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

December 18, 2012

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

SUBJECT: LIMERICK GENERATING STATION – NRC PROBLEM IDENTIFICATION AND RESOLUTION INSPECTION REPORT 05000352/2012010 AND 05000353/2012010

Dear Mr. Pacilio:

On November 9, 2012, the U. S. Nuclear Regulatory Commission (NRC) completed an inspection at your Limerick Generating Station (LGS) Units 1 and 2. The enclosed report documents the inspection results discussed with Tom Dougherty, Site Vice President, and other members of your staff.

This inspection examined activities conducted under your license as they relate to identification and resolution of problems and compliance with the Commission's rules and regulations and conditions of your license. Within these areas, the inspection involved examination of selected procedures and representative records, observations of activities, and interviews with personnel.

Based on the samples selected for review, the inspectors concluded that Exelon was generally effective in identifying, evaluating, and resolving problems. Exelon personnel identified problems and entered them into the corrective action program at a low threshold. Exelon prioritized and evaluated issues commensurate with the safety significance of the problems and corrective actions were generally implemented in a timely manner.

This report documents an NRC-identified finding of very low safety significance (Green). The finding was determined not to involve a violation of NRC requirements. If you disagree with the cross-cutting aspect assigned to the 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 LGS.

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 the

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).

Sincerely,

/RA/

Paul G. Krohn, Chief
Projects Branch 4
Division of Reactor Projects

Docket Nos.: 50-352, 50-353
License Nos.: NPF-39, NPF-85

Enclosure: Inspection Report 05000352/2012010 and 05000353/2012010
w/Attachment: Supplemental Information

cc w/encl: Distribution via ListServ

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).

Sincerely,

/RA/

Paul G. Krohn, Chief
Projects Branch 4
Division of Reactor Projects

Docket Nos.: 50-352, 50-353
License Nos.: NPF-39, NPF-85

Enclosure: Inspection Report 05000352/2012010 and 05000353/2012010
w/Attachment: Supplemental Information

cc w/encl: Distribution via ListServ

Distribution w/encl:
W. Dean, RA
D. Lew, DRA
D. Roberts, DRP
P. Wilson, DRP
C. Miller, DRS
J. Clifford, DRS
P. Krohn, DRP
A. Rosebrook, DRP
S. Ibarrola, DRP
E. DiPaolo, DRP, SRI
J. Hawkins, DRP, RI
N. Esch, DRP, AA
C. Santos, RI, OEDO
S. Shaffer, DRP
A. DeFrancisco, DRP
A. Dugandzic, DRP
R. Powell, DRP
RidsNrrPMLimerick Resource
RidsNrrDorlLpl1-2 Resource
ROPreports Resource

DOCUMENT NAME: G:\DRP\BRANCH4\INSPECTION REPORTS\LIMERICK\2012\4TH Q 2012\LIMERICK PIR REPORT 2012REV3.DOCX

ADAMS Accession No.: **ML12353A086**

☑ SUNSI Review		☑ **Non-Sensitive** ☐ Sensitive		☑ **Publicly Available** ☐ Non-Publicly Available	
OFFICE *mmt*	RI/DRP	RI/DRP	RI/DRP		
NAME	SShaffer/SS	RPowell/RP	PKrohn/PGK		
DATE	12/06 /12	12/ 17 /12	12/ 11 /12		

OFFICIAL RECORD COPY

U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket Nos.:	50-352, 50-353
License Nos.:	NPF-39, NPF-85
Report Nos.:	05000352/2012010 and 05000353/2012010
Licensee:	Exelon Generation Company
Facility:	Limerick Generating Station
Location:	Sanatoga, PA 19464
Dates:	October 22 – 26 and November 5 – 9, 2012
Team Leader:	Steve Shaffer, Senior Project Engineer
Inspectors:	Anne DeFrancisco, Project Engineer Aaron Dugandzic, Project Engineer Justin Hawkins, Resident Inspector, Limerick Generating Station
Approved by:	Paul G. Krohn, Chief Projects Branch 4 Division of Reactor Projects

SUMMARY OF FINDINGS

IR 05000352/2012010 and 05000353/2012010; October 22 – November 9, 2012; Limerick Generating Station (LGS); Biennial Baseline Inspection of Problem Identification and Resolution. The inspectors identified a finding in the area of prioritization and evaluation of issues.

This NRC team inspection was performed by three regional inspectors and one resident inspector. The inspectors identified a finding of very low safety significance (Green) during this inspection. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using NRC Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). Findings for which the SDP does not apply may be Green or assigned a severity level after NRC management review. Cross-cutting aspects associated with findings are determined using IMC 0310, "Components Within the Cross-Cutting Areas." 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.

Problem Identification and Resolution

The inspectors concluded that Exelon was generally effective in identifying, evaluating, and resolving problems. Exelon personnel identified problems, entered them into the corrective action program at a low threshold, and prioritized issues commensurate with their safety significance. In most cases, Exelon appropriately screened issues for operability and reportability, and performed causal analyses that appropriately considered extent of condition, generic issues, and previous occurrences. The inspectors also determined that Exelon typically implemented corrective actions to address the problems identified in the corrective action program in a timely manner. Notwithstanding, the inspectors identified one finding in the area of prioritization and evaluation of issues.

The inspectors concluded that, in general, Exelon adequately identified, reviewed, and applied relevant industry operating experience to LGS operations. In addition, based on those items selected for review, the inspectors determined that Exelon's self-assessments and audits were thorough.

Based on the interviews the inspectors conducted over the course of the inspection, observations of plant activities, and reviews of individual corrective action program and employee concerns program issues, the inspectors did not identify any indications that site personnel were unwilling to raise safety issues nor did they identify any conditions that could have had a negative impact on the site's safety conscious work environment.

