Oyster Creek
4Q/2009 Plant Inspection Findings

Initiating Events

Significance: G Sep 30, 2009
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
Unexpected power drop when transferring mode of control of recirculation pump
A self-revealing NCV of Oyster Creek Technical Specification 6.8.1, “Procedures and Programs,” occurred when Exelon did not properly implement procedures to transfer the “D” reactor recirculation pump from local manual to remote manual control which resulted in an unplanned reduction in reactor power on August 6. Operations personnel misread the scoop tube position indicator on “D” reactor recirculation pump motor generator set and did not properly match it with the speed indicated on the remote controller in the control room as required by the procedure, resulting in a reduction in recirculation flow and a reduction in reactor power. Exelon’s corrective actions included restoring “D” reactor recirculation pump speed, replacement of the existing unmarked scoop tube position indicators with numbered position indicators and a revision of the procedure 301.2 “Reactor Recirculation System” to include cautions and additional information on how to read the scoop tube position indicators. This issue has been entered into Exelon’s corrective action program.

This finding was more than minor because it was similar to example 4.b in Inspection Manual Chapter 0612, Appendix E and resulted in a power reduction of 3%. Additionally, the finding was more than minor in accordance with IMC 0612, Appendix B (Section 1-3), “Issue Screening,” because it was associated with the human performance attribute of the initiating events cornerstone and affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. In accordance with IMC 0609.04 (Table 4a), “Phase 1 – Initial Screening and Characterization of Findings,” the finding was determined to be of very low safety significance (Green) because the finding affected the initiating events cornerstone and was a transient initiator contributor that did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions will not be available. The performance deficiency had a cross-cutting aspect in the area of human performance, work practices [IMC 0305, Aspect H.4.(a)], because Exelon did not effectively implement human error prevention techniques, such as self and peer checking. Specifically, Exelon did not effectively use peer checking when determining the position of the reactor recirculation pump motor generator set scoop tube and the operators proceeded in the face of uncertainty when faced with poorly marked scoop tube position indicators. (Section 4OA3)

Inspection Report# : 2009004 *(pdf)*

Significance: G Aug 13, 2009
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to Identify and Correct a Degraded Condition Leading to #1 EDG Inability to Perform Its Safety Function
The NRC identified a finding of very low safety significance (Green) that involved a non-cited violation (NCV) of 10 CFR50, Appendix B, Criterion XVI, “Corrective Action,” because Exelon did not identify and correct a degraded condition which resulted in subsequent inoperablility that would have prevented the #1 emergency diesel generator (EDG) from automatically performing its safety function. Specifically, the troubleshooting activity following the July 12, 2009, event, conducted prior to restart on July 15, 2009, did not identify the degraded operation of Generator Breaker Close (GBC) relay contacts. Continued degradation of these relay contacts subsequently resulted in the #1 EDG output breaker not closing during surveillance testing on August 3, 2009. The team found that Exelon replaced the GBC relay and its base and conducted an adequate post-maintenance test, returning the #1 EDG to an operable condition on August 5, 2009. Exelon entered this issue into the corrective action program.

The finding was more than minor because it was associated with the equipment reliability attribute of the Mitigating Cornerstone and it adversely affected the associated cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). A Phase 3 SDP analysis determined that the finding was of very low safety significance (Green), during the 16 day exposure period, in that there was a reasonable probability that operators would have successfully locally closed the output breaker. This finding had a cross-cutting aspect in the area of human performance, decision making [IMC 0305, Aspect H.1(a)], because the safety-significant and risk-significant decisions concerning the #1 EDG were not completed in a systematic process to ensure safety is maintained.
Inspection Report# : 2009009 *(pdf)*

Significance: G Jun 30, 2009
Identified By: Self-Revealing
Item Type: FIN Finding
Inadequate Evaluation Results In Instrument Air Transient
A self revealing finding occurred when Exelon did not adequately evaluate the impact of water which had entered the service air system in December 2008 which resulted in an accumulation of failed desiccant and corrosion products in the 'C&D' instrument air dryer purge valve. This caused the purge valve to seize in the open position and an instrument air transient on April 5. This finding was determined not to be a violation of NRC requirements. Exelon's corrective actions included replacing the desiccant, repairing the air dryer purge valve and installing it in its proper orientation. This issue has been entered into Exelon's corrective action program.

