UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
2100 RENAISSANCE BOULEVARD, SUITE 100
KING OF PRUSSIA, PENNSYLVANIA 19406-2713

January 28, 2016

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 - INTEGRATED INSPECTION REPORT 05000219/2015004

Dear Mr. Hanson:

On December 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 January 11, 2016, with Mr. G. Stathes, Site Vice President, and other members of your staff.

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

The inspectors documented two findings of very low safety significance (Green) in this report. One finding involved a violation of NRC requirements. Because of the very low safety significance, and because the violation has been entered into your corrective action program, the NRC is treating this finding as a non-cited violation, 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, or a finding not associated with a regulatory requirement in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region I, and the NRC Resident Inspector at Oyster Creek 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
Projects Branch 6
Division of Reactor Projects

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

Enclosure:
Inspection Report 05000219/2015004
w/Attachment: Supplementary Information

cc w/encl: Distribution via ListServ

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U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No.	50-219
License No.	DPR-16
Report No.	05000219/2015004
Licensee:	Exelon Nuclear
Facility:	Oyster Creek Nuclear Generating Station
Location:	Forked River, New Jersey
Dates:	October 1, 2015 – December 31, 2015
Inspectors:	A. Patel, Senior Resident Inspector E. Andrews, Resident Inspector S. Haney, Hope Creek Resident Inspector M. Henrion, Project Engineer M. Scheetz, Reactor Engineer B. Dionne, Health Physicist J. DeBoer, Emergency Preparedness Inspector
Approved By:	Silas R. Kennedy, Chief Reactor Projects Branch 6 Division of Reactor Projects

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SUMMARY

IR 05000219/2015004; 10/01/2015 – 12/31/2015; Exelon Energy Company, LLC, Oyster Creek Generating Station; Operability Determinations and Functionality Assessments and Follow-Up of Events.

This report covered a three-month period of inspection by resident inspectors and announced inspections performed by regional inspectors. One NRC-identified non-cited violation (NCV) and one self-revealing finding of very low safety significance (Green) were identified during this inspection. The significance of most findings is 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" dated April 29, 2015. Cross-cutting aspects are determined using IMC 0310, "Aspects Within Cross-Cutting Areas" dated December 4, 2014. All violations of Nuclear Regulatory Commission (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: Initiating Events

- Green. A self-revealing finding was identified because Exelon did not adequately identify and correct conditions, per LS-AA-120, "Issue Identification and Screening Process," that led to degradation of the electric pressure regulator (EPR) wiring, which resulted in an uncontrolled rise in reactor pressure and subsequent reactor scram on average power range monitor (APRM) Hi-Hi Flux. Specifically, Exelon failed to generate issue reports to document degraded EPR wiring that was previously identified, and therefore did not take corrective action prior to a reactor scram. Planned corrective actions include reinforcing with station personnel that an issue report is required when issues are identified.

  This finding is more than minor because it is associated with the equipment performance attribute of the Initiating Events cornerstone and adversely impacted its objective to limit the likelihood of events that upset plant stability and challenge critical safety functions. In accordance with IMC 0609, Attachment 4 and Exhibit 1 of Appendix A, the inspectors determined that this finding is of very low safety significance (Green) because the finding did not cause both a reactor trip and the loss of mitigation equipment relied upon to transition the plant from the onset of the trip to a stable shutdown condition. The inspectors determined there is no cross-cutting aspect associated with this finding since it is not representative of current Exelon performance. Specifically, in accordance IMC 0612, the causal factors associated with this finding occurred outside the nominal three-year period of consideration and considered not representative of present performance. (Section 4OA3)

Cornerstone: Mitigating Systems

- Green. The inspectors identified an NCV of 10 *Code of Federal Regulations* (CFR) 50, Appendix B, Criterion XI, "Test Control," because Exelon conducted unacceptable preconditioning of the standby liquid control (SLC) relief valves prior to American Society of Mechanical Engineers (ASME) code testing. Specifically, Exelon performed a SLC system functional test prior to performing the SLC relief valve as-found testing. Exelon's immediate corrective actions included completing the as-found test prior to the functional test. Exelon entered this issue into their corrective action program (CAP) as issue report 2566036 to track the resolution of the issue.

The performance deficiency is more than minor because it is associated with the equipment performance attribute of the Mitigating Systems cornerstone and affects the cornerstone objective of ensuring availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Additionally, if left uncorrected, the performance deficiency could have the potential to lead to a more significant safety concern. Specifically, completion of the functional test prior to the replacement of the SLC relief valves masks the actual as-found condition by solidifying the valve internals. As a result, the as-found condition of the SLC relief valves have not been conducted and in the worst case scenario, could open below the design setpoint, which would divert flow back to the liquid poison tank instead of into the vessel to shut down the reactor during an anticipated transient without scram (ATWS) condition. The inspectors evaluated the finding using IMC 0609, Attachment 4, "Initial Screening and Characterization of Findings," and determined the finding was of very low safety significance (Green) because the structure, system or component (SSC) maintained its operability. The finding has a cross-cutting aspect in the area of Problem Identification and Resolution, Evaluation because Exelon did not thoroughly evaluate issues to ensure that resolutions address causes and extent of conditions commensurate with their safety significance. Specifically, Exelon did not evaluate the effect of performing the SLC system functional test prior to conducting the ASME code as-found test on the SLC relief valves. [P.2] (Section 1R15)

REPORT DETAILS

Summary of Plant Status

Oyster Creek began the inspection period at 100 percent power. Operators lowered power to 90 percent on October 2, 2015, to return the 'A' reactor coolant pump motor generator set after planned maintenance and returned to full power later the same day. On October 11, operators lowered power to 95 percent for hydraulic control unit maintenance and returned to 100 percent later the same day. Operators lowered power to 85 percent on October 17 and October 31 to return hydraulic control units to service and returned to full power later on each respective day. Operators lowered power to 90 percent on November 6 to return the 'E' reactor coolant pump motor generator set after planned maintenance and returned to full power later the same day. On November 14, operators lowered power to 25 percent for planned maintenance on the automatic voltage regulator. Operators returned the unit to 100 percent power on November 16. Operators briefly lowered power to 90 percent to perform rod pattern adjustments on November 21 and December 11 and returned to full power later on each respective day. Oyster Creek remained at or near 100 percent power for the remainder of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01 – 1 sample)

.1 Readiness for Seasonal Extreme Weather Conditions

a. Inspection Scope

The inspectors reviewed Exelon's readiness for the onset of seasonal cold temperatures. The review focused on the intake and the emergency diesel generators. The inspectors reviewed the Updated Final Safety Analysis Report (UFSAR), technical specifications, control room logs, and the CAP to determine what temperatures or other seasonal weather could challenge these systems, and to ensure Exelon personnel had adequately prepared for these challenges. The inspectors reviewed station procedures, including Exelon's seasonal weather preparation procedure and applicable operating procedures. The inspectors performed walkdowns of the selected systems to ensure station personnel identified issues that could challenge the operability of the systems during cold weather conditions. 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 – 1 sample)

a. Inspection Scope

The inspectors performed partial walkdown of the following system:

- SLC system on October 6, 2015

The inspectors selected these systems based on its risk-significance relative to the reactor safety cornerstones at the time they were inspected. The inspectors reviewed applicable operating procedures, system diagrams, the 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 CAP for resolution with the appropriate significance characterization.

b. Findings

No findings were identified.

