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

May 5, 2009

Mr. Charles G. Pardee
Senior Vice President, Exelon Generation Company, LLC
President and Chief Nuclear Officer (CNO), Exelon Nuclear
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: OYSTER CREEK GENERATING STATION - NRC INTEGRATED INSPECTION REPORT 05000219/2009002

Dear Mr. Pardee:

On March 31, 2009, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Oyster Creek Generating Station. The enclosed integrated inspection report documents the inspection results, which were discussed on April 16, 2009, with Mr. P. Orphanos, Plant Manager, and other members of your staff.

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

The report documents one NRC-identified finding of very low safety significance (Green). This finding was determined to involve a violation of NRC requirements. However, because of the very low safety significance and because the finding was entered into your corrective action program, the NRC is treating this finding as a non-cited violation (NCV) consistent with Section VI.A of the NRC's Enforcement Policy. If you contest this 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.

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

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

Sincerely,

/RA/

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

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

Enclosure: Inspection Report 05000219/2009002
w/Attachment: Supplemental Information

cc w/encl:
C. Crane, President and Chief Operating Officer, Exelon Corporation
M. Pacilio, Chief Operating Officer, Exelon Nuclear
T. Rausch, Site Vice President, Oyster Creek Nuclear Generating Station
P. Orphanos, Plant Manager, Oyster Creek Generating Station
J. Barstow, Regulatory Assurance Manager, Oyster Creek
J. Grimes, Acting Senior Vice President, Mid-Atlantic Operations
K. Jury, Vice President, Licensing and Regulatory Affairs
P. Cowan, Director, Licensing
B. Fewell, Associate General Counsel, Exelon
Correspondence Control Desk, Exelon Nuclear
Mayor of Lacey Township
P. Mulligan, Chief, NJ Dept of Environmental Protection
R. Shadis, New England Coalition Staff
E. Gbur, Chairwoman - Jersey Shore Nuclear Watch
E. Zobian, Coordinator - Jersey Shore Anti Nuclear Alliance
P. Baldauf, Assistant Director, NJ Radiation Protection Programs

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

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

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

Distribution w/encl: **(VIA E-MAIL)**
S. Collins, RA
M. Dapas, DRA
D. Lew, DRP
J. Clifford, DRP
R. Bellamy, DRP
S. Barber, DRP
C. Newport, DRP
M. Ferdas, DRP, SRI
J. Kulp, DRP, RI
J. DeVries, DRP, OA
S. Campbell, RI OEDO
H. Chernoff, NRR
E. Miller, PM, NRR
J. Hughey, NRR, Backup
ROPreportsResource@nrc.gov
Region I Docket Room (with concurrences)

SUNSI Review Complete: RRB (Reviewer's Initials) **ML091250078**

DOCUMENT NAME: G:\DRP\BRANCH6\+++OYSTER CREEK\OC INSPECTION REPORTS 2009\OC 0902.DOC

After declaring this document "An Official Agency Record" it **will** be released to the Public.

To receive a copy of this document, indicate in the box: "**C**" = Copy without attachment/enclosure ,"**E**" = Copy with attachment/enclosure "**N**" = No copy

OFFICE	RI:DRP		RI:DRS		RI:DRP	
NAME	MFerdas/ MF		JTrapp/JT		RBellamy/ RRB	
DATE	05/01/09		05/01 /09		05/01/09	

OFFICIAL RECORD COPY

U. S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No.:	50-219
License No.:	DPR-16
Report No.:	05000219/2009002
Licensee:	Exelon Energy Company, LLC (Exelon)
Facility:	Oyster Creek Generating Station
Location:	Forked River, New Jersey
Dates:	January 1, 2009 – March 31, 2009
Inspectors:	M. Ferdas, Senior Resident Inspector J. Kulp, Senior Resident Inspector (Acting) T. Setzer, Resident Inspector (Acting) J. Schoppy, Senior Reactor Inspector S. Barr, Senior Emergency Preparedness Inspector R. Nimitz, Senior Health Physicist D. Spindler, Resident Inspector – Beaver Valley
Approved By:	Ronald R. Bellamy, Ph.D., Chief Projects Branch 6 Division of Reactor Projects

TABLE OF CONTENTS

SUMMARY OF FINDINGS

IR 05000219/2009002; 01/01/09 - 03/31/2009; Exelon Energy Company, LLC, Oyster Creek Generating Station; Identification and Resolution of Problems.

The report covered a 3-month period of inspection by resident inspectors, regional reactor inspectors, an emergency preparedness inspector, and an announced inspection by a health physicist. One Green non-cited violation (NCV) was 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). 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.

A. NRC-Identified and Self-Revealing Findings

Cornerstone: Emergency Preparedness

Green. The inspectors identified a non-cited violation (NCV) of 10CFR50.54(q), "Conditions of Licenses," because Exelon did not properly maintain the conditions of the Oyster Creek Emergency Plan. Specifically, Exelon did not implement timely corrective or compensatory actions when the radioactive gas effluent monitoring system (RAGEMS) automatic sampling system was taken out of service from November 2006 through March 2009. Exelon's corrective actions included replacing solenoid valves in the automatic sampling system and placing the automatic system back in service.

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

B. Licensee-Identified Violations

None.

REPORT DETAILS

Summary of Plant Status

The Oyster Creek Generating Station (Oyster Creek) began the inspection period operating at full (100%) power.

On February 1, the plant experienced a load reject scram due to an internal fault on the 'M1A' transformer. Exelon reported this event to the NRC in Event Notification 44822, "Unusual Event and Reactor Scram Due to Main Transformer Fire." During the plant shutdown, Exelon personnel disconnected the 'M1A' transformer; and conducted testing on the 'M1B' transformer and the main generator to ensure that these components did not sustain damage due to the electrical transient which occurred when the 'M1A' transformer failed. Operators commenced a reactor startup and established the reactor critical on February 3. On February 5, operations personnel synchronized the main generator to the grid and reached 60% power, which was the maximum power achievable with only the 'M1B' transformer in-service. Additional information on this event is contained in section 4OA3 of this report.

On February 25, operations personnel performed a planned downpower to 20% and took the generator off line in order to replace the 'M1A' transformer. Oyster Creek remained at 20% power by utilizing the main steam bypass valves to remove steam to the main condenser. During the downpower Exelon personnel replaced the 'M1A' transformer, and plugged a small condenser tube leak on the 'C' South condenser, cleaned the isophase bus duct cooling cooler, and performed minor repairs on the 'M1B' transformer. On February 28, operators synchronized the main generator to the grid and commenced power ascension. The plant returned to full power on March 1.

On March 6, while performing a planned downpower to 95% for a control rod pattern adjustment, operations personnel identified turbine control valve position oscillations, as well as control oil pressure and electric power (MWe) output fluctuations. Operators performed an additional power reduction to 90% which resulted in a termination of the oscillations. Exelon personnel reviewed plant data that was collected concerning the oscillations and verified that the oscillations were similar to the control valve oscillations experienced in 2008. Operations personnel established an adverse condition monitoring plan (ACMP) and standing order which provided guidance to the operators on how to respond to future turbine control valve oscillations. The operators returned the plant to full power on March 6.

On March 9, operations personnel performed an unplanned power reduction to 97% due to a trip of the '1-3' circulating water pump which caused main condenser vacuum to degrade. Vacuum stabilized after the power reduction and the plant returned to full power that same day.

Oyster Creek operated at full power for the remainder of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01)

a. Inspection Scope (3 samples)

The inspectors performed three site specific weather-related condition inspections.