The finding was more than minor in accordance with IMC 0612, Appendix B (Section 1-3), "Issue Screening," because it was associated with the configuration control attribute of the initiating events cornerstone and affected the objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during power operation. In accordance with IMC 0609.04 (Table 4a), "Phase 1 – Initial Screen and Characterization of Findings," the inspectors conducted a Phase 1 SDP screening and determined that a detailed Phase 2 evaluation was required to assess the safety significance because the finding contributed to both the likelihood of a reactor trip and the likelihood that mitigation equipment would not be available. The inspectors determined that the finding was of very low safety significance (Green) using Table 2, "Initiators and Dependency Table for Oyster Creek Nuclear Generating Station," and Table 3.4, "SDP Worksheet for Oyster Creek Nuclear Generating Station – Loss of Instrument Air (LOIA)," in the Risk-Informed Inspection Notebook for Oyster Creek Nuclear Generating Station. The performance deficiency had a cross-cutting aspect in the area of problem identification and resolution, corrective action program [IMC 0305, Aspect P.1(c)], because Exelon did not fully evaluate the effect of the failure of the #3 air compressor after cooler to include the potential of water intrusion into the service air system.

Inspection Report# : 2009003 *(pdf)*

Significance: G Jun 30, 2009
Identified By: Self-Revealing
Item Type: FIN Finding
Ineffective Use of Operating Experience on Main Power Transformer Cooling System
A self revealing finding occurred when Exelon did not adequately evaluate operating experience (OE) regarding transformer cooling issues. Specifically, Exelon did not identify and correct a single point vulnerability (SPV) on the main transformers cooling system control circuitry. This resulted in a manual reactor scram in April 2009 when the 'M1A' main power transformer lost all cooling and the cooling system could not be restored. This finding was determined not to be a violation of NRC requirements. Exelon's corrective actions included modifying the cooling system control circuitry on the 'M1A' and 'M1B' main power transformer to address the SPV. This issue has been entered into Exelon's corrective action program.

The finding was more than minor in accordance with IMC 0612, Appendix B (Section 1-3), "Issue Screening," because it was associated with the equipment performance attribute of the initiating events cornerstone and affected the objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during power operation. In accordance with IMC 0609.04 (Table 4a), "Phase 1 – Initial Screen and Characterization of Findings," the finding was determined to be of very low safety significance (Green). The performance deficiency had a cross-cutting aspect in the area of problem identification and resolution, operating experience [IMC 0305,

Aspect P.2(a)], because Exelon did not evaluate relevant internal and external OE to identify a SPV in the transformer cooling system.

Inspection Report# : 2009003 *(pdf)*

Mitigating Systems

Significance: G Aug 13, 2009
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
Failure to Control Foreign Material in the Shell Side of the 'B' Isolation Condenser
The NRC identified a self-revealing finding of very low safety significance (Green) that involved an NCV of Oyster Creek Technical Specification 6.8.1, “Procedures and Programs,” because Exelon did not adequately implement a safety- related maintenance activity. Specifically, foreign material exclusion (FME) control requirements during maintenance in November 2008 were not properly implemented which allowed foreign material to enter the ‘B’ Isolation Condenser (IC) level instrumentation piping. This resulted in the unavailability of the IC due to erratic water level indication during the July 12, 2009 event. The team found that Exelon took adequate corrective actions to restore the ‘B’ IC’ to an operable condition including back-flushing the instrumentation piping, calibrating the instrument, and revising the surveillance procedure to incorporate back-flushing of the instrument piping during surveillances. Exelon entered this issue into their corrective action program.

