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

February 8, 2011

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

SUBJECT: OYSTER CREEK GENERATING STATION - NRC INTEGRATED INSPECTION REPORT 05000219/2010005

Dear Mr. Pacilio:

On December 31, 2010, the U. S. Nuclear Regulatory Commission (NRC) completed an inspection at your Oyster Creek Generating Station. The enclosed integrated inspection report documents the inspection findings, which were discussed on January 26, 2011, with Mr. Michael Massaro, Site Vice President, and other members of your staff.

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

This report documents one NRC-identified finding and two self-revealing findings of very low safety significance (Green) which involved violations of NRC requirements. However, because of the very low safety significance and because they are entered into your corrective action program, the NRC is treating these findings as non-cited violations (NCVs) consistent with Section 2.3.2 of the NRC Enforcement Policy. If you contest any NCV, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN.: Document Control Desk, Washington DC 20555-0001; with copies to the Regional Administrator, Region I; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at Oyster Creek Generating Station. In addition, if you disagree with the characterization of any finding in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region I, and the NRC Resident Inspector at Oyster Creek Generating Station. The information you provide will be considered in accordance with Inspection Manual Chapter 0305.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Website at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

We appreciate your cooperation. Please contact me at (610) 337-5232 if you have any questions regarding this letter.

Sincerely,

Ronald R. Bellamy

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

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

Enclosure: Inspection Report 05000219/2010005
w/Attachment: Supplemental Information

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Sincerely,
/RA/
Ronald R. Bellamy, Ph.D., Chief
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U. S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No.:	50-219
License No.:	DPR-16
Report No.:	05000219/2010005
Licensee:	Exelon Nuclear
Facility:	Oyster Creek Generating Station
Location:	Forked River, New Jersey
Dates:	October 1, 2010 – December 31, 2010
Inspectors:	J. Kulp, Senior Resident Inspector J. Ambrosini, Resident Inspector R. Nimitz, Senior Health Physicist M. Modes, Senior Reactor Inspector T. O'Hara, Reactor Inspector C. Newport, Project Engineer
Approved By:	R. Bellamy, Ph.D., Chief Projects Branch 6 Division of Reactor Projects

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SUMMARY OF FINDINGS

IR 05000219/2010005; 10/1/2010 – 12/31/2010; Exelon Energy Company, LLC, Oyster Creek Generating Station; Maintenance Effectiveness, Event Followup.

The report covered a 3-month period of inspection by resident inspectors, a regional project engineer, and regional specialist inspectors. Three Green non-cited violations (NCV) were identified. The significance of most findings is indicated by their color (Green, White, Yellow, or Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). The cross-cutting aspects were determined using IMC 0310, "Components Within the Cross Component Areas." Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

Cornerstone: Initiating Event

Green: A Green, self-revealing NCV of Technical Specification (TS) 6.8.1.a occurred when Exelon did not adequately implement plant startup procedures which resulted in an automatic reactor scram. Immediate corrective actions included just in time training with all reactor operators, increased management oversight during the subsequent startup, and procedural changes to list all alarms by name that must be cleared prior to raising reactor pressure above 500 psig. Exelon is performing a full root cause evaluation on the event (IR 1155520).

The inspectors determined that the performance deficiency was similar to the "not minor if" statement contained in example 4b of IMC 0612, Appendix E, "Examples of Minor Issues," because the performance issue resulted in a manual reactor scram. The finding was more than minor in accordance with IMC 0612, Appendix B, "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) because the finding did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available. This finding has a cross-cutting aspect in the area of human performance, work practices (H.4(b)), where personnel work practices support human performance, specifically, Exelon defines and effectively communicates expectations regarding procedural compliance and personnel follow procedures. On December 23, operators did not verify that condenser vacuum was adequate prior to raising reactor pressure above 500 psig, contrary to established procedural guidance. (Section 4OA3)

Cornerstone: Mitigating Systems

Green: A Green, inspector identified NCV of TS 4.5.M.1.f, "Snubber Service Life Monitoring", was identified while inspecting four snubber testing failures that occurred during refueling outage 1R23. Specifically, Exelon's snubber testing program, contained in SP-1302-52-045, "Requirements for Functional Testing of Snubbers", does not

evaluate snubber maintenance and test records to identify common cause failures of snubbers due to environmental (temperature, vibration, humidity) conditions and adjust snubber service life expectations accordingly, such that snubber service life reviews can be accomplished effectively without service life affecting reactor operations. Exelon took immediate corrective action to repair or replace the failed snubbers, performed an analysis to ensure the snubber failures had no impact on system operation, and entered this issue into their corrective action program (IR1138622, IR1139897, IR1143332, IR1143829)

There are no similar examples in IMC 0612, Appendix E, "Examples of Minor Issues". This finding is more than minor because it affects the equipment performance attribute of the mitigating systems cornerstone to ensure the availability, reliability and capability of system that respond to initiating events to prevent undesirable consequences, specifically the safety related piping systems in containment. In accordance with Table 4a of IMC 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," the finding was determined to be of very low safety significance (Green) because it was a qualification deficiency confirmed not to result in loss of operability or functionality. This finding has a cross-cutting aspect in the area of problem identification and resolution (P.1(c)) because Exelon did not thoroughly evaluate problems such that the resolutions address causes and extent of conditions. Additionally, Exelon did not conduct effectiveness reviews of corrective actions to ensure that the problems are resolved. (Section 1R12)

Cornerstone: Public Radiation Safety

Green: A Green, self-revealing NCV of TS 6.8.4 occurred due to Exelon's failure to maintain continuous, representative monitoring and sampling of plant stack gaseous effluents, as required by the Offsite Dose Calculation Manual. The cause was degradation of sample line integrity over the period March 2006 through March 2010. Exelon reported the issue, initiated compensatory monitoring, repaired the stack sample tubing, conducted bounding dose calculations, and entered this issue, including the evaluation of extent-of-condition, into the corrective action program (IR 01053577).

This finding is more than minor because the performance deficiency adversely impacted the Public Cornerstone objective of ensuring adequate protection of public health and safety in that effluent releases were not fully monitored in accordance with applicable requirements to ensure proper quantification and characterization of radioactive releases. This finding was assessed for significance using IMC 0609, Appendix D, and determined to be of very low safety significance because: Exelon was able to re-assess the radioactive effluent using alternative radiation monitoring instrumentation and programs, therefore Exelon had data by which to assess dose to a member of the public, determine the dose impact to the public, and conclude that the doses were less than the dose values in Appendix I to 10 CFR Part 50 and/or 10 CFR 20.1301(e). This finding has a cross-cutting aspect in the area of Human Performance, Resources (H.2(c)) because procedures were not sufficiently robust for review of reasonableness and consistency of data from samples to support identification of the issue in a timely manner. (Section 4OA3)

REPORT DETAILS

Summary of Plant Status

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

On October 31, operators commenced a planned shutdown and started the 1R23 refueling outage. The plant returned to power generation on December 1.

On December 2, operators performed an unplanned downpower from 35% to 20% reactor power due to indications of an internal fault on the M1B transformer. Operators took the generator offline and started the 1F23 forced outage to electrically disconnect the M1B transformer. The operators placed the generator online and returned to 50% power on December 4 after disconnecting the M1B transformer.

On December 9th, operators performed a planned downpower to 20% reactor power, took the generator offline and started the 1F24 forced outage to replace the M1B transformer with an onsite spare. The operators placed the generator online and returned to 50% power on December 12, after placing the spare M1B transformer on its storage pad.

On December 15, operators performed a planned downpower to 20% reactor power, took the generator offline and started the 1F25 forced outage to electrically reconnect the M1B transformer with an onsite spare. The operators placed the generator online and returned to full power on December 17.

On December 18, operators responded to a trip of the "A" reactor recirculation pump which resulted in an unplanned downpower. Exelon chose to remain at 55% power while 2 of 5 reactor recirculation pumps were unavailable.

On December 19, operators commenced an unplanned shutdown and started the 1F26 forced outage to repair the "B" reactor recirculation pump mechanical seal. Operators commenced a reactor startup on December 23. While heating up the plant following reactor startup, an automatic scram occurred. The automatic scram is discussed in detail in section 4OA3 of this report. Operators performed another reactor startup on December 24 and returned to full power on December 25.

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

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01)

a. Inspection Scope (1 sample)

The inspectors performed one adverse weather preparation inspection.

The inspectors reviewed Exelon's activities associated with seasonal readiness for cold weather conditions. The inspectors reviewed the updated final safety analysis report (UFSAR) to identify risk significant systems that require protection from cold weather conditions. The inspectors performed a walkdown of the intake structure, the heat tracing of outdoor components including temporary water storage tanks, and the emergency diesel generators. The inspectors reviewed Exelon's cold weather preparation activities to assess their adequacy and to verify they were completed in accordance with procedural requirements. The inspectors also reviewed applicable corrective action program condition reports to assess their reliability and material condition of their systems.

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

b. Findings

No findings were identified.

1R04 Equipment Alignment (71111.04)

a. Inspection Scope (4 samples)

The inspectors performed 3 partial and 1 complete equipment alignment inspections. The partial equipment alignment inspections were completed during conditions when the equipment was of increased safety significance such as would occur when redundant equipment was unavailable during maintenance or adverse conditions, or after equipment was recently returned to service after maintenance. The inspectors performed a partial walkdown of the following systems, and when applicable, the associated electrical distribution components and control room panels, to verify the equipment was aligned to perform its intended safety functions:

- 'A' Containment Spray system on November 29 and November 30 after the system was returned to service following the 1R23 refueling outage;
- 'A' and 'B' Isolation Condenser system on December 6 after the equipment was returned to service following the 1R23 refueling outage; and
- 'A' control rod drive system on December 30 following planned maintenance on the B control rod drive system.

The inspectors performed a complete system alignment inspection on the standby liquid control (SLC) system on November 29 and 30 after it was returned to service following the 1R23 refueling outage to determine whether the system was aligned and capable of providing a backup method of shutting down the reactor in accordance with design basis requirements. The inspectors reviewed operating procedures, the surveillance test procedure, piping and instrument drawings, and the applicable equipment lineup list, to determine if the equipment was aligned to perform its safety function upon actuation.

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

b. Findings

No findings were identified.

1R05 Fire Protection (71111.05)

a. Inspection Scope (71111.05Q - 3 samples)

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

- Demineralizer Tanks and Steam Jet Air Ejector Area (TB-FZ-11H) on November 16;
- Emergency Diesel Generator Room #1 (DG-FA-15) on November 18; and
- Emergency Diesel Generator Room #2 (DG-FA-17) on November 18.

b. Findings

No findings were identified.

1R08 Inservice Inspection (ISI) Activities (71111.08)

a. Inspection Scope (71111.08 - 1 Sample)

The inspectors selected samples for inspection based upon the guidance in Inspection Procedure 71111.08 and the risk priority of those components and systems where degradation could result in a significant increase in the risk of core damage. The observations and documentation reviews were conducted to verify that inspection activities are being performed in accordance with the American Society of Mechanical Engineers (ASME) Boiler, and Pressure Vessel Code requirements.

Drywell Sandbed Bay Visual (VT) and Ultrasonic (UT) Inspections

The inspectors reviewed the Exelon procedures for performing drywell ultrasonic (UT) wall thickness measurements and for performing visual inspection (VT) of the drywell protective coating in the sandbed regions. The inspectors observed Exelon perform these inspections in sandbed bays #1, #3 and #11. The inspectors also reviewed the completed inspection reports (both UT and VT) for sandbed bays #1, #3, #5, #7, #9, #11, #13, #15, #17 and #19. The inspectors verified that Exelon successfully completed the planned inspections, documented the observed conditions, analyzed and evaluated the conditions identified and entered all conditions into the corrective action process for follow up and resolution.

Dissimilar Metal Weld Inspections

During this refueling outage, the inspectors reviewed Exelon's conduct of automated, phased-array, ultrasonic examinations of four reactor vessel nozzle dissimilar metal welds in accordance with Boiling Water Reactor Vessel Internals Project (BWRVIP) inspection requirements. The inspectors determined that Exelon had conducted a detailed review of pre-1R23 performance demonstration initiative (PDI) ultrasonic inspection data to determine whether any significant weld indications had existed that were undetected by prior inspections. The inspectors verified that Exelon's detailed review, conducted in 2008, did not reveal any significant defect indications.

The inspectors verified that the inspections completed during the November 2010 refueling outage met the requirements of the ASME Boiler and Pressure Vessel Code, Section XI, Amendment III, Supplement 10. The inspectors reviewed the procedures used in these inspections, verified the process qualification documentation, and remotely observed the collection of inspection data by Exelon personnel. Upon completion of these inspections, the inspectors reviewed a sample of the inspection data sheets.

Additional Non-Destructive Examination (NDE) Samples

The inspectors verified that NDE activities were performed in accordance with the ASME Boiler and Pressure Vessel Code, Section XI, by reviewing inspection procedures, personnel NDE documentation, and by direct observation and data report reviews. The inspectors reviewed the completed inspection reports (data sheets) from six primary system ultrasonic weld inspections, one dye penetrant examination, and 1 radiographic examination of a core spray piping weld replacement.

The inspectors reviewed a sample of the in-reactor vessel visual inspection (IVVI) indications recorded from Exelon's visual inspection of the reactor steam dryer. The inspectors verified that Exelon's inspection results documented no change in the prior steam dryer indications during the past operating cycle. The inspectors reviewed condition reports which reported indications discovered as a result of visual inspection of the steam dryer and evaluated the reported conditions as acceptable for use "as-is" for continued operation with re-inspection during the next refueling outage. The inspectors assessed Exelon's evaluation and disposition for continued service without repair of these non-conforming conditions identified during ISI activities.

The inspectors reviewed a sample of the ultrasonic examination personnel certifications and reviewed the NDE qualifications for the technicians responsible for the data collection, review and interpretation of the inspection results. This review was conducted to confirm that the examiner skill, the test equipment capabilities, the examination techniques used, and the examination procedures enabled the performance of the ultrasonic and visual examination of the selected components. The inspectors verified that the manual and automatic remote ultrasonic examinations met the requirements of ASME Section XI.

ASME, Section XI Repair Replacement Samples

The inspectors reviewed work order (WO) C2023465, which controlled the replacement of the internals of valve V-2-73 as specified by engineering change request (ECR) 09-00499. The inspectors verified that the work and the post repair NDE (VT-3 of the valve

body and VT-1 of all bolting materials) were completed in accordance with ASME Code Case N-416-3.

The inspectors also reviewed WO C2023712 which accomplished the replacement of a section of core spray piping. With respect to this work order, the inspectors reviewed: AR01076164, which reported two areas of core spray pipe wall thinning which was eroded below minimum wall thickness; inspection results reported via NER-NC-09-035Y; and the technical evaluation (AR01076164-03) which recommended replacement of the affected piping during the November 2010 refueling outage. The inspectors reviewed the welding process for the replacement of the core spray pipe and the NDE (magnetic particle testing (MT) during the welding process and radiographic testing (RT) of the completed weld) used to inspect the repair. The final RT was accomplished with eight RT films. One of the films showed evidence of incomplete weld fusion. The inspectors reviewed the issue report (IR 1144878) which evaluated this condition and specified excavation of the affected area and re-welding and post-repair RT. Upon repair of the weld, the inspectors verified acceptable RT results. The inspectors verified the completion of this replacement after reviewing the acceptance by Exelon and the Authorized Nuclear Inspector.