1R05 Fire Protection

.1 Resident Inspector Quarterly Walkdowns (71111.05Q – 2 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.

- Reactor building northwest corner room on November 19, 2015
- Reactor building northeast corner room on November 22, 2015

b. Findings

No findings were identified.

1R07 Heat Sink Performance (711111.07A – 1 sample)

a. Inspection Scope

The inspectors reviewed the containment spray system II heat exchangers to determine its readiness and availability to perform its safety functions. The inspectors reviewed the design basis for the component and verified Exelon's commitments to NRC Generic Letter 89-13 "Service Water System Problems Affecting Safety-Related Equipment." The inspectors reviewed the results of previous inspections of the containment spray system II heat exchangers. The inspectors discussed the results of the most recent inspection with engineering staff and reviewed pictures of the as-found and as-left conditions. The inspectors verified that Exelon initiated appropriate corrective actions for identified deficiencies. The inspectors also verified that the number of tubes plugged within the heat exchanger did not exceed the maximum amount allowed.

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification Program (71111.11 – 1 sample)

.1 Quarterly Review of Licensed Operator Requalification Testing and Training

a. Inspection Scope

The inspectors observed licensed operator simulator training on November 3, 2015, which included a control rod drive pump shaft shear, feedwater heater trip, and electromatic relief valve stuck open. 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.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13 – 4 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.

- Containment spray system II and emergency service water system II out of service for planned maintenance from October 6-9, 2015
- No. 2 emergency diesel generator out of service for planned maintenance from October 19-23, 2015
- No. 1 emergency diesel generator out of service on November 9, 2015
- Core spray system II out of service for planned maintenance on November 18, 2015

b. Findings

No findings were identified.

1R15 Operability Determinations and Functionality Assessments (71111.15 – 2 samples)

a. Inspection Scope

The inspectors reviewed operability determinations for the following degraded or non-conforming conditions based on the risk significance of the associated components and systems:

- SLC relief valves following failed as-found test on October 1, 2015
- Operator workarounds on November 4, 2015

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. The inspectors confirmed, where appropriate, compliance with bounding limitations associated with the evaluations. Where compensatory measures were required to maintain operability, such as in the case of operator work arounds (OWAs), the inspectors determined whether the measures in place would function as intended and were properly controlled by Exelon. The inspectors verified that Exelon identified OWAs at an appropriate threshold and addressed them in a manner that effectively managed OWA-related adverse effects on operators and SSCs.

b. Findings

Introduction. The inspectors identified a Green NCV of 10 CFR 50, Appendix B, Criterion XI, "Test Control," because Exelon conducted unacceptable preconditioning of the SLC relief valves prior to ASME code testing. Specifically, Exelon performed a SLC system functional test prior to performing the SLC relief valves as-found testing.

Description. The SLC system is designed to provide a backup method of shutting down the reactor by injecting a neutron-absorbing boron solution into the reactor vessel during an ATWS. The SLC relief valves protect downstream piping from overpressure by returning pump discharge flow back to the liquid poison tank and are designed to lift at 1400 psig +/-3 percent. Every refueling outage, Oyster Creek performs a functional test on the SLC system to satisfy the requirements of Technical Specification Sections 4.3.C and 4.2.E.3 and the In-Service Test Program requirements. During the functional test, the sodium pentaborate solution in the liquid poison tank is cycled within the system, coming in contact with the SLC relief valves. Following the functional test, the relief valves are removed from the system to be tested per the ASME code. ASME operating manual (OM) Code 2004, Appendix I, "Inservice Testing of Pressure Relief Devices in Light-Water Reactor Nuclear Power Plants" states, in part, that for replacement of a full complement of valves, the valves removed from service shall be tested within 12 months of removal from the system.

The SLC relief valves were tested following the most recent refueling outage, approximately 11 months later. Since 1995, these valves have consistently failed their as-found test. Specifically, the valves are consistently failing in the higher direction, greater than 3 percent of 1400 psig. Exelon analysis states the cause of the SLC relief valves failing high is boron crystallization. The sodium pentaborate solution cycled through the system during the functional test must be heat traced in order for the boron to remain soluble in the solution. When the valves are taken out of service, the residual solution remaining on the relief valves from the functional test is no longer heat traced, which causes the boron to crystallize and solidify the valve internals. The SLC relief valves have failed their as-found tests high during the last three refueling outages.

The inspectors reviewed regulatory positions and guidance regarding preconditioning, including IMC Part 9900: Technical Guidance, "Maintenance – Preconditioning of SSCs before Determining Operability," which states, in part, that unacceptable preconditioning is defined as the alteration, variation, manipulation, or adjustment of the physical condition of a SSC before or during technical specification surveillance or ASME code testing that will alter one or more of an SSC's operational parameters, which results in acceptable test results. Such changes could mask the actual as-found condition of the SSC and possibly result in an inability to verify that operability of the SSC. In addition, unacceptable preconditioning could make it difficult to determine whether the SSC would perform its intended function during an event in which the SSC might be needed.

The limiting overpressure event results in a maximum reactor vessel pressure of 1335 psig. In addition to the functional test performed during every refueling outage, the SLC system is also tested quarterly at 1050 psig. Therefore, the quarterly SLC test does not test the ATWS maximum design pressure of 1335 psig. The concern would be if the relief valve opened at a discharge pressure between 1050 psig and 1335 psig. If that was the case, the system would not respond as expected since it would divert flow back to the liquid poison tank instead of into the vessel to shut down the reactor during an ATWS condition. This causes a concern since the ability to use SLC during an ATWS condition is credited in the ATWS analysis.

The inspectors identified that performing the functional test on the SLC system prior to completing the SLC relief valve as-found tests was unacceptable preconditioning since the alteration of the SLC system before ASME code testing altered the SLC relief valve operational parameters. Specifically, performing the functional test prior to replacing the

SLC relief valves caused a build-up of boron crystallization when the valves were removed from the system causing the SLC relief valves to fail their as-found test high. The boron crystallization could mask the true as-found condition of the SLC relief valves. Exelon had an opportunity to identify this when conducting the evaluation the last three refueling outages. Specifically, Exelon wrote issue reports when the SLC relief valves failed ASME code testing following the last three refueling outages, but did not evaluate the build-up of boron crystallization affecting the true as-found condition of the SLC relief valves.

