



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

REGION I
2100 RENAISSANCE BLVD., SUITE 100
KING OF PRUSSIA, PA 19406-2713

October 30, 2014

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 INTEGRATED INSPECTION
REPORT 05000352/2014004 AND 05000353/2014004**

Dear Mr. Pacilio:

On September 30, 2014, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Limerick Generating Station (LGS), Units 1 and 2. The enclosed inspection report documents the inspection results, which were discussed on October 10, 2014, with Mr. D. Lewis, 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.

This report documents one violation of NRC requirements which was determined to be of very low significance (Green). Additionally, a licensee-identified violation, which was determined to be of very low safety significance, is listed in this report. However, because of the very low safety significance, and because they are entered into your corrective action program, the NRC is treating these findings as a non-cited violation (NCV), consistent with Section 2.3.2 of the NRC Enforcement Policy. If you contest any NCV in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN.: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region I; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at LGS. In addition, 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 Title 10 of the *Code of Federal Regulations* 2.390 of the NRCs "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC's Public Document Room or from the Publicly

Available Records component of the NRC's Agencywide Documents Access Management System (ADAMS). ADAMS is accessible from the NRC website at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

/RA/

Fred L. Bower III, Chief
Reactor Projects Branch 4
Division of Reactor Projects

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

Enclosure: Inspection Report 05000352/2014004 and 05000353/2014004
w/Attachment: Supplementary Information

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U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket Nos.: 50-352, 50-353

License Nos.: NPF-39, NPF-85

Report No.: 05000352/2014004 and 05000353/2014004

Licensee: Exelon Generation Company, LLC

Facility: Limerick Generating Station, Units 1 & 2

Location: Sanatoga, PA

Dates: July 1, 2014 through September 30, 2014

Inspectors: E. DiPaolo, Senior Resident Inspector
R. Montgomery, Resident Inspector
R. Nimitz, Senior Health Physicist
S. Barr, Senior Emergency Preparedness Inspector

Approved By: Fred L. Bower III, Chief
Reactor Projects Branch 4
Division of Reactor Projects

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SUMMARY

IR 05000352/2014004, 05000353/2014004; 7/1/2014 – 9/30/14; Limerick Generating Station (LGS) Units 1 and 2; Maintaining Emergency Preparedness

This report covered a three-month period of inspection by resident inspectors and announced inspections performed by regional inspectors. The inspectors identified one finding of very low safety significance (Green), which was a Non-Cited Violation (NCV). Additionally, the inspectors identified one licensee-identified violation, which was determined to be of very low safety significance. The significance of most findings is indicated by their color (i.e., greater than Green, or Green, White, Yellow, Red) and determined using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP), dated June 19, 2012. Cross-cutting aspects are determined using IMC 0310, "Aspects Within Cross-Cutting Areas," dated January 1, 2014. All violations of Nuclear Regulatory Commission (NRC) requirements are dispositioned in accordance with the NRC's Enforcement Policy, dated July 9, 2013. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 5.

Cornerstone: Emergency Preparedness (EP)

Green. The inspectors identified a Green NCV of Title 10 of the Code of Federal Regulations (CFR) 50.54(q)(2), 10 CFR 50.47(b)(10), and 10 CFR Part 50, Appendix E, Section IV.4, for not maintaining the effectiveness of the LGS, Units 1 and 2, emergency plan as a result of failing to provide the station evacuation time estimate (ETE) to the responsible offsite response organizations (OROs) by the required date. Exelon entered this issue into their corrective action process (CAP) as issue reports (IR) 1525923 and 1578649. Additionally, Exelon re-submitted a new revision of the LGS ETE to the NRC on January 31, 2014.

This performance deficiency is more than minor because it is associated with the emergency preparedness cornerstone attribute of procedure quality and adversely affected the cornerstone objective of ensuring that LGS is capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. The finding was determined to be of very low safety significance (Green) because it was a failure to comply with a non-risk significant portion of 10 CFR 50.47(b)(10). The cause of the finding is related to the cross-cutting element of Human Performance, Documentation, because LGS did not appropriately create and maintain complete, accurate and, up-to-date documentation [H.7]. (Section 1EP5)

Other Findings

A violation of very low safety significance that was identified by LGS was reviewed by the inspectors. Corrective Actions (CAs) taken or planned by LGS have been entered into LGS' CAP. This violation and CA tracking number are listed in Section 4OA7 of this report.

REPORT DETAILS

Summary of Plant Status

Unit 1 began the inspection period at 100 percent power. During the inspection period, power was periodically lowered during periods of high condensate temperature due to environmental conditions (i.e., high air temperature) and to facilitate control rod pattern adjustments. On September 5, operators reduced power to 63 percent to facilitate planned main condenser waterbox cleaning, main turbine valve testing, control rod scram time testing and other secondary plant maintenance. Operators returned the unit to 100 percent power on September 6. On September 9, with initial power at 100 percent, operators conducted an unplanned power reduction to 90 percent due to high main steam line radiation indications caused by the inadvertent isolation of the condensate filter demineralizer system. Following restoration of the condensate filter demineralizer system, operators returned power to 100 percent later that day. Unit 1 remained at or near 100 percent power for the remainder of the inspection period.

Unit 2 began the inspection period at 100 percent power. During the inspection period, power was periodically lowered during periods of high condensate temperature due to environmental conditions (i.e., high outside temperature) and to facilitate control rod pattern adjustments. On September 12, operators reduced power to 63 percent to facilitate both scram time and main turbine valve testing, condenser tube leak repairs and to perform other secondary plant maintenance. Unit 2 remained at or near 100 percent power for the remainder of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R04 Equipment Alignment

.1 Partial System Walkdowns (71111.04 – 4 samples)

a. Inspection Scope

The inspectors performed partial walkdowns of the following systems:

- 'B' control room emergency fresh air system when 'A' control room emergency fresh air system was out-of-service for planned maintenance on July 10, 2014
- Unit 2 'A' standby liquid control (SLC) post system outage window for pump, valve and flow, and squib valve testing on July 24, 2014
- D12 emergency diesel generator (EDG) when D14 EDG was out-of-service on August 25, 2014 for planned maintenance
- Unit 2 high pressure coolant injection (HPCI) when reactor core isolation cooling (RCIC) was out-of-service for planned maintenance on September 2, 2014

The inspectors selected these systems based on their risk-significance relative to the reactor safety cornerstones at the time they were inspected. The inspectors reviewed applicable operating procedures, system diagrams, the Updated Final Safety Analysis

Report (UFSAR), technical specifications (TS), work orders (WO), issue reports (IR), and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have impacted system performance of their intended safety functions. The inspectors also performed field walkdowns of accessible portions of the systems to verify system components and support equipment were aligned correctly and were operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no deficiencies. The inspectors also reviewed whether LGS staff had properly identified equipment issues and entered them into the CAP for resolution with the appropriate significance characterization.

b. Findings

No findings were identified.

1R05 Fire Protection

.1 Resident Inspector Quarterly Walkdowns (71111.05Q – 4 samples)

a. Inspection Scope

The inspectors conducted tours of the areas listed below to assess the material condition and operational status of fire protection features. The inspectors verified that LGS controlled combustible materials and ignition sources in accordance with administrative procedures. The inspectors verified that fire protection and suppression equipment was available for use as specified in the area pre-fire plan, and passive fire barriers were maintained in good material condition. The inspectors also verified that station personnel implemented compensatory measures for out of service, degraded, or inoperable fire protection equipment, as applicable, in accordance with procedures.