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification Program (71111.11)

a. Inspection Scope (1 sample)

The inspectors observed one simulator training scenario on October 6 to assess operator performance and training effectiveness. The inspectors observed training scenario 2612.CREW10-6.01. The inspectors assessed whether the simulator adequately reflected the expected plant response, operator performance met Exelon's procedural requirements, and the simulator instructor's critique identified crew performance problems. Documents reviewed for this inspection activity are listed in the Supplemental Information attachment to this report.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12)

a. Inspection Scope (2 samples)

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

- Main steam isolation valves (IR 1137357 and 1138356) on November 10; and
- Adverse trend on snubbers (IR 1139909) on December 29.

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

b. Findings

Introduction: The inspectors identified a Green NCV of TS 4.5.M.1.f, "Snubber Service Life Monitoring", while inspecting 4 snubber testing failures that occurred during 1R23.

Specifically, Exelon's snubber testing program, contained in SP-1302-52-045, "Requirements for Functional Testing of Snubbers", does not evaluate snubber maintenance and test records to identify common cause failures of snubbers due to environmental (temperature, vibration, humidity) conditions and adjust snubber service life expectations accordingly so snubber service life reviews can be accomplished effectively without service life affecting reactor operations.

Description:

During 1R23, Exelon experienced functional failures on a total of four safety related mechanical snubbers during the TS required functional tests, specifically, the running drag test. The four snubber functional failures were entered into the corrective action program in IRs 1138622, 1139897, 1143332 and 1143829. TS 4.5.M.1.c, "Functional Tests", states that at least every 24 months, a representative sample (defined as 10% of the total of each type of snubber in use at the plant) shall be functionally tested either in place or in a bench test. TS 4.5.M.1.c further states: for each snubber that does not meet the functional test criteria, an additional 10% of that type of snubber shall be functionally tested. In accordance with TS 4.5.M.1.c, the four functional failures cause Exelon to expand their inspection scope and an additional 40% of the installed mechanical snubbers be tested. The apparent cause of the failures for all four snubbers was either hardened or missing grease. The snubbers were either repaired or replaced with new snubbers and reinstalled into the appropriate piping supports. For each failed snubber, Exelon performed engineering evaluations to determine if the failed snubber had adverse affects on the attached piping systems. No adverse effects were identified that would have affected reactor operations.

TS 4.5.M.1.f, "Snubber Service Life Monitoring", states, in part, that records of the service life of each snubber shall be maintained, to include the date at which the designated service life commences, the date of installation, and the maintenance records on which the designated service life is based. TS 4.5.M.1.f also requires that the installation and maintenance records be reviewed on a 24 month basis to verify that the indicated service life of the snubbers will not be exceeded prior to the next review. The TS also specifies that service life shall not at any time affect reactor operations.

In 1977, Exelon installed mechanical snubbers on safety related systems within containment. The snubbers were built by Pacific Scientific (PSA) and have a design

service life of 40 years. Exelon has assigned each snubber a service life of 40 years from time of installation.

In 2004, PSA issued technical bulletin DR-19, "Mechanical Shock Arrestor Standard Design Specification." In this technical bulletin, PSA modified the design service life as "40 years effective service life with appropriate maintenance and operation within the rated load and environmental limits." In 2006, PSA issued technical bulletin DR-20, "Mechanical Shock Arrestor Service Life Extension Program & Preventive Maintenance Recommendations." In this technical bulletin, PSA provided guidance for a preventive maintenance program based upon a graduated response to snubbers found degraded or failed. The program includes failure analysis, increased monitoring and preventive maintenance. The preventive maintenance program in this bulletin is being considered but has not been implemented at Oyster Creek.

In 1994, the NRC issued information notice (IN) 94-048, "Snubber Lubricant Degradation in High-Temperature Environments", which alerted licensees to possible degradation of the lubricant used in mechanical snubbers manufactured by PSA when the snubber is used in a high temperature environment. The IN describes failure of the grease by mechanisms of hardening and loss of viscosity in PSA mechanical snubbers when exposed to high temperatures. The NRC issued IN 94-048 for licensees to review and for consideration of appropriate actions to avoid similar problems but did not require any regulatory action.

Oyster Creek's snubber testing program is contained in SP-1302-52-045, "Requirements for Functional Testing of Snubbers". This procedure defines the requirements and acceptance criteria for functional testing of PSA mechanical snubbers, as well as the test and acceptance criteria required by technical specifications.

The inspector reviewed available maintenance records for the four failed snubbers identified in 1R23. These snubbers had failed or were found degraded and had to be replaced at a time-in-service ranging from 6 to 17 years despite having a designated service life of 40 years. The four failed snubbers had a history of repetitive failures. Three of the snubbers were found to be failed or degraded three times including the failure identified in 1R23. The remaining snubber failed for the second time in 1R23. Despite the maintenance and testing history of these snubbers, no change to the designated 40 year service life was made. The testing requirements in TS 4.5.M.1.c (10% every 24 months) ensure that each snubber will be tested once every 20 years. The demonstrated service lives of snubbers that were identified as failed during 1R23 are much shorter than the time between TS required testing intervals. SP-1302-52-045, "Requirements for Functional Testing of Snubbers", does not have any provisions to update service life of snubbers after they are found degraded or failed, which inhibits Exelon's ability to meet TS 4.5.M.1.f to conduct a review of snubber records to verify that indicated service life will not exceeded until the next service life review. Additionally, the discovery of a failed snubber requires that engineering perform an evaluation to show that the failed snubber had no adverse effects on the piping. This does not meet the requirement contained in TS 4.5.M.1.f stating that the service life of a snubber shall not at any time affect reactor operation, but instead provides a reactive means to review past operability.

The inspectors noted that Exelon has two corporate procedures, ER-AA-330-010 "Snubber Functional Testing" and ER-AA-330-011 "Snubber Service Life Monitoring"

that serve as guidance for individual sites to test and monitor service life of snubbers. These procedures have not been implemented at Oyster Creek.

Analysis: Exelon's failure to take into account the maintenance and testing history of snubbers when determining designated service life so that a review of the snubber testing plan to ensure that service life is not exceeded prior to the scheduled snubber service life review is a performance deficiency.

There are no similar examples in IMC 0612, Appendix E, "Examples of Minor Issues". This finding is more than minor because it affects the equipment performance attribute of the mitigating systems cornerstone to ensure the availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences, specifically the safety related piping systems in containment.

In accordance with table 4a of IMC 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," the finding was determined to be of very low safety significance (Green) because it was a qualification deficiency confirmed not to result in loss of operability or functionality.

This finding has a cross-cutting aspect in the area of problem identification and resolution because Exelon did not thoroughly evaluate problems such that the resolutions address causes and extent of conditions. Additionally, Exelon did not conduct effectiveness reviews of corrective actions to ensure that the problems are resolved. (P.1(c)).

Enforcement: TS 4.5.M.1.f requires that installation and maintenance records for each snubber be reviewed to verify that the indicated service life has not been exceeded or will not be exceeded prior to the next schedule snubber service life review. Contrary to the above, Exelon failed to consider snubber maintenance history when evaluating designated service life values and conducting snubber service life reviews required by TS. Because this violation was of very low safety significance and it was entered into Exelon's corrective action program as IR 1170026, this violation is being treated as an NCV, consistent with the Enforcement Policy. **(NCV 05000219/2010-005-01, Snubber Maintenance History Not Taken Into Account When Conducting Service Life Reviews).**

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

a. Inspection Scope (4 samples)

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

- Bank 6 startup transformer, 'B' battery charger, and 'B' control rod drive system unavailable due to planned maintenance on October 20;
- Core spray system #2 planned unavailability and reactor water inventory management during refueling outage on November 22;
- 'A' control rod drive system and main transformer M1B unavailable due to planned maintenance on December 6; and
- Both station blackout combustion turbines unavailable due to adverse weather conditions, and #1 EDG unavailable due to a battery charger failure on December 29.

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

b. Findings

No findings were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope (5 samples)

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

- Inoperable core spray snubber on October 1 (IR 1120002);
- IP20B power supply failure on October 18 (IR 1123503);
- Degraded weld on embedded plate in torus bay 9 on November 16 (IR 1138764);
- Emergency diesel generator after discrepancies following loss of offsite power test on November 29 (IR 1145338); and
- Torus to drywell vacuum breakers on November 30 (IR 1145393).

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

b. Findings

No findings were identified.

1R18 Plant Modifications (71111.18)

a. Inspection Scope (1 temporary and 1 permanent modification samples)

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

- Bypass valve opening jack circuitry (temporary modification 10-00601); and
- Deluge system modification for M1B transformer replacement (permanent modification 09-00573);

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

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19)

a. Inspection Scope (5 samples)

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

- Containment spray and emergency service water (ESW) system 2 following inspection of keepfill checkvalve V-3-131 on October 6 (R2162788);
- Main steam isolation valve (MSIV) V-1-9 leak rate test following completion of valve maintenance on November 22 (A2263426);
- MSIV V-1-8 leak rate test following completion of valve maintenance on November 23 (R2132344);
- Inservice test baseline after core spray NZ01B motor replacement on November 17 (R2138066); and
- M1B Hyundai main transformer replacement with Utah transformer on December 16 (C2024694).

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

b. Findings

No findings were identified.

1R20 Refueling and Other Outage Activities (71111.20)

a. Inspection Scope (3 samples)

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

Refueling Outage (1R23)

On October 31, operators initiated a plant shutdown to support the 1R23 refueling outage. The inspectors observed portions of the shutdown from the control room, and reviewed plant logs to ensure that technical specification requirements were met for placing the reactor in "hot shutdown" and "cold shutdown." The inspectors also monitored Exelon's controls over outage activities to determine whether they were in accordance with procedures and applicable TS requirements.

The inspectors verified that cool down rates during the plant shutdown were within TS requirements. The inspectors performed a walkdown of accessible portions of the drywell (primary containment) on November 2, and the condenser bay and the main steam tunnel on November 3, to verify that sources of leakage were identified and that there was no evidence of visual damage to passive systems contained in these areas. The inspectors noted the presence of a small amount of water in the bay 5 drywell trench. The bay 17 drywell trench was dry. The inspectors verified that Exelon assessed and managed outage risk. The inspectors confirmed, on a sampling basis, that tagged equipment was properly controlled and equipment configured to safely support maintenance and plant operations. During control room tours, the inspectors verified that operators maintained reactor vessel level and temperature within the procedurally required ranges for the operating condition. The inspectors also verified that the decay heat removal function was maintained by performing a walkdown of the system on November 7 and by periodically monitoring shutdown cooling (SDC) parameters throughout the outage. The inspectors observed Oyster Creek's plant onsite review committee (PORC) startup affirmations on November 29.

The inspectors performed an inspection and walkdown of portions of the drywell prior to containment closure on November 29, to verify there was no evidence of leakage or visual damage to passive systems and to verify that debris was not left which could affect drywell suppression pool performance during postulated accident conditions. The inspectors monitored restart activities that began on November 30. The inspectors ensured that, through verification of technical specification requirements, license conditions, and procedural requirements, required equipment was available to support operational condition changes. Portions of the startup activities were observed from the control room to assess operator and equipment performance. The inspectors further verified that unidentified leakage and identified leakage rate values were within expected values and within technical specification requirements.

During startup activities on December 1, control room operators responded to indications of an unidentified leak rate of approximately 17 GPM. The operators isolated the 'B' recirculation loop due to indications that the leakage was from the 'B' recirculation pump mechanical seal, which stopped the leak. Operators then declared an Unusual Event per Emergency Action Level (EAL) guidance. This event is described in detail in section 4OA3 of this report. After this event, Exelon commenced startup on 4 recirculation loops instead of the typical five loop operation.

Other Outage Activity – Forced Outage due to Main Transformer Failure and Replacement (1F23, 24, 25)

In December, operators reduced power and took the turbine offline three times to support a planned maintenance outage due to a failure of the M1B main transformer.

Exelon replaced both the M1A and M1B main transformers with new transformers during refueling outage 1R23 in November. During power ascension following 1R23, online oil monitoring equipment on the M1B main transformer indicated the increasing presence of acetylene and other gases, which was indicative of an internal fault. As a result, Exelon decided to remove the newly installed Hyundai transformer and replace it with the previously installed Utah transformer. On December 2, operators reduced power and took the generator offline to electrically disconnect Hyundai transformer (1F23). Exelon placed the generator online and returned to 50% power on December 4. On December 9, operators reduced power and took the generator offline to move the Hyundai transformer from the transformer pad to a storage area and moved the spare Utah transformer from the storage area to the transformer pad (1F24). Exelon placed the generator online and returned to 50% power on December 12. On December 15, operators reduced power and took the generator offline to electrically connect the Utah transformer (1F25). The plant returned to 100% power on December 17.

Other Outage Activity – Forced Outage due to Recirculation Pump Trip (1F26)

On December 19, operators initiated and completed an unplanned plant shutdown to support a forced outage to repair the 'B' reactor recirculation pump mechanical seal and to perform electrical troubleshooting on the 'A' reactor recirculation pump, which had tripped on December 18 and is described in section 4OA3 of this report. The inspectors observed portions of the shutdown from the control room, and reviewed plant logs to ensure that TS requirements were met for placing the reactor in "hot shutdown" and "cold shutdown." The inspectors also monitored Exelon's controls over outage activities to determine whether they were in accordance with procedures and applicable TS requirements.

The inspectors verified that cool down rates during the plant shutdown were within TS requirements. The inspectors performed a walkdown of portions of the drywell on December 21. The inspectors noted the presence of standing water in the bay 5 and 17 drywell trenches, which Exelon placed in the corrective action program (IR 1155037). The inspectors verified that Exelon assessed and managed outage risk. The inspectors confirmed on a sampling basis that tagged equipment was properly controlled and equipment configured to safely support maintenance and plant operations. During control room tours, the inspectors verified that operators maintained reactor vessel level and temperature within the procedurally required ranges for the operating condition. The inspectors also verified that the decay heat removal function was maintained through monitoring SDC parameters. The inspectors observed Oyster Creek's PORC startup affirmations on December 22.

The inspectors performed an inspection and walkdown of portions of the drywell prior to final containment closure on December 22, to verify that any observed leakage was documented, that there was no visual damage to passive systems and to determine that debris was not left which could affect drywell suppression pool performance during postulated accident conditions. The inspectors again noted the presence of standing water in the bay 5 and 17 drywell trenches, which Exelon placed in the corrective action program (IR 1155422). The inspectors monitored restart activities that began on December 23, to ensure that required equipment was available for operational condition changes, including verifying TS requirements, license conditions, and procedural requirements. Portions of the startup activities were observed from the control room to assess operator and equipment performance. During the plant startup, an automatic

scram occurred and is described in section 4OA3 of this report. The inspectors monitored portions of the subsequent startup that began on December 24 to ensure that required equipment was available for operational condition changes, including verifying TS requirements, license conditions, and procedural requirements. Oyster Creek synchronized the main generator to the grid and achieved full power on December 25. The inspectors verified that unidentified leakage and identified leakage rate values were within expected values and within TS requirements following return to power operations.