Cornerstone: Initiating Events

> Green. The inspectors identified a finding of very low safety significance (Green) for Exelon's failure to complete an evaluation of the off-normal bus alignment prior to the summer period. Consequently, on July 18, 2012, LGS experienced a fault of the 124A load center (LC) transformer which led to an unplanned manual scram. Exelon's root cause evaluation for this event identified that a contributing cause was the electrical configuration being in an off-normal bus alignment (114A LC cross-tied to the 124A LC) for an extended period due to the failure of the 144D transformer, which placed more load on the degraded 124A connection and contributed to its failure. Exelon has entered the issue into the corrective action program (AR 1437657).

This finding was more than minor because it is similar to examples 4.f and 4.g of IMC 0612, Appendix E, “Examples of Minor Issues,” in that operators inserted a manual scram per procedural requirements following the loss of the reactor recirculation pumps (RRP) associated with the 124A LC transformer failure. Additionally, the finding was more than minor because it is associated with the equipment performance attribute of the Initiating Events cornerstone and affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. This finding was of very low safety significance (Green) because the finding did cause a reactor trip but did not cause a loss of mitigation equipment relied upon to transition the plant from the onset of the trip to a stable shutdown condition. This finding had a cross-cutting aspect in the Problem Identification and Resolution cross-cutting area, Corrective Action Program component, because Exelon did not take appropriate corrective actions to address safety issues and adverse trends in a timely manner, commensurate with their safety significance and complexity [P.1(d)]. Specifically, Exelon’s failure to restore the normal 124A LC alignment or evaluate the effects of continuing the off-normal alignment during the summer period in a timely manner placed additional loading on the transformer contributing to the failure. (Section 4OA2.1.c)

REPORT DETAILS

4. OTHER ACTIVITIES (OA)

4OA2 Problem Identification and Resolution (71152B)

This inspection constitutes one biennial sample of problem identification and resolution as defined by Inspection Procedure 71152. All documents reviewed during this inspection are listed in the Attachment to this report.

.1 Assessment of Corrective Action Program Effectiveness

a. Inspection Scope

The inspectors reviewed the procedures that described Exelon's corrective action program at LGS. To assess the effectiveness of the corrective action program, the inspectors reviewed performance in three primary areas: problem identification, prioritization and evaluation of issues, and corrective action implementation. The inspectors compared performance in these areas to the requirements and standards contained in 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," and Exelon procedure LS-AA-125, "Corrective Action Program Procedure." For each of these areas, the inspectors considered risk insights from the station's risk analysis and reviewed issue reports (IRs) selected across the seven cornerstones of safety in the NRCs Reactor Oversight Process. Additionally, the inspectors attended multiple Plan-of-the-Day, Station Ownership Committee, and Management Review Committee meetings. The inspectors selected items from the following functional areas for review: engineering, operations, maintenance, emergency preparedness, radiation protection, chemistry, physical security, and oversight programs.

(1) Effectiveness of Problem Identification

In addition to the items described above, the inspectors reviewed system health reports, a sample of completed corrective and preventative maintenance work orders, completed surveillance test procedures, operator logs, and periodic trend reports. The inspectors also completed field walkdowns of various systems on site, such as the emergency diesel generators (EDGs), residual heat removal, core spray, and remote safe shutdown panels. Additionally, the inspectors reviewed a sample of IRs written to document issues identified through internal self-assessments, audits, emergency preparedness drills, and the operating experience program. The inspectors completed this review to verify that Exelon entered conditions adverse to quality into their corrective action program as appropriate.

(2) Effectiveness of Prioritization and Evaluation of Issues

The inspectors reviewed the evaluation and prioritization of a sample of IRs issued since the last NRC biennial Problem Identification and Resolution inspection completed in November 2010. The inspectors also reviewed IRs that were assigned lower levels of significance that did not include formal cause evaluations to ensure that they were properly classified. The inspectors' review included the appropriateness of the assigned significance, the scope and depth of the causal analysis, and the timeliness of

resolution. The inspectors assessed whether the evaluations identified likely causes for the issues and developed appropriate corrective actions to address the identified causes. Further, the inspectors reviewed equipment operability determinations, reportability assessments, and extent-of-condition reviews for selected problems to verify these processes adequately addressed equipment operability, reporting of issues to the NRC, and the extent of the issues.

(3) Effectiveness of Corrective Actions

The inspectors reviewed Exelon's completed corrective actions through documentation review and, in some cases, field walkdowns to determine whether the actions addressed and corrected the identified causes of the problems. The inspectors also reviewed IRs for adverse trends and repetitive problems to determine whether corrective actions were effective in addressing the broader issues. The inspectors reviewed Exelon's timeliness in implementing corrective actions and effectiveness in precluding recurrence for significant conditions adverse to quality. The inspectors also reviewed a sample of IRs associated with selected non-cited violations (NCVs) and findings to verify that Exelon personnel properly evaluated and resolved these issues. In addition, the inspectors expanded the corrective action review to five years to evaluate Exelon actions related to Units 1 & 2 480 volt safeguard motor control centers (MCCs) and non-safeguard MCCs.

b. Assessment

(1) Effectiveness of Problem Identification

Based on the selected samples, plant walkdowns, and interviews of site personnel in multiple functional areas, the inspectors determined that Exelon identified problems and entered them into the corrective action program at a low threshold. Exelon staff at LGS initiated approximately 25,000 IRs between November 2010 and October 2012. The inspectors observed supervisors at the Plan-of-the-Day, Station Ownership Committee, and Management Review Committee meetings appropriately questioning and challenging IRs to ensure clarification of the issues. Based on the samples reviewed, the inspectors determined that Exelon trended equipment and programmatic issues, and appropriately identified problems in IRs. The inspectors verified that conditions adverse to quality identified through this review were entered into the corrective action program as appropriate. Additionally, inspectors concluded that personnel were identifying trends at low levels. In general, inspectors did not identify any significant issues or concerns that had not been appropriately entered into the corrective action program for evaluation and resolution. In response to several questions and minor equipment observations identified by the inspectors during plant walkdowns, Exelon personnel promptly initiated IRs and/or took immediate action to address the issues.