- Fire Area 27, Common, control structure fan room on July 10, 2014
- Fire Area 20, Common, Unit 1 static inverter room on July 17, 2014
- Fire Area 80, D13 EDG and fuel oil – lube oil tank room, rooms 311C and 312C on July 18, 2014
- Fire Area 56, Unit 2 RCIC pump room 179 on August 15, 2014

b. Findings

No findings were identified.

1R11 Licensed Operator Regualification Program

.1 Quarterly Review of Licensed Operator Regualification Testing and Training (71111.11Q – 1 sample)

a. Inspection Scope

The inspectors observed a graded simulator scenario for operating crew 'D' on July 28, 2014. The scenario included a control rod scram during testing, a failure of balance of plant equipment, a rapid plant shutdown, an anticipated transient without scram, and a

leak in the drywell. The inspectors evaluated operator performance during the simulated event and verified completion of risk significant operator actions, including the use of abnormal and emergency operating procedures. The inspectors assessed the clarity and effectiveness of communications, implementation of actions in response to alarms and degrading plant conditions, and the oversight and direction provided by the control room supervisor. The inspectors verified the accuracy and timeliness of the emergency classification made by the shift manager and the TS action statements entered by the shift technical advisor. Additionally, the inspectors assessed the ability of the crew and training staff to identify and document crew performance problems.

b. Findings

No findings were identified.

.2 Quarterly Review of Licensed Operator Performance in the Main Control Room (71111.11Q – 1 sample)

a. Inspection Scope

The inspectors observed and reviewed licensed operator performance in the main control room for Unit 1 during both; a planned downpower to 62 percent on September 5, 2014, for scheduled maintenance and an unplanned downpower to 90 percent on September 9, 2014, due to high main steam line radiation indications caused by the inadvertent isolation of the condensate filter demineralizer system. The inspectors verified operator compliance and use of plant procedures, performance of procedure steps in proper sequence, alarm response card implementation, and proper TS usage. Pre-job briefs, the use of human error prevention techniques, communications between crew members, and supervision of activities were also observed to verify that they were performed consistent with established plant practices.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12Q – 2 samples)

a. Inspection Scope

The inspectors reviewed the samples listed below to assess the effectiveness of maintenance activities on structures, systems and component (SSC) performance and reliability. The inspectors reviewed system health reports, CAP documents, maintenance WO, and maintenance rule basis documents to ensure that LGS was identifying and properly evaluating performance problems within the scope of the maintenance rule. For each sample selected, the inspectors verified that the SSC was properly scoped into the maintenance rule in accordance with 10 CFR 50.65 and verified that the (a)(2) performance criteria established by LGS staff was reasonable. As applicable, for SSCs classified as (a)(1), the inspectors assessed the adequacy of goals and CA's to return these SSCs to (a)(2). Additionally, the inspectors ensured that LGS staff was identifying and addressing common cause failures that occurred within and across maintenance rule system boundaries.

- IR 1684387, Common 'C' residual heat removal service water (RHRSW) system motor unsatisfactory test results on July 22, 2014
- IR 1625082, Unit 2 low instrument air pressure with the 'A' instrument air dryer isolated on September 11, 2014

b. Findings

No findings were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13 – 5 samples)

a. Inspection Scope

The inspectors reviewed station evaluation and management of plant risk for the maintenance and emergent work activities listed below to verify that LGS performed the appropriate risk assessments prior to removing equipment for work. The inspectors selected these activities based on potential risk significance relative to the reactor safety cornerstones. As applicable for each activity, the inspectors verified that LGS personnel performed risk assessments as required by 10 CFR 50.65(a)(4) and that the assessments were accurate and complete. When LGS performed emergent work, the inspectors verified that operations personnel promptly assessed and managed plant risk. The inspectors reviewed the scope of maintenance work and discussed the results of the assessment with the station's probabilistic risk analyst to verify plant conditions were consistent with the risk assessment. The inspectors also reviewed the TS requirements and inspected portions of redundant safety systems, when applicable, to verify risk analysis assumptions were valid and applicable requirements were met.

- Half scram testing on Unit 1 while a hot weather alert was in effect on July 8, 2014
- Emergent Yellow risk as a result of emergent maintenance on the 'A' standby gas treatment system (SGTS) due to a failed flow switch on July 29, 2014
- Emergent work and short duration limited condition for operation on Unit 2 due failure of the drywell floor drain sump level instrument primary containment isolation valve (HV-061-212) to open on August 6, 2014
- Emergent Yellow risk as a result of emergent maintenance on the 'B' SGTS due to a failed flow switch on August 13, 2014
- Emergent work and limited condition for operation entry on Unit 1 due to the discovery of a cylinder liner crack indication on EDG D14 on August 16, 2014

b. Findings

No findings were identified.

1R15 Operability Determinations and Functionality Assessments (71111.15 – 6 samples)

a. Inspection Scope

The inspectors reviewed operability determinations for the following degraded or non-conforming conditions:

- IR 1676849, Unit 1 HPCI steam admission valve leak on June 30, 2014
- IR 1688333, Unit 1 'B' residual heat removal (RHR) pump upper room cooler found below minimum emergency service water (ESW) flow during testing on August 1, 2014
- IR 1691672, 'B' RHRSW return header through-wall leak on August 22, 2014
- IR 1695646, Unit 1 EDG extent of condition operability determination following discovery of multiple cylinder cracks during planned D14 EDG system outage on August 23, 2014
- IR 2381352, Fluctuating indicated flow rates on ESW flow to Unit 2 emergency core cooling room coolers on September 15, 2014
- IR 2382060, Unit 2 HPCI exhaust vacuum relief check valves (055-2026 and 055-2F094) failed reverse flow test acceptance criteria on September 17, 2014

The inspectors selected these issues based on the risk significance of the associated components and systems. The inspectors evaluated the technical adequacy of the operability determinations to assess whether TS operability was properly justified and the subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors compared the operability and design criteria in the appropriate sections of the TS and UFSAR to LGS' evaluations to determine whether the components or systems were operable. Where compensatory measures were required to maintain operability, the inspectors determined whether the measures in place would function as intended and were properly controlled by LGS. The inspectors determined, where appropriate, compliance with bounding limitations associated with the evaluations.

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19 – 7 samples)

a. Inspection Scope

The inspectors reviewed the post-maintenance tests for the maintenance activities listed below to verify that procedures and test activities ensured system operability and functional capability. The inspectors reviewed the test procedure to verify that the procedure adequately tested the safety functions that may have been affected by the maintenance activity, that the acceptance criteria in the procedure was consistent with the information in the applicable licensing basis and/or design basis documents, and that the procedure had been properly reviewed and approved. The inspectors also witnessed the test or reviewed test data to verify that the test results adequately demonstrated restoration of the affected safety functions.