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope (1 In-Service Testing sample, 1 Isolation valve sample and 3 routine surveillance samples)

The inspectors observed portions of and/or reviewed the results of 5 surveillance tests:

- Fire deluge system #10 surveillance test on October 14 (R2135571);
- Core spray 'D' check valve surveillance test on November 8 (R2026637);
- #2 emergency diesel generator LOCA/LOOP surveillance test on October 13 (R2133261);
- Main steam isolation valve V-1-9 closure and IST test on November 29 and 30 (A2263426); and
- Reactor protection system output breaker trip test on December 28 (R2168175).

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

b. Findings

No findings were identified.

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety (OS)

RS01 Access Control to Radiologically Significant Areas (71124.01)

a. Inspection Scope (1 sample)

The inspectors reviewed licensee activities and associated documentation to inspect Exelon's performance in the inspection areas listed below. The evaluation of Exelon's performance was against criteria contained in 10 CFR 20, TSs, and applicable station procedures.

Inspection Planning

The inspectors reviewed Performance Indicators (PIs) for the Occupational Exposure Cornerstone. The inspectors also reviewed the results of recent radiation protection program audits and assessments and any reports of operational occurrences related to occupational radiation safety since the last inspection. (See Section 4OA1)

Radiological Hazard Assessment

The inspectors discussed plant operations to identify any significant new radiological hazards for onsite workers or members of the public. The inspectors assessed the potential impact of the changes and monitoring to detect and quantify the radiological hazard.

The inspectors toured radiological controlled areas and reviewed radiological surveys of plant areas (e.g., refueling floor, reactor cavity, reactor building, turbine building, condenser bay, drywell, and the torus), and outdoor areas to verify that the thoroughness and frequency of the surveys were appropriate for the given radiological hazard.

The inspectors conducted walkdowns of the facility, including the dry-active waste storage buildings and outdoor storage areas, to evaluate material conditions and potential radiological conditions. The inspectors made independent radiation measurements to verify condition.

The inspectors selected various radiological risk significant work activities (reactor cavity, in vessel work activities, drywell work activities, condenser bay work, turbine work and torus diving activities) that involved exposure to radiation to verify that appropriate pre-work surveys were performed to identify and quantify the radiological hazard and to establish adequate protective measures. The review included identification of discrete particles, the presence of alpha emitters, the potential for airborne radioactive materials, potential changes in radiological conditions, and non-uniform exposures of the body.

The inspectors reviewed and discussed air sample survey records associated with various work activities to verify that samples were representative of breathing zone and collected and counted in accordance with procedures. The inspectors reviewed the use and operation of continuous air monitors during plant tours. The inspectors reviewed consideration of potential airborne radioactivity generation in areas of loose surface contamination.

Instructions to Workers

The inspectors toured radiologically controlled areas, including outage work areas, and reviewed labeling of containers of radioactive materials to verify that container labeling was consistent with requirements and was informative to workers.

The inspectors reviewed a sample of radiation work permits (RWP), ALARA reviews, and radiological surveys used to access high radiation areas (HRA). The purpose of the review was to verify that work control instructions, specified control barriers, stay times or permissible dose limits, and electronic personal dosimeter (EPD) alarm set-points were in conformance with survey indications. Areas reviewed included the drywell,

turbine work areas, refueling floor, and the condenser bay. The inspectors evaluated Exelon's changes to setpoints for specified conditions and subsequent updating of radiation work permits. The inspectors reviewed ongoing remote monitoring via teledosimetry.

The inspectors reviewed ongoing work activities in the radiological controlled area to evaluate methods used by Exelon to update workers on changes in radiological work conditions.

Contamination and Radioactive Material Control

The inspectors observed locations where Exelon monitors potentially contaminated material leaving the radiologically controlled area (RCA), and inspected the methods used for control, survey, and release from the RCA. The inspectors observed the performance of personnel surveying and releasing material for unrestricted use to verify that the work was performed in accordance with plant procedures. The inspectors reviewed the procedures to ensure that they were sufficient to control the spread of contamination and prevent unintended release of radioactive materials from the site. The inspectors evaluated the radiation monitoring instrumentation sensitivity to verify that it was adequate for the types of radiation present.

The inspectors reviewed Exelon's criteria for the survey and release of potentially contaminated material. The inspectors verified that there was guidance on how to respond to an alarm that indicates the presence of radioactive material.

The inspectors reviewed procedures and records to verify that the radiation detection instrumentation was used at an appropriate sensitivity level based on observed background parameters in the counting area. The inspectors ensured that application of alarm setpoints was based on the instrument's sensitivity. The inspectors also discussed alarm setpoints and typical detection capabilities with licensee personnel.

The inspectors selected a sample of sealed sources, those presenting the greatest radiological risk, from Exelon's inventory records and verified that the sources were accounted for and have been verified to be intact. The inspectors discussed any transactions involving nationally tracked sources to evaluate reporting in accordance with 10 CFR 20.2207.

Radiological Hazards Control and Work Coverage

The inspectors toured the facility and reviewed ongoing work and evaluated ambient radiological conditions (e.g., actual or potential radiation levels or airborne radioactivity levels). The inspectors verified the existing conditions were consistent with posted surveys, RWPs, and worker briefings.

The inspectors observed ongoing work activities and verified the adequacy of radiological controls, such as required surveys (including system breach radiation, contamination, and airborne surveys), radiation protection job coverage (including audio and visual surveillance for remote job coverage), and contamination controls. The inspectors evaluated Exelon's use of electronic personnel dosimeters (EPDs) in high noise areas as HRA monitoring devices (e.g., use of teledosimetry).

The inspectors verified that radiation monitoring devices (thermoluminescent dosimeters (TLD)) were placed on the monitored individual's body consistent with the method that Exelon was employing, to monitor dose from external radiation sources. The inspectors verified, by direct observation, that the dosimeters were placed in the location of highest expected dose. As part of this review, the inspectors reviewed the use of dosimetry to effectively monitor exposure to personnel in high-radiation work areas with significant dose rate gradients.

The inspectors reviewed three radiation work permits for work within potential airborne radioactivity areas with the potential for individual worker internal exposures. The inspectors evaluated airborne radioactive controls and monitoring, including potentials for significant airborne levels (e.g., grinding, grit blasting, system breaches, entry into tanks, cubicles, reactor cavities). The inspectors reviewed system breech activities including use of local ventilation system and respiratory protection equipment to minimize airborne radioactive exposure.

The inspectors observed ongoing work activities within flooded pools and examined Exelon's physical and programmatic controls for highly activated or contaminated materials (nonfuel) stored within storage pools. The inspectors verified that appropriate controls (i.e., administrative and physical controls) were in place to preclude inadvertent removal of these materials from the pool.

The inspectors conducted inspection of posting and physical controls for HRAs and Very High Radiation Areas (VHRA), to the extent necessary to verify conformance with the Occupational PI. The inspectors evaluated reduction in controls of areas (e.g., changing posting of areas from HRAs to Radiation Areas).

Risk-Significant High Radiation Area and Very High Radiation Area Controls

The inspectors discussed with the Radiation Protection Manager (RPM), the controls and procedures for high-risk HRAs and VHRAs and any procedural changes since the last inspection. The inspectors discussed methods employed by Exelon to provide stricter control of VHRA access including potential reduction in the effectiveness and level of worker protection (e.g., use of lock boxes).

The inspectors discussed with health physics supervisors, controls for special areas that had the potential to become VHRAs during certain plant operations including controls to ensure that an individual was not able to gain unauthorized access to the VHRA.

Radiation Worker Performance

The inspectors observed radiation worker performance with respect to stated radiation protection work requirements to determine if performance reflected the level of radiological hazards present. The inspectors interviewed numerous workers conducting work activities in the radiological controlled area to determine if workers were aware of the radiological conditions in their workplace and the RWP controls/limits in place.

The inspectors reviewed at least ten radiological problem reports since the last inspection to identify human performance errors and determine if there were any observable patterns. The inspectors discussed corrective actions for identified concerns with licensee personnel.

Radiation Protection Technician Proficiency

The inspectors observed the performance of radiation protection technicians with respect to radiation protection work requirements to determine if technicians were aware of the radiological conditions in their workplace and the RWP controls/limits and if their performance was consistent with their training and qualifications with respect to the radiological hazards and work activities.

The inspectors reviewed outage radiological problem reports to identify those that indicate the cause of the event to be radiation protection technician error and to evaluate the corrective action approach taken by Exelon to resolve the reported problems.

b. Findings

No findings were identified.

RS02 Occupational ALARA Planning and Controls (71124.02)

a. Inspection Scope

The inspectors reviewed Exelon's performance, in the below identified areas, with respect to maintaining individual and collective radiation exposure ALARA.

Inspection Planning

The inspectors reviewed pertinent information regarding plant collective exposure history, current exposure trends, and ongoing or planned activities in order to assess current performance and exposure challenges. The inspectors determined the plant's 3-year rolling average collective exposure.

The inspectors determined the site-specific trends in collective exposures using various methods such as plant historical data, including outage work dose based on task, evaluation of ALARA data, and licensee source term data.

The inspectors reviewed site-specific procedures associated with maintaining occupational exposures ALARA including the processes used to estimate and track exposures from specific work activities.

Radiological Work Planning

The inspectors obtained from Exelon a list of work activities ranked by actual or estimated exposure that were planned or in progress and selected work activities of the highest exposure significance. These included reactor disassembly, control rod drive work, scaffolding, torus diving, and valve work.

The inspectors reviewed the ALARA work activity evaluations, exposure estimates, and exposure mitigation requirements. The inspectors determined if Exelon reasonably grouped the radiological work into work activities, based on historical precedence, industry norms, and/or special circumstances.

The inspectors determined if Exelon's planning identified appropriate dose mitigation features; considered, commensurate with the risk of the work activity, alternate mitigation features; and defined reasonable dose goals. As applicable, the inspectors verified that Exelon's ALARA assessment had taken into account decreased worker efficiency from use of respiratory protective devices.

The inspectors determined if Exelon's work planning considered the use of remote technologies (such as teledosimetry, remote visual monitoring, or robotics) as a means to reduce dose and the use of dose reduction insights from industry operating experience and plant-specific lessons learned. The inspectors verified the integration of ALARA requirements into work procedure and radiation work permit (RWP) documents.

The inspectors compared accrued results achieved (person-rem), with the intended dose established in Exelon's ALARA planning for work activities that exceeded 5 person-rem aggregate dose. The inspectors determined the reasons for any inconsistencies between intended and actual work activity doses, as accrued. The inspectors discussed aggregate exposure sustained during the 1R23 outage as compared to established pre-outage goals.

Verification of Dose Estimates and Exposure Tracking Systems

The inspectors selected at least five ALARA work packages and reviewed the assumptions and bases for the collective exposure estimate for reasonable accuracy. The inspectors reviewed applicable procedures to determine the methodology for estimating exposures from specific work activities and the intended dose outcome. The inspectors also reviewed approvals by the station ALARA committee.

The inspectors verified, for the selected work activities, that Exelon established measures to track, trend, and if necessary to reduce, occupational doses for ongoing work activities including criteria to prompt additional reviews and/or controls. The inspectors evaluated the adequacy of Exelon's method of adjusting exposure estimates when unexpected changes in scope or emergent work are encountered.

Source Term Reduction and Control

The inspectors used licensee records to determine the historical trends and current status of significant tracked plant source terms known to contribute to elevated facility aggregate exposure. The inspectors discussed source term mitigation with licensee staff and reviewed the stations Five-Year ALARA plan. The inspectors discussed contingency plans for potential changes in the source term as the result of changes in plant fuel performance issues or changes in plant primary chemistry.

Radiation Worker and Radiation Protection Technician Performance

The inspectors observed both radiation worker and radiation protection technician performance during work activities being performed in radiation areas, airborne radioactivity areas, or high radiation areas. The inspectors determined if workers demonstrated the ALARA philosophy in practice and whether there were any procedure compliance issues. The inspectors observed performance to determine whether the training and skill level were sufficient with respect to the radiological hazards and the work involved.

b. Findings

No findings were identified.

RS03 In-Plant Airborne Radioactivity Control and Mitigation (71124.03)

a. Inspection Scope

The inspectors assessed Exelon's performance associated with efforts to limit generation and minimization of occupational intake of airborne radioactive material.

Inspection Planning

The inspectors reviewed the UFSAR to identify areas of the plant designed as potential airborne radiation areas and any associated ventilation systems or airborne monitoring instrumentation. The inspectors also reviewed the UFSAR for overview of respiratory protection program and a description of the types of devices used.

The inspectors reviewed Exelon's procedures for maintenance, inspection, and use of respiratory protection equipment including procedures for air quality maintenance. The inspectors directly observed and evaluated the use of respiratory protection equipment during ongoing work activities.

The inspectors reviewed the reported Occupational Performance Indicators to identify any related to unintended dose resulting from intakes of radioactive materials.

Engineering Controls

The inspectors evaluated Exelon's use of ventilation systems as part of its engineering controls to control airborne radioactivity. The inspectors discussed procedural guidance for use of installed plant systems to verify system use, to the extent practicable, during high-risk activities. The inspectors discussed verification of plant ventilation systems during reactor cavity work.

The inspectors reviewed installed ventilation systems used to mitigate the potential for airborne radioactivity. The inspectors discussed use of installed systems during work activities associated with reactor cavity work.

The inspectors selected two temporary ventilation system setups (high efficiency particulate absolute) filters to support work in contaminated areas. The inspectors discussed the use of these systems with respect to procedural guidance and ALARA.

The inspectors selected installed systems to monitor and warn of changing airborne concentrations in the plant. The inspectors evaluated the alarms and setpoints to prompt licensee/worker action to ensure that doses are maintained within the limits of 10 CFR Part 20 and ALARA. The inspectors observed monitoring of ambient conditions.

The inspectors evaluated that licensee's use of trigger points for evaluating levels of hard-to detect airborne radionuclides.

Use of Respiratory Protection Devices

The inspectors evaluated Exelon's use of respiratory protection devices to maintain occupational doses ALARA. The inspectors selected work activities where respiratory protection devices were used (e.g., control rod drive removal, grit blasting) to limit the intake of radioactive materials, and evaluated the use of respirators. The inspectors evaluated Exelon's means to verify that the level of protection (protection factor) provided by the respiratory protection devices during use was at least as good as that assumed in Exelon's work controls and dose assessment.

The inspectors evaluated the use of certified equipment (respiratory protection devices) to limit the intake of radioactive materials and evaluated that the devices were used consistent with their NIOSH/MSHA certification or any conditions of their NRC approval.