(2) Effectiveness of Prioritization and Evaluation of Issues

The inspectors determined that, in general, Exelon appropriately prioritized and evaluated issues commensurate with the safety significance of the identified problem. Exelon screened IRs for operability and reportability, categorized the IRs by significance, and assigned actions to the appropriate department for evaluation and resolution. The IR screening process considered human performance issues, radiological safety concerns, repetitiveness, adverse trends, and potential impacts on the safety conscious work environment.

Based on the sample of IRs reviewed, the inspectors noted that the guidance provided by Exelon's corrective action program implementing procedures appeared sufficient to ensure consistency in categorization of issues. Operability and reportability determinations were generally performed when conditions warranted and, in most cases, the evaluations supported the conclusion. Causal analyses appropriately considered the extent of condition or problem, generic issues, and previous occurrences of the issue. However, the inspectors identified one finding of more than minor significance for failure of LGS personnel to evaluate an off-normal condition of the 114A and 144D load centers cross-tied to their non-preferred power sources. This finding is documented in Section 4OA2.1.c. The inspectors also noted some observations in Exelon's prioritization and evaluation of the following issues:

Prioritization of Reactor Core Isolation Cooling (RCIC) Lube Oil System Relief Valve Replacements

As part of the corrective actions from the failure of the D23 EDG at LGS in May 2010, Exelon reviewed other systems that had lube oil relief valves to ensure that preventive maintenance (PMs) were being performed correctly to prevent future equipment failures. Exelon identified that the RCIC lube oil filter bypass and equalizer pipe relief valves (4 total – 2 per unit) should have a 10 year replacement PM frequency. Exelon created a corrective action (AR 1065596-84) to process replacement PMs on a 10 year frequency for these relief valves with an original due date of July 1, 2011. The due date for this action was extended multiple times and was finally completed on September 30, 2011. The inspectors determined that the new replacement PMs were created and assigned for 2017 and 2018 coincident with other relief valve work in the RCIC systems on both units although 3 of the 4 valves have never been replaced during the life of the plant, a period of time exceeding 20 years.

Inspectors identified that the last system outage workweek on Unit 1 was the week of September 5, 2011. Due to the extensions of the action item due date, Exelon missed the opportunity to replace the Unit 1 RCIC relief valve (PSV-050-125). The inspectors determined that the prioritization of replacement for these valves was not timely and was a performance deficiency. However, the inspectors did not identify an impact on equipment performance. Therefore, the inspectors determined that the issue was of minor significance.

Prioritization of Procedure Change Requests for High Pressure Coolant Injection (HPCI) System Test and Operating Procedures

In January 2011, Exelon documented an equipment apparent cause evaluation (EACE) for the HPCI turbine stop valve not resetting on Unit 1 (AR 1151354). Exelon generated corrective action assignments 31 and 32 (original due date of February 2012 and June 2012, respectively) to revise the HPCI system test and operating procedures. Inspectors identified that these due dates were rescheduled to March 2013. The inspectors determined that both of these assignments should have been prioritized and completed in a more timely manner based on the initial AR classification level. After the inspectors questioned the timeliness of the due dates for these actions, the operations department significantly changed the procedure change request action (PCRA) backlog process to prioritize backlog items to ensure that PCRAs initiated as corrective actions are prioritized ahead of routine change requests.

The inspectors determined that the untimely completion of the PCRAs for the HPCI system test and operating procedures was a performance deficiency. The inspectors determined this issue to be of minor significance because there have been no equipment failures or deficiencies associated with the HPCI procedures not being updated.

Prioritization of Special Plant Condition (SPC) Evaluation for the Long Path Recirculation Valve (HV-041-210)

In January 2012, Exelon documented a root cause evaluation (AR 1276176) for the NRC White finding for the Unit 2 RCIC system flow diversion event (05000353/2011004-01). As part of the corrective actions for this root cause, Exelon created a SPC condition assignment (AR 1276176-24) to test HV-041-210 valve at the first available opportunity. The assignment was coded for the next Unit 2 refueling outage in the spring of 2013. Exelon's justification for this scheduling is that the valve has been verified closed. The SPC was created to investigate the actual failure mode of the valve by going into the valve internals which could potentially change the root cause results.

The inspectors determined that the site did not prepare to perform this evaluation at the first available opportunity based on Exelon's current planning of the SPC and timing associated with parts availability. The inspectors also determined that because the results of the SPC could change the results of the root cause that Exelon should have prepared to conduct the SPC at the first available opportunity, including evaluating the performance of the SPC during one of the Unit 2 maintenance or forced (2M45, 2F47 or 2F48) outages earlier this year. The inspectors determined this issue to be of minor significance because there have been no equipment failures or deficiencies associated with not performing the SPC at the first available opportunity.

Remote Shutdown Panel Instrumentation Reliability

Two indications on the U1/U2 remote shutdown panel have been demonstrating degraded performance over time and have not been prioritized for timely, permanent repair. Specifically:

- Suppression Pool temperature TI-41-102 – Channel 'D' was inoperable for approximately eight months during 2012. Erratic indications on 'D' and 'H' channels have been documented in action requests since 1999, but component replacement is not scheduled for evaluation until August 2013;

- Reactor Pressure Vessel pressure PI-042-2R011 was documented as not being within its surveillance testing required calibration band during the 2009-2010 timeframe, when readings indicated greater than 1053 psig. Although the instrument was identified as requiring calibration to within the tolerance specified in ST-6-107-595-2 (<1053 psig), no repair evaluation existed to address the deficiency. The inspectors noted that recent checks during 2011 and 2012 indicate that the instrument is currently reading below 1053 psig thereby meeting the surveillance requirements.