- R0812479, Replace power supply on Unit 1 remote shutdown panel on July 17, 2014
- R1220119, Unit 1 RCIC ramp generator and signal converter module calibration preventative maintenance on July 14, 2014
- C0245817, Replace D11 EDG speed control switch on July 29, 2014
- C0253478, Troubleshoot and adjust limit switches associated with the drywell floor drain sump level instrumentation isolation valve on August 6, 2014

- C0253952, Replace Unit 2 RCIC inverter due to procurement issues with safety related parts documentation on September 5, 2014
- C0253038, Leak repair Unit 1 HPCI steam inlet drain pot drain line on September 17, 2014
- R1074229, Overhaul 4 kilovolt D21 offsite power supply 201 feeder breaker on September 24, 2014

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22 – 4 Routine, 1 In-Service Test, and 1 Reactor Coolant System Leakage Detection)

a. Inspection Scope

The inspectors observed performance of surveillance tests and/or reviewed test data of selected risk-significant SSCs to assess whether test results satisfied TS's the UFSAR, and LGS procedure requirements. The inspectors verified that test acceptance criteria were clear, tests demonstrated operational readiness and were consistent with design documentation, test instrumentation had current calibrations and the range and accuracy for the application, tests were performed as written, and applicable test prerequisites were satisfied. Upon test completion, the inspectors considered whether the test results supported that equipment was capable of performing the required safety functions. The inspectors reviewed the following surveillance tests:

- ST-2-051-105-1, Division 1 RHR/Logic System Functional test performed on Unit 1 on July 17, 2014
- ST-6-052-231-2, 'A' Loop Core Spray Pump Valve and Flow test performed on Unit 2 on July 19, 2014
- ST-6-061-200-2, Liquid Radwaste Valve Testing (In-Service Test) performed on Unit 2 on August 5, 2014
- ST-6-107-596-2, Drywell Floor Drain Sump/Equipment Drain Tank Surveillance Log/OPCON 1,2,3 performed on Unit 2 September 6-12, 2014 (Reactor Coolant System Leakage Detection) surveillance
- ST-6-055-230-2, HPCI Pump, Valve and Flow test performed on Unit 2 on September 16, 2014
- ST-6-092-314-1, Unit 1 D14 EDG Slow Start Operability test run performed on September 23, 2014

b. Findings

No findings were identified.

Cornerstone: Emergency Preparedness1EP4 Emergency Action Level and Emergency Plan Changes (71114.04 – 1 sample)a. Inspection Scope

The staff from the office of Nuclear Security and Incident Response (NSIR) performed an in-office review of the latest revision, dated January 31, 2014, of the ETE Analysis for LGS located under agency documents access management system (ADAMS) accession number ML14042A219 as listed in the Attachment.

The staff performed a review using the guidance provided in NUREG/CR-7002, "Criteria for Development of Evacuation Time Estimate Studies." The Updated ETE was found to be complete in accordance with 10 CFR Part 50, Appendix E.IV.3. The NRC review was only intended to verify consistent application of the ETE guidance contained in NUREG/CR-7002; and therefore, remains subject to future NRC inspection in its entirety. The specific document reviewed during this inspection is listed in the Attachment.

b. Findings

No findings were identified.

1EP5 Maintaining Emergency Preparedness (71114.05 – 1 sample)a. Inspection Scope

NRC EP rulemaking, which became effective on December 23, 2011, added a new regulation which required LGS to develop an ETE analysis and submit it to the NRC by December 23, 2012. This inspection was a follow-up of issues identified by the NSIR staff during its review of the Exelon submittal of the ETEs for the ten sites that it operated at the time. The NSIR staff related those issues to Exelon, which provided responses through 2013 and into 2014. During this inspection period, regional EP inspectors reviewed applicable LGS documents, conducted discussions with LGS personnel, and provided assessment of the Exelon response.

b. Findings

Introduction: The inspectors identified a Green NCV of 10 CFR 50.54(q)(2), 10 CFR 50.47(b)(10), and 10 CFR Part 50, Appendix E, Section IV.4, for not maintaining the effectiveness of the LGS, Units 1 and 2, emergency plan as a result of failing to provide the station evacuation time estimate (ETE) to the responsible offsite response organizations (OROs) by the required date. Exelon entered this issue into their corrective action process (CAP) as issue reports (IR) 1525923 and 1578649. Additionally, Exelon re-submitted a new revision of the LGS ETE to the NRC on January 31, 2014.

Description: On November 23, 2011, the NRC issued final new and amended emergency preparedness regulations (EP Rule) (76 Federal Register (FR) 72560) that required all licensees to update the ETE on a periodic basis. This rulemaking became effective on December 23, 2011. The rulemaking also added a new regulation (10 CFR Part 50, Appendix E, Section IV.4), which required LGS to develop an ETE analysis using the most recent decennial census data and submit it to the NRC within 365 days of December 23, 2011. Concurrently with the issuance of the rulemaking, the NRC published a new report entitled "Criteria for Development of Evacuation Time Estimate Studies," NUREG/CR-7002. The Statements of Consideration for the rulemaking (76 FR 72580) identified that the NRC staff would review the submitted ETEs for completeness using that document. The Statements also provided that the guidance of NUREG/CR-7002 guidance was an acceptable template to meet the requirements and LGS should use the guidance or an appropriate alternative.

By individual letters dated December 12, 2012, Exelon submitted the ETEs for the sites for which it held the operating licenses, including LGS. By a letter dated January 23, 2013, Exelon submitted the NUREG/CR-7002 checklists for the ETEs that identified where a particular criterion was addressed in the ETEs, facilitating the NRC review.

As provided in the Statements of Consideration, the NRC staff performed a completeness review using the checklists and found the ETEs (including the ETEs for Limerick Generating Station) to be incomplete due to common and site-specific deficiencies. The staff discussed its concerns regarding the completeness of the ETEs, in a teleconference with Exelon conducted on June 10, 2013. On September 5, 2013, Exelon resubmitted the ETEs and the associated checklists for its sites. The NRC staff performed another completeness review and again found the ETEs to be incomplete. Examples of information missing from the submittal included: peak and average attendance were not stated (NUREG/CR-7002 Criteria Item 2.1.2.a); the ETE used a value based on campsite and hotel capacity, vice an average value (2.1.2.b); basis for speed and capacity reduction factors due to weather was not provided (3.4.b); snow removal was not addressed (3.4.c); no bus routes or plans were included in the ETE analysis (4.1.2.a); and, no discussion on the means of evacuating ambulatory and non-ambulatory residents was included (4.1.2.b). The staff communicated the various ETE issues to Exelon through several telephone conference calls. Upon identification, Exelon entered this issue into its corrective action program as issue reports 1525923 and 1578649. Exelon submitted a third ETE for Limerick on April 4, 2014, and the NRC's satisfactory completeness review of that ETE is documented in Section 1EP4 of this report.

Analysis: The inspectors determined that the failure to submit a complete updated ETE for the LGS by December 23, 2012, was a performance deficiency (PD), because Exelon failed to meet a regulatory requirement that was reasonably within their ability to foresee and correct, and should have been prevented, for both the December 12, 2012, and September 5, 2013, ETE submittals.

Using IMC 0612, Appendix B, "Issue Screening," the inspectors determined that the PD was associated with the Emergency Preparedness cornerstone attribute of procedure quality and was more than minor because it adversely affected the cornerstone objective of ensuring that LGS is capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. The ETE is an input into the development of protective action strategies prior to an accident and to the protective action recommendation decision making process during an accident. The inadequate LGS ETEs had the potential to reduce the effectiveness of public protective actions implemented by the OROs.

The inspectors utilized IMC 0609, Appendix B, "Emergency Preparedness Significance Determination Process," to determine the significance of the PD. The PD was associated with planning standard 10 CFR 50.47(b)(10). EP SDP Table 5.10-1, "Significance Examples 10 CFR 50.47(b)(10)," provides two Green significance examples: "ETEs and updates to the ETEs were not provided to responsible OROs," and "The current public protective action strategies documented in emergency preparedness implementing procedures are not consistent with the current ETE." The inspectors concluded that, because the PD delayed the NRC's approval of the LGS ETE, the ETE was not provided to the site OROs nor was it used to inform the site emergency preparedness implementing procedures as required by 10 CFR 50.47(b)(10), and Section IV, Paragraph 4 (IV.4) of Appendix E to 10 CFR Part 50. Therefore, in accordance with EP SDP Table 5.10-1, this was determined to be a finding of very low safety significance (Green).