The inspectors reviewed Exelon's response to cold weather conditions from January 13 thru January 22. During that period of time the PJM Interconnection, LLC (PJM) declared a cold weather alert. The inspectors verified that operations personnel properly monitored important plant equipment that could have been affected by the cold weather conditions. The inspectors ensured that temperatures for equipment and areas in the plant were maintained within procedural limits, and when necessary, compensatory actions (i.e., additional heating) were properly implemented in accordance with Oyster Creek procedures. The inspectors performed walkdowns of areas that could be potentially impacted by the cold weather conditions, such as the 480 VAC switchgear rooms, emergency diesel generator (EDG) compartments, the EDG generator fuel oil tank building, redundant fire pump and tank, condensate transfer building, and the intake structure.

The inspectors also reviewed Exelon's response to high wind conditions on February 12. During that period of time the National Weather Service issued a high wind warning for Ocean County, New Jersey. The inspectors verified that operators properly implemented station procedures to ready the plant for high wind conditions. The inspectors verified that operational briefs were performed for abnormal conditions that may result due to the high winds. The inspectors also verified that the planned work during that period of time was reviewed and evaluated for deferral due to the elevated reactor scram risk imposed by the high wind conditions.

In addition, the inspectors reviewed Exelon's response to cold weather and winter storm conditions from March 1 thru March 5. During that period of time the PJM declared a cold weather alert. The inspectors verified that operators properly monitored important plant equipment that could have been affected by the cold weather and snow conditions. The inspectors ensured that temperatures for equipment and areas in the plant were maintained within procedural limits, and when necessary, compensatory actions (i.e., additional heating) were properly implemented in accordance with procedures. The inspectors performed walkdowns of areas that could be potentially impacted by the winter weather conditions, such as the 480 VAC switchgear rooms, EDG compartments, 'A/B' battery room, 'C' battery room, diesel fire pump structure, station air compressor suction filters, and intake structure.

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

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment (71111.04)

a. Inspection Scope (3 samples)

The inspectors performed three partial equipment alignment inspections. The partial equipment alignment inspections were completed during conditions when the equipment was of increased safety significance such as would occur when redundant equipment was unavailable during maintenance or adverse conditions, or after equipment was recently returned to service after maintenance. The inspectors performed a partial walkdown of the following systems or areas, 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' and 'B' standby liquid control (SLC) system on January 9;
- 'A' and 'B' isolation condensers (IC) on February 18; and
- Torus room on February 18.

The February 18 walkdown of the torus room by the inspectors was performed to verify the condition of the sandbed region drain lines and bottles and to determine if water was present in the bottles.

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

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05)

a. Inspection Scope (71111.05Q 5 samples)

The inspectors performed a walkdown of five 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:

- #1 EDG fire area 'DG-FA-15' on January 15;
- #2 EDG fire area 'DG-FA-17' on January 15;
- Reactor building (23' Elevation) fire area 'RB-FZ-1E' on February 4;
- Reactor building (51' Elevation) fire area 'RB-FZ-1D' on February 6; and
- Reactor Building (75' Elevation) fire area 'RB-FZ-1C' on February 20.

b. Findings

No findings of significance were identified.

1R07 Heat Sink Performance (71111.07)

a. Inspection Scope (71111.07A 1 sample)

The inspectors verified acceptable heat exchanger performance by reviewing the results of one heat exchanger maintenance activity. The inspectors reviewed the results of the '1-2' turbine building closed cooling water (TBCCW) heat exchanger cleaning/inspection on January 6 to verify that the heat exchanger met cleanliness and material condition requirements. Documents reviewed are listed in the Supplemental Information attachment to this report.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program (71111.11)

a. Inspection Scope (71111.11Q 1 sample)

The inspectors observed one simulator training scenario to assess operator performance and training effectiveness on January 26. The inspectors observed training scenarios 'PC-5A' and 'RPV-1C'. The inspectors assessed whether the simulator adequately reflected the expected plant's response, operator performance met Exelon's procedural requirements, and the simulator instructor's critique identified crew performance issues. Documents reviewed for this inspection activity are listed in the Supplemental Information attachment to this report.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12)

a. Inspection Scope (3 samples)

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

- 'B' emergency service water (ESW) pump breaker did not charge when placed in service after maintenance on January 21 (IR 869546 and 869293);
- '1-1' diesel driven fire pump unable to maintain minimum discharge pressure during functional testing on January 26 (IR 872135); and
- '1-3' circulating water pump trip on March 9 (IR890226).

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

b. Findings

No findings of significance were identified.

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

a. Inspection Scope (6 samples)

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

- '1-1' reactor building closed cooling water (RBCCW) pump and SLC system unavailable due to planned maintenance on January 7;
- '1-3' TBCCW pump, #2 circulating water pump, 'A' and 'B' ESW pump, 'C-2' battery charger, and 'S2045' 230KV offsite power line unavailable due to planned maintenance on January 20;
- '1-3' TBCCW pump, '1-2' RBCCW pump, station blackout transformer, combustion turbine (CT)-1, CT-2, and 'C' reactor recirculation pump unavailable due to planned maintenance on January 26;
- '1-2' RBCCW pump, #2 EDG, #2 standby gas treatment system, and '1-1' diesel driven fire pump unavailable due to planned maintenance, and 'V-26-18' reactor building to torus vacuum breaker unavailable due to unplanned maintenance on January 29;
- Core spray system #2 and '1-3' station air compressor unavailable due to planned maintenance and unplanned entry into ABN-31 'High Winds' on February 12; and
- '1-2' TBCCW heat exchanger, 'A/B' instrument air dryer, '1-4' circulating water pump, 'B' control room heating, ventilation and air conditioning system unavailable due to planned maintenance, and #2 EDG unavailable due to a failed battery charger on March 23.

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

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope (6 samples)

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

- #1 EDG and #2 EDG lube oil circulating pump oil leaks on January 14 (IR 866401 and 866402);
- 'M1B' main transformer "Doble" test results following failure of 'M1A' main transformer on February 4 (IR 874816);
- 'B' core spray booster pump high differential pressure on February 11 (IR 879137);
- 'A' IC snubber hydraulic oil leak on February 18 (IR 882254);
- Seismic qualification of instrument rack 'RK03' and remote shutdown panel due to scaffolds in close proximity on February 24 (IR 884640 and 890680); and
- #2 EDG battery low voltage condition on March 23 (IR 896256).

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

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing (71111.19)

a. Inspection Scope (9 samples)

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

- '1-3' ESW motor louver and filter replacement on January 12 (WO R2126992);
- Repair of the emergency rod in/ notch override switch '4S3' on February 3 (WO M2216450);
- IC initiation relay replacement on February 12 (WO R2135579);
- 'A' IC snubber replacement on February 20 (WO C2020570);
- Installation of 'M1A' transformer on February 26 (WO C2020443);
- Modification of 'M1A' transformer deluge system on February 28 (WO C2020321);
- '1-1' diesel driven fire pump quarterly inspection and maintenance on March 6 (WO R2134599)
- Reactor water cleanup system inlet valve 'V-16-1' (primary containment isolation valve) relay replacement on March 19 (WO A2219659); and
- Replacement of the #2 EDG battery charger on March 23 (WO C2020875).

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

b. Findings

No findings of significance were identified.

1R20 Refueling and Other Outage Activities (71111.20)

a. Inspection Scope (2 samples)

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

Other Outage Activity – Forced Outage due to Main Transformer Failure (1F18).
On February 1, an automatic load reject scram occurred due to a failure of the 'M1A' main transformer. Details of the scram and operator response to the scram are provided in section 4OA3 of this report. Upon notification of the event, the inspectors responded to the control room and observed portions of the post-scram recovery. The inspectors verified that cooldown rates during the plant shutdown were within technical specification requirements.

The inspectors verified that Exelon assessed and managed the outage risk. The inspectors confirmed on a sampling basis that tagged equipment was properly controlled and equipment configured to safely support maintenance work. The scope of work completed was limited to disconnecting and isolating the damaged 'M1A' transformer and performing extensive electrical testing of the 'M1B' transformer to verify it was not damaged during the electrical transient that occurred from the failure of the 'M1A' transformer. During control room tours, the inspectors verified that operators maintained reactor vessel level and temperature within the procedurally required ranges for the operating condition. Exelon did not conduct a forced cooldown and decay heat removal was conducted by admitting steam to the main condenser via the bypass valves. The drywell remained closed and inerted throughout the outage. The inspectors observed Oyster Creek's plant on-site review committee (PORC) startup affirmations on February 3.