The inspectors determined the two examples described above constitute a performance deficiency for not adequately prioritizing a correction of conditions adverse to quality commensurate with the risk-importance and potential operability / technical specification impact on remote shutdown instrumentation, despite the instruments having exhibited

degraded performance. However, the inspectors did not identify an operability impact such that a technical specification limiting condition for operation was exceeded. Specifically, TS 3.3.7.4 requires one channel to be operable and the inspectors verified compliance with this TS was maintained. Therefore, the inspectors determined that the issue was of minor significance, and not subject to enforcement action in accordance with the NRCs Enforcement Policy.

(3) Effectiveness of Corrective Actions

The inspectors concluded that corrective actions for identified deficiencies were generally timely and adequately implemented. For significant conditions adverse to quality, Exelon identified actions to prevent recurrence. The inspectors concluded that corrective actions to address the sample of NRC NCVs and findings since the last problem identification and resolution inspection were timely and effective. Notwithstanding, the inspectors did identify one finding of very low safety significance regarding failure to take adequate corrective actions associated with an off-normal electrical bus alignment. This finding is documented in Section 4OA2.1.c.

c. Findings

(1) Failure to Take Timely Corrective Actions to Address the 144D Load Center ODM Contingency Actions

Introduction. The inspectors identified a finding of very low safety significance (Green) for Exelon's failure to complete an evaluation of the off-normal bus alignment prior to the summer period. Consequently, on July 18, 2012, LGS experienced a fault of the 124A LC transformer which led to unplanned manual scram. Exelon's root cause evaluation for this event identified that a contributing cause was the electrical configuration being in an off-normal bus alignment (114A LC cross-tied to the 124A LC) for an extended period due to the failure of the 144D transformer, which placed more load on the degraded 124A connection and contributed to its failure.

Description. The inspectors performed a review of Exelon's causal evaluation (AR 1355888) that was generated in response to the Unit 1 scram due to the 144D LC transformer fault on April 19, 2012. Exelon created corrective action assignment number 10 to the 144D LC evaluation to document an ODM evaluation for startup with the 114A and the 144D LCs cross-tied to their non-preferred sources (124A and 244D respectively). This ODM evaluation was approved by Exelon management with a contingency requiring that prior to the summer period, the normal bus alignment would be restored. Exelon's corrective action program tracked completion of this ODM contingency under AR 1356794 assignment number 2 with a due date of May 30, 2012. Exelon documented the closure of AR 1356794 to AR 1371755 on May 29, 2012, because the transformer vendor advised the station to replace the 144D transformer instead of repairing it.

The inspectors identified that newly created AR 1371755 stated in part, "This AR is being generated to evaluate possible decisions and repair scenarios during summer operation." The inspectors noted that the original due date for this AR was June 1, 2012, but that the due date was extended three times.

Subsequently, on July 18, 2012, LGS experienced a fault of the 124A LC transformer which led to an unplanned manual scram. The root cause evaluation completed for the 124A LC failure stated in part that, "contributing to this event was the 114A LC being cross-tied to the 124A LC for an extended period due to a previous unrelated failure of the 144D transformer, which placed more load on the degraded (124A) connection and led to its failure." The inspectors determined that the 144D LC ODM contingency to restore normal bus alignment or fully evaluate the off-normal alignment prior to the summer period was not completed by Exelon management prior to the 124A LC transformer failure.

Allowing the corrective actions for the original ODM contingency to be extended multiple times without proper evaluation per the ODM and corrective action program processes is a performance deficiency.

Analysis. The inspectors determined Exelon's failure to complete an evaluation of the off-normal bus alignment prior to the summer period was a performance deficiency that was within Exelon's ability to foresee and correct and should have been prevented. The inspectors determined that this issue was more than minor because it is similar to examples 4.f and 4.g of IMC 0612, Appendix E, "Examples of Minor Issues," in that operators inserted a manual scram per procedural requirements following the loss of the reactor recirculation pumps (RRPs) associated with the 124A LC transformer failure. Additionally, the finding was more than minor because it is associated with the equipment performance attribute of the Initiating Events cornerstone and affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. This finding was of very low safety significance (Green) because the finding did cause a reactor trip but did not cause a loss of mitigation equipment relied upon to transition the plant from the onset of the trip to a stable shutdown condition.

The inspectors determined that this finding had a cross-cutting aspect in the Problem Identification and Resolution cross-cutting area, Corrective Action Program component, because Exelon did not take appropriate corrective actions to address safety issues and adverse trends in a timely manner, commensurate with their safety significance and complexity [P.1(d)]. Specifically, Exelon's failure to restore the normal 124A LC alignment or evaluate the effects of continuing the off-normal alignment during the summer period in a timely manner placed additional loading on the transformer contributing to the failure.