This cause of the finding had a cross-cutting aspect in the area of Human Performance, Documentation, because Exelon personnel did not create and maintain complete, accurate and, up-to-date documentation. Specifically, the EP organization did not develop the LGS ETE as required by the new regulation introduced by the NRC's EP Rule [H.7].

Enforcement: Title 10 CFR 50.54(q)(2) states, in part, that licensees "shall follow and maintain an effective emergency plans which meet the standards in 10 CFR 50.47(b) and the requirements in Appendix E to this part." 10 CFR 50.47(b)(10), states, in part, that licensees shall develop an ETE and update it on a periodic basis. 10 CFR Part 50 Appendix E, Section IV.4, states that within 365 days of December 23, 2011, nuclear power reactor licensees shall develop an ETE analysis and submit it under 10 CFR 50.4.

Contrary to all of the above, the ETEs submitted on December 12, 2012, and on September 5, 2013, by Exelon for the LGS were found to be inadequate. Upon identification, Exelon implemented immediate corrective actions by entering this issue into its corrective action program as IRs 1525923 and 1578649, and revising the ETE to satisfy NRC requirements. Because this finding is of very low safety significance (Green) and was entered into Exelon's corrective action program, this issue is being treated as an NCV consistent with Section 2.3.2.a of the Enforcement Policy. **(NCV 05000352,353/2014004-01: Inadequate Evacuation Time Estimate Submittals)**

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety

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

a. Inspection Scope

During July 7 through 11, and September 8 through 12, 2014, the inspectors reviewed LGS' performance in assessing and controlling radiological hazards in the workplace. The inspectors used the criteria in 10 CFR 20, applicable Regulatory Guides (RG), TSs, and applicable LGS procedures for determining compliance.

Inspection Planning

The inspectors reviewed the station's performance indicators (PI) for the occupational exposure cornerstone, reviewed radiation protection (RP) program audits and reviewed reports of operational radiation exposure occurrences.

Radiological Hazard Assessment

The inspectors reviewed the following:

- Facility walk-downs and independent radiation measurements
- Changes to plant operations involving new radiological hazards
- Radiological surveys
- Post-job radiological reviews.

Instructions to Workers

The inspectors reviewed the following:

- Labeling and control of radioactive material containers
- Malfunctioned or alarms of electronic personal dosimeters (EPDs)
- Changes in radiological work conditions or requirements.

Contamination and Radioactive Material Control

The inspectors reviewed the following:

- Monitoring of material leaving the radiological control area
- Methods to control, survey, and release materials
- Radiation monitoring instrumentation
- Personnel contamination surveys
- Radioactive source control, tracking, and inventory.

Radiological Hazards Control and Work Coverage

The inspectors reviewed the following:

- Post-outage exposure reports
- Personal radiation monitoring devices
- Monitoring in significant dose rate gradients
- Posting and physical controls for high radiation areas (HRA), and locked high radiation areas
- Control of radioactive materials stored in pools.

Risk-Significant HRA and Very High Radiation Area (VHRA) Controls

The inspectors discussed controls and procedures for access controls for HRA and VHRA with the RP Manager and RP supervisors.

Problem Identification and Resolution

The inspectors evaluated whether problems associated with radiation monitoring and exposure control were being identified at an appropriate threshold and properly addressed. The inspectors assessed the process for applying operating experience.

b. Findings

No findings were identified.

2RS2 Occupational ALARA Planning and Controls (71124.02)

a. Inspection Scope

During July 7-11, and September 8-12, 2014, the inspectors assessed performance with respect to maintaining occupational individual and collective radiation exposures as low as is reasonably achievable (ALARA). The inspectors used the requirements in 10 CFR 20, applicable RG's, and LGS' TSs and procedures for determining compliance.

Inspection Planning

The inspectors reviewed the following:

- LGS site-specific trends in collective exposures
- Changes in the radioactive source term
- ALARA procedures.

Radiological Work Planning

The inspectors reviewed the following:

- High exposure work planning activities
- ALARA work activity evaluations
- Exposure estimates and exposure reduction requirements

- Results achieved (dose rate reductions, actual dose)
- Unit 2 post-outage ALARA reviews.

Source Term Reduction and Control

The inspectors assessed post-shut-down changes in the source term.

Problem Identification and Resolution

The inspectors evaluated whether problems associated with ALARA planning and controls were being identified at an appropriate threshold and corrected.

b. Findings

No findings were identified.

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

a. Inspection Scope

During July 7-11, and September 8-12, 2014, the inspectors evaluated the controls for in-plant airborne sources consistent with ALARA principles and the use of respiratory protection devices. The inspectors used the requirements in 10CFR 20, the guidance in applicable RG's, and LGS' TS's and procedures for determining compliance.

Engineering Controls

The inspectors reviewed the following:

- Use of ventilation
- Criteria for evaluating levels of airborne for beta-emitting, alpha-emitting, and other hard-to-detect radionuclides

Use of Respiratory Protection Devices

The inspectors reviewed the following:

- Respiratory equipment storage
- Use of respiratory protection factors
- Use of certified respiratory protection devices
- Qualifications of individuals to use respiratory protection devices.

Self-Contained Breathing Apparatus (SCBA) for Emergency Use

The inspectors reviewed the following:

- Status and surveillance records of three SCBAs staged in-plant for use during emergencies
- SCBA procedures
- SCBA maintenance and test records

- Capability for refilling and transporting SCBA air bottles
- Availability of providing different mask sizes
- Qualifications of personnel performing service and repair
- Qualifications of personnel that may be assigned to use the devices including control room operations personnel.

Problem Identification and Resolution

The inspectors evaluated whether problems associated with the control and mitigation of in-plant airborne radioactivity were being identified by LGS and placed in the CAP with appropriate CA's planned or implemented.

b. Findings

No findings were identified.

2RS4 Occupational Dose Assessment (71124.04)

a. Inspection Scope

During July 7-11, and September 8-12, 2014, the inspectors evaluated the monitoring, assessment and reporting of occupational dose. The inspectors used the requirements in 10 CFR 20, the guidance in various RG's, and requirements in LGS' TS's and procedures.

External Dosimetry

The inspectors reviewed the following:

- Use of national voluntary laboratory accreditation program (NVLAP) accredited dosimetry
- Use of (EPDs and application of a "correction factor" based on NVLAP dosimetry results
- Dosimetry occurrence reports, skin dose assessment reports and associated CA's

Internal Dosimetry - Routine Bioassay (In Vivo)

The inspectors reviewed procedures for the measurement of internally deposited radionuclides using whole body count (WBC) equipment.

Internal Dose Assessment – WBC Analyses

The inspectors reviewed dose assessments using results of WBC analyses since the last inspection in this area.

Special Dosimetric Situations - Declared Pregnant Workers

The inspectors reviewed training provided to employees on the risks of radiation exposure to the embryo/fetus, the regulatory aspects of declaring a pregnancy, the process used for (voluntarily) declaring a pregnancy, and associated exposure controls.

Dosimeter Placement and Assessment of Effective Dose Equivalent for External Exposures

The inspectors reviewed LGS' procedures for monitoring external dose in non-uniform radiation fields with large dose gradients

Problem Identification and Resolution

The inspectors assessed whether problems associated with occupational dose evaluations were identified at an appropriate threshold, were placed in the CAP, and were adequately resolved.

b. Findings

No findings were identified.