The inspectors monitored restart activities that began on February 3 and verified that required equipment was available for operational condition changes, including verifying technical specification requirements, license conditions, and procedural requirements. Portions of the startup activities were observed from the control room to assess operator performance including the reactor going critical on February 3, as well as synchronization of the main turbine generator to the grid and power ascension to 60% (power limit for plant operation with a single main transformer in service) on February 5.

Other Outage Activity – Planned Maintenance Outage (1M19).
On February 25, operators commenced a planned downpower and removed (off-line) the main generator from service in order to connect a replacement 'M1A' transformer.

The reactor remained critical at 20% power and admitted steam to the condenser via the bypass valves during the outage. The inspectors monitored portions of the downpower and taking the generator off-line. The drywell remained closed and inerted throughout the outage.

The inspectors verified that Exelon assessed and managed the outage risk. The inspectors confirmed on a sampling basis that tagged equipment was properly controlled and equipment configured to safely support maintenance work. The scope of work completed included connecting the replacement 'M1A' transformer, identifying and plugging two leaking condenser tubes in the 'C' south condenser and performing minor repairs to the 'M1B' transformer. The inspectors monitored restart activities that began on February 28, which included observing operators synchronizing the main generator to the grid and portions of power ascension. The plant reached full power on March 1.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope (3 IST samples and 5 routine surveillance samples)

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

- 'A' SLC in-service test (IST) on January 7;
- 'A', 'B', 'C', and 24VDC weekly battery surveillance test on January 13;
- Reactor building to torus vacuum breaker surveillance test on January 29;
- High drywell pressure scram surveillance test and calibration on February 6;
- Scram discharge instrument volume (SDIV) analog level calibration and surveillance test on February 10;
- Core spray system #2 IST on February 11;
- '1-1' diesel driven fire pump operability test on March 6; and
- '1-1' service water pump IST (including IST rebaseline activities) on March 8.

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

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness [EP]

1EP6 Drill Evaluation (71114.06)

a. Inspection Scope (2 samples)

The inspectors observed one site EP drill and one operator requalification activity.

The inspectors observed the EP drill from the control room simulator and the technical support center (TSC) on February 11. The inspectors evaluated the conduct of the drill, facility equipment issues, and Exelon personnel performance related to developing classification, notification, and protective action recommendations. The inspectors observed Exelon's drill critique of the TSC facility and of the crew performance in the simulator to ensure Exelon appropriately identified performance issues.

The inspectors also observed an operator requalification activity on March 3, which counted as an input into the NRC's emergency response drill and exercise performance indicator (PI). The inspectors observed Exelon's critique of the training activity to verify that weaknesses and deficiencies were adequately identified. The inspectors specifically focused on ensuring Exelon identified operator performance issues associated with event classification, notification, and protective action recommendations.

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

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety [OS]

2OS1 Access Control to Radiologically Significant Areas (71121.01)

a. Inspection Scope (3 samples)

The inspectors reviewed activities and documentation associated with access control to radiologically significant areas. The inspectors walked down radiological controlled areas at Oyster Creek and performed independent radiation surveys of those areas. The inspectors reviewed housekeeping, material conditions, postings, barricading, and access controls to determine if radiological controls were acceptable in the areas toured. The tours also focused on how Oyster Creek was implementing Oyster Creek Technical Specification requirements related to High Radiation Area (HRA) controls. The inspectors reviewed and evaluated contamination controls, including observations of materials being removed from radiological controlled areas.

The inspectors reviewed radiological controls associated with radiation work permits 09-19 (SFP heat exchanger work), 09-21 (clean-up system maintenance), and 09-31(valve repairs).

The inspectors reviewed and discussed internal dose assessments performed by Exelon in 2009 (as of the time of the inspection) to identify apparent occupational internal doses greater than 50 millirem committed effective dose equivalent (CEDE). The review also included the adequacy of dose assessments and included a review of Exelon's program designed to evaluate potential intakes associated with hard-to-detect radionuclides (e.g., transuranics). The inspectors also reviewed applicable 10 CFR Part 61, "Licensing Requirements for Land Disposal of Radioactive Waste," waste stream analysis and scaling factor reports.

The inspectors reviewed self-assessments, audits, and corrective action program condition reports associated with access control to radiologically significant areas (including outage radiological oversight activities) to determine if issues were being properly identified, evaluated and corrective actions were appropriately prioritized in the corrective action program.

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

b. Findings

No findings of significance were identified.

2OS2 ALARA Planning and Controls (71121.02)

a. Inspection Scope (2 samples)

The inspectors reviewed activities and documentation to determine if Exelon was implementing operational, engineering, and administrative controls to maintain personnel occupational radiation exposure as low as is reasonably achievable (ALARA). The review was against the criteria contained in 10 CFR 20 ("Standards for Protection Against Radiation") and applicable industry standards and station procedures.

The inspectors reviewed pertinent information regarding Oyster Creek's collective dose history, current exposure trends, and on-going and planned activities in order to assess current performance and exposure challenges. The inspectors determined the site specific trends in collective exposures using plant historic data, NUREG-0713, ("Occupational Radiation Exposure at Commercial Nuclear Power Reactors and Other Facilities), and source-term measurements (average contact dose rate with reactor coolant piping). The inspectors determined the plant's three-year rolling average collective exposure. In addition, the inspectors reviewed Oyster Creek's "1R22 Refueling Outage Report."

The inspectors reviewed self-assessments, audits, and corrective action program condition reports associated with ALARA program implementation to determine if issues were being properly identified, evaluated, and corrective actions were appropriately prioritized in the corrective action program. The inspectors also reviewed dose significant post-job (work activity) reviews and post-outage ALARA report critiques.

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

b. Findings

No findings of significance were identified.

2OS3 Radiation Monitoring Instrumentation and Protective Equipment (71121.03)

a. Inspection Scope (4 samples)

The inspectors reviewed activities and documentation associated with radiation monitoring instrumentation and protective equipment.

The inspectors reviewed Oyster Creek's radiological source term, based on 10 CFR Part 61 data, in order to identify potential changes in radiation types and energies that could impact calibrations and/or analyses. The inspectors reviewed the calibration and set points on the following instrumentation:

- Radiation Protection Instrumentation
  - AM-2 (077454), AMS-3(700043), RAP sample pump (001309), AMS-3(700018), RAP sample pump (701901), RM-14(079670), and Bicron (079141).
  - Personnel monitors - PCM1B (0002603233).
  - Material monitors- SAM-9(702318 and 702319).
  - Electronic dosimeters- 28738 and 36528.

- Process and Area Monitoring Instrumentation
  - Refuel Floor Area Radiation Monitors - C9 and B9.
  - Refuel Floor Exhaust - A1/A2.
  - Containment High Radiation Monitoring System.

The review consisted of verifying Exelon's compliance with requirements contained in Oyster Creek procedures, Technical Specifications, and instrumentation/equipment vendor manuals.

The inspectors reviewed the maintenance and inspection documentation associated with three self-contained breathing apparatus (SCBA) (Pac Nos. 16, 28, and 51) which were staged for use by Oyster Creek personnel. The inspectors verified that vital components (e.g., regulator, alarms) on the SCBA were functional; and that cylinder hydrostatic testing and monthly inspections were being performed. The inspectors also verified qualifications of Oyster Creek personnel responsible for checking and repairing the devices.

The inspectors reviewed training and qualification records (including bottle change-out) for each operations shift crew, and other Oyster Creek personnel expected to use the devices for assigned emergency duties. The inspectors also reviewed bottle filling capabilities and plans.