Enforcement. This finding does not involve enforcement action since no regulatory requirement violation was identified because Exelon's procedure, OP-AA-106-101-1006, Revision 011, "Operational Decision Making Process," is not required to be implemented as part of LGS's 10 CFR 50, Appendix B, Quality Assurance Program and the 124A LC transformer is not a safety related component. Exelon has entered the issue into the corrective action program (AR 1437657). Because this finding does not involve a violation, it is identified as a finding (FIN). (**FIN 05000352/2012010-01, Failure to Take Timely Corrective Actions to Address the 144D Load Center ODM Contingency Actions**)

.2 Assessment of the Use of Operating Experience

a. Inspection Scope

The inspectors reviewed a sample of IRs associated with review of industry operating experience to determine whether Exelon appropriately evaluated the operating experience information for applicability to LGS and had taken appropriate actions, when warranted. The inspectors also reviewed evaluations of operating experience documents associated with a sample of NRC generic communications to ensure that Exelon adequately considered the underlying problems associated with the issues for resolution via their corrective action program. In addition, the inspectors observed various plant activities to determine if the station considered industry operating experience during the performance of routine and infrequently performed activities.

b. Assessment

The inspectors determined that Exelon appropriately considered industry operating experience information for applicability, and used the information for corrective and preventive actions to identify and prevent similar issues when appropriate. The inspectors determined that operating experience was appropriately applied and lessons learned were communicated and incorporated into plant operations and procedures when applicable. The inspectors also observed that industry operating experience was routinely discussed and considered during the conduct of Plan-of-the-Day meetings and pre-job briefs. However, the inspectors noted some observations in Exelon's use of operating experience:

Reactor Recirculation Pump Seal Replacement PM Deferral and ODM

In February 2012, Exelon personnel documented (AR 1299616-04), an ODM to defer the 6 year PM for replacement of the RRP seals. The ODM justified the decision by stating that the 1 'A' RRP seal was exhibiting good performance and Operating Experience (OE) from both Quad Cities (953714) and Dresden (1258322) technically supported deferral of the replacement PM past the 6 year point.

However, the inspectors identified that Exelon's PM deferral was not supported by the OE or the vendor recommendation cited in the ODM. Specifically, the Quad Cities OE documented an approved ODM for exceeding the 6 year replacement PM but the site replaced the RRP seal prior to the 6 year point. In addition, the Dresden OE did not evaluate extending the seal replacement PM frequency past 6 years. Also, Exelon's use of LGS' 6 year replacement PM history with no failures was not a valid justification because the site only changed the PM frequency for replacement from 4 to 6 years in 2004 and the first RRP seal replacement on this new frequency occurred in April 2006, less than one replacement cycle from February 2012. Finally, the inspectors noted that while the vendor recommended deferral, Exelon did not support this recommendation in the approved ODM with any technical justification. Although the ODM approved operating the RRP seals beyond six years, the 1 'A' RRP seal experienced degradation in August of 2012 requiring replacement of the seal within the 6 year PM frequency.

The inspectors determined that the failure to adequately justify the ODM decision to defer the RRP seal replacement PM was a performance deficiency but was not a contributing cause of the 1 'A' RRP seal degradation in August 2012 (EACE AR

1392061). Therefore, the inspectors determined that the issue was of minor significance.

c. Findings

No findings were identified.

.3 Assessment of Self-Assessments and Audits

a. Inspection Scope

The inspectors reviewed a sample of audits, including the most recent audit of the corrective action program, departmental self-assessments, and assessments performed by independent organizations. Inspectors performed these reviews to determine if Exelon entered problems identified through these assessments into the corrective action program, when appropriate, and whether Exelon initiated corrective actions to address identified deficiencies. The inspectors evaluated the effectiveness of the audits and assessments by comparing audit and assessment results against self-revealing and NRC-identified observations made during the inspection.

b. Assessment

The inspectors concluded that self-assessments, audits, and other internal Exelon assessments were generally critical, thorough, and effective in identifying issues. The inspectors observed that Exelon personnel knowledgeable in the subject completed these audits and self-assessments in a methodical manner. Exelon completed these audits and self-assessments to a sufficient depth to identify issues which were then entered into the corrective action program for evaluation. In general, the station implemented corrective actions associated with the identified issues commensurate with their safety significance.

c. Findings

No findings were identified.

.4 Assessment of Safety Conscious Work Environment

a. Inspection Scope

During interviews with station personnel, the inspectors assessed the safety conscious work environment at LGS. Specifically, the inspectors interviewed personnel to determine whether they were hesitant to raise safety concerns to their management and/or the NRC. The inspectors also interviewed the station Employee Concerns Program coordinators to determine what actions are implemented to ensure employees were aware of the program and its availability with regards to raising safety concerns. The inspectors reviewed the Employee Concerns Program files to ensure that Exelon entered issues into the corrective action program when appropriate.

b. Assessment

During interviews, Exelon staff expressed a willingness to use the corrective action program to identify plant issues and deficiencies and stated that they were willing to raise safety issues. The inspectors noted that no one interviewed stated that they personally experienced or were aware of a situation in which an individual had been retaliated against for raising a safety issue. All persons interviewed demonstrated an adequate knowledge of the corrective action program and the Employee Concerns Program. Based on these limited interviews, the inspectors concluded that there was no evidence of an unacceptable safety conscious work environment and no significant challenges to the free flow of information.

c. Findings

No findings were identified.

4OA6 Meetings, Including Exit

On November 9, 2012, the inspectors presented the inspection results to Tom Dougherty, Site Vice President and other members of the LGS staff. The inspectors verified that no proprietary information was retained by the inspectors or documented in this report.