2RS5 Radiation Monitoring Instrumentation (71124.05)

a. Inspection Scope

During July 7-11, and September 8-12, 2014, the inspectors reviewed the calibration and the checking of various radiation monitoring instruments. The review was against criteria contained in 10 CFR Part 20, 10 CFR Part 50, applicable RG's and industry standards, TS's/Offsite Dose Calculation Manual (ODCM), and LGS procedures for determining compliance.

Calibration and Testing Program

The inspectors reviewed the calibration and functional instrument checks of various radiation monitoring systems (RHRSW, service water, main steam, off-gas, post-accident drywell, liquid radioactive waste) including alarm set-points (as applicable) and liquid radioactive waste effluent discharge flow elements.

Post-Accident Monitoring Instrumentation

The inspectors reviewed the calibration of the primary containment post-accident monitors.

b. Findings

No findings were identified.

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

a. Inspection Scope

During July 7-11, and September 8-12, 2014, the inspectors reviewed monitoring, evaluation, and control of gaseous effluents. The review was against criteria contained in 10 CFR Part 20, 10 CFR Part 50, applicable RG's and industry standards, TS's/ODCM, and LGS procedures for determining compliance.

Effluent Flow Measuring Instruments

The inspectors reviewed the procedures used to determine the effluent stack and vent flow rates for use in gaseous effluent releases.

Air Cleaning Systems

The inspectors reviewed surveillance test results for TS required ventilation effluent discharge systems (SGTS and Reactor Enclosure System).

Dose Calculations

The inspectors reviewed the results and LGS' evaluations of the latest (October 2013) Land Use Census.

b. Findings

No findings were identified.

4. **OTHER ACTIVITIES**

4OA1 Performance Indicator Verification (71151)

.1 Occupational Exposure Control Effectiveness (1 sample)

a. Inspection Scope

During the period September 8-12, 2014, the inspectors sampled LGS submittals for the occupational radiological occurrences PI for the past four quarters. The inspectors used PI definitions and guidance contained in the Nuclear Energy Institute (NEI) Document 99-02, Revision 7, to determine the accuracy of the PI data reported during those periods.

The inspectors reviewed the following:

- Discussions with RP staff
- EPD accumulated dose alarms, dose reports, and dose assignments
- Conducted walk-downs of various locked high and VHRA entrances

b. Findings

No findings were identified.

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

a. Inspection Scope

During the period September 8-12, 2014, the inspectors sampled LGS submittals for the REMP/ODCM radiological effluent occurrences PI for the past four calendar quarters. The inspectors used PI definitions and guidance contained in the NEI Document 99-02, Revision 7, to determine if the PI data was reported properly during this period.

The inspectors reviewed the following:

- Public dose assessments for the PI
- LGS issue report database
- Gaseous and liquid effluent summary data
- Offsite dose calculations for the past four quarters

b. Findings

No findings were identified.

.3 Mitigating Systems Performance Index (MSPI) (2 samples)

a. Inspection Scope

The inspectors reviewed LGS' submittal of the MSPI for Unit 1 and Unit 2 RHR systems for the period of July 1, 2013, through June 30, 2014. To determine the accuracy of the PI data reported during those periods, the inspectors used definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7. The inspectors also reviewed LGS' operator narrative logs, IR's, MSPI derivation reports, event reports, and NRC integrated inspection reports to validate the accuracy of the submittals.

b. Findings

No findings were identified.

.4 Unplanned Scrams per 7000 Critical Hours (2 samples)

a. Inspection Scope

The inspectors reviewed LGS' submittals for the Unplanned Scrams per 7000 Critical Hours for both Unit 1 and Unit 2 for the period of July 1, 2013, through June 30, 2014. To determine the accuracy of the PI data reported during those periods, inspectors used definitions and guidance contained in the NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, and NUREG-1022, Revision 3. "Event Report Guidelines 10 CFR 50.72 and 50.73." The inspectors reviewed LGS' operator narrative logs, operability assessments, maintenance rule records, maintenance WO, IR's, event reports and NRC integrated inspection reports to validate the accuracy of the submittals.

b. Findings

No findings were identified.

.5 Unplanned Scrams with Complications (2 samples)a. Inspection Scope

The inspectors reviewed LGS' submittals for the Unplanned Scrams with Complications for both Unit 1 and Unit 2 for the period of July 1, 2013, through June 30, 2014. To determine the accuracy of the PI data reported during those periods, inspectors used definitions and guidance contained in the NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, and NUREG-1022, Revision 3. "Event Report Guidelines 10 CFR 50.72 and 50.73." The inspectors reviewed LGS' operator narrative logs, operability assessments, maintenance rule records, maintenance WO, IRs, event reports and NRC integrated inspection reports to validate the accuracy of the submittals.

b. Inspection Findings

No findings were identified.

40A3 Follow-Up of Events and Notices of Enforcement Discretion (71153 – 4 samples)

(Closed) Licensee Event Report (LER) 05000352/2014-001-00 and revision 1:
Inoperable Reactor Enclosure Secondary Containment Integrity due to Open Airlock

(Closed) LER 05000353/2014-001-00: Inoperable Reactor Enclosure Secondary Containment Integrity due to Open Airlock

(Closed) LER 05000352/2014-002-00: Inoperable Reactor Enclosure Secondary Containment Integrity due to Open Airlock

(Closed) LER 05000353/2014-002-00: Inoperable Reactor Enclosure Secondary Containment Integrity due to Open Airlock

The events were reported as a condition that could have prevented the fulfillment of a safety function of structures or systems needed to control the release of radioactive material in accordance with 10 CFR 50.72(b)(3)(v)(C) and the guidance in contained in NUREG-1022, Revision 3. "Event Report Guidelines 10 CFR 50.72 and 50.73." TS 3.6.5.1.1, "Reactor Enclosure Secondary Containment Integrity," Surveillance Requirement 4.6.5.1.1.b, requires at least one door in each access to the reactor enclosure be closed. The events were the result of workers inadvertently opening both airlock doors simultaneously. In all cases, the airlock doors were closed within 10 seconds well within Limiting Condition for Operation 3.6.5.1.1 Action time limit of four hours. As a result, a violation of plant TS did not occur.

The inspectors reviewed the events and determined that no PD existed because there were no equipment failures, human performance errors, or other factors which contributed simultaneous opening of the airlock doors. In addition, due to the short duration of the doors being open, reactor enclosure pressure did not drop below the TS limit of 0.25 inch of vacuum water gauge. The LERs are closed.

4OA6 Meetings, Including Exit

On October 10, 2014, the inspectors presented the inspection results to Mr. D. Lewis, Plant Manager, and other members of the LGS staff. The inspectors verified that no proprietary information was retained by the inspectors or would be documented in this report.

4OA7 Licensee-Identified Violation

The following violation of very low safety significance (Green) was identified by LGS and is a violation of NRC requirements which met the criteria of the NRC Enforcement Policy for being dispositioned as a NCV.

LGS Unit 1 and 2 TS 6.8.1 require that written procedures be established, implemented, and maintained including an ODCM. LGS Procedure CY-LG-170-301, Revision 26, ODCM, requires in Table 3.3-1, that continuous airborne radioactivity samplers be placed in three locations close to the site boundary (in different sectors) of the highest calculated annual average ground level deposition (D/Q). Contrary to the above, there was no sampler close to the site boundary location in the southeast sector with the highest ground level D/Q. That air sampler located in the southeast sector was at a distance of 3 miles beyond the site boundary. This matter was identified by LGS in late 2012 and placed in the CAP. At the time of this inspection, LGS was installing a new air sampling station near the site boundary location in the southeast sector.