The inspectors reviewed self-assessments, audits, and corrective action program condition reports associated with radiation monitoring equipment and protective equipment to determine if issues were being properly identified, evaluated, and corrective actions were appropriately prioritized in the corrective action program.

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

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES [OA]

4OA2 Identification and Resolution of Problems (71152)

.1 Review of Items Entered Into the Corrective Action Program

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

.2 Annual Sample Review

a. Inspection Scope (2 Annual samples)

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

Review of Stack Radiation Monitoring System Out-of-Service. The inspectors reviewed Exelon's evaluation and corrective actions associated with corrective action program condition reports IR 855612 and 871701 which involved stack radiation monitoring sampling capabilities during an accident.

This issue was initially reviewed in NRC inspection report 5000219/2008005. In this report, the inspectors opened unresolved item (URI) 05000219/2008005-03 ("Stack Radiation Monitoring System Sampling Capabilities"), because additional information and review of system sampling capabilities was needed to determine if the re-alignment of the sampling system of the Radioactive Gas Effluent Monitoring System (RAGEMS) in November 2006 had any impacts on the Oyster Creek Emergency Plan and to determine if any performance deficiency had existed. The inspectors reviewed the history of Exelon's identification of the deficiency involved with the RAGEMS auto-sampling system and reviewed the licensee's actions to resolve the problem once it was identified.

The inspection also included a review of corrective action program condition reports and work orders associated with the RAGEMS system, interviews with site chemistry and emergency preparedness personnel, analysis of Oyster Creek Emergency Plan commitments, a review of Oyster Creek sampling procedures (including a walk-down of available sampling system processes), and a review of a time-motion study which assessed the ability to obtain a manual stack sample under emergency event conditions.

Maintenance Personnel Assigned to the Emergency Response Organization Did Not Receive Proper Training. The inspectors reviewed Exelon's evaluation and corrective actions associated with several maintenance technicians who had not received the required training, but had been credited for providing an adequate number of on-shift technicians to meet the requirements of the Oyster Creek Emergency Plan (IR 864933). Specifically, nineteen technicians were assigned positions on the station Emergency Response Organization (ERO) without having the appropriate qualifications in the Oyster Creek Learning Management System (LMS). The inspectors reviewed Exelon's root cause evaluation, requirements for on-shift manning, the ERO staffing, and associated training requirements. The inspectors also reviewed Exelon's extent of condition analysis and their conclusion that no violation of NRC requirements had occurred.

b. Findings and Observations

The inspectors identified one non-cited violation (NCV) associated with the stack radiation monitoring system being out of service.

Review of Stack Radiation Monitoring System Out-of-Service

Introduction. The inspectors identified a Green non-cited violation (NCV) of 10CFR50.54(q), "Conditions of Licenses," because Exelon did not properly maintain the conditions of the Oyster Creek Emergency Plan. Specifically, Exelon did not implement timely corrective or compensatory actions when the RAGEMS automatic sampling system was taken out of service from November 2006 through March 2009. Exelon's corrective actions included replacing solenoid valves in the automatic sampling system and placing that automatic system back in service.

Description: Planning Standard 10 CFR 50.47(b)(9) requires adequate methods, systems, and equipment for assessing and monitoring actual or potential offsite consequences of a radiological emergency condition are in use. 10 CFR 50, Appendix E, Section IV.B, requires that the means to be used for determining the magnitude of, and for continually assessing the impact of, the release of radioactive materials be described. NUREG-0654/FEMA-REP-1, Section II.I, specifies evaluation criteria by which the staff, in the absence of a licensee proposed alternative, evaluates the licensee's compliance with planning standard 50.47(b)(9). This section states that each licensee have methods and techniques for determining: (1) the source term of releases of radioactive material; (2) the magnitude of the release based on plant parameters and effluent monitors; and, (3) the relationship between these releases and onsite and offsite exposures and contamination.

The Oyster Creek RAGEMS was installed to comply with 10 CFR 50.47(b)(9) and NRC NUREG-0737 requirements. A purpose of the system is to provide for a continuous monitoring of noble gas releases, including continuous particulate and iodine samples. The Oyster Creek Emergency Plan states that samples from RAGEMS must be analyzed to provide isotopic concentrations of halogens and particulates.
In November 2006, the RAGEMS iodine sampling retrieval system was placed in the bypass mode due to a number of occurrences where the automatic dropout feature of the iodine sample filter had failed during routine weekly sampling. To avoid the problems with the automatic sampling system, chemistry personnel placed the sample retrieval system into the bypass (manual) mode. The inspectors noted that eleven

corrective action program condition reports were written in 2005 and 2006 to document the problem with the automatic sampling feature of RAGEMS.

After the automatic sampling system was placed in manual, the chemistry staff did not appropriately enter the change of the RAGEMS configuration into the Oyster Creek corrective action program, nor were the concerns forwarded to the EP group for an analysis regarding Emergency Plan impact. In late 2008, the inspectors issued an URI after Exelon was not able to provide an evaluation regarding the dose estimates for obtaining manual RAGEMS samples under accident conditions. In January 2009, Exelon contracted a time-motion study to bound the dose which a technician would receive while obtaining a manual RAGEMS sample. The study showed that under design-basis conditions, a technician could take a manual RAGEMS sample without exceeding regulatory dose limits. However, the inspectors noted that the steps used by the contractor in the time motion study were not reflected in any Oyster Creek procedure and that the complexity involved in the planning and execution of obtaining a manual sample was beyond the level to be considered "skill of the craft." To accomplish the manual sampling under accident conditions, with no existing procedural guidance, a significant amount of job planning and health physics coverage would be required. Therefore, based on this assessment, the inspectors determined that this compensatory action could not be credited for the failure of the RAGEMS automatic sampling system.

The inspectors concluded that for the time between placing the automatic sampling system in bypass and the performance of the time-motion study, Exelon had violated the Emergency Plan licensing basis for obtaining a RAGEMS iodine and particulate sample under accident conditions. Although the issue had been identified in corrective action program condition reports, Oyster Creek personnel did not raise it to an appropriate significance level in their corrective action program and did not adequately address the issue until inspectors had raised the issue in 2008.

The performance deficiency associated with this finding involved Exelon not implementing timely corrective or compensatory actions when the RAGEMS automatic sampling system was taken out of service; which resulted in Exelon not maintaining the Oyster Creek Emergency Plan in a manner to completely meet the standards in 10 CFR 50.47(b)(9). Exelon's corrective actions included replacing solenoid valves in the automatic sampling system and placing that automatic system back in service.

Analysis. The inspectors determined that Exelon did not implement timely corrective or compensatory actions when RAGEMS automatic sampling system was taken out of service. The finding was more than minor because it affected the Emergency Response Organization Performance attribute of the EP Cornerstone to ensure that the licensee is capable of implementing adequate measures to protect the public health and safety of the public in the event of a radiological emergency.

In accordance with Inspection Manual Chapter (IMC) 0609, Appendix B, "Emergency Preparedness Significance Determination Process," the inspectors determined the finding to be of very low safety significance (Green). Specifically, the inspectors utilized IMC 0609, Appendix B, Section 4.9 and Sheet 1, "Failure to Comply," and determined that the failure to comply with an aspect of the Emergency Plan related to dose assessment (10 CFR 50.47(b)(9)) was a risk-significant planning standard (RSPS) problem; but it was not a RSPS functional failure of the Oyster Creek dose assessment

process. Because the time-motion study concluded that a manual iodine and particulate sample could have been obtained under accident conditions without exceeding regulatory dose limits, the inspectors determined that the RSPS function had not been degraded and the failure of the automatic sampling system ultimately would not have affected the outcome of protecting the health and safety of the public or of station personnel.