Additionally, the inspectors determined that Exelon did not follow ASME OM Code-2004, Appendix I, "Inservice Testing of Pressure Relief Devices in Light-Water Reactor Nuclear Power Plants," I-3300, Periodic Testing, which states, in part, that no maintenance, adjustment, disassembly or other activity that could affect "as-found" set-pressure is permitted prior to testing. Contrary to the above, Exelon performed the functional test on the SLC system prior to testing, which introduced the boron solution to the SLC relief valve internals, affecting the as-found set-pressure of the valves. Specifically, the boron solution crystallized when it was no longer heat traced and solidified the valve internals, causing the SLC relief valves to fail their as-found test high. Following this method, Exelon did not have a true as-found test for the SLC relief valves since the boron crystallization masks the true as-found condition of the valves prior to the as-found test.

Exelon entered the issue into their CAP, issue report 2566036. Exelon's corrective actions include completing the as-found test prior to the functional test. Additionally, Exelon completed a technical evaluation and determined that the disassembly and inspection of the existing SLC relief valves did not show indications of drift. Specifically, the valve internal inspection did not indicate corrosion within the valve internals nor spring relaxation, which could indicate drift.

Analysis. The inspectors determined that Exelon's performance of unacceptable preconditioning prior to completing the as-found test per ASME code testing was a performance deficiency. The performance deficiency is more than minor because it is associated with the equipment performance attribute of the Mitigating Systems Cornerstone and affects the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Additionally, if left uncorrected, the performance deficiency could have the potential to lead to a more significant safety concern. Specifically, completion of the functional test prior to the replacement of the SLC relief valves masks the actual as-found condition by solidifying the valve internals. As a result, the as-found testing of the SLC relief valves have not been conducted, and in the worst case scenario, they could open below the design setpoint, which would divert flow back to the liquid poison tank instead of into the vessel to shut down the reactor during an ATWS condition.

The inspectors evaluated the finding using IMC 0609, Attachment 4, "Initial Screening and Characterization of Findings," and IMC 0609, Appendix A, Exhibit 2, "Mitigating System Screening Questions." The inspectors determined that this finding is a deficiency that affected the design or qualification of a mitigating SSC, when the SSC maintained its operability or functionality. Specifically, Exelon completed a technical evaluation and determined that the disassembly and inspection of the existing SLC relief valves did not show indications of drift. Therefore, the inspectors determined the finding to be of very low safety significance (Green).

The finding has a cross-cutting aspect in the area of Problem Identification and Resolution, Evaluation, because Exelon did not thoroughly evaluate issues to ensure that resolutions address causes and extent of conditions commensurate with their safety significance. Specifically, Exelon did not evaluate the effect of performing the SLC system functional test before conducting the as-found test on the SLC relief valves. (P.2)

Enforcement. 10 CFR 50, Appendix B, Criterion XI, "Test Control," requires, in part, that a test program shall be established to assure that all testing required to demonstrate that SSCs will perform satisfactorily in service, is identified and performed in accordance with written test procedures, and incorporate the requirements and acceptable limits contained in applicable design documents. Contrary to the above, prior to October 1, 2015, Exelon did not adequately establish a test program that assured that all testing required to demonstrate that the SLC relief valves would perform satisfactorily in service. Specifically, Exelon performed a functional test of the SLC system prior to replacement of the SLC relief valves, which affected the valves' as-found test. The boron crystallization as a result of the functional test could have masked the as-found condition of the relief valves making it difficult to determine whether the SLC system would be able to perform its intended function during an event. This issue was entered into the CAP as issue report 2566036, and Exelon's immediate corrective actions included completing the as-found test prior to the functional test. Because the violation was of very low safety significance (Green) and has been entered into the CAP, this violation is being treated as an NCV, consistent with Section 2.3.2a of the NRC Enforcement Policy. (**NCV 05000219/2015004-01, Preconditioning of the Standby Liquid Control Relief Valves)**

1R18 Plant Modifications (71111.18 – 1 sample)

.1 Permanent Modifications

a. Inspection Scope

The inspectors evaluated a modification to the emergency diesel generator No. 2 by engineering change package 15-00445, "Prelubrication modification for emergency diesel generator #2 engine." The inspectors verified that the design bases, licensing bases, and performance capability of the affected systems were not degraded by the modification. In addition, the inspectors reviewed modification documents associated with the upgrade and design change, including the addition of a tap off location on the No. 2 emergency diesel generator to support prelubrication evolutions. The inspectors also reviewed revisions to the drawings, procedures, and interviewed engineering and operations personnel to ensure the modification did not affect the design of the No. 2 emergency diesel generator.

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19 – 5 samples)

a. Inspection Scope

The inspectors reviewed the post-maintenance tests for the maintenance activities listed below to verify that procedures and test activities adequately tested the safety functions that may have been affected by the maintenance activity, that the acceptance criteria in the procedure were consistent with the information in the applicable licensing basis and/or design basis documents, and that the test results were properly reviewed and accepted and problems were appropriately documented. The inspectors also walked down the affected job site, observed the pre-job brief and post-job critique where possible, confirmed work site cleanliness was maintained, and witnessed the test or reviewed test data to verify quality control hold point were performed and checked, and that results adequately demonstrated restoration of the affected safety functions.

- 'A' recirculation pump following planned maintenance on October 3, 2015
- 1-8 'B' sump pump following breaker replacement on October 5, 2015
- Emergency diesel generator No. 2 following planned maintenance on October 26, 2015
- 'A' electromatic relief valve following pressure sensor replacement on October 27, 2015
- Emergency diesel generator No. 1 following relay replacement on November 10, 2015

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22 – 2 samples)

a. Inspection Scope

The inspectors observed performance of surveillance tests and/or reviewed test data of selected risk-significant SSCs 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:

- Containment spray and emergency service water system II pump operability and comprehensive test on October 9, 2015
- Emergency diesel generator No. 1 load test on October 26, 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 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.

2. RADIATION SAFETY

Cornerstones: Public Radiation Safety and Occupational Radiation Safety

2RS1 Radiological Hazard Assessment and Exposure Controls (71124.01– 1 sample)

a. Inspection Scope

During November 2 - 5, 2015, the inspectors reviewed and assessed Exelon's performance in assessing and controlling radiological hazards in the workplace. The review was against criteria contained in 10 CFR 20, technical specifications, applicable Regulatory Guides (RG), and Exelon procedures.

Radiological Hazard Assessment

The inspectors reviewed recent plant radiation surveys and any changes to plant operations since the last inspection to identify any new radiological hazards for onsite workers or members of the public.