The finding was more than minor because it was associated with the human performance attribute of the Mitigating Systems Cornerstone and it adversely affected the associated cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). A Phase 3 SDP analysis determined that this finding was of very low safety significance (Green), during the 233 day exposure period, in that there was a reasonable probability that the operators could have successfully used the ‘B” IC. The finding was identified to have a cross-cutting aspect in the area of human performance, work practices [IMC 0305, Aspect H.4(c)], because Exelon did not ensure supervisory and management oversight of work activities, including contractors, such that nuclear safety is supported.

Inspection Report# : 2009009 *(pdf)*

Significance: G Jun 30, 2009
Identified By: NRC
Item Type: NCV NonCited Violation
Medium Voltage Cables Maintained Submerged for Extended Period of Time
The inspectors identified a NCV of 10 CFR 50, Appendix B, Criterion XVI, ”Corrective Action,” because Exelon has not implemented effective actions to minimize water accumulation and submergence of medium voltage cables contained in the turbine building closed cooling water (TBCCW) heat exchanger pit as recommended by their cable conditioning monitoring program. Exelon’s corrective actions included revising equipment operator instructions to direct them to ensure that cables were not maintained submerged. This issue has been entered into Exelon’s corrective action program.

The finding was more than minor in accordance with IMC 0612, Appendix B (Section 1-3), “Issue Screening,” because it was associated with the equipment performance attribute of the mitigating systems cornerstone and affected the cornerstone objective to ensure the availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences. In accordance with IMC 0609.04 (Table 4a), “Phase 1 – Initial Screening and Characterization of Findings,” the finding was determined to be of very low safety significance (Green). The performance deficiency had a cross-cutting aspect in the area of problem identification and resolution, operating experience [IMC 0305, Aspect P.2(b)], because Exelon did not implement and institutionalize operating experience through changes to station processes, procedures, and equipment. Specifically, Exelon did not change operations instructions or plant equipment to better monitor and remediate the presence of water in the TBCCW heat exchanger pit to minimize the submergence of medium voltage cables as recommended by internal and external operating

experience.

Inspection Report# : 2009003 *(pdf)*

Significance: G Jun 30, 2009
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
Improper Solder Joint Causes Safety Related Station Battery Charger Failure
A self revealing NCV of Oyster Creek Technical Specifications 6.8.1, "Procedures and Programs," occurred when Exelon did not properly implement maintenance instructions and perform adequate soldering on the 'C2' battery charger. This resulted in a wire connected to the power thyristor control module to come loose during operation which caused the battery charger to fail on April 13. Exelon's corrective actions included repairing the 'C2 battery charger, inspecting the other solder joints accomplished during the maintenance activity, and evaluating the need for additional training for maintenance technicians. This issue has been entered into Exelon's corrective action program.

The finding was more than minor in accordance with IMC 0612, Appendix B (Section 1-3), "Issue Screening," because it was associated with equipment performance attribute of the mitigating systems cornerstone and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. In accordance with IMC 0609.04 (Table 4a), "Phase 1 – Initial Screening and Characterization of Findings," the finding was determined to be of very low safety significance (Green). The performance deficiency had a cross-cutting aspect in the area of human performance, resources [IMC 0305, Aspect H.2(b)], because the training of personnel was not sufficient to ensure nuclear safety. Specifically, although the initial qualification training provided Exelon personnel with the knowledge to perform proper solder joints, the lack of a continuing training program to maintain proficiency and not performing just in time training prior to an infrequently performed maintenance evolution resulted in the overall training of the maintenance personnel to be insufficient to prevent the performance or identification of defective solder joints.