LGS evaluated the impact of the lack of this station and concluded there was no radiological impact in that: air monitoring stations near the site boundary in adjoining sectors had not detected radioactivity attributable to plant operations; analysis of samples of broadleaf vegetation in the specific sector did not identify any radioactivity attributable to station operations; and routine effluent sampling did not identify any abnormal airborne effluent releases. The issue was determined to be more than minor

because it adversely affected the program and process attribute of the Public Radiation Safety cornerstone objective to ensure adequate protection of public health and safety from exposure to radioactive materials released into the public domain. The inspectors determined that the finding was of very low safety significance (Green) because the finding was in the radiological environmental monitoring program and was contrary to TS. Because this finding is of very low safety significance, and the issue was entered into LGS' CAP (IRs 1390579, 1668838), this violation is being treated as a Green NCV consistent with the NRC Enforcement Policy.

ATTACHMENT: SUPPLEMENTARY INFORMATION

SUPPLEMENTARY INFORMATION

KEY POINTS OF CONTACT

LGS Personnel

T. Dougherty, Site Vice President
D. Lewis, Plant Manager
C. Gerdes, Manager, Chemistry, Environmental and Radioactive Waste
D. Doran, Director of Engineering
D. Merchant, Radiation Protection Manager
F. Sturniolo, Director of Maintenance
J. Broillet, Emergency Preparedness Manager
J. Hunter, Director of Work Management
J. Karkoska, Manager, Nuclear Oversight
J. Murphy, Senior Manager Operation Support
K. Aleshire, Exelon Corporate Emergency Preparedness Manager
K. Kemper, Security Manager
M. DiRado, Manager, Engineering Programs
M. Gillin, Shift Operations Superintendent. Manager, Engineering Systems
R. Dickinson, Manager, Regulatory Assurance
R. Gerdes, Chemistry Manager
R. Kreider, Director of Operations
R. Ruffe, Training Director
T. Fritz, System Manager, Rad Monitors
T. Mscisz, Radiation Protection
V. Cwietniewicz, Mid-Atlantic Corporate Emergency Preparedness Manager

LIST OF ITEMS OPENED, CLOSED, DISCUSSED, AND UPDATED

Opened/Closed

05000352/2014-004-01 05000353/2014-004-01	NCV	Inadequate Evacuation Time Estimate Submittals (Section 1EP5)
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Closed

05000352/2014-001-00 05000352/2014-001-01	LER	Inoperable Reactor Enclosure Secondary Containment Integrity due to Open Airlock (Section 4OA3)
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05000353/2014-001-00	LER	Inoperable Reactor Enclosure Secondary Containment Integrity due to Open Airlock (Section 4OA3)
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05000352/2014-002-00	LER	Inoperable Reactor Enclosure Secondary Containment Due to Open Airlock (Section 4OA3)
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05000353/2014-002-00	LER	Inoperable Reactor Enclosure Secondary Containment Due to Open Airlock (Section 4OA3)
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Discussed

None.

LIST OF DOCUMENTS REVIEWED

Section 1R04: Equipment Alignment

Issue Reports

01695646 01699893

Procedures

2555.1.A (COL), Equipment alignment for Automatic Operation of HPCI System, Revision 19

OS78.1.B (COL), "Equipment Alignment for Control Room HVAC Isolation and Emergency
Fresh Air Supply," Revision 11

S48.9, Routine inspection of SLC system, Revision 22

S55.1.A, Normal HPCI Line-up for Automatic Operation, Revision 35

S78.1.B, "Aligning the Control Room HVAC Isolation and Emergency Fresh Supply System for
Automatic Operation," Revision 8

S92.9.N, "Routine Inspection of the Diesel Generators," Revision 64

ST-6-048-450-2, SLC Lineup verification, S48.9A SLC Setup for normal operations, Revision 22

Drawings:

M-0055, Sheet 2, P&D High Pressure Coolant Injection, Revision 57

Miscellaneous

M-1-E41-1040, 6E Elementary Diagram – HPCI System
Protected System/Pathway Checklist No: 09.01.2014.19.50.21

Section 1R05: Fire Protection

Issue Reports

01683130

Procedures

F-A-619, “Common, Control Structure Fan Room,” Revision 6
F-A-452, Common, Unit 1 Static Inverter Room, Revision 9
F-D-311C, D13 Diesel Generator and Fuel Oil – Lube Oil Tank Room, Rooms 311C and 312,
Revision 8
F-R-179, Unit 2, RCIC Pump Room 179 (Elevation 177), Revision 8
SE-8, “Fire”, Revision 50
ST-4-022-921-0, “Fire Damper Inspection/Functional Test,” Revision 5
ST-4-022-921-1, “Fire Damper Inspection/Functional Test,” Revision 6
ST-4-022-921-2, “Fire Damper Inspection/Functional Test,” Revision 5

Section 1R11: Licensed Operator Regualification Program

Issue Reports

1686504

Procedures

GP.5 Appendix 2, Planned Reactor Maneuvering without Shutdown, Revision 78
ON-102, Air Ejector Discharge or Main Steam Line High Radiation, Revision 28
T-103, Secondary Containment Control, Revision 22

Miscellaneous

1436 Unit 1 Load Drop Summary
LLORSEG-2052, Simulator Exercise Guide, Revision 1

Section 1R12: Maintenance Effectiveness

Issue Reports

1684387

Procedures

ER-AA-310, Implementation of the maintenance Rule, Revision 9
ER-AA-310-1005, Maintenance Rule – Dispositioning Between (A)(1) and (A)(2), Revision 7
ER-AA-310-1004, Maintenance Rule – Performance Monitoring, Revision 11
MA-AA-723-330, “Electrical Testing of AC Motors Using Baker Instrument Advanced Winding
Analyzer,” Revision 3

Miscellaneous

Technical Evaluation for IR 1684387, Evaluation of ‘C’ RHRSW Motor Test Results, Revision 0

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

Issue Reports

1462813	1505063	1514746	1601894	1689578	1691566
1692221	A1910266				

Procedures

OP-AA-108-107-1001, "Station Response to Grid Capacity Conditions," Revision 4

Miscellaneous

ACE D14 EDG Cylinder Jacket Linear Indication (CS-AA-125-1003)
 Operator's Log 8/22/14
 OP-AA-101-113-1004, Attachment 2, Event/Issue Report Format, Revision 27, for Stand-by Gas Treatment System Heater Prompt Investigation
 OP-AA-101-113-1004, Attachment 2, Event/Issue Report Format, Revision 27, for Limerick 0B Stand-by Gas Treatment System Flow Switch Declared Inoperable

Section 1R15: Operability Determinations and Functionality Assessments

Issue Reports

1676849	16956461	1601894	01695761	01695862	1514746
1462813					

Procedures

ER-AA-340-1001, Generic Letter 89-13 Program Implementation Instructional Guide, Revision 9
 RT-2-011-254-0, ESW Loop 'B' D/P and Flow Data Collection, Revision 28
 ST-4-055-953-2, HPCI Vacuum Breaker Test, Revision 11
 ST-6-011-232-0, 'B' Loop ESW Pump, Valve, and Flow Test, Revision 84