Instructions to Workers

The inspectors observed several containers of radioactive materials and assessed whether the containers were labeled and controlled in accordance with requirements.

The inspectors reviewed several occurrences where a worker's electronic personal dosimeter alarmed. The inspectors reviewed Exelon's evaluation of the incidents, documentation in the CAP, and whether compensatory dose evaluations were conducted when appropriate.

Contamination and Radioactive Material Control

The inspectors observed the monitoring of material leaving the radiological control area and inspected the methods and radiation monitoring instrumentation used for control, survey, and release of that material. The inspectors selected several sealed sources from inventory records and assessed whether the sources were accounted for and were tested for loose surface contamination. The inspectors evaluated whether any recent transactions involving nationally tracked sources were reported in accordance with requirements.

Radiological Hazards Control and Work Coverage

The inspectors evaluated in-plant radiological conditions and performed independent radiation measurements during facility walk-downs and observation of radiological work activities. The inspectors assessed whether posted surveys, radiation work permits, worker radiological briefings, the use of continuous air monitoring and dosimetry monitoring were consistent with the present conditions. The inspectors examined the control of highly activated or contaminated materials stored within the spent fuel pools and the posting and physical controls for selected high radiation areas, and locked high radiation areas (LHRAs) to verify conformance with requirements and with the occupational performance indicator.

b. Findings

No findings were identified.

2RS3 In-Plant Airborne Radioactivity Control and Mitigation (71124.03 – 1 sample)

a. Inspection Scope

During November 2 - 5, 2015, the inspectors reviewed the control of in-plant airborne radioactivity and the use of respiratory protection devices in these areas. The inspectors used the requirements in 10 CFR 20, RG 8.15, RG 8.25, NUREG/CR-0041, technical specifications, and procedures required by technical specifications as criteria for determining compliance.

Use of Respiratory Protection Devices

The inspectors reviewed the adequacy of Exelon's use of respiratory protection devices in the plant to include applicable as low as reasonably achievable evaluations, respiratory protection device certification, respiratory equipment storage, air quality testing records, and individual qualification records.

Self-Contained Breathing Apparatus (SCBA) for Emergency Use

The inspectors reviewed the following: the status and surveillance records for three SCBAs staged in-plant for use during emergencies; Exelon's SCBA procedures and maintenance and test records; the refilling and transporting of SCBA air bottles; SCBA mask size availability; and the qualifications of personnel performing service and repair this equipment.

b. Findings

No findings were identified.

2RS4 Occupational Dose Assessment (71124.04 – 1 sample)

a. Inspection Scope

During November 2 - 5, 2015, the inspectors reviewed the monitoring, assessment, and reporting of occupational dose. The inspectors used the requirements in 10 CFR 20, Regulatory Guides, technical specifications, and procedures required by technical specifications as criteria for determining compliance.

Internal Dosimetry

The inspectors reviewed: internal dosimetry procedures; whole body counter measurement sensitivity and use; adequacy of the program for whole body count monitoring of plant radionuclides; adequacy of the program for dose assessments based on air sample monitoring and the use of respiratory protection; and internal dose assessments for any internal exposures.

Special Dosimetric Situations

The inspectors reviewed: Exelon worker notification of the risks of radiation exposure to the embryo/fetus; the dosimetry monitoring program for declared pregnant workers; external dose monitoring of workers in large dose rate gradient environments; and dose assessments performed since the last inspection that used multi-badging, skin dose or neutron dose assessments.

b. Findings

No findings were identified.

2RS6 Radioactive Gaseous and Liquid Effluent Treatment (71124.06 – 1 sample)

a. Inspection Scope

During November 2 - 5, 2015, the inspectors reviewed the treatment, monitoring, and control of radioactive gaseous and liquid effluents. The inspectors used the requirements in 10 CFR 20; 10 CFR 50, Appendix I; technical specifications; Offsite Dose Calculation Manual (ODCM); applicable industry standards; and procedures required by technical specifications as criteria for determining compliance.

Sampling and Analyses

The inspectors reviewed: radioactive effluent sampling activities, representative sampling requirements; compensatory measures taken during effluent discharges with inoperable effluent radiation monitoring instrumentation; the use of compensatory radioactive effluent sampling; and the results of the inter-laboratory and intra-laboratory comparison program including scaling of hard-to-detect isotopes.

Dose Calculations

The inspectors reviewed: changes in reported dose values from the previous annual radioactive effluent release reports; several liquid and gaseous radioactive waste discharges; the scaling method for hard-to-detect radionuclides; ODCM changes; land use census changes; public dose calculations (monthly, quarterly, annual); and records of abnormal gaseous or liquid radioactive releases.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151)

.1 Occupational Exposure Control Effectiveness (1 sample)

a. Inspection Scope

During November 2 – 5, 2015, the inspector sampled licensee submittals for the occupational exposure control effectiveness performance indication (PI) from the 4th quarter 2014 through the 3rd quarter 2015. The inspectors used PI definitions and guidance contained in the Nuclear Energy Institute Document 99-02, Revision 7, to determine the accuracy of the PI data reported. The inspectors reviewed electronic personal dosimetry accumulated dose alarms, dose reports, and dose assignments for any intakes that occurred during the time period reviewed to determine if there were potentially unrecognized PI occurrences. The inspectors conducted walk-downs of entrances to various LHRA and very high radiation areas to determine the adequacy of the controls in place.

b. Findings

No findings were identified.

.2 Radiological Effluent Technical Specifications /ODCM Radiological Effluent Occurrences (1 sample)

a. Inspection Scope

During November 2 – 5, 2015, the inspector sampled licensee submittals for the radiological effluent technical specifications /ODCM radiological effluent occurrences PI from the 4th quarter 2014 through the 3rd quarter 2015. The inspectors used PI

definitions and guidance contained in the Nuclear Energy Institute Document 99-02, Revision 7, to determine if the PI data was reported properly. The inspectors reviewed the public dose assessments for the PI for public radiation safety to determine if related data was accurately calculated and reported.

The inspectors reviewed the CAP database to identify any potential occurrences such as unmonitored, uncontrolled, or improperly calculated effluent releases that may have impacted offsite dose. The inspectors reviewed gaseous and liquid effluent summary data and the results of associated offsite dose calculations to determine if indicator results were accurately reported.

b. Findings

No findings were identified.

.3 Mitigating Systems Performance Index (5 samples)

a. Inspection Scope

The inspectors reviewed Exelon's submittal of the Mitigating Systems Performance Index for the following systems for the period of October 1, 2014, through September 30, 2015:

- Emergency Alternating Current Power System
- High Pressure Injection System – Core Spray
- Heat Removal – Isolation Condensers
- Residual Heat Removal – Containment Spray
- Cooling Water System

To determine the accuracy of the performance indicator data reported during those periods, the inspectors used definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7. The inspectors also reviewed Exelon's operator narrative logs, condition reports, mitigating systems performance index derivation reports, event reports, and NRC integrated inspection reports to validate the accuracy of the submittals.

b. Findings

No findings were identified.