Inspection Report# : 2009003 *(pdf)*

Significance: SL-IV May 15, 2009
Identified By: NRC
Item Type: NCV NonCited Violation
Inadequate 10 CFR 50.59 Evaluation for Trunnion Room Door/Secondary Containment Temporary Modification
Severity Level IV. The team identified a Severity Level IV non-cited violation of 10 CFR 50.59, "Changes, Tests, and Experiments," in that, Exelon did not obtain a license amendment for a change in the facility that involved a change to the technical specifications (TS). Specifically, Exelon implemented a temporary modification that changed the secondary containment boundary, but was prohibited by TS requirements, without first obtaining the necessary license amendment. In response, Exelon entered the issue into the corrective action program for evaluation. Current compliance with TS was not challenged since the temporary modification was restored as of November 15, 2008.

The violation is more than minor because the change that required the 10 CFR 50.59 evaluation would have required NRC review and approval prior to implementation. Because this was a violation of 10 CFR 50.59, it was considered to be a violation that potentially impedes or impacts the regulatory process. Therefore, this violation was evaluated using the traditional enforcement process. Comparing this item to the examples in NUREG 1600 (Enforcement Policy), Supplement I, this finding is similar to Item D.5, "Violations of 10 CFR 50.59 that result in conditions evaluated as having very low safety significance (i.e., Green) by the SDP." This is an example of a Severity Level IV violation. The team determined the violation to be of very low safety significance (Green) because it did not adversely impact shutdown mitigation capabilities and did not result in a loss of control.

This finding has a cross-cutting aspect in the area of Human Performance, Decision-Making Component, because Exelon did not use conservative assumptions in decision making during the safety evaluation performance and review. Specifically, Exelon did not consider the TS requirements and UFSAR and TS bases when performing and reviewing a safety evaluation that permitted a configuration that was not authorized by TSs.

Inspection Report# : 2009007 *(pdf)*

Barrier Integrity

Significance: G Dec 31, 2009
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
Untimely Corrective Action for the 'B' Spent Fuel Pool Cooling Pump
A self-revealing non-cited violation (NCV) was identified of 10CFR50 Appendix B, Criterion XVI, "Corrective Action" was identified when Exelon did not take timely corrective action to address an identified degrading trend in the performance on the B spent fuel pool cooling pump. Exelon repaired the pump by replacing the impeller and performed a satisfactory in-service test (IST) on December 8, and entered the issue into the corrective action program.

The NCV was not similar to the examples cited in IMC 0612 Appendix E, but the inspectors determined it was more than minor because it was associated with the SSC performance attribute of the barrier integrity cornerstone objective to provide reasonable assurance that the physical design barriers protect the public from radionuclide releases caused by accidents or events by maintaining the functionality of the spent fuel pool cooling system. The inspectors determined this issue was of very low safety significance (Green) because the issue did not result in a loss of cooling to the spent fuel pool where operator or equipment failures could preclude restoration of cooling prior to pool boiling, did not result from fuel handling errors that caused damage to fuel clad integrity or a dropped assembly, and did not result in a loss of spent fuel pool inventory greater than ten percent of the fuel pool volume. The performance deficiency had a cross-cutting aspect in the area of human performance, work control [H.3(b)] because Exelon did not effectively coordinate work activities by implementing actions to communicate, coordinate and cooperate with each other during activities in which interdepartmental coordination is necessary to assure plant and human performance.
Inspection Report# : 2009005 *(pdf)*

Significance: G Jun 30, 2009
Identified By: NRC
Item Type: NCV NonCited Violation
Non-Conservative Acceptance Criteria Specified In SBGTS Surveillance Procedure
The inspectors identified a NCV of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings," because Exelon did not ensure that the surveillance test procedure utilized for the standby gas treatment system (SBGTS) included appropriate acceptance criteria to determine the maximum allowable differential pressure (dP) for the high efficiency particulate air (HEPA) filters. Exelon's corrective actions included performing a technical evaluation to assess the operability of the SBGTS and revising the surveillance test procedure and control room alarm response procedure. This issue has been entered into Exelon's corrective action program.

