IST, Revision 49
604.3.001, Reactor Building to Torus Power Vacuum Breaker Test and Calibration, Revision 42
645.4.036, Fire Pump #2 Operability Test, Revision 26
636.4.003, Diesel Generator #1 Load Test, Revision 101
602.4.002, MSIV Closure and IST Test, Revision 41

Calculations
C-1302-741-5350-009, Oyster Creek EDG Battery Sizing Calculation, Revision 1

Condition Reports

2435836	2435686	2435497	2435697	2473157

Maintenance Orders/Work Orders

R2251418	R2250249	R2249566	R2253257	R2246844

Miscellaneous
In-service Testing Valve Trend Data for MSIV valve V-1-7, dated March 25, 2015

Section 1EP4: Emergency Action Level and Emergency Plan Changes

Miscellaneous
EP-AA-1000, Exelon Nuclear Standardized Radiological Emergency Plan, Revision 26
EP-AA-1010, Oyster Creek Station Radiological Emergency Plan Annex, Revision 9

Procedures
EP-AA-111, Emergency Classification and Protective Action Recommendations, Revision 19

Section 1EP6: Drill Evaluation

Procedures
EP-AA-112-100, Control Room Operations, Revision 13
EP-AA-112-100-F-01, Shift Emergency Director Checklist, Revision U
EP-AA-112-100-F-06, ERO Notification or Augmentation, Revision Q
EP-AA-114-F-02, BWR Release In Progress Determination Guidance, Revision A

Section 2RS1: Radiological Hazard Assessment and Exposure Controls

Procedures
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RP-AA-210-1001, Dosimetry Logs and Forms, Revision 9
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RP-AA-401 Attachment 5, ALARA Post Job Review 14-406 1R25 Reactor Disassembly, Refuel, Inspection and Reassembly of Reactor, October 30, 2014
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PI-AA-125, Corrective Action Program (CAP) Procedure, Revision 2
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Drawing 4059, Jersey Central Power & Light Company, Oyster Creek Station – Unit #1
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1575590	2471069	1614019	1515759	1575045	1575340
1605643	1659406	2417391	2486351		

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Section 4OA3: Follow-up of Events and Notices of Enforcement Discretion

Procedures
651.4.002, Standby Gas Treatment System 15-Minute Run – System 1, Revision 14
OP-AA-106-101, Significant Event Reporting, Revision 16
LS-AA-1110, Reportable Event SAF 1.8, Revision 21
312.2, Operation of the Reactor Building Railroad Air Lock Doors, Revision 16
EP-AA-1010, Emergency Action Levels for Oyster Creek Station, Revision 3
ABN-25, Off-Gas Deflagration, Revision 7

203.4, Plant Cooldown Following Reactor Scram, Revision 55
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2475574	2475641	2475747	2476834	2473561	2474409
2474403	2474385	2474379	2474359	2474338	2473834
2473656	2473641	2473580	2473159	2473665	2473100

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10CFR50.9, Completeness and Accuracy of Information, dated July 10, 2014
10CFR 50.72, Immediate Notification Requirements for Operating Nuclear Power Reactors, dated July 10, 2014
10CFR 50.73, Licensee Event Report System, dated July 10, 2014
ENS 50476, Loss of Secondary Containment Integrity
NRC Enforcement Policy, dated January 28, 2013, revised July 9, 2013
Oyster Creek Nuclear Generating Station Operating Logs, dated September 18-20, 2014

LIST OF ACRONYMS

ADAMS	Agencywide Documents Access and Management System
CFR	Code of Federal Regulations
EAL	Emergency Action Level
IMC	Inspection Manual Chapter
IR	Issue Report
PPM	Parts Per Million
LER	Licensee Event Report
NCV	Non-Cited Violation
NRC	Nuclear Regulatory Commission
SDP	Significance Determination Process
UFSAR	Updated Final Safety Analysis Report