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 CAP 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 CAP and periodically attended condition report screening meetings.

b. Findings

No findings were identified.

.2 Semi-Annual Trend Review

a. Inspection Scope

The inspectors performed a semi-annual review of site issues to identify trends that might indicate the existence of more significant safety concerns. As part of this review, the inspectors included repetitive or closely-related issues that may have been documented by Exelon in trend reports, site performance indicators, major equipment problem lists, system health reports, and maintenance rule assessments, and maintenance or CAP backlogs. The inspectors also reviewed Exelon's CAP database for third and fourth quarters of 2015 to assess condition reports written in various subject areas (equipment problems, human performance issues, etc.), as well as individual issues identified during the NRC's daily condition report review.

b. Findings

No findings were identified.

The inspectors evaluated a sample of corrective maintenance backlogs, control room deficiency tags, open operability evaluations, and OWAs. The inspectors verified that these issues were addressed within the scope of the CAP.

.3 Annual Sample: Reactivity Management Event Follow-Up

a. Inspection Scope

The inspectors performed an in-depth review of Exelon's evaluation and corrective actions associated with a reactor re-criticality during plant shutdown event on July 8, 2014. The inspectors reviewed condition reports and corrective actions associated with the event. The inspectors also assessed Exelon's evaluation, extent of condition review, completed and proposed corrective actions, and the prioritization and timeliness of actions to evaluate whether the corrective actions were appropriate. Specifically, the inspectors review of procedure changes, operator training lesson plans, simulator guides, and Exelon's application of operating experience. The inspector determined the effectiveness of the completed corrective actions through discussions with operations management, training instructors and licensed operators. The inspector also reviewed the current adequacy of the simulator for use in low power operations training.

b. Findings

No findings were identified.

The inspectors determined that Exelon's evaluation and extent-of-condition review were thorough, and the causes were appropriately identified. The inspectors also determined that the corrective actions were reasonable and would address the unanticipated re-criticality event. Exelon's root cause identified that operations did not demonstrate engaged thinking organization behaviors such as application of operating experience, recognition of risk, effects of their actions, and supervisors stepping out of an oversight role. The inspectors concluded that Exelon's evaluation of and completed and planned corrective actions, for the re-criticality event was appropriate and thorough.

4. Annual Sample: Unidentified Cable in the Lower Cable Spreading Room

a. Inspection Scope

The inspectors performed an in-depth review of Exelon's evaluations and corrective actions associated with issue report 924496 for a cable not properly routed in the lower cable spreading room. Specifically, a loop of cable without a label was discovered hanging between two cable trays during a walkdown in 2009. An NRC inspector identified that actions to identify the cable was not complete in 2014 (issue report 1650323).

The inspectors assessed Exelon's problem identification threshold, compensatory actions, and timeliness of corrective actions to determine whether Exelon was appropriately identifying, characterizing, and correcting problems associated with this issue and whether the planned corrective actions were appropriate. The inspectors performed reviews of the documents listed in the Attachment to this report, performed field walkdowns, and interviewed engineering personnel to assess the effectiveness of the planned, scheduled, and completed corrective actions to resolve the identified component deficiency.

Finally, the inspectors reviewed issue reports, work orders, drawings, calculations and procedures to determine if the nonconforming condition was appropriately identified, documented, characterized and entered into Exelon's corrective action process and in compliance with 10 CFR 50, Appendix B requirements.

b. Findings

No findings were identified.

The unidentified cable was determined to be de-energized in 2009 using a voltage detector and found to be in good condition with all insulation intact. Because the cable is not labeled, its function cannot be determined without tracing the cable out. Work to trace out the cable was delayed until April 2013, when it was incorrectly dispositioned as no longer existing. A walk down performed by the inspectors in 2014 determined that the cable still exists.

The cable appears to be part of the original plant design based on its location in the lower cable spreading room. A visual inspection conducted in 2014 noted it appeared that one end of the cable entered the lower cable spreading room from a digital subsystem cabinet in the control room, while the other end of the cable appeared to enter the lower cable spreading room from the reactor control panel in the control room.

However, the exact location could not be determined without physically tracing the cable to determine its route.

The inspectors determined that additional work is in progress to identify the cable. Specifically, a work order is scheduled to determine the route of the cable in October 2016. Once the function of the cable is identified, Exelon will either remove the cable if it is not needed or reroute it per SP-9000-41-005, "Installation Specification for Cables and Raceways at Oyster Creek Nuclear Generating Station."

Based on this information, it was determined that the unidentified cable is not a safety concern. Specifically, since being discovered, equipment having cables in the vicinity of the unidentified cable have operated as designed during testing, shutdown, and operating conditions. Additionally, the plant would still be able to achieve safe shutdown if the cable became energized and caused a fire in the lower cable spreading room. The inspectors determined that Exelon has properly screened the priority of work per PI-AA-120, "Issue Identification and Screening Process" and concluded that Exelon's planned actions were reasonable.

4OA3 Follow-Up of Events and Notices of Enforcement Discretion (71153 – 2 samples)

.1 (Closed) Licensee Event Report (LER) 05000219/2014-003-02: Technical Specification Prohibited Condition Caused by Emergency Diesel Generator Inoperable for Greater than Allowed Outage Time

On July 28, 2014, during a bi-weekly one hour loaded run of the No. 2 emergency diesel generator, the upper fan shaft failed. This resulted in loss of all cooling to the No. 2 emergency diesel generator. Operators received emergency diesel generator engine trouble alarms and manually shutdown the emergency diesel generator. Further examination determined that the No. 2 emergency diesel generator would have been unable to complete its mission time for 43 days prior to the failure. Therefore, EDG No. 2 was inoperable for greater than the technical specification allowed out of service time of 7 days, a condition prohibited by plant technical specifications which was reportable under 10 CFR 50.73(a)(2)(i)(B).

Exelon's evaluations of the failure identified that procedure changes in 2005 which changed the belt tension and belt tension measuring devices did not receive an appropriate evaluation to identify that the additional stress created by the change in belt tension exceeded with in the design limitations and assumptions of the equipment, thus creating a new failure mechanism. Corrective actions to reduce the belt tension to a lower value eliminated this new failure mechanism.

The inspectors reviewed this issue in NRC inspection report 05000219/2015009, (Section 4OA3) and identified a minor violation regarding 10 CFR 50.73(B)(3) which requires that an LER contains an assessment of safety consequences and implications of the event. This LER was revised to include the assessment of safety consequences and implications of the event. The inspectors did not identify any violations or new issues during the review of Revision 2 of the LER. This LER is closed.