The finding was more than minor in accordance with IMC 0612, Appendix B (Section 1-3), "Issue Screening," because it was associated with the procedure quality attribute of the barrier integrity (maintain radiological barrier functionality of SBGTS trains - BWR only) cornerstone and affected the cornerstone objective to provide reasonable assurance that physical design barrier protect the public from radionuclide releases caused by accidents or events. In accordance with IMC 0609.04 (Table 4a), "Phase 1 – Initial Screening and Characterization of Findings," the finding was determined to be of very low safety significance (Green). The performance deficiency had a cross-cutting aspect in the area of human performance, resources [IMC 0305, Aspect H.2(c)], because Exelon did not ensure that accurate procedures were available for the surveillance test. Specifically, the acceptance criteria specified in surveillance test procedure was not the same and was non-conservative to that specified in the Oyster Creek technical specifications.

Inspection Report# : 2009003 *(pdf)*

Significance: G Jun 30, 2009
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
Adverse Trend on #1 SBGTS Not Identified

A self revealing NCV of 10 CFR 50, Appendix B, Criterion XVI, “Corrective Action,” occurred when Exelon did not identify a degraded condition on the #1SBGTS HEPA filter in March 2009. This resulted in the HEPA filter exceeding the technical specification allowable acceptance criteria for pressure drop across the filter and the SBGTS #1 being declared inoperable in May 2009. Exelon’s corrective actions included replacing the HEPA filters, reviewing #2 SBGTS historical performance data, and reviewing the expectations for system monitoring with engineering personnel. This issue has been entered into Exelon’s corrective action program.

The finding was more than minor in accordance with IMC 0612, Appendix B (Section 1-3), “Issue Screening,” because it was associated with systems, structures and components (SSC) and barrier performance attribute of the barrier integrity (maintain radiological barrier functionality of SBGTS trains - BWR only) cornerstone and affected the cornerstone objective to provide reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. In accordance with IMC 0609.04 (Table 4a), “Phase 1 – Initial Screening and Characterization of Findings,” the finding was determined to be of very low safety significance (Green). The performance deficiency had a cross-cutting aspect in the area of problem identification and resolution, corrective action program [IMC 0305, Aspect P.1(a)], because Exelon personnel did not identify an issue that potentially impacted nuclear safety. Specifically, Exelon personnel did not identify a degraded trend on the SBGTS #1.

Inspection Report# : 2009003 *(pdf)*

Significance: G Jun 30, 2009
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
Loss of Secondary Containment Integrity During Maintenance on Reactor Building Roof
A self revealing NCV of 10 CFR 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings” occurred when Exelon personnel did not properly implement a procedure for the control of secondary containment integrity during maintenance activities when both reactor building roof access airlock hatches were maintained opened at the same time on April 1. Exelon’s corrective actions included installing a label on the roof hatch doors which specify control requirements, replacing the door lock with one controlled by operations personnel, and reinforcing with maintenance personnel the requirements for pre-job briefings. This issue has been entered into Exelon’s corrective action program.

The finding was more than minor in accordance with IMC 0612, Appendix B (Section 1-3), “Issue Screening,” because it was associated with the configuration control attribute of the barrier integrity (maintain radiological barrier functionality of SBGTS trains - BWR only) cornerstone and affected the cornerstone objective to provide reasonable assurance that physical design barrier protect the public from radionuclide releases caused by accidents or events. In accordance with IMC 0609.04 (Table 4a), “Phase 1 – Initial Screening and Characterization of Findings,” the finding was determined to be of very low safety significance (Green). The performance deficiency had a cross-cutting aspect in the area of human performance, work practices [IMC 0305, Aspect H.4(a)], because human error prevention techniques were not used commensurate with the risk of the assigned task, such that work activities are performed safely. Specifically, Exelon personnel did not effectively utilize pre-job briefs and self and peer checks to ensure that secondary containment integrity would be maintained during maintenance activities on the reactor building roof.