Also, on December 6, 2012, the inspectors presented additional information to Bob Dickinson, Regulatory Affairs Manager and other members of the LGS staff via teleconference.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

T. Dougherty, Site Vice President
D. Lewis, Plant Manager
B. Schultz, Senior Reactor Operator
R. Kreider, Operations Director
M. Gillin, Shift Operations Superintendent
C. Gerdes, Manager, Chemistry
R. Webster, Employee Concerns Coordinator
C. Capriotti, Acting Manager, Maintenance
D. Doran, Engineering Director
J. Hunter, Work Management, Director
T. Wasong, Training, Director
B. Dickinson, Regulatory Assurance, Manager
J. Karkoska, Nuclear Oversight, Manager
R. Harding, Regulatory Assurance
M. Klick, Corrective Action Program, Manager
D. Semeter, Senior Manager Plant Engineering
M. Bonanno, Electrical Branch Manager
D. Merchant, Radiation Protection Manager
J. Issertell, Instrument & Controls Maintenance Manager
L. Murphy, Chemistry
M. Alexis, Component Specialist
M. Barth, System Engineer
J. Berg, System Engineer
M. Bonifanti, Engineering Manager
D. Cheung, System Engineer
I. Choudhry, Security Programs Lead
M. Dirado, Engineering Manager
A. Kopistansky, System Engineer
J. Mitman, Sr. Engineer
V. Patel, System Engineer
E. Purdy, System Engineer
C. Ramos, Operations Shift Supervisor
R. Rodgers, CMO Program Specialist (PCM/PAM)
N. Roy, System Engineer
B. Schultz, Manager Operations Support
D. Smolinsky, Technical Procurement Specialist
M. Crim, Emergency Response
C. Fritz, Operations
D. Wilbert, Operations
B. Sokso, Operations
S. Bakes, Operations
B. Gulbrandson, Operations
C. Ramos, Operations

NRC Personnel

R. Powell, Chief of TSAB, Region I

LIST OF ITEMS OPENED, CLOSED, DISCUSSED, AND UPDATED

Opened and Closed

05000352/2012010-01	FIN	Failure to Take Timely Corrective Actions to Address the 144D Load Center ODM Contingency Actions

LIST OF DOCUMENTS REVIEWED

Section 4OA2: Problem Identification and Resolution

Audits and Self-Assessments
NOSA-LIM-11-04: Corrective Action Program Audit Report
NOSA-LIM-11-05: Engineering Design Control Audit Report, IR 1235172
NOSA-LIM-11-06: Radiation Protection Audit Report
NOSA-LIM-11-11: Maintenance Functional Area Increased Frequency Audit Report
Executive Review of Exelon Nuclear's Learning Programs for December 2011
Executive Review of Exelon Nuclear's Learning Programs for April 2012
Executive Review of Exelon Nuclear's Learning Programs for August 2012
Functional Area Self-Assessment (FASA), Preparation for NRC Problem Identification and
FASA, Emergency Preparedness Program
FASA, Operations Standards
FASA, Operator Fundamentals
FASA, NEI 08-07 for LGS Security, 2011, IR 1140938
FASA, Generic Letter 89-13, 2011, IR 1138044
FASA, Plant Improvement Process, 2011, IR 1138055
Check-In Self-Assessment, Security Search Processes, IR 1319500
Check-In Self-Assessment, EOC Engineering Performance Monitoring, IR 1319766
Resolution Inspection, August 2012 (AR 01317145)
Check-In Self-Assessment, UFSAR Update Compliance Check-In (AR 131130
Check-In Self-Assessment, Safety Culture Survey Check-In plan & Approval Assignment OPEX Program (AR 01137212)
Check-In Self-Assessment, CAP Quality
LMI Backlog Reduction: Maintenance

Issue Reports *(* indicates that condition report was generated as a result of this inspection)*

0105608	1151321	1313897	1381595
0138075	1151354	1314434	1382262
0219148	1151354	1314807	1384549
0644942	1151764	1320143	1384878
0728111	1152249	1322653	1386343
0874599	1152382	1324530	1390033
0916037	1152591	1327746	1391598
0932781	1153519	1327817	1392061
0935522	1156960	1328562	1392651
0952219	1158168	1328685	1392730
0952695	1160445	1331127	1392943
0952910	1164021	1332374	1402816
0953032	1166306	1334650	1402900
0953714	1166763	1335126	1406101
1008113	1166932	1336987	1406105
1043440	1167295	1337375	1406113
1049144	1167903	1337749	1406115
1065596	1168410	1337856	1406117
1075848	1170958	1341136	1406118
1083732	1173566	1342560	1412661
1084172	1181279	1343301	1412675
1088044	1186147	1345006	1421857
1089704	1189330	1346091	1423970
1089777	1200001	1346455	1426057
1089945	1201717	1347887	1426226
1090043	1203601	1347906	1427060
1090672	1204897	1351594	1428812
1092186	1224283	1352071	1429672
1092190	1230409	1352860	1429672
1095500	1230613	1352930	1429761
1107986	1238874	1353276	1430132
1112160	1239365	1353888	1430233
1114118	1242426	1356297	1432872
1117397	1244969	1356770	1436439*
1126485	1248979	1357529	1437539*
1129709	1258322	1365199	1437638*
1138044	1276176	1366175	1437657*
1142397	1290928	1366579	1467777
1142397	1296602	1368968	A1076981
1144567	1297367	1371755	A1565999
1148121	1299616	1374944	A1566223
1148274	1312492	1375497	A1648156
1151320	1313443	1378538	

Action Requests

A1845735	01083732	01244969	01359061
A1435950	01084172	01244990	01371381
A1851320	01102717	01249109	01377559
A1211162	01110466	01254845	01380101
A1481462	01114118	01254845	01384034
A1695149	01116115	01260861	01385606
A1845735	01126485	01269903	01386437
A1743488	01139033	01297569	01388653
A1864995	01139385	01310370	01401328
A1851320	01142397	01310370	01405112
A1211162	01151354	01319906	01407477
A1481462	01168410	01320066	01411487
A1695149	01184333	01320143	01411994
00880889	01213452	01328685	01425404
00885591	01227977	01334650	01757154
00908974	01231897	01343301	
00994647	01235013	01346455	
01071136	01238043	01353888	