The performance deficiency had a cross-cutting aspect in the area of problem identification and resolution, because Exelon did not take appropriate corrective actions in a timely manner commensurate with its safety significance and complexity. Specifically, the RAGEMS sampling system was not able to satisfy the functions required by the Oyster Creek Emergency Plan for over two years before Exelon took adequate steps to identify the problem and initiate corrective actions [P.1(d)].

Enforcement: 10 CFR 50.54(q) requires, in part, that a licensee "shall follow and maintain in effect emergency plans which meet the standards in 10 CFR 50.47(b) and the requirements in Appendix E of this part."

Contrary to the above, the Oyster Creek main stack iodine and sampling system function was not creditable from November 2006 through March 2009, because the RAGEMS automatic sampling system was taken out of service in November 2006 and the licensee was unable to confirm that an accident-condition manual sample was obtainable until a time-motion study was assessed in March 2009. This condition violated the requirements of the Oyster Creek Emergency Plan, and placed Exelon in violation of 10 CFR 50.54(q) for not properly maintaining the conditions of the Emergency Plan. Because this finding is of very low safety significance, and because it was entered into Exelon's corrective action program,(IR 871701), this violation is being treated as a NCV, consistent with Section VI.A of the NRC Enforcement Policy. **(NCV 005000219/2009002-01, Failure of the Oyster Creek RAGEMS to Meet the Requirements of the Emergency Plan)**

Maintenance Personnel Assigned to the Emergency Response Organization Did Not Receive Proper Training

No findings of significance were identified.

Exelon's root cause evaluation determined that the issue was due to an error in the LMS qualification database structure. As of January 2009, Exelon completed an extent of condition review which consisted of reviewing the training and qualifications of the electrical, mechanical, and instrument maintenance groups, as well as the radiation protection, chemistry, licensed operators, and non-licensed operators. Exelon concluded that only the nineteen technicians from the maintenance groups did not have the required emergency plan training. Exelon provided those individuals the required training on January 9.

Exelon's extent of condition review utilized the shift coverage logs as detailed in procedure OP-OC-100-1001, "Shift Coverage Logs," to assess the daily shift compositions for the affected time periods (June 2006 thru January 2008) when non-qualified technicians had been assigned to ERO positions. Exelon determined that while

there were occasions when non-qualified technicians had been assigned to shift roles, in all cases there were extra personnel on shift who were qualified to fill those technicians' ERO positions.

The inspectors reviewed Exelon's effort and compared the requirements of the "Shift Coverage Log" with those of the Oyster Creek Emergency Plan. The inspectors noted that the "Shift Coverage Log" requirements were more conservative than the Emergency Plan requirements and concluded that the non-qualified technicians had not caused a violation of the Emergency Plan staffing requirements.

4OA3 Event Followup (71153) (5 samples)

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

.1 Unusual Event and Automatic Reactor Scram due to Fire in the 'M1A' Transformer

a. Inspection Scope

On February 1 (at 2156), operations personnel in the control room responded to an automatic load reject scram caused by the failure of the 'M1A' transformer. The nature of the failure of the 'M1A' transformer caused a fire when venting oil ignited. Exelon's fire brigade responded and ensured that the deluge system for the 'M1A' had activated to prevent the spread of the fire. At 2202, offsite fire fighting assistance was requested to fight the fire. In accordance with Oyster Creek Generating Station's emergency action level (EAL) matrix, an Unusual Event (UE) was declared at 2211, due to a fire in the main transformer pad area not extinguished within 15 minutes of detection. Offsite fire fighting assistance arrived at 2212 and the fire was extinguished at 2227 and a reflash watch was established. Operations personnel terminated from the UE at 2337 on February 1.

The inspectors responded to the control room following notification of the scram and observed the response of Exelon personnel to the event. At the time of the event, the inspectors verified that conditions were met for an UE as described in the Oyster Creek EAL matrix. The inspectors reviewed log entries and verified that Exelon personnel met the time requirements in making the EAL declaration and notification. 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 technical specification requirements to ensure that Oyster Creek operated in accordance with its operating license during course of the event. The inspectors also provided NRC regional management with a periodic status of during the course of the event.

The inspectors reviewed process plant 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 procedures OP-AA-108-114, "Post Transient Review" and OP-AA-106-101-1001, "Event Response Guidelines."

The inspectors observed the PORC meeting prior to plant startup to evaluate whether Exelon understood the cause of the event and appropriately resolved issues identified during the event. The inspectors reviewed Exelon's prompt investigation and post-trip review reports, both documented in corrective action program condition report IR 874816, 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.

This event is described and evaluated in corrective action program condition reports IR 875046, 874816, and 875100.

b. Findings

No findings of significance were identified.

.2 Leak from the 'B' Isolation Condenser (IC) Shell Vent

a. Inspection Scope

On February 9, Exelon chemistry personnel noted that condensation from the 'B' IC shell vent was reaching the ground outside of the reactor building. The area was covered with herculite and a sample of the condensation was taken. The results of the analysis indicated that the tritium concentration was 21,900 picocuries per liter (pci/L), which is in excess of the New Jersey state reportable activity concentration of 2000 pci/L. Chemistry sample results performed by Exelon did not identify other radionuclides above minimum detectable activity. Exelon notified the State of New Jersey for the release on the same day.

The inspectors discussed the issue with Exelon engineering, chemistry, and radiation department personnel in order to understand the extent of the issue with the condensate transfer, IC, and de-mineralized water systems. The inspectors walked down the area below the isolation condenser discharge piping, including the area potentially impacted by the condensation. The inspectors reviewed public and occupational dose assessments performed by Exelon personnel. The inspectors also reviewed and discussed groundwater monitoring data and IC water sample data.

This event is described and evaluated in corrective action program condition report IR 878594.

b. Findings

No findings of significance were identified.

The inspectors reviewed and discussed Exelon's radiological dose assessments for public and occupational dose and did not identify any significant dose consequences associated with the condensation. There were no drinking water pathways impacted by the condensation and sampling of groundwater wells in early March 2009 did not indicate any detectable tritium above minimum detectable activity from this source. Exelon has taken the initiative to install, and place in-service, a new clean water tank to

provide a source of non-tritium containing water for use by the ICs. At the time of this inspection, Exelon was implementing actions to place the new tank and clean water source in service.

.3 Chlorine Leak from New Rad Waste Service Water Chlorination Building

a. Inspection Scope

On March 5, operations personnel responded to a control room alarm which indicated that a chlorine gas leak existed at the chlorination building within the protect area. Operations personnel quarantined the area and chemistry technicians responded in respiratory equipment to investigate the potential source of the leakage. Exelon personnel identified a small chlorine leak originating from a used chlorine bottle test cap. Exelon personnel were able to isolate the leak and the alarmed stopped upon successfully tightening the test cap on the bottle.

The inspectors reviewed Exelon's response to the chlorine leak by reviewing the control room logs, abnormal operating procedure for toxic or flammable gas release, and discussing the issue with Exelon personnel to understand the actions that were taken and how plant equipment responded. The inspectors performed a walkdown of the chlorination building in order to understand the extent of the issue. The inspectors also verified that conditions did not meet the entry criteria for an EAL as described in the Oyster Creek EAL matrix.

This event is described and evaluated in corrective action program condition report IR 888938.

b. Findings

No findings of significance were identified.

.4 (Closed) LER 05000219/2008-001-00, Automatic Reactor Shutdown Caused By Main Transformer Failure

This license event report (LER) discussed an automatic reactor scram that occurred on November 28, 2008, from a load reject caused by a failure of the 'M1A' transformer. Additional information on this event is contained in section 4OA5.3 of this report. The inspectors reviewed this LER and no findings of significance were identified and no violation of NRC requirements occurred. This LER is closed.

