October 30, 2003

Mr. John Skolds
President and CNO
Exelon Nuclear
Exelon Generation Company, LLC
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: LIMERICK GENERATING STATION - NRC INTEGRATED INSPECTION REPORT 05000352/2003004, 05000353/2003004

Dear Mr. Skolds:

On September 27, 2003, the United States Nuclear Regulatory Commission (NRC) completed an inspection at your Limerick Generating Station Units 1 and 2. The enclosed integrated report documents the inspection findings which were discussed on October 9, 2003, with Mr. R. DeGregorio and other members of your staff.

This 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 two NRC-identified findings and one self-revealing finding of very low safety significance (Green). All of these findings were determined to involve violations of NRC requirements. This report also documents two NRC-identified Severity Level IV violations associated with a change in the emergency plan that decreased the effectiveness in one area of the plan and lack of records to support changes made to the emergency plan. However, because of their very low safety significance and because they are entered into your corrective action program, the NRC is treating these five issues as non-cited violations (NCVs), in accordance with Section VI.A of the NRC's Enforcement Policy. Licensee-identified violations which were determined to be of very low safety significance are listed in Section 4OA7 of this report. 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, Region I; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, D.C. 20555-0001; and the NRC Resident Inspector at the Limerick facility.

Since the terrorist attacks on September 11, 2001, the NRC has issued five Orders and several threat advisories to licensees of commercial power reactors to strengthen licensee capabilities, improve security force readiness, and enhance controls over access authorization. In addition to applicable baseline inspections, the NRC issued Temporary Instruction (TI) 2515/148, "Inspection of Nuclear Reactor Safeguards Interim Compensatory Measures," and its subsequent revision, to audit and inspect licensee implementation of the interim compensatory measures required by the Order. Phase 1 of TI 2515/148 was completed at all commercial

nuclear power plants during calendar year (CY) 2002, and the remaining inspection activities for Limerick were completed in February 2003. The NRC will continue to monitor overall safeguards and security controls at Limerick.

In accordance with 10 CFR 2.790 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 Web site at http://www.nrc.gov/reading-rm/adams.html (The Public Electronic Reading Room).

Sincerely,

/RA/

Mohamed Shanbaky, Chief
Projects Branch 4
Division of Reactor Projects

Docket Nos: 50-352; 50-353
License Nos: NPF-39; NPF-85

Enclosure: Inspection Report 05000352/2003004, 05000353/2003004
w/Attachment: Supplemental Information

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Site Vice President - Limerick Generating Station
Limerick Generating Station Plant Manager
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U.S. NUCLEAR REGULATORY COMMISSION

REGION 1

Docket Nos: 50-352; 50-353

License Nos: NPF-39, NPF-85

Report No: 05000352/2003004, 05000353/2003004

Licensee: Exelon Generation Company, LLC

Facility: Limerick Generating Station, Units 1 & 2

Location: Evergreen and Sanatoga Roads
Sanatoga, PA 19464

Dates: June 29, 2003 through September 27, 2003

Inspectors: A. Burritt, Senior Resident Inspector
B. Welling, Resident Inspector
J. Caruso, Senior Operations Engineer
J. Furia, Senior Health Physicist
S. Iyer, Reactor Engineer
N. McNamara, Emergency Preparedness Inspector
J. Talieri, Reactor Inspector

Approved by: Mohamed Shanbaky, Chief
Projects Branch 4
Division of Reactor Projects

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SUMMARY OF FINDINGS

IR 05000352/2003-004, IR 05000353/2003-004; 06/29/2003-09/27/2003; Limerick Generating Station, Units 1 and 2; Licensed Operator Requalification Program, Operability Evaluations, Emergency Preparedness, and Event Followup.

The report covered a 3-month period of inspection by resident inspectors and announced inspections by regional health physicists, emergency preparedness inspectors, and reactor inspectors. Three Green non-cited violations (NCVs) and two Severity Level IV NCVs, were identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter 0609, "Significance Determination Process" (SDP). Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 3, dated July 2000.