NCVs and Findings

NCV 2010-04-03, Failure to perform a PM required by the PCM template not implemented with subsequent failure of D23, IR 1065596-50

FIN 2010-04-03, Failure to Identify Incorrectly Adjusted Control Power Relay Resulting in Unit 1 Manual Scram, IR 1083732 16,17,18,19, 20

LER 2010-001-00, U2 Hi-Hi radiation alarm set point for the process radiation monitor on the reactor enclosure cooling water system (RECW), was discovered exceeding the TS value, IR 1084172-08

NCV 2010-07-01, Failure to complete UFSAR updates within the required time interval, IR 1442397-18

NCV 2010-07-02, Failure to perform increased unit cooler flushes per procedure when the unit cooler (1A RHR room) was running due to temperature controller deficiency, IR 1142397-18

NCV 2010-402-02, Failure to provide adequate intrusion detection in the OCA, IR 105608-09 and 10

NCV 2011-02-01, Unit 2 main steam line response time without corrective action, IR 1167295-10, 21, and IR 1168410-25

NCV 2011-02-02, Licensee Event Report 2011-001; Changed modes with a Unit 2 inoperable remote shutdown instrument (RHR heat exchanger bypass valve position indicator); AR 1167295/1168410

NCV 2011-05-001, Seismic Unusual Event notification; Failure to provide a timely Unusual Event notification for the August 23, 2011 seismic event; AR 1254845

NCV 2011-06-01, Inadequate corrective actions for previous NRC finding for programmatic deficiencies in the preventative maintenance program, IR 1114118-16

NCV 2011-503-01, Emergency Action Level HU6 non-conservative change; Failure to provide an adequate 50.54q review (reduction in effectiveness of the Emergency Plan for a 15 minute classification of a fire delay); AR 1184333

NCV 2012-08-01, Failure to include in LER 2-2011-003 that HPCI was inoperable while RCIC was inoperable, TS 3.0.3 should have been entered, IR 1377559-03

NCV 2012-401-01, Failure to perform a thorough search of an incoming vehicle in the sally port, IR 1353276-07

Procedures
8031-M1-B32-C001, Technical Manual for RCP, Revision 001
AD-LG-101-1002, Temporary Changes to Approved Documents and Partial Procedure Use, Revision 010
ARC-MCR-107/207 A2, Turbine Control Valve/Stop Valve/Stop Valve Scram Bypassed, Revision 004
ARC-MCR-111 A1, 'A' Recirculation Pump Seal Stage HI/LO Flow, Revision 000
CC-AA-112, Temporary Configuration, Revisions 17 & 18
CC-AA-4008, Engineer of Choice (EOC) Performance Monitoring and Improvement, Revision 001
CY-LG-120-852, Temporary Chemical Treatment of the Clarified Water System, Revision 4
E-011-00100, Sheet 029, Rev 0000, Layout Drawing MCC Cubicle HV-051-1F024B
EI-AA-1, Safety Conscious Work Environment, Revision 3
EI-AA-101, Employee Concerns Program, Revision 10
EI-AA-101-1002, Employee Issues Trending, Revision 7
ER-AA-2002, System Health Monitoring, Revision 015
ER-AA-2003, System Performance Monitoring and Analysis, Revision 009
ER-AA-600, Risk Management, Revision 006
ER-AA-600-1011, Risk Management Program, Revision 011
HU-AA-104-101, Procedure Use and Adherence, Revision 5
HU-AA-1212, Technical Task Risk/Rigor Assessment, Pre-job Brief, Independent Third Party Review, and Post-job Brief, Revision 004
IC-11-02002, Emergency Diesel Generator Voltage Regulators, Revision 014
IER 11-3, Weakness in Operator Fundamentals
LS-AA-106, Plant Operations Review Committee (PORC), Revision 007
LS-AA-115, Operating Experience Program, Revision 17
LS-AA-115-1001, Processing of Level 1 OPEX Evaluations, Revision 5
LS-AA-115-1002, Processing of Level 2 OPEX Evaluations, Revision 3
LS-AA-115-1003, Processing of Level 3 OPEX Evaluations, Revision 2
LS-AA-115-1004, Processing of NERS and NNOES, Revision 002
LS-AA-120, Issue Identification and Screening Process, Revision 14
LS-AA-125, Corrective Action Program (CAP) Procedure, Revision 17
LS-AA-125-1001, Root Cause Analysis Manual, Revision 10
LS-AA-125-1002, Common Cause Analysis Manual, Revision 7
LS-AA-125-1003, Apparent Cause Evaluation Manual, Revision 010
LS-AA-125-1004, Effectiveness Review Manual, Revision 5
LS-AA-125-1005, Coding and Analysis Manual, Revision 8
LS-AA-126, Self-Assessment and Benchmarking Program, Revision 007
LS-AA-126-1001, Focused Area Self-Assessments, Revision 7
LS-AA-126-1005, Check-In Self-Assessments, Revision 5
LS-AA-126-1006, Self-Assessment and Bench (SAB) Program, Revision 3
LS-AA-127, Passport Action Tracking Management Procedure, Revision 10
LS-AA-1012, Safety Culture Monitoring, Revision 2
M-020-002, Fairbanks Morse Opposed Piston Diesel Engine Examination and General Maintenance, Revision 006
M-043-013, Reactor Recirculation Pump N-7500 Mechanical Seal Test, Revision 003
M-200-037, Q Listed HVAC Heating and Cooling Coil Clean/Flush, Revision 008
MA-AA-716-010, Maintenance Planning, Revision 020
MA-AA-716-210, Performance Centered Maintenance (PCM) Process, Revision 014
MA-MA-716-009, Preventative Maintenance Deferral Justification Checklist, Revision 004
M-C-756-001, HPCI Turbine Inspection, Revision 28