.5 (Closed) LER 05000219/2009-001-00, Automatic Reactor Shutdown Caused by Main Transformer Failure

This LER discussed an automatic reactor scram and UE that occurred on February 1, from a load reject caused by the failure of the 'M1A' transformer. A description of this event is further described in section 4OA3.1 of this report. The inspectors reviewed this LER, the results of the installation testing of the 'M1A' transformer from December 2008 and the results of a forensic analysis of the 'B' phase high voltage bushing. The inspectors concluded that Exelon had maintained and tested the transformer in accordance with industry standards. The inspectors further concluded that the failure

mechanism for the 'B' phase high voltage bushing was not identifiable by the installation testing and was not reasonably within Exelon's ability to foresee, correct or prevent. The inspectors reviewed the LER and no findings of significance were identified and no violation of NRC requirements occurred. Exelon documented this event in corrective action program condition reports IR 875046, 874816, and 875100. This LER is closed.

4OA5 Other

.1 Quarterly Resident Inspector Observations of Security Personnel and Activities

a. Inspection Scope

During the inspection period, the inspectors conducted the following observations of security force personnel and activities to ensure they were consistent with Exelon security procedures and regulatory requirements relating to nuclear plant security. These observations took place during both normal and off-normal plant working hours. Specifically, the inspectors:

- Observed operations within the central and secondary alarm stations;
- Toured selected security towers and security officer response posts;
- Observed security force shift turnover activities;
- Observed a security force drill; and
- Reviewed security logs and corrective action program documents which discussed security issues.

.2 (Closed) URI 05000219/2008005-03, Stack Radiation Monitoring System Sampling

This URI was opened in NRC inspection report 05000219/2008005, dated January 27, 2009. The URI allowed the inspectors to review Exelon's evaluation of this issue and to assess the Emergency Plan implications associated with placing the RAGEMS auto sampling system out of service. This issue is further discussed and evaluated in section 4OA2.2 of this report. The inspectors identified a Green NCV of 10 CFR 50.54(q). This URI is closed.

.3 (Closed) URI 05000219/2008005-04, Failure of M1A Transformer Causes an Automatic Load Reject Scram

This URI was opened in NRC inspection report 05000219/2008005, dated January 27, 2009. The URI allowed the inspectors to review Exelon's root cause evaluation and LER regarding the failure of the 'M1A' main transformer and reactor scram to determine if a performance deficiency existed which contributed to the event.

The inspectors reviewed the results of the forensic disassembly of the 'M1A' transformer conducted by an Exelon contracted company, the results of Exelon's transformer dissolved oil analysis program from 2004 to the present, and the results of the 2004 comprehensive electrical diagnostic test of the 'M1A' transformer. This data was assessed using IEEE Std C57.104-1991, "IEEE Guide for the Interpretation of Gases Generated in Oil-Immersed Transformers" and Nuclear Electric Insurance Limited (NEIL) guidance.

The inspectors concluded that Exelon maintained the transformer in accordance with industry standards and the nature of the failure was not reasonably within Exelon's ability to foresee, correct or prevent. No findings of significance were identified and no violation of NRC requirements occurred. Exelon documented the issue in corrective action program condition report IR 850348. This URI is closed.

.4 Institute of Nuclear Power Operations (INPO) Plant Assessment Report Review

a. Inspection Scope

The inspectors reviewed the final report for the March 2008 INPO plant assessment of Oyster Creek in the fourth quarter of 2008. The inspectors reviewed the report to ensure that issues identified were consistent with NRC's perspectives of Exelon's performance and to verify if any significant safety issues were identified that required further NRC follow-up.

b. Findings

No findings of significance were identified.

4OA6 Meetings, Including Exit

Director of Division of Reactor Safety Site Visit. On March 23, a site visit was conducted by Mr. D. Roberts, Division of Reactor Safety, Director, for the NRC's Region 1 Office. During Mr. Roberts' visit, he toured the plant and met with Exelon managers.

Resident Inspector Exit Meeting. On April 16, the inspectors presented their overall findings to members of Exelon's management led by Mr. P. Orphanos, Plant Manager, 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.

4OA7 Licensee-Identified Violations

None.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel
J. Barstow, Manager, Regulatory Assurance
P. Bloss, Director (acting), Work Management
J. Dostal, Director, Operations
S. Dupont, Regulatory Assurance Specialist
T. Farenga, Manager, Emergency Preparedness
G. Fehring, Manager, Site Security Operations
J. Kerr, Manager, Corrective Action Program
T. Keenan, Manager, Security
G. Ludlam, Director, Training
M. McKenna, Shift Operations Superintendent
P. Orphanos, Plant Manager
R. Peak, Director, Engineering
D. Peiffer, Manager, Nuclear Oversight
T. Rausch, Site Vice-President
H. Ray, Senior Manager, Design Engineering
J. Renda, Manager, Radiation Protection
T. Roddey, Manager, Programs
R. Skelskey, Senior Manager, System Engineering
J. Vaccaro, Director, Maintenance
J. Kandasamy, Manager, Environmental/Chemistry

Others:
State of New Jersey, Bureau of Nuclear Engineering

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened/Closed

05000219/2009002-01	NCV	Failure of the Oyster Creek RAGEMS to Meet the Requirements of the Emergency Plan (Section 4OA2)

Closed

05000219/2008-001-00	LER	Automatic Reactor Shutdown Caused By Main Transformer Failure (Section 4OA5)
05000219/2009-001-00	LER	Automatic Reactor Shutdown Caused By Main Transformer Failure (Section 4OA5)
05000219/2008005-03	URI	Stack Radiation Monitoring System Sampling (Section 4OA5)

05000219/2008005-04	URI	Failure of M1A Transformer Causes an Automatic Load Reject Scram (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

344, "Screen Wash System Operation"
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"
ABN-31, "High Winds"

Condition Report (IR)

879834	879826	879822	879809	868352	868902
868935	888536	887462	886007	868113	887941
887643	887646	888875	903035		

Other Documents

Cold Temperature Inspection Checklist, dated March 1, 2009
Cold Temperature Inspection Checklist, dated March 3, 2009

Section 1R04: Equipment Alignment

Procedures

304, "SLC Operation"
307, "Isolation Condenser System"
CC-AA-5001, "Post Transient or Scram Walkdown"
ER-AA-330-004, "Visual Examination of Snubbers"

Condition Reports (IR)

850551	880555	867106	882254	884481	870039
897709	897462				

Other Documents

CC-AA-5001, Attachment 1, "SSCs Inspected and Degraded Conditions Identified During Post Transient Walkdown, November 30, 2008, and February 2, 2009
GE 148F723, "SLC P&ID"

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"
OP-OC-201-008, "Oyster Creek Prefire Plans"
990-1746 Fire Hazards Analysis Report

Drawings
3D-911-02-012

Condition Reports (IR)
868954 884616 897102

Other Documents
Fire Hazard Analysis DG-FA-15, #1 EDG Room"
Fire Hazard Analysis DG-FA-17, #2 EDG Room"
Fire Hazard Analysis FS-FA-16, #EDG Fuel Storage Area"
OP-OC-201-208 Attachment 1, "Oyster Creek Nuclear Generating Station Pre-Fire Plan – #1 EDG Room (DG-FA-15)
OP-OC-201-208 Attachment 1, "Oyster Creek Nuclear Generating Station Pre-Fire Plan – #2 EDG Room (DG-FA-17)
OP-OC-201-208 Attachment 1, "Oyster Creek Nuclear Generating Station Pre-Fire Plan – EDG Fuel Storage Area (FS-FA-16)

Section 1R07: Heat Sink Performance
Procedures
309.1, "TBCCW System"

Condition Reports (IR)
442450 522880 596779 641679 641678 719228
548506 625363 642471 706676 712343 719911

Work Orders (AR)
R2118844

Section 1R11: Licensed Operator Requalification Program
Procedures
ABN-1,"Reactor Scram"
ABN-12, "Generator Excitation Equipment Malfunction"
ABN-60, "Grid Emergency"
312.11, "Nitrogen System and Containment Atmosphere Control"
EMG-3200.01A, "RPV Control No ATWS"
EMG-3200.01B, "RPV Control with ATWS"
EMG-3200.02, "Primary Containment Control"