The inspectors reviewed records of air testing for supplied-air devices to verify that air used in these devices meets or exceeded appropriate quality. The inspectors evaluated the breathing air supply systems against the minimum pressure and airflow requirements for the devices in use.

The inspectors selected individuals qualified to use respiratory protection devices, and verified that they have been deemed qualified to use the devices.

The inspectors observed individuals assigned to wear a respiratory protection device and observed them donning and functionally checking the device as appropriate. The inspectors discussed their use of the devices including how to properly respond to any device malfunction or unusual occurrence.

b. Findings

No findings were identified.

RS04 Occupational Dose Assessment (71124.04)

a. Inspection Scope

The inspectors evaluated Exelon's occupational dose assessment program to assess the accuracy and effectiveness of Exelon's ability to measure occupational dose, including internal dose.

Inspection Planning

The inspectors reviewed the results of available radiation protection program audits related to internal and external dosimetry to gain insights into overall licensee performance in the area of dose assessment.

The inspectors reviewed Exelon's current National Voluntary Laboratory Accreditation Program (NVLAP) accreditation report for Exelon personnel dosimetry.

The inspectors reviewed licensee procedures associated with dosimetry operations, including issuance/use of external dosimetry (routine, multi-badging, extremity, neutron,

etc.), and assessment of internal dose. The inspectors evaluated procedure guidance for personnel monitoring.

External Dosimetry

The inspectors evaluated the use of Exelon's personnel dosimeters that require processing, to determine if they were NVLAP accredited. The inspectors determined if Exelon uses a "correction factor" to address the response of the electronic dosimeter (ED) as compared to its TLD for situations when the ED must be used to assign dose.

Internal Dosimetry

The inspectors reviewed routine bioassay (in vivo) procedures used to assess dose from internally deposited nuclides using whole body counting equipment. The inspectors determined if the procedures address methods for determining if an individual is internally or externally contaminated, the release of contaminated individuals, the determination of entry route (ingestion, inhalation), and assignment of dose.

The inspectors evaluated the minimum detectable activity (MDA) of Exelon's instrumentation used for passive whole body counting to determine if the MDA was adequate to determine the potential for internally deposited radionuclides sufficient to prompt additional investigation.

Special Dosimetric Situations

The inspectors reviewed Exelon's program to inform workers of the risks of radiation exposure to the embryo/fetus, the regulatory aspects of declaring a pregnancy, and the specific process to be used for (voluntarily) declaring a pregnancy.

The inspectors reviewed Exelon's methodology for monitoring external dose in situations in which non-uniform fields are expected or large dose gradients could exist (e.g., diving activities, valve work) to verify that Exelon established criteria for determining when alternate monitoring techniques (i.e., use of multi-badging or determination of effective dose equivalent for external exposures using an approved method) were to be implemented.

b. Findings

No findings were identified.

RS05 Radiation Monitoring Instrumentation (71122.05)

a. Inspection Scope

The inspectors evaluated Exelon's radiation monitoring instrumentation to assess the performance of Exelon in ensuring the accuracy and operability of radiation monitoring instruments.

Inspection Planning

The inspectors reviewed the UFSAR to identify radiation instruments associated with monitoring area radiological conditions including airborne radioactivity, process streams, effluents, materials/articles, and workers.

The inspectors obtained a listing of in-service survey instrumentation including air samplers and small article monitors (SAMs), along with instruments used for detecting and analyzing workers' external contamination (personnel contamination monitors (PCMs)) and workers' internal contamination (portal monitors (PMs), whole body counters (WBCs)), including neutron monitoring instrumentation to determine whether an adequate number and type of instruments are available to support operations.

The inspectors obtained and reviewed copies of licensee and third-party (independent) evaluation reports of the radiation monitoring program since the last inspection, including audits of Exelon's offsite calibration facility and reviewed the reports for insights into Exelon's program.

The inspectors reviewed procedures that govern instrument source checks and calibrations. The inspectors review the calibration and source check procedures for adequacy. The inspectors reviewed calibration records and source checks for contamination monitoring instruments.

Walkdowns and Observations

The inspectors walked down the stack monitoring system, to verify that effluent/process monitor configurations align with ODCM descriptions. The inspectors looked for monitor degradation and/or out-of-service tags.

The inspectors selected at least five portable survey instruments in use or available for issuance and checked calibration and source check stickers for currency, and to assess instrument material condition and operability. The inspectors evaluated instrumentation in use within the radiological controlled area to validate current calibration and source checking. The inspectors reviewed source checking of different types of portable survey instruments.

The inspectors walked down five area radiation monitors, including portable area monitors, and continuous air monitors (CAMs) to determine whether they were appropriately positioned relative to the radiation source or area they were intended to monitor. The inspectors compared monitor response (via local or remote indication) with actual area conditions for consistency. The inspectors evaluated instrumentation in-place on the refueling bridge and work platforms.

The inspectors selected PCMs, PMs, and SAMs and verified that the periodic source checks were performed in accordance with licensee procedures. The inspectors reviewed alarm set-point data for various personnel and equipment monitors at three radiological controlled area exits to verify that the alarm set-point values were reasonable under the circumstances to ensure that licensed material was not released from the radiological controlled area.

Calibration and Check Sources

The inspectors reviewed Exelon's latest 10 CFR Part 61 source term to determine if the calibration sources used were representative of the types and energies of radiation encountered in the plant.

b. Findings

No findings were identified.

Cornerstone: Public Radiation Safety (PS)

RS06 Radioactive Gaseous and Liquid Effluent Treatment (71124.06)

a. Inspection Scope

The inspectors reviewed aspects of Exelon's gaseous and liquid effluent control program in the below listed areas.

(Note: Exelon identified operability issues with the Plant Stack Monitor in April 2010. This issue was previously reviewed and discussed in NRC Inspection Report 05000219/2010003, dated August 9, 2010 (ADAMS ML102210111). See Section 4OA5 for a discussion of this issue.)

Event Report and Effluent Report Reviews

The inspectors reviewed the 2006, 2007, 2008, and 2009 Annual Radiological Effluent Release Reports. The inspectors determined if the reports were submitted as required by the ODCM/Technical Specifications. The inspectors reviewed the reports for anomalous results, unexpected trends or abnormal releases identified by Exelon for further inspection to determine if they were evaluated, were entered in the corrective action program, and were adequately resolved.

The inspectors reviewed the Radiological Effluent Release reports to Identify radioactive effluent monitor operability issues reported by Exelon as provided in effluent release reports. The inspectors reviewed these issues during the onsite inspection, as warranted, given their relative significance. The inspectors determined if the issues were entered into the corrective action program and adequately resolved.

ODCM and UFSAR Reviews

The inspectors reviewed the UFSAR descriptions of the radioactive effluent monitoring systems, treatment systems, and effluent flow paths during inspection walk-downs.

The inspectors reviewed changes to the ODCM made by Exelon since the last inspection, to review the technical basis or evaluations of the change and to determine whether they were technically justified and maintained effluent releases ALARA.

Groundwater Protection Initiative (GPI) Program

The inspectors reviewed reported groundwater monitoring results, and changes to the program for identifying and controlling contaminated spills/leaks to groundwater.

The inspectors reviewed Exelon's evaluations and program to provide for release of tritiated groundwater associated with its remediation of tritium groundwater. The inspectors reviewed changes made to the ODCM to support this activity. The inspectors reviewed projected dose calculations with respect to guidance contained in NRC Regulatory Guide 1.109. As part of this review, the inspectors walked-down the pumping system at the intake, used for the groundwater remediation effort.

Procedures, Special Reports & Other Documents

The inspectors reviewed LERs, event reports and special reports related to the effluent program issued since the previous inspection. The inspectors reviewed these documents to identify any additional focus areas for the inspection based on the scope/breadth of problems described in these reports.

Walkdowns and Observations

The inspectors determined if Exelon made any significant changes to its effluent release points, e.g., changes subject to a 10 CFR 50.59 review or requiring NRC approval of alternate discharge points.

Sampling and Analyses

The inspectors determined if Exelon was routinely relying on the use of compensatory sampling in lieu of adequate system maintenance.

Effluent Flow Measuring Instruments

The inspectors reviewed the methodology used to determine the effluent stack and plant vent flow rates.

Problem Identification and Resolution

The inspectors reviewed problems associated with the effluent monitoring and control program to determine if they were identified by Exelon at an appropriate threshold and were properly addressed for resolution in the corrective action program. (See Section 4OA2)

b. Findings

No findings were identified.

4. OTHER ACTIVITIES [OA]

4OA1 Performance Indicator Verification (71151)

a. Inspection Scope (7 samples)

.1 Occupational Exposure Control Effectiveness (1 Sample)

a. Inspection Scope (71151)

The inspectors reviewed Exelon's program to gather, evaluate, and report information on the occupational exposure control effectiveness performance indicator (PI). The inspectors used the guidance provided in Nuclear Energy Institute (NEI) 99-02, Revision 6, "Regulatory Assessment Performance Indicator Guideline" to assess the accuracy of Exelon's collection and reporting of PI data. The inspectors reviewed corrective action program records for occurrences involving High Radiation Areas, Very High Radiation Areas, and unplanned personnel radiation exposures since the last inspection in this area. The purpose of this review was to verify that occurrences that met NEI criteria were recognized and identified as Performance Indicators.

b. Findings

No findings were identified.

.2 RETS/ODCM Radiological Effluent Occurrences (1 Sample)

a. Inspection Scope (71151)

The inspectors reviewed Exelon's program to gather, evaluate, and report information on the radiological effluents technical specification/offsite dose calculation manual (RETS/ODCM) PI. The inspectors used the guidance provided in NEI 99-02 to assess the accuracy of Exelon's collection and reporting of PI data. The inspectors reviewed corrective action program records and projected monthly and quarterly dose assessment results due to radioactive liquid and gaseous effluent releases for the past four complete quarters. The purpose of this review was to verify that occurrences that met NEI criteria were recognized and identified as Performance Indicators. As part of this review, the inspectors also reviewed Exelon's evaluations and public dose assessments associated with identification of localized ground water contamination within the restricted area.

b. Findings

No findings were identified.

.3 Mitigating Systems Performance Indicators (5 samples)

The inspectors reviewed Exelon's program to gather, evaluate, and report information on five PIs associated with the mitigating systems performance index (MSPI). The inspectors used the guidance provided in NEI 99-02 to assess the accuracy of Exelon's collection and reporting of PI data. The inspectors reviewed operating logs and corrective action program condition reports. The inspectors verified the accuracy and completeness of the reported data from October 1, 2009 through September 30, 2010 for the following PIs:

- Emergency AC power system;
- High pressure injection system;
- Heat removal system;
- Residual heat removal system; and
- Cooling water systems.

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

b. Findings

No findings were identified.

4OA2 Identification and Resolution of Problems (71152)

.1 Review of Items Entered Into the Corrective Action Program

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

.2 Semi-Annual Review to Identify Trends

a. Inspection Scope (1 sample)

The inspectors performed one semi-annual trend review. The inspectors reviewed Exelon's corrective action program documents to identify trends that could indicate the existence of a more significant safety issue. The inspectors also performed a walkdown of equipment important to safety to ensure issues were being properly identified and corrected in the corrective action program. The inspectors review was focused on repetitive equipment problems, human performance issues, and program implementation issues. The results of the trend review by the inspectors were compared with the results of normal baseline inspections. The review included issues documented outside the normal corrective action system, such as in system health reports and Oyster Creek monthly management reports. The review considered a six-month period of June through December 2010.

b. Assessment and Observations

No findings were identified.

.3 Annual Sample Review

a. Inspection Scope (1 Operator Work Around and 1 annual sample)

The inspectors reviewed Exelon's evaluation and corrective actions associated with the following two issues. Documents reviewed for these inspection activities are listed in the Supplemental Information attachment to this report.

Operator Work-Arounds (Cumulative Review). The inspectors reviewed equipment issues that Exelon identified as operator work-arounds (OWA) or operator challenges. The inspectors verified that the OWAs were being properly controlled as specified by OP-AA-102-103, "Operator Work-Around Program." The inspectors assessed the cumulative impact of the identified OWAs, operator challenges, and control room deficiencies by performing a detailed document review and interviewing operations

personnel during the week of December 15. In addition, the inspectors conducted a walkdown of the main control room and risk significant plant areas to determine if these deficiencies adversely affected the ability of operations personnel to implement emergency operating procedures or respond to plant transients.

Torus Vacuum Breaker V-26-18 O-Ring Missing. The inspectors reviewed Exelon's evaluation and corrective actions associated with the torus vacuum breaker V-26-18 actuator o-ring missing (IR 1142958). Exelon noted an air leak on the piston actuator for the reactor building to torus vacuum breaker air actuator during the last run cycle. When Exelon performed corrective maintenance on the actuator during the 1R23 outage, maintenance personnel noted the o-ring was missing on the cylinder flange. Exelon rebuilt the actuator with a correctly installed o-ring under work order C2024491. The inspectors reviewed relevant corrective action program condition reports to ensure that the full extent of the issue was identified, appropriate evaluations were performed, and corrective actions were specified and prioritized.

b. Findings and Observations

No findings were identified.

.4 Problem Identification and Resolution for Inservice Inspection (71111.08)

a. Inspection Scope

The inspectors reviewed a sample of corrective action reports that identified nonconforming conditions discovered during the most recent and previous refueling outages. The inspectors verified that flaws and other nonconforming conditions identified during nondestructive testing were reported, characterized, evaluated and appropriately dispositioned for continued operation or for repair or replacement.

b. Findings

No findings were identified.

.5 Problem Identification and Resolution for Radiation Protection Inspections (71153, 71124.01, 71124.02, 71124.03, 71124.04, 71124.05, 71124.06, 60855.1)

a. Inspection Scope

The inspectors reviewed a sample of corrective action documents to determine if identified problems were entered into the corrective action program for resolution and to evaluate Exelon's threshold for entering issues into the program. The review included a check for possible repetitive issues, such as radiation worker or radiation protection technician errors. The inspectors also reviewed recent audits and assessments to ensure that identified issues were entered into the corrective action program.

b. Findings

No findings were identified.

4OA3 Event Followup (71153) (7 samples)

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

.1 Ground Water (Pipe Vault #1)

a. Inspection Scope (71153, 71124.06)

On May 14, 2010 Exelon notified the NRC and the State of New Jersey of the identification of tritiated water, measuring about 18,000 pCi/l, in pipe vault #1. The estimated quantity of water was approximately 2,000 to 3,000 gallons which was pumped into a tank for processing. The pipe vault is located on the southeast corner of the Reactor Building and was being entered and inspected as part of Exelon's buried pipe remediation program. This issue was initially discussed in NRC quarterly inspection report 05000219/2010003, dated August 9, 2010 (ADAMS ML102210111).