Inspection Report# : 2009003 *(pdf)*

Significance: G May 15, 2009
Identified By: NRC
Item Type: NCV NonCited Violation
Inadequate Design Control for RBCCW Containment Isolation Valve Modification
Green. The team identified a finding of very low safety significance involving a non-cited violation of 10 CFR 50, Appendix B, Criterion III, “Design Control,” in that Exelon did not ensure the adequacy of a reactor building closed cooling water system containment isolation check valve design. Specifically, Exelon modified the check valve but did not ensure that the replacement valve could meet the existing design basis temperature value. In response, Exelon entered the issue in their corrective action program and evaluated the design temperature of the check valve to assure the valve would function properly during postulated events.

The finding is more than minor because it is associated with the design control attribute of the Barrier Integrity Cornerstone and affected the cornerstone objective of
providing reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. The team determined the finding screened as very low safety significance (Green) because it did not represent a degradation of the radiological barrier function provided for the control room, auxiliary building, or spent fuel pool, did not represent a degradation of the barrier function of the control room against smoke or a toxic atmosphere, did not represent an actual open pathway in the physical integrity of reactor containment, and did not involve an actual reduction in function of hydrogen igniters in the reactor containment.

This finding has a cross-cutting aspect in the area of Human Performance, Work Practices Component, because Exelon did not define and effectively communicate expectations regarding procedural compliance and personnel did not follow procedures. Specifically, Exelon did not comply with procedure CC-AA-102, “Design Input and Configuration Change Impact Screening,” to evaluate the design temperature of the newly installed check valve to ensure that all affected systems can perform their design basis functions. (IMC 0305, Aspect H.4(b))

Inspection Report# : 2009007 *(pdf)*

Emergency Preparedness

Significance: G Mar 31, 2009
Identified By: NRC
Item Type: NCV NonCited Violation
Failure of the Oyster Creek RAGEMS to Meet the Requirements of the Emergency Plan
The inspectors identified a non-cited violation (NCV) of 10CFR50.54(q), “Conditions of Licenses,” because Exelon did not properly maintain the conditions of the Oyster Creek Emergency Plan. Specifically, Exelon did not implement timely corrective or compensatory actions when the radioactive gas effluent monitoring system (RAGEMS) automatic sampling system was taken out of service from November 2006 through March 2009. Exelon’s corrective actions included replacing solenoid valves in the automatic sampling system and placing the automatic system back in service.

The finding was more than minor because it affected the Emergency Response Organization Performance attribute of the Emergency Preparedness (EP) Cornerstone to ensure that the licensee is capable of implementing adequate measures to protect the public health and safety of the public in the event of a radiological emergency. In accordance with Inspection Manual Chapter (IMC) 0609, Appendix B, “Emergency Preparedness Significance Determination Process,” the inspectors determined the finding to be of very low safety significance (Green). Specifically, the inspectors utilized IMC 0609, Appendix B, Section 4.9 and Sheet 1, “Failure to Comply,” to determine that the failure to satisfy 10 CFR 50.47(b)(9) was a risk-significant planning standard (RSPS) problem; but it was not a RSPS functional failure of the Oyster Creek dose assessment process. Because a time-motion study concluded that a manual iodine and particulate sample could have been obtained under accident conditions without exceeding regulatory dose limits, the inspectors determined that the RSPS function had not been degraded and the failure of the automatic sampling system ultimately would not have affected the outcome of protecting the health and safety of the public. The performance deficiency had a cross-cutting aspect in the area of problem identification and resolution, because Exelon did not take appropriate corrective actions in a timely manner commensurate with its safety significance and complexity. Specifically, the RAGEMS sampling system was not able to satisfy the functions required by the Oyster Creek Emergency Plan for over two years before Exelon took adequate steps to initiate corrective actions [P.1(d)]. (Section 4OA2)

Inspection Report# : 2009002 *(pdf)*

Occupational Radiation Safety

Public Radiation Safety

Physical Protection

Although the NRC is actively overseeing the Security cornerstone, the Commission has decided that certain findings pertaining to security cornerstone will not be publicly available to ensure that potentially useful information is not provided to a possible adversary. Therefore, the cover letters to security inspection reports may be viewed.

Miscellaneous

Last modified : March 01, 2010