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

Section 1R12: Maintenance Effectiveness
Procedures
310, "Containment Spray System Operation"
337, "4160 Volt Electrical System"
101.2, "Oyster Creek Site Fire Protection Program"
2400-SME-3915.03, "4160 Volt Breaker Preventive Maintenance"
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"
RAP-NSSS, "NSSS Annunciator Response Procedures"

MA-AA-716-210-1001, “Performance Centered Maintenance (PCM Templates)”
OP-MA-109-101, “Clearance and Tagging”
CC-AA-206, “Fuse Control”

Condition Reports (IR)

348189	435168	508367	582193	630756	676670
869293	869456	883776	872135	890226	

Work Orders (AR)

M2215490	R2095884	R2115708	R2119802	R2124728	R2109430
A2215944	R2108804	A2115627			

Other Documents
4160V AC Distribution System Health Report, dated 10/1/2008 – 12/31/2008
NEI 93-01, “Industry Guideline for monitoring the Effectiveness of Maintenance at Nuclear Power Plants”
Vendor Manual VM-OC-2612, “Operation and Maintenance Manual Fire Pump Drive Engines”
PCM Template Matrix – Small Diesel Engines
Troubleshooting Action Plan Log – Work Order A2215944

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”
OP-OC-108-109-1001, “Preparation for Severe Weather T&RM for Oyster Creek”
ABN-31, “High Winds”

Condition Report (IR)

879826	896256

Section 1R15: Operability Evaluations

Procedures
OP-AA-108-115, “Operability Determinations (CM-1)”
2400-SMM-3921.05, “Calibration of Bergen-Paterson Hydraulic Snubber Test Machine”
675.1.001, “Hydraulic Snubber Inspection and Replacement”
675.1.507, “Functional Testing of Bergen-Paterson Hydraulic Snubbers”

Condition Reports (IR)

866401	866402	874816	879137	882254	883829
884640	890680	889554	896256	897526	O2003-0270

Work Orders (AR)

C2020570	R2139264	R2139027

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”

Insulation Fluids Analysis for M1B Transformer, dated February 2, 2009
Doble Testing Results for M1B Transformer, dated February 4, 2009
Doble Testing Results for M1B Transformer, dated December 1, 2008
IEEE Std C57.104.1991, "IEEE Guide for the Interpretation of Gases Generated in Oil-Immersed Transformers"
ASME OM Code 1995, "Code for Operation and Maintenance of Nuclear Power Plants"
Oyster Creek Nuclear Generating Station "Updated Final Safety Analysis Report"
Oyster Creek Nuclear Generating Station "Operating License and Technical Specifications"
"Past operability of remote shutdown and Fuel Zone level panels and instrument rack RK03 due to scaffold clearance violations", dated March 16, 2009
Control Room Operator Logs, dated March 23, 2009
Operability Evaluation O2003-0270, "DG-1 Battery Charger"

Section 1R19: Post-Maintenance Testing

Procedures

ER-AA-330-004, "Visual Examination of Snubbers"
MA-AA-716-012, "Post Maintenance Testing
OP-MA-109-101, "Clearance and Tagging"
OP-OC-100-1003, "Redundant System Operability Verification Checksheet"
310, "Containment Spray System Operation"
607.4.008, "Containment Spray and Emergency Service Water Pump System 2 Operability Test"
609.3.113, "Isolation Condenser Automatic Actuation Bistable Calibration and Test"
645.4.001, "Fire Pump #1 Operability Test"
645.6.010, "Fire Suppression Deluge Valve Functional Test"
675.1.001, "Hydraulic Snubber Inspection and Replacement"
675.1.507, "Functional Testing of Bergen-Paterson Hydraulic Snubbers"
2400-SMM-3921.05, "Calibration of Bergen-Paterson Hydraulic Snubber Test Machine"

Condition Report (IR)

645392	656696	882254	883380	883384	883829
884219	882388	884133	882305	888469	885291
874751					

Work Order (AR)

C2020570	R2126992	R2135579	M2216450	R2134599	R2137894
C2020875	C2020443	C2020321			

Other Documents

IR850348 Scram Report, dated November 28, 2008
IR874816 Scram Report, dated February 1, 2009
Doble Testing Results for Eddystone 3 Transformer, dated February 4, 2009
Doble Testing Results for Eddystone 3 Transformer (M1A), dated February 25, 2009
OC 09-00140, "Replace M-1A Transformer with Eddystone Transformer"
Adverse Condition Monitoring and Contingency Plan, "1-1 Fire Diesel Condition Monitoring", dated February 6, 2009
ECR OC-09-00248-000, "204 15789: Battery Charger Replacement For EDG-2"
NRC IE Circular 76-05: Hydraulic Shock and Sway Supressors – Maintenance of Bleed and Lock-up Velocities on ITT Grinnell's Model Nos. Fig. 200 and Fig. 201, Catalog PH-74-R
NRC Information Notice No. 82-12: Surveillance of Hyraulic Snubbers

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”

Drawing

C210487-0,“NO. 3 MAIN PWR. TRANSF. NAMEPLATE”

Condition Report (IR)

877435	876524	874852	883938	884133	883768
883433	883339	883211	877906	880897	881032
881614	882955	882893	882560	882388	882305
882381	882361	882338	882325	882317	882305
882280	882032	881610	881614	881137	881032
880897	885858	886910	886951	886950	886806
886899	886987	886659	886767	886794	887008
887010	887012	887026	887043	887082	886684
886336	886524	885408	885406	885344	885136
885177	885199	884133	883938	883768	

Work Orders (AR)

A2216369

Other Documents

A2216369, “Prepare Tech Eval to Support Tagging and Clearance for M1A”
Extended Operation on Bypass Valves Adverse Condition Monitoring and Contingency Plan, dated February 18, 2009
Insulation Fluids Analysis for M1B Transformer, dated February 2, 2009
Doble Testing Results for M1B Transformer, dated February 4, 2009
Doble Testing Results for Eddystone 3 Transformer, dated February 4, 2009
Doble Testing Results for Eddystone 3 Transformer (M1A), dated February 25, 2009
OTDM 874816, “Operating the reactor at 20% to 25% power on bypass valve control with the turbine generator off-line while replacing the M1A transformer.”
OTDM 878531, “‘D’ Electromatic Relief Valve Operations”
810-1652-01, “Serveron On-Line Transformer Monitor Operation & Maintenance Guide”

Section 1R22: Surveillance Testing

Procedures

SA-AA-129, “Electrical Safety”
MA-AA-1000, “Conduct of Maintenance”
612.4.001, “SLC Pump and Valve Operability and IST”
634.2.002, “Main Station Battery Weekly Surveillance”
634.2.004, “24 Vdc Battery Weekly Surveillance”
610.4.013, “Core Spray System 2 Comprehensive/Preservice Pump In-Service Test”
619.3.111, “SDIV Analog Level Calibration and Test”
619.3.016, “High Drywell Pressure Scram Test and Calibration”
641.4.001, “Service Water Pump Operability and In-Service Test” and
645.4.001, “Fire Pump #1 Operability Test”

Condition Reports (IR)

879129	879067	879137	811067	870316	870337
870435	878525	872135			

Work Orders (AR)

R2135291	R2135843	R2135845	R2134505	R2134390	R2137894

Other Documents

NRC Inspection Manual Part 9900 Technical Guidance, "Maintenance- Preconditioning of Structures, Systems, and Components Before Determining Operability"
ASME OM Code 1995, "Code for Operation and Maintenance of Nuclear Power Plants"
Oyster Creek Nuclear Generating Station "Updated Final Safety Analysis Report"
Oyster Creek Nuclear Generating Station "Operating License and Technical Specifications"
Safety Evaluation 000212-036, "Core Spray System Operability Criteria Revision"
Safety Evaluation 000212-046, "Core Spray System Main Pump Operability Criteria"
Safety Evaluation 000212-061, "Core Spray System 2 Main Pump Operability Criteria"