As part of the review at that time, the inspectors performed walkdowns of the area and entered the vault to review material conditions. The inspectors confirmed that, prior to the 2008 outage, the isolation condensers (IC) were filled from the condensate storage tank, which contains tritiated water. During the 2008 refueling outage, Exelon installed a demineralized water system to provide a non-tritiated water source for the ICs and serves as the preferred source of filling the ICs to maintain system water levels. Although the condensate storage tank and fire main continue to be the credited sources of IC shell side fill water for the licensing basis, Exelon's preferential use of the demineralized water system will minimize future tritium releases during use of the ICs.

The inspectors conducted a follow-up review as to the source of the tritium in pipe vault #1. The inspectors interviewed Exelon personnel and evaluated the likely causes of tritium. The inspectors walked down the area near the vault to identify likely sources. The inspectors reviewed the following items:

- Latest radiological data, including well samples from newly installed wells;
- Efforts to radiological characterization of area;
- Exelon's failure modes analysis (FMA);
- Inspection results of potential piping sources in the area including determination of likely sources;
- Assessments as to the source of the tritium;
- Records of the site characterization of geology and hydrology;
- Systems, structures, and/or components that contain or could contain licensed material in the area;
- Evaluations of work practices that involved licensed material for which there is a credible mechanism for the licensed material to reach the groundwater at that location;
- Implementation of the onsite groundwater monitoring program;
- Records of leaks and spills;
- Dose projections available;
- Disposition of water; and
- Reporting and notification records.

Exelon's evaluation determined that the source of the tritium identified in the water found in pipe vault #1 was from local tritiated steam condensate deposition associated with actuation of the ICs in July 2007. No other credible source of the tritium was identified through the Exelon's failure modes analysis, evaluation and inspection of the condition of underground piping, or evaluation of well sample results for the wells surrounding and in the vicinity of pipe vault #1. The evaluation of well data included that from new wells installed in the vicinity of pipe vault #1. Exelon conducted dose projections associated with the releases and did not identify any significant public or occupational dose impact.

b. Findings

No findings were identified.

.2 RAGEMS Monitoring

a. Inspection Scope (71153, 71124.06)

On April 7, Exelon technicians ascending the plant ventilation stack identified that the stack radioactive effluent sample line of the radioactive gaseous effluent monitoring system (RAGEMS) was disconnected at a pipe union at about the 260 foot elevation of the stack. The sample line was found to be displaced laterally resulting in the interruption of the sample flow path. The stack sample line is used to deliver a continuous sample of stack effluents to the RAGEMS located in the RAGEMS Building at the base of the stack. The technician who discovered the piping discontinuity reconnected the fitting. Subsequent Exelon investigation identified that three sample line unions had failed in the line to varying degrees. Two were found disconnected and the third was loose. The RAGEMS system had been declared inoperable on April 7, to support the flow transmitter work. Exelon evaluated reportability and subsequently made a 10 CFR 50.72 notification (ENS 45824) on April 8.

The inspectors reviewed the circumstances surrounding the issue, the duration of the condition, and public dose projection implications of the condition. The inspectors reviewed Exelon's root cause investigation as well as bounding dose reconstruction. The review was with respect to 10 CFR 20, 10 CFR 50, the station TSs, and the ODCM.

(Note: This issue was initially reviewed and discussed in NRC quarterly inspection report 05000219/2010003, dated August 9, 2010 (ADAMS ML102210111). Both the reportability aspects of this issue as well as the emergency preparedness (EP) aspects were reviewed and evaluated during that NRC inspection. Preliminary assessment of the public dose impact of this issue was also reviewed during that inspection which indicated no public doses in excess of 10 CFR 50, Appendix I, ALARA design specifications were exceeded.)

During this inspection, the inspectors reviewed Exelon's dose assessment in regards to the maximum projected doses during the time period that the RAGEMS was in a degraded condition. The inspectors also reviewed secondary effluent controls contained within the Radioactive Effluents Control Program, including monitoring systems, sampling, coolant monitoring, and environmental monitoring to provide secondary controls on radioactive effluents and control of doses to the public. The inspectors also reviewed bounding dose calculations associated with effluent release conditions considering secondary controls and/or monitoring systems.

As part of this review, the inspectors evaluated: potential release paths, projected source terms, projected doses, bounding sources terms and controls, to determine if during the time period of degraded monitor performance, with the existing source term, 10 CFR 50, Appendix I doses were exceed or likely exceeded. The inspectors also evaluated potential projected doses, assuming a less favorable source term and use of secondary controls, to limit doses to the public to 10 CFR 50, Appendix I ALARA design specifications.

The inspectors also confirmed that Exelon conformed to the requirements of TSs related to the protective instrumentation specifications pertaining to the off-gas system radiation monitoring functions.

b. Findings

Introduction: A Green, self-revealing NCV of Technical Specification 6.8.4 occurred when Exelon failed to maintain continuous representative sampling of plant stack radioactive gaseous effluents. Specifically, Exelon did not fully conduct monitoring and sampling of stack gaseous effluents in accordance with the methodology in the ODCM, as required by TS 6.8.4.

Description: Effluents from the plant stack are principally monitored and sampled by the installed stack radioactive gaseous effluent monitoring system (RAGEMS). This monitoring system is described in the UFSAR and the system provides for on-line noble gas monitoring as well as continuous particulate and iodine sampling and the collection of tritium samples. The RAGEMS system provides for monitoring and sampling of combined ventilation system inputs from various plant ventilated spaces including the reactor building, off-gas system, turbine building, and radwaste facilities. The stack effluent sample line runs down the stack and is used to deliver a sample to the stack RAGEMS sample and monitoring system located in the RAGEMS Building at the base of the stack. The station has secondary controls in-place (e.g., off-gas monitoring, source term analysis and monitoring, in-plant monitoring, bounding analyses and controls) to alert plant staff to changes in release rates and source term. In addition, the station's environmental monitoring program provides secondary checks of the efficacy of the effluents program.

Exelon's root cause analysis identified that the stack monitoring system showed very slight declining performance beginning as early as March 2006. This declining performance was evidenced by a very gradual decline in live-time radioactivity count rate for the stack gas channel. Further, the stack monitor gas channel computer trace showed decreasing gas channel count rates associated with occasional off-gas system outages as compared to earlier traces. Exelon's post identification review concluded that its secondary effluent program monitoring capabilities provided for sufficient detection of changes in source term and release rates to ensure conformance with 10 CFR 50 Appendix I ALARA design values.

TS 6.8.4 requires that Exelon conduct, in-part, monitoring and sampling of radioactive gaseous effluent in accordance with the methodology and parameters in the ODCM. The ODCM specifies in section 4.11.2, that the effluent doses shall be determined by obtaining representative samples. The ODCM also specifies in section 4.11.2 that noble gas radionuclides in gaseous effluents may be identified by taking a grab sample and analyzing it using criteria specified. Table 4.11.2.1.2-1 requires that the sampling be

continuous and that the noble gases be monitored continuously with a noble gas monitor. Since the same sample line also provides the stack effluent sample for grab sampling, this capability also degraded over time and was eventually lost due to loss of line integrity.

Exelon's root cause analysis indicated the RAGEMS stack effluent system did not collect a fully representative sample of the effluents due to the sample line integrity issue. Based on data analysis, Exelon concluded the initial degradation of integrity occurred in or about March 2006.

Exelon conducted a multi-faceted re-analysis of projected releases and offsite doses. Exelon conducted bounding dose analyses to estimate potential public dose consequences during the period of sample line degradation, evaluated reactor coolant history, and normalized stack releases using post-system restoration data. Exelon also reviewed environmental sample data, including ambient radiation levels and particulate and iodine environmental sample station data and did not identify any indication that elevated releases occurred during periods of potential degradation of the sampling capability. Exelon evaluated in-plant work activities during the period to identify any potential airborne events. Exelon also evaluated fuel integrity, coolant concentrations, leak rates, and dose consequences associated with potential changes thereto. Exelon concluded that the degradation of the stack effluent sample line did not result nor was likely to result in any member of the public exceeding applicable 10 CFR 50, Appendix I, ALARA design specifications.

Exelon's failure analysis indicated the degradation of sample line integrity was due to improper line connection assembly in conjunction with with sample line weight stress. Exelon repaired the connections and installed tube supports to support the sample line and to prevent wind induced motion of the line causing stress at the fittings. Exelon declared the stack RAGEMS system (including the sample line) operable on April 20, after conducting a satisfactory leak check of the sample line.

Exelon's root cause analysis identified that procedures for conduct of review of data from actual samples and quality control activities for reasonableness and consistency were not sufficient to critically review and evaluate the stack sample data. The need for such data reviews is specified in Regulatory Guide 4.15, Rev. 1, which is incorporated by reference into the TS for effluent monitoring.

Analysis: Exelon did not fully monitor or collect representative samples of plant stack effluents, as required by TS 6.8.4 and the ODCM during the period between March 2006 and March 2010 as a result of sample line integrity issues. The failure to monitor or collect representative samples of the plant stack effluent was reasonably within Exelon's ability to foresee and should have been prevented.

This finding was not willful and did not involve a violation that impacted the regulatory process or contribute to an actual safety consequence. The finding is more than minor because it is associated with the plant facilities, equipment, and instrumentation attribute of the Public Radiation Safety Cornerstone and adversely impacted the objective of ensuring adequate protection of public health and safety from exposure to radioactive materials released into the public domain. Specifically, during the period March 2006 through at least March 2010, stack monitoring and sampling degraded over time due to sample line integrity issues. Following identification, Exelon initiated an enhanced

compensatory monitoring program, repaired the cause of the non-representative sampling, and entered this issue, including the evaluation of extent-of-condition, into the corrective action program. This finding was assessed using IMC 0609, Appendix D, and determined to be of very low safety significance (Green) because: the issue was contrary to Exelon's TSs and is a radioactive effluent release program deficiency; there was no spill; secondary radioactive effluent monitoring and control program elements provided for control of effluents releases. In addition, Exelon was able to assess the dose to members of the public from routine releases and determined that projected doses did not nor were likely to exceed applicable limits including ALARA design specifications of 10 CFR 50, Appendix I. Exelon's review of environmental radiation monitoring data, during the period of sample line degradation, did not identify any adverse effect or delectable activity in the environment attributable to the condition.

The inspectors' independent review of Exelon's data, assessment, dose projections, and source term, indicated that both pre-and post correction assessment public doses were a small fraction of the 10 CFR 50, Appendix I ALARA dose specifications. The inspectors identified that during the period, fuel integrity remained high, there were no abnormal releases, principal radioactive effluent reduction equipment (e.g., augmented off-gas system) were maintained operable to reduce effluents, and secondary controls contained in Exelon's effluent program and source term monitoring provided for characterization and control of effluents to ensure conformance with 10 CFR 50 Appendix I. Exelon plans to provide updated effluent release and dose reports, as necessary, to reflect revised analyses.

The cause of this finding is related to the crosscutting area of human performance, resources aspect (H.2(c)) because procedures for conduct of review of data from actual samples and quality control activities for reasonableness and consistency were not sufficient to recognize deficiencies (e.g., detect degradation of sampling capabilities).

Enforcement: TS 6.8.4 requires Exelon to conduct, in-part, monitoring and sampling of radioactive gaseous effluent in accordance with the methodology and parameters in the ODCM. The ODCM specifies in Section 4.11.2 that, for purposes of determining public dose rates to be within the limits specified therein, the doses due to iodine-131, iodine-133, tritium, and all radionuclides, in particulate form, with half-lives greater than 8 days in gaseous effluents shall be determined by obtaining representative samples. The ODCM also specifies in section 4.11.2 that noble gas radionuclides in gaseous effluents may be identified by taking a grab sample and analyzing it using criteria specified therein. In addition, section 2.4 of the ODCM specifies that the quantity of noble gases released will be determined from the continuous noble gas monitor and periodic isotopic analyses.

Contrary to these requirements, Exelon failed to conduct representative monitoring and sampling of noble gasses, iodine, particulates, and tritium during the period March 2006 through at least March 2010, due to degradation in stack effluent sampling line integrity. Exelon initiated compensatory monitoring, repaired the cause of the non-representative sampling, and entered this issue, including the evaluation of extent-of-condition, into the corrective action program (IR 01053577). Because this finding is of very low safety significance, and because it was entered into Exelon's corrective action program (IR 01053577), this violation is being treated as an NCV, consistent with the Enforcement Policy. **(NCV 05000219/2010005-02, Failure to Conduct Representative Sampling of Stack Effluents)**

.3 Loss of 4160V 1D Bus

a. Inspection Scope

On October 7, Exelon personnel were performing procedure 632.2.002, "Grid Undervoltage Channel Functional Test" when the 1D 4160V breaker tripped. As designed, the #2 emergency diesel generator (EDG) received a fast start signal, its output breaker closed, and the diesel powered the load from the 1D 4160V bus. Exelon later determined that the cause of the failure was a fault in the test equipment.

The inspectors verified that operations personnel responded in accordance with procedures and equipment responded as intended by reviewing the completed procedures, control room narrative logs, corrective action program condition reports, and through interviews of operations personnel. The inspectors also reviewed TS requirements to ensure that Oyster Creek was operated in accordance with its operating license. The inspectors performed a walkdown of the main control room panels and indications to verify equipment status and plant parameters. Exelon notified the NRC with an 8 hour report (ENS 46315) and submitted a licensee event report (LER 05000219/2010-001-00) for this event. The loss of the 4160V 1D bus is described and evaluated in corrective action program condition report IR 1123363.

.4 Unusual Event declared to Unidentified Leak Rate greater than 10 GPM

a. Inspection Scope

On December 1, control room operators responded to indications of an unidentified leak rate of approximately 17 GPM. The operators isolated the "B" recirculation loop due to indications that the leakage was from the "B" recirculation pump mechanical seal, which stopped the leak.

The inspectors responded to the control room following site announcement declaring an Unusual Event due to an Unidentified Leak Rate in excess of 10 GPM and observed the response of Exelon personnel to the event, including operator actions in the control room. At the time of the event, the inspectors verified that conditions met the entry criteria for an emergency action level (EAL) as described in the Oyster Creek EAL matrix. In addition, the inspectors reviewed 10 CFR 50.72, "Immediate Notification Requirements for Operating Nuclear Power Reactors," to verify that Exelon properly notified the NRC during the event. The inspectors also reviewed TS requirements to ensure that Oyster Creek operated in accordance with its operating license.

The inspectors reviewed plant process computer (PPC) data, control room logs, and discussed the event with Exelon personnel to gain an understanding of how operations personnel and plant equipment responded during the event. The inspectors evaluated Exelon's program and process associated with event response to ensure they adequately implemented station procedure OP-AA-106-101-1001, "Event Response Guidelines."

The Unusual Event is described and evaluated in corrective action program condition report IR 1147123.

b. Findings

No findings were identified.

.5 'A' Reactor Recirculation Pump Trip on December 18

a. Inspection Scope

On December 18, Oyster Creek experienced a trip of the 'A' recirculation pump. At the time, Oyster Creek was in four loop operation due to the previous failure of the "B" recirculation pump mechanical seal. Control room operators responded to several recirculation pump and motor generator set alarms and confirmed that the "A" recirculation pump had tripped. Oyster Creek performed simple troubleshooting and determined the pump tripped due to an electrical fault in the system, but could not isolate the location of the fault while at power. Exelon chose to remain at 55 percent power during initial troubleshooting while two of the recirculation loops were unavailable.