.2 (Closed) LER 05000219/2015-001-00: Reactor Scram due to EPR Failure during MPR Troubleshooting

On March 22, 2015, an automatic reactor scram occurred from full power operation due to a valid reactor protection system actuation on APRM hi-hi flux. The APRM hi-hi flux was caused by an uncontrolled rise in reactor pressure due to the failure of the EPR. In addition, the backup mechanical pressure regulator (MPR) did not limit reactor pressure as it was outside of the normal operating band. When workers entered the field to perform MPR repairs, the degraded EPR wiring was disturbed, thereby resulting in failure of the EPR and subsequent reactor scram.

This condition is reportable under 10 CFR 50.73(a)(2)(iv)(A) as an event that resulted in an automatic actuation of the reactor protection system. The inspectors reviewed Exelon's root cause evaluation, supporting documentation, station procedures, and interviewed members of station staff and management regarding the event. A self-revealing finding of very low safety significance (Green) was identified and is discussed below. This LER is closed.

a. Findings

Introduction. A Green, self-revealing finding was identified because Exelon did not adequately identify and correct conditions, per LS-AA-120, "Issue Identification and Screening Process," that led to degradation of the EPR wiring, which resulted in an uncontrolled rise in reactor pressure and subsequent reactor scram on APRM Hi-Hi Flux. Specifically, Exelon failed to generate an issue report to document degraded EPR wiring that was previously identified, and therefore did not take corrective action prior to reactor scram.

Description. On March 22, 2015, an automatic reactor scram occurred from full power operation due to a valid reactor protection system actuation on APRM Hi-Hi flux. The APRM Hi-Hi flux was caused by an uncontrolled rise in reactor pressure due to the failure of the EPR. In addition, the backup MPR did not limit reactor pressure as it was outside of the normal operating band. Reactor Pressure is controlled by the EPR at normal operating pressure of 1020 psig. Normal configuration has the MPR set to actuate 8-10 percent higher than the EPR, such that the MPR will take control of, and limit, reactor pressure if the EPR fails. When workers entered the field to perform steam leak repairs on the MPR sensing line on March 22, the degraded EPR wiring was disturbed, causing a short to ground and thereby resulting in failure of the EPR and subsequent reactor scram.

Exelon entered this issue in their CAP (issue report 2472372) and performed a root cause evaluation. Exelon determined the root cause was that previously identified aged and degraded EPR wiring was not replaced prior to failure. The root cause documented several opportunities to address deficiencies associated with EPR, which began with initial identification in 2008:

- In 2008, the 1R22 Front Standard inspection identified degraded wiring insulation. Exelon entered this issue into the CAP under issue report 836351. Work was scoped for refueling and maintenance outage 1R23 under action request (AR) A2209186 and work order C2023084.

- In 2010, due to a lack of available parts, work order C2023084 was not completed. Work order C2023084 was closed out to a modified reduction in scope that relied on "best effort repairs," without a subsequent tracking issue report to ensure the initial and complete repairs were made in a future outage. A tracking issue report should have been written per LS-AA-120 and MA-AA-716-011.
- In 2011, the system engineer received a 1R23 turbine services report that contained recommendations to repair brittle EPR wiring in the main turbine front standard. Furthermore, the report said the repairs "should be done at the next outage." These concerns and recommendations were not put into the CAP or tracked for resolution IAW LS-AA-120.
- During scoping for refueling and maintenance outage1R24 in 2011, AR A2209186 was still open and not recommended for 1R24 scope by Engineering. The justification for not recommending the AR for 1R24 was that the work was already completed in 1R23, and only administrative activities were still open which required closeout. This AR was taken to complete on May 2, 2011, by Oyster Creek Maintenance.

The inspectors determined that Exelon had appropriately entered the original issue of concern from 2008 into their corrective action tracking system. However, the actions identified were never completed and the subsequent work requests were inappropriately closed without required condition report for tracking to ensure repairs were made. Step 4.8.1.2D of MA-AA-710-011, "Work Execution and Closeout," Revision 14, requires that an issue report be generated if a scope change or revision is identified during execution of work activities. Additionally, LS-AA-120, "Issue Identification and Screening Process," Revisions 11 (2010) and 13 (2011), step 4.3.3, requires documentation of issues that could have an undesirable effect on performance of equipment via a condition report (i.e., issue report). Contrary to the above, Exelon did not generate an issue report for the degraded EPR wiring, following the modified reduction in scope of work order C2023084 in 2010, as well as following identification by turbine services in 2011. During review of root cause 2472372, the inspectors identified there were no corrective actions to address the inappropriate work order closure and the failure to generate an issue report in 2010 and 2011. Exelon entered this issue into their CAP as issue report 2560515. Planned corrective actions include reinforcing with station personnel that an issue report is required when issues are identified.

Analysis. The inspectors determined that Exelon's failure to document an issue report for the degraded EPR wiring constituted a performance deficiency. Specifically, the failure to document an issue report for the work order closure in 2010, as well as the subsequent identification of the degraded wiring in 2011, was not in accordance with LS-AA-120, step 4.3.3. Therefore, the degraded wiring was not corrected, and eventually caused a reactor scram. This issue was more than minor since it was associated with the equipment performance attribute of the Initiating Events cornerstone and adversely impacted its objective to limit the likelihood of events that upset plant stability and challenge critical safety functions. In accordance with IMC 0609, Attachment 4 and Exhibit 1 of Appendix A, the inspectors determined that this finding is of very low safety significance, or Green, because the finding did not cause both a reactor trip and the loss of mitigation equipment relied upon to transition the plant from the onset of the trip to a stable shutdown condition.

The inspectors determined there was no cross-cutting aspect associated with this finding since it was not representative of current Exelon performance. Specifically, in accordance IMC 0612, the causal factors associated with this finding occurred outside the nominal three-year period of consideration and were considered not representative of present performance.

Enforcement. No violation of regulatory requirements was identified. The EPR system is not a safety-related system and, as such, the requirements of 10 CFR 50, Appendix B, Criterion XVI, do not apply to ineffective corrective actions for EPR deficiencies. However, not identifying and correcting EPR deficiencies was considered a finding and Exelon entered it into their CAP as AR 02560515. **(FIN 05000219/2015004-02, Inadequate Problem Identification and Resolution Leading to Degradation of EPR Causing a Reactor Scram)**

4OA5 Other Activities

.1 Correction to Inspection Report 05000219/2015009

Inspection Report 05000219/2015009, Supplementary Information, "List of Items Opened, Closed and Discussed," inadvertently numbered the closure of inspection finding as 2014005-04 instead of the proper inspection finding number of 2014005-02. Also in this section, the title of the inspection finding number should be "Inadequate Review of Change in Maintenance Process Results in Inoperable Emergency Diesel Generator" instead of the documented title of "EDG Cooling Fan Shaft Failure."