Section 1EP6: Drill Evaluation

Other Documents

EP-AA-125-1002, "PI Summary Report", dated February 11, 2009

Section 2OS1: Access Control to Radiological Significant Areas

Procedures

RP-OC-1002, "Evaluation of Plant Radioisotopes and Energies"
RP-OC-1001-06-02, "Calculation of Oyster Creek Average Beta Energy"
RP-OC-1001-08-004, "Gross Alpha and Gross Beta DAC Values"

Condition Reports (IR)

813734	835816	835817	837169	853407	853408

Section 2OS2: ALARA Planning and Controls

Condition Reports (IR)

858338	754434	817147	850789	866379	866379

Other Documents

Calculation RP - OC-1001-09-002, Alpha Determination
Calculation RP - C-1001-08-03, Plant Radioisotopes
Calculation RP- OC-1001-08-001, Scaling Factors
Audit Report OC-08-13, dated December 8, 2008
OC Chemistry Performance Report, dated October 27, 2008
Assessment radiation protection -850789-02
Radiation Protection Department Excellence Plan

Section 2SO3: Radiation Monitoring Instrumentation and Protective Equipment

Procedures

RP-OC-826, "Inspection of Fire-hawk Mask Mounted Regulator SCBAs"
RP-AA-503, "Unconditional Release Survey"
RP-OC-703, "Calibration of Eberline Model PM-7 Personnel Monitor"
RP-OC-704, "Calibration of NE Technology Model SAM 9 and 11"
RP-OC-503-1001, "Release Survey Documentation"

Condition Reports (IR)
883219 883262 884045 897100 897102 897088
896558

Section 4OA2: Identification and Resolution of Problems

Procedures
EP-AA-1010, “Exelon Nuclear Radiological Emergency Plan Annex for Oyster Creek Station”
TQ-AA-113, “ERO Training and Qualification”
TQ-AA-161, “Maintenance Training Program”
EP-AA-121, “Emergency Response Facilities and Equipment Readiness”
CY-OC-120-900, “Stack Effluent Sampling and Analysis”
Procedure 831.8, “Post Accident Sampling and Analysis: Estimation of Percent Fuel Failure and Estimation of Main Stack Release Rate”
OP-OC-100-101, “Shift Coverage Guidelines”
OP-OC-100-1001, “Shift Coverage Log”

Condition Reports (IR)
871701 864933

Other Documents
Technical Support Document 09-004, Radiological Dose Assessment for Post Accident Stack RAGEM at Oyster Creek Nuclear Station (Revision 1)
OC Emergency Plan Component Work Status Report (dated 3/3/09)
Lesson Plan for G-1, EP Overview (Station) (Revision 6)
Lesson Plan for G-14, OSC Team Dispatch and Control (Revision 7)
Daily Shift Coverage Logs (dated 1/1/06 through 1/9/09)

Section 4OA3: Event Followup

Procedures
ABN-1, “Scram”
ABN-2, “Recirculation System Failures”
ABN-10, “Turbine Generator Trip”
ABN-29, “Plant Fires”
ABN-33, “Toxic or Flammable Gas Release”
CC-AA-5001, “Post Transient or Scram Walkdown”
OP-AA-101-113-1004, “Guidelines for the Morning Plant Status Reports”
OP-AA-108-114, “Post Transient Review”
LS-AA-106, “Plant Operations Review Committee”
307, “Isolation Condenser System”
RAP-K4e, “NRW Chlorine Leak”

Drawings
BR2004, “Demineralized & Condensate Water Transfer System”
GE 148F262, “Flow Diagram - Emergency Condenser System”

Condition Reports (IR)
874816 866108 875125 875100 875046 875094
875021 875037 878594 845673 867878 888938
888926 875037

Other Documents
NUREG-1022, “Event Reporting Guidelines 10 CFR 50.72 and 50.73"
OCNGS 990-1746, “Fire Hazards Analysis Report: MT-FA-12, Main Transformer and Condensate Area”
OP-OC-201-008, “Oyster Creek Pre-Fire Plans: Main Transformer Area (MT-FA-12)”
EP-AA-1010, “Radiological Emergency Plan Annex for Oyster Creek Station, Table OCGS 3-1 Hot Matrix Emergency Action “
EN 44822, “Unusual Event and Reactor Scram Due to Main Transformer Fire”
Doble Testing Results for M1A Transformer, dated December 10, 2008
PNO-I-09-001, “Unusual Event and Automatic Reactor Scram Due To a Fire In the M1A Main Transformer”
PNO-I-09-001A, “Unusual Event and Automatic Reactor Scram Due To a Fire In the M1A Main Transformer”
OP-AA-108-114, “Scram Report – BWR: Identifying Number: IR874816”
Complex Troubleshooting Guide for ‘A’ and ‘B’ Isolation Condensers
PCM Template, “Power Transformers – Oil Filled”
IEEE Std C57.104-1991, “IEEE Guide for the Interpretation of Gases Generated in Oil-Immersed Transformers.”
Control Room Logs, dated March 5, 2009
Exelon Nuclear Letter RA-09-026, LER 2009-002-00, “Automatic Reactor Shutdown Caused by Main Transformer Failure”, Dated March 31, 2009.
Doble Global Power Services report, “Bushing Forensic Analysis for Exelon, Oyster Creek”, dated March 31, 2009.
874816-06, Root Cause investigation Report “M1A Transformer Fire/Rx Scram due to ‘B’ Phase High Voltage Bushing Ground Fault”

Section 4OA5: Other
Condition Reports (IR)
850345 903944 869839 892966

Other Documents
850345-05, Root Cause Investigation Report “Reactor Scram Due to Internal Failure of the M1A Main Transformer.”
PCM Template, “Power Transformers – Oil Filled”
Licensee Event Report 2008-001-00, “Automatic Reactor Shutdown Caused By Main Transformer Failure”, dated January 21, 2009.
IEEE Std C57.104-1991, “IEEE Guide for the Interpretation of Gases Generated in Oil-Immersed Transformers.”
Doble Global Power Services Report, “Failure Teardown Investigation Report Main GSU for Oyster Creek Unit M-1A”, dated March 29, 2009.

LIST OF ACRONYMS

ACMP	Adverse Condition Monitoring Plan
ALARA	As Low As Is Reasonably Achievable
CEDE	Committed Effective Dose Equivalent
CT	Combustion Turbine
EAL	Emergency Action Level
EDG	Emergency Diesel Generator
EP	Emergency Preparedness
ERO	Emergency Response Organization
ESW	Emergency Service Water
Exelon	Exelon Energy Company, LLC
HRA	High Radiation Area
IC	Isolation Condenser
IMC	Inspection Manual Chapter
INPO	Institute of Nuclear Power Operations
IR	Condition Report
IST	In-Service Test
LER	License Event Report
LMS	Learning Management System
NCV	Non-Cited Violation
NEIL	Nuclear Electric Insurance Limited
NRC	US Nuclear Regulatory Commission
Oyster Creek	Oyster Creek Generating Station
pCi/L	Picocuries per Liter
PARS	Publicly Available Records
PI	Performance Indicators
PJM	PJM Interconnection, LLC
PORC	Plant On-Site Review Committee
PPC	Process Plant Computer
RAGEMS	Radioactive Monitoring System Sampling Capabilities
RBCCW	Reactor Building Closed Cooling Water
RSPS	Risk Significant Planning Standard
SCBA	Self-Contained Breathing Apparatus
SDIV	Scram Discharge Instrument Volume
SDP	Significance Determination Process
SLC	Standby Liquid Control
TSC	Technical Support Center
UE	Unusual Event
URI	Unresolved Item
WO	Work Order