Miscellaneous

ASME Code Case N-513-2, Evaluation Criteria for Temporary Acceptance of Flaws in Moderate Energy Class 2 or 3 Piping, Revision 2
 Calculation LM-0414, RHR and Core Spray Room Temperature Response Following a Design Basis Accident Loss of Coolant Accident, Revision 2
 Limerick Units 1 and 2 In-service Test Bases, September 10, 2014
 LS-AA-125-1003, Apparent Cause Evaluation (Equipment), Revision 10 for D14 EDG cylinder Jacket Linear Indications
 M1969536, Check ESW Instrument Line for Clogs
 MA-AA-716-004, Attachment 2 complex Troubleshooting (Troubleshooting Data Sheet), Revision 11 for D14 EDG
 OP-AA-101-113-1004, Event/Issue Report Format Equipment Issue (Limerick), Revision 27 for EDG D14 cylinder cracks
 OP-AA-108-111, "Adverse condition monitoring and contingency plan" for the Unit 1 HPCI Steam Admission valve leak on 7/1/14
 Rework investigation Template for D14 EDG cylinder Jacket Linear Indications

Section 1R19: Post-Maintenance Testing

Issue Reports

1670013	1671282	1675536	1686287	1686403	1686891
1689578	1699603	1699850	1700008		

Procedures

Attachment 2, Event/Issue Report Format for Unit 2 Drywell Floor Drain Level Instrument PCIV failed to open fully
CC-AA-404, Maintenance Application: Application Selection, Evaluation and Control of Temporary Leak Repairs, Revision 8
S92.8.A, Installing/Removing 4 Kilovolt Breakers, Revision 41
ST-6-049-230-1, "RCIC Pump, Valve and Flow Test," Revision 78
ST-6-049-320-1, "RCIC Operability Verification," Revision 26
ST-6-061-200-2, "Liquid Radwaste Valve Test," Revision 20

Miscellaneous

C0253478
C0253952
GE SIL No. 336, "Surveillance Testing Recommendations for HPCI and RCIC System," December 1989
E/S X-M1-11009, "Instrument Calibration Sheet," Limerick Unit 1, Revision 1
Prompt Investigation for Topaz Inverter, IR 1675536
R0812479
Temp Turbine Maintenance Guide, RCIC Application, Final Report September 2012

Section 1R22: Surveillance Testing

Issue Reports

01685184 01689578 01693962

Procedures

ST-2-051-105-1, "Division 1 RHR (LPCI) LSF/SAA – NON Outage," Revision 8
ST-6-052-231-2, "A' LOOP Core Spray Pump Valve and Flow Test," Revision 55
ST-6-055-230-2, "HPCI Pump, Valve and Flow Test," Revision 73
ST-6-061-200-2, "Liquid Radwaste Valve Test," Revision 20
ST-6-092-314-1, "D14 Diesel Generator Slow Start Operability Test Run," Revision 98
ST-6-107-596-2, "Drywell Floor Drain Sump/Equipment Drain Tank Surveillance LOG OPCON 1,2,3," Revision 30

Miscellaneous

R1292109

Section 1EP4: Emergency Action Level and Emergency Plan Changes

Miscellaneous

Letter from J. Barstow (Exelon Generation Company, LLC) to U.S. Nuclear Regulatory Commission, "10 CFR 50 Appendix E – Evacuation Time Estimate Analysis for Limerick Generating Station," dated January 31, 2014, [ML14042A219]

Section 1EP5: Maintaining Emergency Preparedness

Issue Reports

1525923 1578649

Miscellaneous

Letter from D. M. Gullott (Exelon Generation Company, LLC) to: U.S. Nuclear Regulatory Commission, "10 CFR 50 Appendix E - Evacuation Time Estimate Analysis for Limerick Generating Station," dated December 12, 2012 [ML12348A382]

Letter from D. M. Gullott (Exelon Generation Company, LLC) to U.S. Nuclear Regulatory Commission, "10 CFR 50 Appendix E - Evacuation Time Estimate Analysis Checklists," date January 23, 2013 [ML13024A209]

Letter from J. Barstow (Exelon Generation Company, LLC) to: U.S. Nuclear Regulatory Commission, "10 CFR 50, Appendix E – Evacuation Time Estimate Analysis Supplemental Response for Braidwood Station, Byron Station, Clinton Power Station, Dresden Nuclear Power Station, LaSalle County Station, Limerick Generating Station, Oyster Creek Nuclear Generating Station, Peach Bottom Atomic Power Station, Quad Cities Nuclear Power Station, and Three Mile Island Nuclear Station," dated September 5, 2013 [ML13254A112]

Letter from J. Barstow (Exelon Generation Company, LLC) to: U.S. Nuclear Regulatory Commission, "10 CFR 50 Appendix E – Evacuation Time Estimate Analysis for Limerick Generating Station," dated January 31, 2014 [ML14042A219]

Section 2RS01: Access Control to Radiologically Significant Areas

Procedures:

RP-AA-203-1001, Personnel Exposure Investigation, Revision 7

RP-AA-210-1001, Dosimetry Logs and Forms, Revision 9

RP-AA-210-1001, Neutron Dose Estimation (Neutron/Gamma Ration Method), Revision 9

RP-AA-270, Prenatal Radiation Exposure, Revision 6

RP-301, Radiological Air Sampling Program, Revision 8

RP-LG-300-101, Routine Survey Program and Documentation, Revision 12 and 13

RP-LG-301-2001, Radiation Protection Response Card, Revision 19

RP-AA-302, Determination of Alpha Levels and Monitoring, Revision 7

RP-AA-403, Administration of the Radiation Work Permit Program, Revision 6

RP-LG-460-103, Upper level Drywell Access Control During Irradiated Core Component Movement, Revision 6

RP-AA-503, Unconditional Release Survey Method, Revision 8

ST-0-107-493-0, Periodic Byproduct Material Leakage Test and Inventory, Revision 15

Documents:

1R15 Outage Radiation Protection Outage Report

Audits; NOSCPA LG-14-07-07, NOSCPA LG-14-07-03

Contamination Control – Personnel Contamination Data

Corrective Action Documents (various)

Dose Records

Dosimetry Performance Testing Data

LGS-14-001, 2013 Annual Isotopic Mix Analysis, Revision 0

NVLAP Certification Information

Personnel Exposure Investigations

Radiological Survey Data

Section 2RS02: Occupational ALARA Planning and Controls

Procedures:

CY-AB-120-130, Revision 10 BWR Shutdown Chemistry
CY-AB-120-130-F-01, Revision 0, Outage Chemistry Plan
CY-LG-120-1301, Revision 8, Outage Cobalt Limits

Documents:

ALARA Contingency Plans
Check-in Assessment (AR 1608967)
Corrective Action Documents (various)
CRUD Burst Response Plan
Post Job ALARA Reviews (various)
Radiation Protection Outage Checklist
Radiological Risk Management Matrix
Shutdown Chemistry Plan
Source Term Control Plans and Actions
Station ALARA Committee Minutes
Station Daily Updates (various)
Various ALARA Plans including control rod drive unlatching ALARA plans, estimates and Decision Analyses
Work-In-Progress Job Reviews and ALARA Reviews

Section 2RS03: In-plant Airborne Radioactivity Control and Mitigation

Procedures:

RP-301, Radiological Air Sampling Program, Revision 8
RP-AA-302, Determination of Alpha Levels and Monitoring, Revision 7
RP-LG-300-101, Routine Survey Program and Documentation, Revision 12 and 13
RT-O-111-900, One Hour SCBA Cylinder Inspection and Functional Test

Documents:

Airborne Radioactivity Intake Assessments
Corrective Action Documents (various)
Respirator Certification, Novo 2000
Respirator Qualification Records (training, medial certification)