4OA6 Meetings, Including Exit

On January 11, 2016, the inspectors presented the inspection results to Mr. G. 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.

ATTACHMENT: SUPPLEMENTARY INFORMATION

SUPPLEMENTARY INFORMATION

KEY POINTS OF CONTACT

Exelon Personnel

G. Stathes, Site Vice-President
M. Gillin, Plant Manager
M. Ford, Director, Operations
J. Stanley, Director, Engineering
D. Chernesky, Director, Maintenance
M. Rossi, Licensed Operator Requalification Training Lead Instructor
T. Osborne, Maintenance and Technical Instructor
C. Symonds, Director, Training
D. Greiner, Nuclear Oversight
D. DiCello, Director, Work Management
M. McKenna, Manager, Regulatory Assurance
T. Cappuccino, Senior Regulatory Assurance Engineer
R. Dutes, Regulatory Assurance Engineer
T. Farenga, Radiation Protection Manager
J. Renda, Manager, Environmental/Chemistry
T. Keenan, Manager, Site Security
M. Chanda, Emergency Preparedness Manager
P. Bloss, Senior Manager, Plant Engineering
E. Swain, Shift Operations Superintendent
K. Wolfe, RP Technical Manager
J. Murphy, RP ALARA Manager

LIST OF ITEMS OPENED, CLOSED, DISCUSSED, AND UPDATED

Opened/Closed

05000219/2015004-01	NCV	Preconditioning of the Standby Liquid Control Relief Valves (Section 1R15)
05000219/2015004-02	FIN	Inadequate Problem Identification and Resolution Leading to Degradation of EPR Causing a Reactor Scram (Section 4OA3)

Closed

05000219/2014-003-02	LER	Technical Specification Prohibited Condition Caused by Emergency Diesel Generator Inoperable for Greater than Allowed Outage Time (Section 4OA3)

05000219/2015-001-00	LER	Reactor Scram due to EPR Failure during MPR Troubleshooting (Section 4OA3)
05000219/2014005-02	NOV	Inadequate Review of Change in Maintenance Process Results in Inoperable Emergency Diesel Generator (Section 4OA5)

LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

Procedures
322, Service Water System, Revision 89
341, Emergency Diesel Generator Operation, Revision 110
ABN-31, High Winds, Revision 20
ABN-32, Abnormal Intake Level, Revision 25
OP-OC-108-109-1001, Severe Weather Preparation T&RM for Oyster Creek, Revision 32
OP-OC-108-109-1002, Cold Weather Freeze Inspections, Revision 5
NO-AA-220-1009-F-WIN, Winter Readiness MDA Template, Revision 1
WC-AA-107, Seasonal Readiness, Revision 16

Condition Reports

2594245	2594152	2486294	2574264	2563279	2545630
2507186	2567747	2554978	2566673	2590995	

Maintenance Orders/Work Orders

R2263661	C2034629	C2035059	C2035148	C2035185	R2249249

Miscellaneous
Oyster Creek Certification of 2015-2016 Winter Readiness, dated November 15, 2015

Section 1R04: Equipment Alignment

Procedures
304, Standby Liquid Control System Operation, Revision 48

Condition Reports
2566343

Section 1R05: Fire Protection

Procedures
OP-OC-201-008, Oyster Creek Pre-Fire Plans, Revision 22
OP-OC-201-012-1001, On-Line Fire Risk Management, Revision 3
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
ER-AA-600-1069, Oyster Creek Site list of High Risk Fire Areas, Revision 0

OP-OC-201-008-1010, Reactor Building (-19' Elevation) CRD Pump Room, Revision 0
OP-OC-201-008-1011, Reactor Building (-19' Elevation) Northeast Corner Room, Revision 0
FSP-RB1F4, Fire Support Procedure for RB -19' Elevation, NE, Revision 3

Condition Reports
2589869* 2589893

Section 1R07: Heat Sink Performance

Procedures
ER-AA-340, GL 89-13 Program Implementing Procedure, Revision 7
ER-AA-340-1001, GL 89-13 Program Implementation Instructional Guide, Revision 9
ER-OC-340-1001, Oyster Creek Generic Letter 89-13 Program Basis Document, Revision 4
607.4.005, Containment Spray and Emergency Service Water Pump System 2 Operability and Comprehensive/Pre-service/Post-Maintenance Inservice Test, Revision 80

Calculations
EXOC005-CALC-002, Design Basis for Containment Spray System, Revision 2
C-1302-241-5450-073, Acceptable Containment Spray Heat Exchanger Fouling Resistance, Revision 0
C-1302-241-E120-078, Containment Spray Heat Exchanger Performance Evaluation, Revision 0

Condition Reports
2567500 2566996 2566217 2566681 2566748

Drawings
BR2005, Emergency Service Water, Sheet 4, Revision 52
GE 148F740, Containment Spray System Flow Diagram, Sheet 1, Revision 44

Miscellaneous
EPRI NP-7552, Heat Exchanger Performance Monitoring Guidelines, dated December 1991
A0703678, Containment Spray System 2 Heat Exchanger Performance – Evaluation of Data Collected During Heat Exchanger Test Performed in 2015, completed 10/9/2015

Section 1R11: Licensed Operator Requalification Program

Procedures
OP-OC-101-111-1001, Strategies for Successful Transient Mitigation, Revision 9
HU-AA-1211, Pre-Job Briefings, Revision 11
HU-AA-101, Human Performance Tools and Verification Practices, Revision 9
TQ-AA-155, Conduct of Simulator Training and Evaluation, Revision 5

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

Procedures
WC-AA-101, Online Work Control Process, Revision 25
WC-AA-101-1001, Online Risk Management and Assessment, Revision 19
WC-AA-104, Integrated Risk Management, Revision 23
ER-AA-600-1042, Online Risk Management, Revision 9
OP-AA-108-117, Protected Equipment Program, Revision 4

OP-OC-201-012-1001, Online Fire Risk Management, Revision 4
310, Containment Spray System, Revision 111
MA-OC-861-101, Diesel Generator Inspection (24 Month) – Mechanical, Revision 20
MA-OC-741-101, Diesel Generator Inspection (24 Month) – Electrical, Revision 13
MA-OC-741-103, EDG #2 24 Month Inspection – SU&T and Operation, Revision 10
101.2, Oyster Creek Site Fire Protection Program, Revision 73
341, Emergency Diesel Generator Operation, Revision 110
636.4.015, Diesel Generator #1 Fast Start Test, Revision 22
610.3.106, Core Spray System 2 Isolation Valve Actuation Test and Calibration, Revision 19