OP-AA-101-113, Operator Fundamentals, Revision 007
OP-AA-102-103-1001, Operator Burden and Plant Significant Decisions Impact Assessment Program, Revision 4
OP-AA-106-101-1001, Event Response Guidelines, Revision 019
OP-AA-106-101-1005, Quarantine of Areas, Equipment and Records, Revision 000
OP-AA-108-115, Operability Determinations, Revision 011
OP-AA-108-117, Protected Equipment Work Approval, Revision 002
OP-AA-109-101-1001, Clearance and Tagging HIT Team Performance Management Process, Revision 005
OP-LG-103-102-1000, Human Performance Continuing Good Practices, Revision 41
OP-LG-103-102-1002, Strategies for Successful Transient Mitigation, Revision 11
OP-LG-101-111-2000, On Shift Personnel Specific Procedure Use, Revision 8
PI-AA-1001, Performance Improvement Integrated Matrix, Revision 001
RT-1-012-390-0, RHR Heat Exchanger Heat Transfer Performance Computation Test, Revision 009
RT-6-055-330-1, HPCI Turbine Over-speed Mechanism Operability Check, Revision 020
RT-6-055-340-2, HPCI Turbine Hydraulic Control System Operability Check, Revision 9
RT-6-092-454-1, Procedure for De-energizing and Re-energizing the D14 Safeguard Bus during a Refuel Outage, Revision 011
S43.3.A, Filling and Venting 'A' Recirculation Pump Loop and Seal, Revision 046
S94.2.A, By-Passing and Removing the 'A' RPS and UPS Static Inverter from Service, Revision 016
S94.9.A, Routine Inspection of 'A'(B) RPS UPS Static Inverter, Revision 015
Shift Training Documentation Doc Type 807 SO-11-013
ST-2-036-419-2, RPS - Electrical Power Monitoring Channel 'A' and 'C' Calibration/Functional Test, Revision 018
ST-6-022-252-0, Diesel Driven Fire Pump Flow Test, Revision 030
ST-6-049-202-1, RCIC Cold Shutdown Valve Test, Revision 24
ST-6-049-230-1, RCIC Pump, Valve and Flow Test, Revision 76
SY-AA-101-112, Exelon Security Search Process, Revision 025
SY-AA-101-112-F-01, Vehicle Search Place Keeping Aid, Revision 001
WC-AA-120, Preventative Maintenance (PM) Program Requirements, Revision 000

Work Orders

M1757154	R0237028	R0925726	R1137024
C0223500	R0254626	R0957969	R1162430
C0243137	R0539031	R0964227	R1174129
C0244503	R0556109	R0996293	R1174129
R0048748	R0736076	R1032309	R1224955
R0049068	R0871382	R1037500	R1237464
R01135995	R0907228	R1089425	

Miscellaneous
Benchmarking Monitor CAP Product Quality & Timeliness (AR 00991281)
Common Cause Analysis (CCA), Adequacy of Effectiveness Reviews in CAP Products (ACIT 1256947)
Quick Human Performance Investigation Report (QHPI): Untimely Recognition of Technical Specification WRAM Action
ECR 07-00336
FCR EL-1014
PM 213203

PM398256
PM398257
PM399086
Common Cause Analysis 1102983 (Action Tracking Number 1102983-02)
AD-AA-101-F-10, Revision 1, Temporary Procedure Change Site Approval Form Temp Change No. 12-0282-1, for ST-6-049-202-1, RCIC Cold Shutdown Valve Test; ST-6-049-202-1, Revision 24
Archive Start Up Restraints, Unit 1, LCOTR#:1-SUC-11-0201, reference TRM 4.3.7.2.2, Seismic Monitor
Active Wizard Site Procedure Workflow / Procedure Approval Report for OP-LG-101-111-2000 and ST-6-107-595-1/2
OP-AA-102-103-1001, Rev. 3, Attachment 1, Operator Burden Aggregate Assessment Form Example, September 30, 2012
Instrument Calibration Sheets for FT-049-1N051, Unit 1 RCIC Pump Discharge; FS-049-1N659, Low Gross Failure; FT-049-1N003, Unit 1 Reactor Core Isolation Charging Loop
P&ID 8031-M-49/50 Reactor Core Isolation Cooling, Unit 1
Control Room Log Entries Report, 7/1/2012
Priority Work List 10/25/12
ST-6-107-595-1/2, Revision 41/33-34, Monthly Surveillance Log, January, February, March, April, May, June, July, August and September 2012
ST-6-107-595-2, Revisions 31-34, Monthly Surveillance Log, April, May, June, August, September, October, November, December, 2011

LIST OF ACRONYMS

ADAMS	Agency-wide Documents Access and Management System
AR	Action Request
ARC	Alarm Response Card
CFR	Code of Federal Regulations
EACE	Equipment Apparent Cause
EDG	Emergency Diesel Generator
FIN	Finding
HPCI	High Pressure Coolant Injection
IMC	Inspection Manual Chapter
IR	Issue Report
LC	Load Center
LGS	Limerick Generating Station
MCC	Motor Control Center
MCR	Main Control Room
NCV	Non-Cited Violation
NRC	Nuclear Regulatory Commission
ODM	Operational Decision Making
OE	Operating Experience
PARS	Publicly Available Records System
PCM	Performance Centered Maintenance
PCRA	Procedure Change Request Action
P&ID	Piping and Instrument Diagram
PM	Preventative Maintenance
RCIC	Reactor Core Isolation Cooling
RRP	Reactor Recirculation Pump
SDP	Significance Determination Process
SPC	Special Plant Condition
ST	Surveillance Test
TS	Technical Specifications