Section 2RS04: Occupational Dose Assessment

Procedures:

RP-AA-203-1001, Personnel Exposure Investigation, Revision 7
RP-AA-210-1001, Dosimetry Logs and Forms, Revision 9
RP-AA-210-1001, Neutron Dose Estimation (Neutron/Gamma Ration Method), Revision 9
RP-AA-221, Review, Correction and Analyses of Whole Body Count Data, Revision 2
RP-AA-270, Prenatal Radiation Exposure, Revision 6

Documents:

Corrective Action Documents (various)
EPD/OSL Discrepancy Reports
Exposure Control and Dose Records
General Source Term Data

NVLAP testing Certification In-light
Personnel Contamination Event Logs
Personnel Intake Investigations

Section 2RS05: Radiation Instrumentation

Procedures:

CY-AA-130-300, Gamma Spectroscopy, Revision 5
M-053-002, Control and Processing of Irradiated and Contaminated Hardware, Revision 4
in the Spent Fuel Pools and Cask Pit
RP-301, Radiological Air Sampling Program, Revision 8
RP-AA-503, Unconditional Release Survey Method, Revision 8
RP-AA-700-1208, Operation of the Shepard Model 89 Calibrator RP-AA-700-1204, Operation of
the SAC-4 Alpha Counter, Revision 1
RP-AA-1010, Attachment 1, Justification of Small Article Monitor
Alarm Set-point, Revision 0
RP-LG-300-101, Routine Survey Program and Documentation, Revision 12 and 13
RT-2-041-420-1, Calibration/Functional test main Steam Line radiation Monitor
ST-2-012-405-0(A, B) Calibration/Functional Test RHR Service Water Monitor
ST-2-026-407-1, Calibration Primary Containment Post-LOCA Monitor
ST-2-026-411-1, Calibration/Functional testing Air Ejector
ST-2-063-400-0, Calibration/Functional test- Liquid Radioactive Effluent Line
ST-6-061-590-0, Liquid Radwaste Effluent Line Source and Channel Check
ST-2-063-601-0, Calibration/Functional test, Radwaste Pipe Flow Discharge

Documents:

1R15 Outage Radiation Protection Outage Report
Audits; NOSCPA LG-14-07-07, NOSCPA LG-14-07-03
Contamination Control – Personnel Contamination Data
Corrective Action Documents (various)
LGS-11-006, Canberra Argos Plant Mix Gamma Sensitivity, Revision 0
LGS-14-001, 2013 Annual Isotopic Mix Analysis, Revision 0
Limerick Unit 1 2014-2015 Alpha Assessment
Offsite Dose Calculation Manual, Revision 25, 26
Radioactive Effluent Monitoring System Health Reports
Radiological Survey Data

Section 2RS06: Radioactive Gaseous and Liquid Effluent Treatment

Procedures:

CY-AA-LG-170-301, Limerick ODCM, Revision 26
RP-LG-227, LGS 10 CFR 20.2002 Permit Implementation, Revision 5
ST-2-026-440-0, Radioactive Gaseous Effluent Monitoring –North Stack Effluent Flow rate
Monitor Calibration /Functional
ST-2-026-442-1 Radioactive gaseous Effluent Monitoring South Stack Effluent Flow Rate
Monitor Calibration/Functional Test
ST-2-026-640-0 Radioactive Gaseous Effluent Monitoring North Stack Effluent Flow Rate
Monitor Functional Test
ST-2-026-642-1 Radioactive Gaseous Effluent Monitoring South Stack Effluent Flow Rate
Monitor Calibration/Functional test
ST-2-026-642-2, Radioactive Gaseous Effluent Monitor South Stack Effluent Flow Rate
Functional

ST-2-026-442-2, Radioactive Gaseous Effluent Monitor South Stack Effluent Flow Rate Monitor Calibration
ST-4-076-101-0, A SBGTS heater Differential Pressure Test
ST-4-076-101-0, B SBGTS heater Differential Pressure Test
ST-6-076-200-1, Reactor Enclosure Secondary Containment Auto Isolation Valve Timing Test
ST-6-076-250-1, SBGTS and RERS Flow Test
ST-6-076-200-2, Reactor Enclosure Secondary Containment Auto Isolation Valve Timing Test
ST-6-076-250-2, SBGTS and RERS Flow Test
ST-4-076-321-0, 'A' SBGTS Charcoal/Adsorber/HEPA Filter Test
ST-4-076-321-1, 'A' Reactor Enclosure Recirculation System Charcoal Adsorber/HEPA Filter Test
ST-4-076-321-2, 'A' Reactor Enclosure Recirculation System Charcoal Adsorber/HEPA Filter Test
ST-4-076-322-0, 'B' SBGTS Charcoal/Adsorber/HEPA Filter Test
ST-4-076-322-2, 'B' Reactor Enclosure Recirculation System Charcoal Adsorber/HEPA Filter Test
ST-4-076-801-0 'A' SBGTS Charcoal Analysis,
ST-4-076-802-0 'B' SBGTS Charcoal Analysis,
ST-4-076-806-1, 'A' Reactor Enclosure Recirculation System Charcoal Analysis
ST-4-076-806-2, 'A' Reactor Enclosure Recirculation System Charcoal Analysis
ST-4-076-807-1, 'B' Reactor Enclosure Recirculation System Charcoal Analysis
ST-4-076-807-2, 'B' Reactor Enclosure Recirculation System Charcoal Analysis

Documents:

Corrective Action Documents (various)
Limerick Land Use Census October 2013
ODCM Revision 26
Sample results (various)

Section 40A1: Performance Indicator Verification

Procedures

NEI 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7

Miscellaneous

Corrective Action Documents (various)
Limerick Annual Effluent and Environmental Reports -2013
Personnel Dose Results

LIST OF ACRONYMS

ADAMS	Agencywide Documents Access and Management System
ALARA	As Low As is Reasonably Achievable
CA	Corrective Action
CAP	Corrective Action Program
CFR	Code of Federal Regulations
D/Q	Ground Level Deposition
EDG	Emergency Diesel Generator
EP	Emergency Preparedness
EPD	Electronic Personal Dosimeter
ETE	Evacuation Time Estimate
HEPA	High Efficiency Particulate air
HPCI	High Pressure Coolant Injection
HRA	High Radiation Area
IMC	Inspection Manual Chapter
IR	Issue Report
LCO	Limited Condition for Operation
LER	Licensee Event report
LGS	Limerick Generating Station
MSPI	Mitigating Systems Performance Index
NCV	Non-cited Violation
NEI	Nuclear Energy Institute
NOS	Nuclear Oversight
NRC	Nuclear Regulatory Commission
NSIR	Nuclear Security and Incident Response
NVLAP	National Voluntary Laboratory Accreditation Program
ODCM	Offsite Dose Calculation manual
ORO	Offsite Response Organization
PD	Performance Deficiency
PI	Performance Indicators
RCIC	Reactor Core Isolation Cooling
REMP	Radiological Effluents Technical Specification
RHR	Residual Heat Removal
RHRSW	Residual Heat Removal Service Water
RP	Radiation Protection
SCBA	Self-Contained Breathing Apparatus
SDP	Significance Determination Process
SGTS	Standby Gas Treatment System
SLC	Standby Liquid Control
SSC	Structure, System, or Component
TS	Technical Specifications
UFSAR	Updated Final Safety Analysis Report
WO	Work Order
VHRA	Very High Radiation Area
WBC	Whole Body Counter