Condition Reports

2576071	2574609	2574367	2574462	2574177	2573631
2573530	2573391	2573400	2573377	2573349	2573206
2573202	2584378	2584237	2589864*		

Drawings
BR 2005, Emergency Service Water System Flow Diagram, Sheet 4, Revision 86
EM 8393039, Emergency Diesel Generator #1 Electrical Elementary Wiring Diagram, Sheet 3, Revision 13

Maintenance Orders/Work Orders
M2391127 R2265245

Miscellaneous
Oyster Creek Generating Station Technical Specifications Section 3.7, Auxiliary Electrical Power, Amendment 256
Oyster Creek Nuclear Generating Station Updated Final Safety Analysis Report, Section 8.3, Onsite Power Systems, Revision 18

Section 1R15: Operability Determinations and Functionality Assessments

Procedures
ER-AA-321, Administrative Requirements for Inservice Testing, Revision 12
ER-AA-321-1007, Inservice Testing (IST) Program Corporate Technical Positions, Revision 1
612.4.002, Standby Liquid Control System Functional Test, Revision 36
304, Standby Liquid Control System Operation, Revision 48
2400-SMM-3900.04, System Pressure Test Procedure (ASME XI), Revision 11
OP-AA-108-101, Control of Equipment and System Status, Revision 12
OP-AA-102-103, Operator Work-Around Program, Revision 4
OP-AA-102-103-1001, Operator Burden and Plant Significant Decisions Impact Assessment Program, Revision 6
OP-AA-108-105-1001, MCR and RWCR Equipment, Deficiency Management and Performance Indicator Screening, Revision 5
OP-AA-115-101, Operator Aid Postings, Revision 2

Condition Reports

2560704	1487564	1545751	2566036	2390334	0553303
1484833	2492268	2361599	2365469	2436158	1654689
1654716	2539574	2483560	2344845	2319187	2573264
2423651	2362396	2359218	2364713	2558218	2573272
2573567	2451535	2499499	1654718	1654717	2574264
2576123	1637441	2396736	1674837	2477387	2475490
2531793	2573937	2596521			

Maintenance Orders/Work Orders

R2211906	R2212185	R2216449	R2211906	C2028722	C2031410
C2033330	C2030020	R2179284	C2034008	R2235991	C2033002

Miscellaneous

VM-OC-0152, Crosby Safety and Relief Valves, Revision 5
VM-OC-5934, Instructions for Liquid Poison Pumps, Revision 3
Anticipated Transients Without Scram: Study for the Oyster Creek Nuclear Power Station, dated March 1975
SP-1302-12-186, Oyster Creek Specification for Test of Liquid Poison Relief Valves, Revision 2
Oyster Creek Generating Station Updated Final Safety Analysis Report, Section 9.3 Process Auxiliaries, Revision 16
Oyster Creek Generating Station Technical Specifications, Section 3.2, Reactivity Control, Amendment 178
Adverse Condition Monitoring Plan Log, dated 11/4/15
Control Room Narrative Log, dated 11/4/15
Oyster Creek Nuclear Generating Station Plan of the Day, dated 10/5/15
Oyster Creek Nuclear Generating Station Plan of the Day, dated 11/2/15
Main Control Room Deficiencies Database, dated 10/15/15
Disabled Alarms Database, dated 10/15/15
Operator Challenges Database, dated 10/15/15
Operator Work Arounds Database, dated 10/15/15
Control Room Degraded Components Database, dated 10/15/15
Plant Oil Leaks Database, dated 10/15/15
Plant Air Leaks Database, dated 10/15/15
Plant Water Leaks Database, dated 10/15/15
Operator Burden/Degraded Equipment Aggregate Assessment, dated 8/31/15

Section 1R18: Plant Modifications

Procedures

LS-AA-104-1000, 50.59 Resource Manual, Revision 9
LS-AA-104, Exelon 50.59 Review Process, Revision 10
LS-AA-104-1003, 50.59 Screening Form, Revision 4
MA-AA-716-230-1001, Oil Analysis Interpretation Guideline, Revision 19
341, Emergency Diesel Generator Operation, Revision 110

Condition Reports

2591258	2587999	2595763	2595648	2595446	2595105
2594775	2596260				

Drawings
3E-861-21-1002, Emergency Diesel Generator Lube Oil System Flow Diagram, Sheet 1, Revision 14

Maintenance Orders/Work Orders
C2035361 C2035395

Miscellaneous
ECR OC 15-00445, Prelubrication Modification for EDG #2, Revision 0
VM-OC-0095, Power Plants Diesel Generators, Revision 13
VM-OC-0096, Turbo Charge Engine (Diesel Generator), Revision 3

Section 1R19: Post-Maintenance Testing

Procedures
OP-AA-106-101, Significant Event Reporting, Revision 17
MA-AA-716-012, Post Maintenance Testing, Revision 20
WC-AA-101, On-Line Work Control Process, Revision 24
MA-AA-716-011, Work Execution & Close Out, Revision 19
2400-SME-3915.01, Motor Control Center Preventive Maintenance, Revision 20
351.1, The Chemical Waste/Floor Drain System Operating Procedure, Revision 139
636.4.013, Diesel Generator #2 Load Test, Revision 46
602.3.004, Electromatic Relief Valve Pressure Sensor Test and Calibration, Revision 55
636.4.003, Diesel Generator #1 Load Test, Revision 101
636.4.015, Diesel Generator #1 Fast Start Test, Revision 22
341, Emergency Diesel Generator Operation, Revision 110

Condition Reports
2564629 2564371 2564561 2554283 2562541 2547522
2576071 22584237 2572673 2584378

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EP-AA-122, Drills and Exercise Program, Revision 18
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EP-AA-1000, Exelon Nuclear Standardized Radiological Emergency Plan, Revision 28

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1036126	1746489	0924496	1650323		

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LIST OF ACRONYMS

ADAMS	Agencywide Documents Access and Management System
APRM	average power range monitor
AR	action request
ASME	American Society of Mechanical Engineers
ATWS	anticipated transient without scram
CAP	corrective action program
CFR	Code of Federal Regulations
EAL	emergency action level
EPR	electric pressure regulator
FIN	finding
HRA	high radiation area
IMC	Inspection Manual Chapter
LER	Licensee Event Report
LHRA	locked high radiation area
MPR	mechanical pressure regulator
NCV	non-cited violation
NOV	notice of violation
NRC	Nuclear Regulatory Commission
ODCM	Offsite Dose Calculation Manual
OM	operating manual
OWA	operator work arounds
PARS	Publicly Available Records
PI	performance indicator
RG	regulatory guide
SCBA	self-contained breathing apparatus
SLC	standby liquid control
SSC	structure, system, or component
UFSAR	Updated Final Safety Analysis Report