At the time of the event, the inspectors verified that conditions did not meet the entry criteria for an EAL as described in the Oyster Creek EAL matrix. In addition, the inspectors reviewed 10 CFR 50.72, "Immediate Notification Requirements for Operating Nuclear Power Reactors," to verify that Exelon properly notified the NRC during the event. The inspectors also reviewed TS requirements to ensure that Oyster Creek operated in accordance with its operating license.

The inspectors reviewed PPC data, control room logs, and discussed the event with Exelon personnel to gain an understanding of how operations personnel and plant equipment responded during the event. The inspectors evaluated Exelon's program and process associated with event response to ensure they adequately implemented station procedures OP-AA-108-114, "Post Transient Review" and OP-AA-106-101-1001, "Event Response Guidelines."

Exelon initiated an unplanned plant shutdown on December 19 to support a forced outage (1F26) to repair the "B" reactor recirculation pump mechanical seal and to continue electrical troubleshooting on the "A" reactor recirculation pump. This forced outage is described in detail in section 1R20.

b. Findings

No findings were identified.

.6 Automatic reactor scram during critical plant heatup on December 23

a. Inspection Scope

On December 23, operating personnel in control room responded to an automatic reactor scram.

The inspectors responded to the site after being informed of the event on December 23. At the time of the event, the inspectors verified that conditions did not meet the entry criteria for an EAL as described in the Oyster Creek EAL matrix. In addition, the inspectors reviewed 10 CFR 50.72, "Immediate Notification Requirements for Operating

Nuclear Power Reactors," to verify that Exelon properly notified the NRC during the event. The inspectors also reviewed TS requirements to ensure that Oyster Creek operated in accordance with its operating license.

The inspectors reviewed PPC data, control room logs, and discussed the event with Exelon personnel to gain an understanding of how operations personnel and plant equipment responded during the event. The inspectors evaluated Exelon's program and process associated with event response to ensure they adequately implemented station procedures OP-AA-108-114, "Post Transient Review" and OP-AA-106-101-1001, "Event Response Guidelines."

The inspectors observed the plant onsite review committee (PORC) meeting prior to plant startup to ensure Exelon identified the cause of the event and appropriately resolved issues identified during the event. The inspectors reviewed Exelon's prompt investigation (IR 1155520) to gain additional information pertaining to the event, and ensure that human performance and equipment issues were properly evaluated and understood prior to plant startup.

b. Findings

Introduction. A Green, self-revealing NCV of Technical Specification 6.8.1.a occurred when Exelon did not adequately implement plant startup procedures which resulted in an automatic reactor scram.

Description. On December 23, Exelon operators were performing a reactor startup following forced outage 1F26. The mode switch was in startup with the reactor power in range 9 of the intermediate range monitor (IRM) nuclear instrumentation. Reactor pressure was approximately 570 psig with main condenser vacuum at 24 inches Hg when both reactor protection systems (RPS) activated and the reactor received an automatic scram signal on low condenser vacuum.

The condenser low vacuum trip relay setpoint is 22 inches Hg while reactor pressure is above 600 psig. The automatic reset for the low vacuum trip relay is between 25 and 26 inches Hg. In order to ensure the low vacuum trip relay has reset, procedure 201, "Plant Startup", step 5.44.2, directs the operators to confirm that "all main condenser vacuum trips have cleared and all main condenser alarms have cleared prior" to exceeding 500 psig reactor pressure. Operators did not verify that condenser vacuum was adequate or that all main condenser vacuum trips had cleared, prior to raising reactor pressure above 500 psig.

Exelon's preliminary evaluation (IR 1155520) determined that operators had verified that the low vacuum turbine trips were reset, but did not verify that the main condenser low vacuum alarm and the RPS main condenser low vacuum alarms were clear prior to raising reactor pressure above 500 psig. Immediate corrective actions included just in time training with all reactor operators, increased management oversight during the startup, and procedural changes to list all alarms by name that must be cleared prior to raising reactor pressure above 500 psig. Exelon is performing a full root cause evaluation on the event (IR 1155520).

Analysis. Exelon's failure to implement procedure 201, "Plant Startup," is a performance deficiency that was reasonably within Exelon's ability to foresee and prevent. The

inspectors determined that the performance deficiency was similar to example 4b in IMC 0612, Appendix E, "Examples of Minor Issues," and is more than minor because the performance deficiency resulted in a plant transient.

Additionally, the finding was more than minor in accordance with IMC 0612, Appendix B, "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) because the finding did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available.

This finding has a cross-cutting aspect in the area of human performance, work practices (H.4(b)), where personnel work practices support human performance. Specifically, Exelon defines and effectively communicates expectations regarding procedural compliance and that personnel follow procedures. On December 23, operators did not verify that condenser vacuum was adequate nor that all main condenser vacuum trips had cleared prior to raising reactor pressure above 500 psig contrary to established procedural guidance.

Enforcement. TS 6.8.1a states, in part, that written procedures shall be established, implemented, and maintained as recommended in Regulatory Guide 1.33. Contrary to the above, Exelon failed to implement procedure 201, "Plant Startup," in a manner that would have prevented the automatic scram which occurred on December 23. Because this violation was of very low safety significance and it was entered into Exelon's corrective action program as IR 1155520, this violation is being treated as an NCV, consistent with the Enforcement Policy. **(NCV 05000219/2011-01-03, Failure to Implement Procedures Resulting in Reactor Scram).**

.7 (Closed) LER 05000219/2010-001-00,

a. Inspection Scope

This LER discussed an automatic start of the # 2 emergency diesel generator due to an unexpected trip of the 1D bus normal feeder breaker caused by a fault in a piece of test equipment during a surveillance test on October 7. The inspectors reviewed this LER and no new issues were identified. This LER is closed.

The inspectors noted that this LER was submitted on December 17, which was 10 days later than the requirement of 60 days following the discovery of the event as required in 10 CFR 50.73(a). Exelon made a timely 8 hour report (ENS 46315) following the event on October 7. The inspectors evaluated that the issue of the timely submission of the LER was a minor violation, as it did not meet the examples of a severity level IV violation provided in section 6.9.d of the NRC Enforcement Policy.

b. Findings

No findings were identified.

4OA5 Other

.1 Independent Spent Fuel Storage Installation (ISFSI) (60855.1)

a. Inspection Scope (1 Sample)

The inspectors reviewed routine operational surveillance data, including radiological surveillance, for the ISFSI facility. The inspectors toured the facility and made independent radiation measurements of the facility. The data was evaluated against 10 CFR Part 20 and applicable Exelon procedures.

b. Findings

No findings were identified.

.1 Post-Approval Site Inspection for License Renewal (71003)

a. Inspection Scope (1 Sample)

The inspectors reviewed Exelon's plans to comply with license condition (2)(c)(11) for the inspection of the drywell sand bed region. The inspectors compared Exelon's plans against the requirement to perform full scope inspections (as defined in Appendix A of the license renewal safety evaluation report dated March 20, 2007, and summarized in the UFSAR) of the drywell sand bed region every other refueling outage beginning in the refueling outage prior to April 9, 2009. The inspectors also compared Exelon plans against commitment (4) in Appendix A of the license renewal safety evaluation report which states the Inservice Inspection Program will be enhanced to require inspection of 100% of the epoxy coating. The inspectors further reviewed Exelon's inspection plans to determine if the inspections were performed in accordance with ASME section XI, subsection IWE and if the inspections met the scheduler requirements of the note to commitment 4 to inspect all 10 bays every other refueling outage, in accordance with item 21 of the IWE inspection program.

The inspectors reviewed Exelon' compliance with license condition (2)(c)(13) which requires Exelon perform an engineering study prior to April 9, 2009 to identify options to eliminate or reduce the leakage in the facility cavity liner. The inspectors also determined if Exelon was continuing to monitor for leakage of the refueling cavity liner and other water sources associated with the drywell and if they had implemented plans to eliminate routine leakage in order to provide increased protection against further degradation as stated in the Safety Evaluation Report (SER) at 5-5. The inspectors reviewed Exelon's response to their choice to install a flow indicating device on the refueling drain and the subsequent failure of the device due to clogging. The inspectors reviewed the impact of the resultant water flowing down the containment vessel gap and into the sandbeds. The inspectors reviewed photographs of the moisture in the sandbed regions caused by the failure of the flow indicating device and the evidence that the water did not appear to impinge on the containment vessel wall but flowed down the vertical concrete wall of the sandbed.

The inspectors reviewed changes made to commitments prior, and subsequent to, the period of extended operation. The inspectors compared the process and consequence of changes to update a vessel inspection program commitment, change the period of

replacement for the diesel fire pump day tank, modify the buried pipe program procedure, and modify a commitment related to fire pump surveillance. The change process was compared with the expectations in NRR Office Letter No. 807 "Control of Licensing Bases for Operating Reactors", NEI 99-04 "Guidelines for Managing NRC Commitment Changes," and NRC Regulatory Issue Summary 2000-17 "Managing Regulatory Commitments Made by Power Reactor Licensees to the NRC Staff."

The inspectors reviewed results of the mitigation of the buried piping degradation program, including the methodology used to identify vulnerable piping. This review compared Exelon's progress against the SER, Appendix A, Commitment 26, which included the provisions to enhance the program to include inspection of buried piping within ten years of entering the period of extended operation, unless an opportunistic inspection occurs within this ten year period. The inspectors reviewed Exelon's actions in order to determine if the inspections included at least one carbon steel, one aluminum and one cast iron pipe or component and if the locations selected for inspection included at least one location where the previously replaced or recoated. Because Exelon chose to place piping, whose failure would result in significant consequences, inside a vault or secondary barrier, the inspectors discussed the progress of the remediation program with the program owners.

The inspectors reviewed the process, procedures, and results of compliance with 10 CFR 54.37 (b). The inspectors compared this against the UFSAR update required by 10 CFR 50.71(e) which must include any systems, structures, and components newly identified that would have been subject to an aging management review or evaluation of time-limited aging analyses in accordance with § 54.21. The inspectors verified if the Oyster Creek UFSAR update described how the effects of aging will be managed such that the intended functions in § 54.4(b) will be effectively maintained during the period of extended operation.

The inspectors reviewed the results of all one-time inspections and the plans for one-time inspections during and after the current outage to determine compliance with commitment 24 of appendix A of the SER. The standard of evaluation was if the program provided reasonable assurance that during the extended period operation an aging effect is not occurring, or that the aging effect is occurring slowly enough to not affect the component or structure intended function during the period of extended operation, and therefore will not require additional aging management. The inspectors ascertained if the commitment to include two stainless steel pipe sections in a stagnant or low flow area in the reactor water cleanup system, and two stainless steel pipe sections in a stagnant or low flow area in the isolation condenser system were included in the one-time inspection samples.

b. Findings

No findings were identified.

.2 (Closed) URI 05000219/2010004-01: EDG Pillow-Block Bearing

a. Inspection Scope

During the routine overhaul and inspection of the #1 emergency diesel generator (EDG) on June 8, maintenance personnel identified damage to the cooling fan shaft pillow-block bearing. Exelon removed the bearing for further analysis by an offsite lab and replaced the bearing and shaft with new components on June 9. Exelon entered this

issue into the corrective action program as IR 1078312 and IR 1103610 and performed an equipment apparent cause evaluation (EACE) to review the offsite lab report to determine the cause of the failure and any additional corrective actions. This EACE was not complete at the conclusion of the third quarter 2010 inspection period, so the inspectors opened a URI to follow the issue. The inspectors reviewed the offsite lab report and Exelon's EACE and discussed the results with regional specialist inspectors.

b. Findings

No findings were identified.

4OA6 Meetings, Including Exit

Resident Inspector Exit Meeting. On January 26, the inspectors presented their overall findings to members of Exelon's management led by Mr. Michael Massaro, Site Vice President, and other members of his staff who acknowledged the findings. The inspectors confirmed that proprietary information reviewed during the inspection period was returned to Exelon.

Radiation Protection Exit Meeting. The inspectors presented the inspection findings to members of Exelon management on October 8, November 12, and December 10, 2010. Exelon personnel acknowledged the inspection findings. No proprietary material is included in this inspection report.

Inservice Inspection Exit Meeting. The inspectors presented the inspection findings to members of Exelon management on December 13, 2010. Exelon personnel acknowledged the inspection findings. No proprietary material is included in this inspection report.

Post-Approval Site Inspection for License Renewal Exit Meeting. The inspectors presented the inspection findings to members of Exelon management on December 13, 2010. Exelon personnel acknowledged the inspection findings. No proprietary material is included in this inspection report.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel
M. Massaro, Site Vice-President
P. Orphanos, Plant Manager
R. Peak, Plant Manager
D. Dicello, Director, Work Management
M. McKenna, Director, Operations
G. Malone, Acting Director, Engineering
C. Symonds, Acting Director, Training
J. Dostal, Director, Maintenance
J. Barstow, Manager, Regulatory Assurance
T. Keenan, Manager, Security
R. Skelsky, Senior Manager, Systems Engineering
H. Ray, Senior Manager, Design Engineering
G. Flesher, Acting Shift Operations Superintendent
J. McDaniel, Manager, Nuclear Oversight
M. Seeloff, Manager, Corrective Action Program
M. Ford, Manager, Environmental/Chemistry
A. Farenga, Manager, Radiation Protection
J. Chrisley, Regulatory Assurance Specialist
J. Kerr, Regulatory Assurance Specialist
Z. Demeke, Engineering
G. Harttraft, Engineering
M. McAllister, NDE Senior Site Specialist
R. Healey, GEH
P. Tamburo, Senior Staff Engineer
R. Alger, GEH
A. Paschal, GEH
S. Schwartz, Senior Staff Engineer
P. Bloss, Work Management Director
R. Heffner, Radiation Protection Supervisor
Z. Karpe, Corporate Environmental Manager
K. Leonard, Program Owner, Buried Pipe
M. Nelson, Project Manager
S. Sklenar, Environmental Manager, Mid-Atlantic
C. Taylor, Licensing Engineer

Others:
State of New Jersey, Bureau of Nuclear Engineering

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened/Closed		
05000219/2010005-01	NCV	Snubber Maintenance History Not Taken Into Account When Conducting Service Life Reviews (Section 1R12)
05000219/2010005·02	NCV	Failure to Conduct Representative Sampling of Stack Effluents (Section 4OA3)
05000219/2010005-03	NCV	Failure to Implement Procedures Resulting in Reactor Scram (Section 4OA3)
Closed		
05000219/2010-001-00	LER	Automatic start of emergency diesel generator due to unexpected trip of the 1D bus normal feeder breaker (Section 4OA3)
05000219/2010004-01	URI	EDG Pillow-Block Bearing (Section 4OA5)

LIST OF DOCUMENTS REVIEWED

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

Section 1R01: Adverse Weather Protection

Procedures
OP-OC-108-109-1001, "Preparation for Severe Weather T&RM for Oyster Creek"
OP-AA-108-111-1001, "Severe Weather and Natural Disaster Guidelines"
WC-AA-107, "Seasonal Readiness"
OP-OC-108-109-1002, "Cold Weather Freeze Inspection"
OP-OC-108-109-1003, "Winter Readiness"

Condition Reports (IR)
1150402 1013027 1144319 1120679 1074738 1097855

Work Orders (AR)
A2233818 A2249499 A2251230 A2266263 A2263901

Other Documents
Exelon Letter, "Certification of 2010-2011 Winter Readiness", dated November 15, 2010

Section 1R04: Equipment Alignment

Procedures
304, "Standby Liquid Control System Operation"
307, "Isolation Condenser System"
310, "Containment Spray System Operation"
612.4.001, "Standby Liquid Control Pump and Valve Operability and In-Service Test
302.1, "Control Rod Drive System"

Drawings
GE 148F262, "Emergency Condenser Flow Diagram"
GE 148F723, "Liquid Poison System Flow Diagram"
GE 148F740, "Containment Spray System Flow Diagram"
GE 237E487, "CRD System Flow Diagram"

Condition Reports (IR)
0921274 1110221 1122914 1132790 1136378 1138158
1138352 1145150

Section 1R05: Fire Protection

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

Other Documents
Pre-Fire Plan TB-FZ-11H, "Demineralizer Tanks and Steam Jet Air Ejector Area, Elev. 23'6""
Pre-Fire Plan, "Emergency Diesel Generator Room #2 (DG-FA-17)"
Pre-Fire Plan, "Emergency Diesel Generator Room #1 (DG-FA-15)"

Section 1R08: Inservice Inspection Activities

Procedures

CC-AA-501-1008, "Exelon Nuclear Welding Program, Welding General Requirements"
ER-OC-330-1001, " ASME Piping System Classification Changes"
CC-AA-501-1003, "Exelon Nuclear Welding Program, Visual Weld Acceptance Criteria"
MA-AA-733-1001, "Exelon Nuclear Guidance For Check Valve General Visual Inspection"
ER-AA-335-004, "Ultrasonic Measurement of Material Thicknesses and Interfering Conditions"
GE-PDI-UT-3, GE Energy Nuclear Procedure, "PDI Generic Procedure For Ultrasonic Thru Wall Sizing In Piping Welds"
GEH-PDI-UT-1, GE Hitachi Nuclear Energy Procedure, "PDI Generic Procedure for the Ultrasonic Examination of Ferritic Pipe Welds"
ER-AA-335-018, "Detailed, General, VT-1, VT-1C, VT-3, and VT-3C Visual Examination of ASME Class MC and CC Containment Surfaces and Components"
GEH-PDI-UT-10, GE Hitachi Nuclear Energy Procedure, " PDI Generic Procedure for the Ultrasonic Examination of Dissimilar Metal Welds"
GE-UT-304, GE Energy Nuclear Procedure, " Procedure for Manual Ultrasonic Planar Flaw Sizing In Vessel Materials"
GE-UT-300, GE Hitachi Nuclear Energy Procedure, "Procedure for Manual Examination of Reactor Vessel Assembly Welds In Accordance With PDI"
GE-UT-309, GE Energy Nuclear Procedure, " Procedure for Manual Ultrasonic Planar Flaw Sizing Of Nozzle Inner Radius And Bore Regions"
GE-UT-311, GE Hitachi Nuclear Energy Procedure, " Procedure for Manual Ultrasonic Of Nozzle Inner Radius, Bore And Selected Nozzle To Vessel Regions"

Condition Reports (IR)

749686	797908	826211	825919	1076164	1135939
819365	1010090	1025526	853894	963709	983888
1022703	1025526	893090	878804	836047	1062804
1076164	842492	1116708	872994	885602	1100053
1137251	852702	1137251	1137014	1136465	1136858
1136858	1137013	1136663	1135732	1137002	1136994
1136465	1136555	1136920	1136839	1137109	1136920
1136920	1136555	1136994	1137002	1137006	1137011
1136999	1137011	1137006	1137287	1136858	1137417
1137013	1136839				

Radiograph Review

Core Spray piping replacement weld radiograph report RT-001, 11/27/10

NDE Inspection Reports & Data Sheets

GEH Report, Dissimilar Metal Weld Ultrasonic Examination Review, eDRF Number 0000-0088-3338, Revision 0, 7/5/08
W.O. C2023027-05, Report No. 1R23-145; PT of Component Weld RHC-2-0044D
Oyster Creek Report No. R-16R-025; UT Inspection of Safe End To Nozzle weld no. NRO2-2-565D, 9/17/96
Oyster Creek Report No. R-16R-057; UT Inspection of Safe End To Nozzle weld no. NRO2-2-565E(NG-E-27), 9/25/96
Oyster Creek Report No. R-16R-052; UT Inspection of Safe End To Nozzle weld no. NRO2-2-565A(NG-A-26), 9/24/96

Oyster Creek Report No. R-16R-049; UT Inspection of Safe End To Nozzle weld no. NRO2-2-565B, 9/23/96
Oyster Creek Report No. 1R23-LRA-001; UT Thickness Measurement Data Sheet, Sandbed Bay #1, 11/5/10
Oyster Creek Report No. 1R23-LRA-001; ASME IWE (Class MC) Containment Visual Examination NDE Report, Sandbed Bay #1, 11/2/10
Oyster Creek Report No. 1R23-LRA-002; UT Thickness Measurement Data Sheet, Sandbed Bay #3, 11/6/10
Oyster Creek Report No. 1R23-LRA-002; ASME IWE (Class MC) Containment Visual Examination NDE Report, Sandbed Bay #3, 11/6/10
Oyster Creek Report No. 1R23-LRA-024; UT Thickness Measurement Data Sheet, Sandbed Bay #5, 11/17/10
Oyster Creek Report No. 1R23-LRA-024; ASME IWE (Class MC) Containment Visual Examination NDE Report, Sandbed Bay #5, 11/17/10
Oyster Creek Report No. 1R23-LRA-022; UT Thickness Measurement Data Sheet, Sandbed Bay #7, 11/15/10
Oyster Creek Report No. 1R23-LRA-022; ASME IWE (Class MC) Containment Visual Examination NDE Report, Sandbed Bay #7, 11/15/10
Oyster Creek Report No. 1R23-LRA-023; UT Thickness Measurement Data Sheet, Sandbed Bay #9, 11/16/10
Oyster Creek Report No. 1R23-LRA-023; ASME IWE (Class MC) Containment Visual Examination NDE Report, Sandbed Bay #9, 11/16/10
Oyster Creek Report No. 1R23-LRA-003; UT Thickness Measurement Data Sheet, Sandbed Bay #11, 11/9/10
Oyster Creek Report No. 1R23-LRA-003; ASME IWE (Class MC) Containment Visual Examination NDE Report, Sandbed Bay #11, 11/9/10
Oyster Creek Report No. 1R23-LRA-004; UT Thickness Measurement Data Sheet, Sandbed Bay #13, 11/9/10
Oyster Creek Report No. 1R23-LRA-004; ASME IWE (Class MC) Containment Visual Examination NDE Report, Sandbed Bay #13, 11/9/10
Oyster Creek Report No. 1R23-LRA-006; UT Thickness Measurement Data Sheet, Sandbed Bay #15, 11/13/10
Oyster Creek Report No. 1R23-LRA-006; ASME IWE (Class MC) Containment Visual Examination NDE Report, Sandbed Bay #15, 11/13/10
Oyster Creek Report No. 1R23-LRA-005; UT Thickness Measurement Data Sheet, Sandbed Bay #17, 11/9/10
Oyster Creek Report No. 1R23-LRA-005; ASME IWE (Class MC) Containment Visual Examination NDE Report, Sandbed Bay #17, 11/9/10
Oyster Creek Report No. 1R23-LRA-021; UT Thickness Measurement Data Sheet, Sandbed Bay #19, 11/15/10
Oyster Creek Report No. 1R23-LRA-021; ASME IWE (Class MC) Containment Visual Examination NDE Report, Sandbed Bay #19, 11/14/10
Oyster Creek, N2D, Examination Summary Sheet 1R23-112, NR02 2-565D WELD(IGSCC), Nozzle to Safe End, 11/18/10
Oyster Creek, N2D, Liquid Penetrant Examination Report No. 1R23-111, NR02 2-565D WELD, Nozzle to Safe End, 11/18/10
Oyster Creek, N2B, Examination Summary Sheet 1R23-110, NR02 2-565B WELD(IGSCC), Nozzle to Safe End, 11/18/10
Oyster Creek, N2B, Liquid Penetrant Examination Report No. 1R23-109, NR02 2-565B WELD, Nozzle to Safe End, 11/18/10

Oyster Creek, N2A, Examination Summary Sheet 1R23-108, NR02 2-565A WELD(IGSCC), Nozzle to Safe End, 11/18/10
Oyster Creek, N2A, Liquid Penetrant Examination Report No. 1R23-107, NR02 2-565A WELD, Nozzle to Safe End, 11/18/10
AR01136716; INR OC1R23 IVVI-10-04 SD Tie Bar K-1 Lower, 11/6/1
AR01136717; INR OC1R23 IVVI-10-05 SD Tie Bar N, 11/6/10
AR01136724; INR OC1R23 IVVI-10-06 Steam Dryer Center Baffle Plate, 11/6/10
AR01136718; INR OC1R23 IVVI-10-08 SD Tie Bar B-1 Lower, 11/6/10
AR01136999; INR OC1R23 IVVI-10-09 SD Tie Bar C-1 Lower, 11/6/10
AR01137002; INR OC1R23 IVVI-10-10 SD 310 degree HAD Swing Bar Stop Block, 11/7/10
AR01137011; INR OC1R23 IVVI-10-12 SD 135 degree Lifting Rod Lock Collar, 11/7/10

Personnel NDE Certification Records

0899 0977

Repair-Replacement Work Orders

C2023465; Replace Internals In Valve V-2-73, 6/30/10
C2023712; Replace Eroded Core Spray Piping, 11/10/10

Program Documents

Oyster Creek Underground Piping Program Description and Status, Topical Report 116, Revision 6, 10/13/10

Miscellaneous

VM-OC-0134, "Anchor Darling Valves Operating & Maintenance Instruction Manual"
EPRI Letter 2007-367, "BWR Vessel & Internals Project (BWRVIP); Subject: Recommendations Regarding Dissimilar Metal Weld Examinations (Includes Needed Requirement per NEI 03-08)", dated 12/4/07
EPRI Letter 2008-293, "BWR Vessel & Internals Project (BWRVIP) "Transmittal of "Interim Guidance for an Accelerated Inspection Program for BWRVIP-75-A Category C Dissimilar Metal Welds Containing Alloy 182.", dated 10/28/08
Focused Area Self Assessment (FASA), Inservice Inspection Oyster Creek, ISI Program 1R23 Pre-NRC FASA, 8/31/10
NRC Letter, "Oyster Creek Nuclear Generating Station (OCNGS) – Alternatives and Reliefs Concerning the Fourth 10 Year Interval Inservice Inspection Program (TAC NOS. MB5790, MB5791, MB5792 and MB5793) ", dated 10/1/03
GEH, 10 CFR Part 21 Communication SC-09-06, "Anomaly Discovered in Tomo View 2 Data Analysis Software", dated 9/22/09
10 CFR 21 – BWRVIP Survey; Attachment A, "Exelon Response to RLB Survey In Response to GEH Safety Communication 09-01 and 09-03"
Exelon Letter RA-09-019, "Oyster Creek Generating Station (OCGNS) Refueling Outage 22 (1R22) Inservice Inspection (ISI) Summary Report and Attachments", dated 2/20/09
Exelon Letter RA-09-019, "Oyster Creek Generating Station (OCGNS) Refueling Outage 22 (1R22) Inservice Inspection (ISI) Summary Report and Attachments: Attachment 1, ISI Post 1R22 Outage Summary Report", dated 2/20/09

Exelon Letter RA-09-019, "Oyster Creek Generating Station (OCGNS) Refueling Outage 22 (1R22) Inservice Inspection (ISI) Summary Report and Attachments: Attachment 2, Form NIS-1, Containment ISI Program – IWE, 11/08", dated 2/20/09
Exelon Letter RA-09-019, "Oyster Creek Generating Station (OCGNS) Refueling Outage 22 (1R22) Inservice Inspection (ISI) Summary Report and Attachments: Attachment 3, Form NIS-2, Owner's Report For Repairs and Replacements", dated 2/20/09
Document Revision Request 10-19, 10/14/10; PDI Generic Procedure For The Ultrasonic Examination Of Austenitic Pipe Welds, GE-PDI-UT, Revision 5; 11/1/10
Document Revision Request 06-35, 9/16/06; PDI Generic Procedure For The Ultrasonic Examination Of Weld Overlaid Austenitic Pipe Welds, GE-PDI-UT-8, Revision 4; 9/18/06
Document Revision Request 10-08, 3/12/08; Procedure For Phased Array Ultrasonic Examination Of Dissimilar Metal Welds, GEH-UT-247, Version 2; 3/18/10
Document Revision Request 06-35, 9/16/06; PDI Generic Procedure For The Ultrasonic Examination Of Weld Overlaid Austenitic Pipe Welds, GE-PDI-UT-8, Revision 4; 9/18/06

Section 1R11: Licensed Operator Requalification Program

Other Documents

EOP User's Guide (2000-BAS-3200.02)
Scenario 2612.CREW.10-6.01
EP-AA-1010 Table OCGS 3.1, "Emergency Action Level (EAL) Matrix"

Section 1R12: Maintenance Effectiveness

Procedures

ER-AA-310, "Implementation of Maintenance Rule"
ER-AA-310-1005, "Maintenance Rule - Disposition Between (a)(1) and (a)(2)"
LS AA-125-1003, "Apparent Cause Evaluation Manual"
ER-AA-330-011, "Snubber Service Life Monitoring"
2400-GMM-3921.52, "Removal, Inspection and Installation of Mechanical Snubbers"
SP-1302-52-045, "Requirements for Functional Testing of Snubbers"
ER-AA-330-004, "Visual Examination of Snubbers"
ER-AA-330-010, "Snubber Functional Testing"
675.1.001, "Hydraulic Snubber Inspection and Replacement"
602.4.004, "Main Steam Isolation Valve 10% Closure Test"

Condition Reports (IR)

1138622	1143829	1144054	1143874	1149674	1143332
1144738	1135806	1136893	1136900	1138096	1138620
1143148	1143332	1143829	1143874	1139516	1139897
1139909	1105782	1136893	1120002	1138356	1137357
825932	796399	912272	952772	984533	1138356
1137357	1026563	552088	549352	547308	549352
551773	553354	553324	547992	551808	624206
656696	631031	1162972	554069	1170026	

Work Orders (AR)

A2237605	A2237605	R2153133	C2024166	A207993	R2094386
M2236053	R2090403	R2142691	R2133416	R2155457	R2162019
R2151915	A2153352	C2014200	C2024581		

Other Documents

NEI 93-01, "Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants"

NRC Letter, "Oyster Creek Nuclear Generating Station – Issuance of Amendment RE: Revision to Mechanical Snubber Functional Test Requirements (TAC NO. MD8566)", dated October 10, 2008

VM-OC-0026, "Pacific Scientific Mechanical Snubbers Manual"

VM-OC-0006, "Technical Maintenance Manual for Hydraulic Shock and Sway Arrestors"

Technical Specification 4.5.M, "Shock Suppressors (Snubbers)"

Information Notice 94-48, "Snubber Lubricant Degradation in High-Temperature Environments"

NEI 94-01, "NEI Industry Guideline for Implementing Performance-Based Option of 10CFR Part 50, Appendix J

Pacific Scientific letter, ""In-Service" Testing of Pacific Scientific Shock Arrestors", dated September 5, 1984

Basic-PSA, Inc. DR1319, "Mechanical Shock Arrestors Standard Design Specification"

Basic-PSA, Inc. DR1320, "Mechanical Shock Arrestors Service Life Extension Program & Preventive Maintenance Recommendations"

PS193, "Instruction Manual Repair and Overhaul Mechanical Shock Arrestors"

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

Procedures

ER-AA-600-1042, "On-line Risk Management"

ER-AA-600-1021, "Risk Management Application Methodologies"

ER-AA-600-1014, "Risk Management Configuration Control"

ER-AA-600-1011, "Risk Management Program"

WC-OC-101-1001, "On-line Risk Management and Assessment"

Section 1R15: Operability Evaluations

Procedures

OP-AA-108-115, "Operability Determination"

CC-AA-309-101, "Engineering Technical Evaluations"

ER-AA-330-004, "Visual Examination of Snubbers"

310, "Containment Spray System Operation"

636.4.002, "Diesel Generator No. 2 Automatic Actuation Test"

604.4.016, "Torus to Drywell Vacuum Breaker Operability and In-Service Test"

Condition Reports (IR)

1138764	1138997	1145338	1140832	1139815	1139819
1139817	1139419	1139413	1139404	1139393	1139345
1145393	1145392	1145390	1145389	1145387	1120002

Work Orders (AR)

R2133261	A2057287	R2123655	A2260563

Other Documents

NRC Inspection Manual - Part 9900 Technical Guidance, "Operability Determinations & Functionality Assessments for Resolution of Degraded or Nonconforming Conditions Adverse to Quality or Safety"

MPR-2974, "Oyster Creek Nuclear Generating Station Torus Pitting Inspection Evaluation Criteria"

MPR-953, "Oyster Creek Nuclear Generating Station Torus Shell Thickness Margin"

UFSAR Table 6.2-10, "Containment Spray System Control and Instrumentation"
SE 315403-018, "Safety Significance of Torus Spray Nozzle Blockage"
C-1302-741-5350-001, "Loading of Emergency Diesel Generators and Unit Substations"
UFSAR Chapter 6.2, "Containment Systems"

Section 1R18: Plant Modifications

Procedures
101.2, "Fire Protection Program"
LS-AA-128, "Regulatory Review of Proposed Changes to the Approved Fire Protection Program"
CC-AA-209, "Fire Protection Program Configuration Change Review"

Condition Report (IR)

1119356	1115667	1158113	1132417	1143763

Work Order (AR)

A2258869	A2209186	C2023501	C2024694	A2259830	R2132957
A2218333					

Other
NFPA 15, 2007 edition, "Standard for Water Spray Fixed Systems for Fire Protection"
UFSAR 9.5.1, "Fire Protection Program"
ECR 09-00573

Section 1R19: Post-Maintenance Testing

Procedures
MA-AA-716-012, "Post Maintenance Testing
OP-MA-109-101, "Clearance and Tagging"
607.4.015, "Containment Spray and ESW System 2 Pump Operability, IST, and Containment Spray Pumps Trip"
665.5.003, "Main Steam Isolation Valve Leak Rate Test"

Condition Report (IR)

1133544	1136887	825932	796399	912272	952772
984533	1138356	1137357	1139821	1139842	1139818

Work Order (AR)

R2162788	A2218728	A2263426	A207993	R2094386	M2236053
R209403	R2142691	R2133416	R2155457	R2162019	R2151915
R2119989	R2133448	R2119989	R2138066	C2024694	R2132348
R2168175					

Drawings
20451-H, "24in Globe Body MSIV w/Cyl Operator, Modification for Oyster Creek"
BR 2002, "Main Steam System"

Other
NEI 94-01, "NEI Industry Guideline for Implementing Performance-Based Option of 10CFR Part 50, Appendix J

Section 1R20: Refueling and Outage Activities

Procedures

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

Condition Report (IR)

1136920	1136465	1138356	1138689	1138380	1138126
1138124	1138622	1138620	1138590	1140331	1140335
1139161	1140800	1140079	1139161	1138882	1140060
1140062	1142390	1142989	1139839	1140319	1140321
1139334	1143220	1140781	1143182	1143115	1133247
1141374	1145446	1145220	1143022	1137003	1136916
1136849	1154484	1154418	1154391	1154389	1155311
1155410	1155037	1154954	1154744	1154042	1155454
1155422	1330592	1133268	1133745	1142565	1136887
1134600	1139334	1139821	1139818	1139842	1144552
1101335	1098634	1098493	1097808	1097281	1097283
1097285	1097287	1147123			

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MA-AA-1000, "Conduct of Maintenance"
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Procedures
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RP-AA-12, "Internal Dose Control program Description"
RP-AA-203, "Exposure Control and Authorization"
RP-AA-201, "Access to RCA for Escorted Visitors"
RP-AA-401-1001, "On-line Dose Performance Threshold Reporting"
RP-AA-401-1002, "Radiological Risk Management"
RP-AA-400-1007, "Elevated Dose rate Exposure Planning"
RP-AB-460, "TIP Area Access Control"
RP-AA-460, "Control of High and Locked High Radiation Areas"
RP-AA-460-001, "Control for Very High radiation Areas"
RP-AA-460-002, "Additional High Radiation Exposure Control"
233.2, "Drywell Access and Control During Fuel Movement"
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Section RS02: Occupational ALARA Planning and Controls
Procedures
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RP-AA-203, "Exposure Control and Authorization"
RP-AA-201, "Access to RCA for Escorted Visitors"
RP-AA-401-1001, "On-line Dose Performance Threshold Reporting"
RP-AA-401-1002, "Radiological Risk Management"

RP-AA-401, "Operational ALARA Planning and Control"
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Procedures
RP-AA-11, "External Dose Control program Description"
RP-AA-12, "Internal Dose Control program Description"
RP-AA-203, "Exposure Control and Authorization"
RP-AA-220, "Bioassay Program"
RP-OC-220,-1001, "Operation of the Canberra Fastscan Whole Body Counting System"
RP-AA-270, "Pre-natal radiation Exposure"
6610-ADM-426.01, "Operation, Calibration and Quality Assurance of the Canberra Whole Body Counting System"
RP-AA-401-1002, "Radiological Risk Management"
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Section RS04: Occupational Dose Assessment
Procedures
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RP-AA-12, "Internal Dose Control program Description"
RP-AA-201, "Access to RCA for Escorted Visitors"
RP-AA-203, "Exposure Control and Authorization"

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Procedures
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Contamination Monitoring Instrument Matrix

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Section RS06: Radioactive Gaseous and Liquid Effluent Treatment

Procedures

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RP-AA-300, "Radiological Survey Program"
RP-AA-302, "Determination of Alpha Levels and Monitoring"
RP-OC-301-1001, "Air Sample Collection and Analysis TRM"
RP-AA-301, "Radiological Air Sampling Program"
CY-OC-120-1103, "Radioactive Effluent Sample and Analysis Schedule"
SP10-003, "Well 73, Pump and Sample Point Operation"
CY-OC-120-706, "Groundwater Remediation Process sample Collection"
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Report- Hydrogeology Investigation Report
General Source Term Data
Contamination Monitoring Instrument Matrix
Groundwater Sample Batch Analyses and Calculations

Section 4OA1: Performance Indicator (PI) Verification

Procedures

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RP-AA-201, "Access to RCA for Escorted Visitors"
RP-AA-460, "Control of High and Locked High Radiation Areas"
RP-AA-460-001, "Control for Very High radiation Areas"
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Section 4OA2: Identification and Resolution of Problems

Procedures

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1125902	1126953	1126955	1127560	1128430	1133801
1133910	1134122	1134257	1134516	1135537	1135540
1135542	1135859	1136232	1137384	1137451	1137455
1113746	1137835	1138972	1137429	1138259	1086589
941178	1139483				

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Section 4OA3: Event Followup

Procedures

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ABN-47, "Loss of USS 1B1"
632.2.002, "Grid UV Channel Functional Test"
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CY-AB-120-0001, "Chemistry Action Level Impact Assessments, Engineering Evaluation and Clean-up Projection"
406.8, "Operation of the Stack RAGEMs"
406.2, "Operation of the Process Radiation Monitoring System"
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RP-AA-463-1001, "Failed Fuel Surveillance Guidance"
RP-AA-300, "Radiological Survey Program"
RP-AA-302, "Determination of Alpha Levels and Monitoring"
RP-OC-301-1001, "Air Sample Collection and Analysis TRM"
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1123503	1123514	1123516	1123423	1154389	1125902
1126953	1126955	1127560	1128430	1133801	1133910
1134122	1134257	1134516	1135537	1135540	1135542
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Stack Input Monitoring Matrix
General Source Term data
RAGEMS Flow Diagram
Effluent Release and Purge Calculations
Complex Trouble Shooting Plan
Failure Mode Causal table

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Procedures
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1149074	113725				

LIST OF ACRONYMS

ABN	Abnormal Operating Procedure
AC	Alternating Current
ACE	Apparent Cause Evaluation
ADAMS	Agency-wide Documents Access and Management System
ALARA	As Low As Reasonably Achievable
ANS	Alert and Notification System
APRM	Average Power Range Monitor
ARM	Area radiation Monitor
ASME	American Society of Mechanical Engineers
ATWS	Anticipated Transient Without Scram
BWR	Boiling Water Reactor
BWRVIP	Boiling Water Reactor Vessel Internals Project
CAM	Continuous Air Monitors
CAP	Corrective Action Program
CDF	Core Damage Frequency
CEDE	Committed Effective Dose Equivalent
CFR	Code of Federal Regulations
CR	Condition Report
CRD	Control Rod Drive
CS	Core Spray
DAC	Derived Air Concentration
DEP	Drill and Exercise Performance
DMW	Dissimilar metal weld
EACE	Equipment Apparent Cause Evaluation
EAL	Emergency Action Level
ECR	Engineering Change Request
ED	Electronic Dosimeter
EDEX	Effective Dose Equivalent for External Exposure
EDG	Emergency Diesel Generator
EMRV	Electromatic Relief Valve
ENS	Emergency Notification System
EOF	Emergency Operations Facility
EOP	Emergency Operating Procedure
EP	Emergency Preparedness
EPD	Electronic Personal Dosimetry
EPRI	Electric Power Research Institute
EQ	Environmental Qualification
ERO	Emergency Response Organization
ESW	Emergency Service Water
Exelon	Exelon Energy Company, LLC
FEMA	Federal Emergency Management Agency
FIN	Finding
FW	Feedwater
FZ	Fire Zone
GE	General Electric
GL	Generic Letter
GPI	Groundwater Protection Initiative
GPU	General Public Utilities
HCU	Hydraulic Control Unit

HELB	High Energy Line Break
HEPA	High Efficiency Particulate Air
HRA	High Radiation Area
HVAC	Heating Ventilation and Air Conditioning
I&C	Instrumentation and Control
IC	Isolation Condenser
IGSCC	Inter Granular Stress Corrosion Cracking
IMC	Inspection Manual Chapter
IPEEE	Individual Plant Examination for External Events
IR	Issue Report
IRM	Intermediate Range Monitor
ISFSI	Independent Spent Fuel Storage Installation
ISI	In Service Inspection
ISLOCA	Interfacing System Loss of Coolant Accident
IST	Inservice Test
JCPL	Jersey Central Power and Light
LDE	Lens Dose Equivalent
LER	License Event Report
LLC	Limited Liability Company
LOCA	Loss of Coolant Accident
MCC	Motor Control Center
MDA	Minimum Detectable Activity
MG	Motor Generator
MSHA	Mine Safety and Health Administration
MSPI	Mitigating Systems Performance Index
MT	Magnetic Particle Testing
NCV	Non Cited Violation
NDE	Non Destructive Examination
NEI	Nuclear Energy Institute
NIOSH	National Institute for Occupational Safety and Health
NIST	National Institute of Standards Technology
NRC	Nuclear Regulatory Commission
NUREG	NRC technical report designation (Nuclear Regulatory Commission)
NVLAP	National Laboratory Accreditation Program
OB	Office Building
ODCM	Offsite Dose Calculation Manual
OSC	Operations Support Center
OWA	Operator Workarounds
Oyster Creek	Oyster Creek Generating Station
PARS	Publicly Available Records
PCM	Personnel Contamination Monitors
PCP	Process Control Program
PDI	Performance Demonstration Initiative
PI	Performance Indicator
PI&R	Problem Identification and Resolution
PM	Portal Monitors
PORC	Plant Onsite Review Committee
PPC	Process Plant Computer
PT	Penetrant Testing
RAGEMS	Radioactive Gaseous Effluent Monitoring System
RB	Reactor Building

RBCCW	Reactor Building Closed Cooling Water
RCA	Radiological Controlled Area
RCS	Reactor Coolant System
RCSA	Reactor Coolant System Activity
RCSL	Reactor Coolant System Identified Leak Rate
REMP	Radiological Environmental Monitoring Program
RP&C	Radiological Protection and Chemistry
RPM	Radiation Protection Manager
RPS	Reactor Protection System
RS	Radiation Safety
RSPS	Risk Significant Planning Standard
RT	Radiographic Testing
RWP	Radiation Work Permit
SAM	Small Article Monitors
SDC	Shutdown Cooling
SDP	Significance Determination Process
SGTS	Standby Gas Treatment System
SJAE	Steam Jet Air Ejector
SLC	Standby Liquid Control
SRM	Source Range Monitor
T&RM	Training & Reference Material
TB	Turbine Building
TBCCW	Turbine Building Closed Cooling Water
TCCP	Temporary Configuration Change Package
TEDE	Total Effective Dose Equivalent
TLD	Thermoluminescent Dosimeter
TS	Technical Specifications
TSC	Technical Support Center
TYRA	Three Year Rolling Average
UFSAR	Updated Final Safety Analysis Report
UILR	Unidentified Leak Rate
URI	Unresolved Item
UT	Ultrasonic Testing
VDC	Voltage Direct Current
VHRA	Very High Radiation Area
VLC	Voltage Level Control
VT	Visual Testing
WBC	Whole Body Counter
WO	Work Order