Reactor Safety

A. NRC-Identified and Self-Revealing Findings

Cornerstone: Mitigating Systems

- Green. The inspectors identified a finding of very low safety significance that is also a non-cited violation of Technical Specification 6.8.1, "Procedures," because chemistry staff did not follow procedures. Specifically, spray pond water samples were not analyzed for soluble manganese within the required weekly frequency and when manganese in the spray pond water was above 100 parts-per-billion (ppb), the actions specified in the procedure were not taken.

  The finding is more than minor because it is similar to example 4.a in Appendix E of NRC Inspection Manual Chapter 0612. This finding was determined to have very low safety significance by Phase 1 of the Reactor Inspection Findings for At-Power Situations Significance Determination Process because the performance deficiency did not result in a loss of safety function and is not potentially risk significant due to a seismic, flood, fire, or severe weather initiating event.

  The inspectors also identified that a contributing cause of this finding involved a human performance error because neither a chemistry technician nor the technician's supervisor followed the steps prescribed by the procedure. (Section 1R15)

Cornerstone: Barrier Integrity

- Green. A self-revealing non-cited violation of Technical Specification 3.6.5.1.2 was identified because Exelon did not maintain refueling area secondary containment integrity while performing core alterations during a refueling outage.

The finding is more than minor because the issue was associated with the human performance attribute of the Barrier Integrity cornerstone, and it affected the cornerstone objective. The Barrier Integrity cornerstone objective was affected because secondary containment functionality was not maintained when required by Technical Specifications. This finding was determined to be of very low safety significance (Green) by NRC Inspection Manual Chapter 0609, Appendix G, Shutdown Operations Significance Determination Process. The plant conditions while secondary containment was breached did not require a phase 2 assessment and therefore screened as Green per the Appendix G, Section 1 guidance.

The inspectors also noted that a contributing cause of this finding was related to a human performance error because operators did not properly verify Technical Specifications compliance when breaching secondary containment. (Section 4OA3)

- Green. The inspectors identified a non-cited violation of 10 CFR 55.53(f)(2) regarding the licensee's method used to reactivate senior operator licenses to support refueling. The operator licenses were reactivated without the required direct supervision being present during the shift under-instruction time.

  This finding was determined to be more than minor but of very low safety significance. It is more than minor because it is similar to example 2h in Appendix E of Inspection Manual Chapter 0612. The performance deficiency is related to operator license conditions. The performance deficiency involved more than 20% of the senior operator license reactivations to support refueling operations not meeting the requirements of 10 CFR 55.53(f)(2). Accordingly, the performance deficiency was determined to be of very low safety significance. (Section 1R11)

Cornerstone: Miscellaneous

- SL-IV. The inspector identified a Severity Level IV non-cited violation (NCV) of 10 CFR 50.54(q) because the licensee decreased the effectiveness of its emergency plan in one area by removing a provision to provide volunteer bus drivers to two school districts within the 10 mile Emergency Planning Zone for evacuating students during a radiological event. The change was implemented without NRC approval.

  Changing emergency plan provisions without prior NRC approval impacts the NRC's ability to perform its regulatory function and is therefore processed through traditional enforcement as specified in Section IV.A.3 of the Enforcement Policy, issued May 1, 2000 (65 FR 25388). According to Supplement VIII of the Enforcement Policy, this finding was determined to be a Severity Level IV violation because it involved a failure to meet a requirement not directly related to assessment and notification. This NCV was also determined to have very low safety significance since Exelon had maintained a list of

volunteers that would have been able to perform the function if needed. (Section 1EP4)

- SL-IV. The inspector identified a Severity Level IV non-cited violation of 10 CFR 50.54(q). During the implementation of a new Standard Emergency Plan, Exelon did not retain a record that determined whether a decrease-in-effectiveness had or had not occurred when Exelon generated the new Standard Emergency Plan that deleted portions of the previous Combined Limerick/Peach Bottom Emergency Plan.

  Changing emergency plan provisions without documentation impacts the NRC's ability to perform its regulatory function and is therefore processed through traditional enforcement as specified in Section IV.A.3 of the Enforcement Policy, issued May 1, 2000 (65 FR 25388). According to Supplement VIII of the Enforcement Policy, this finding was determined to be a Severity Level IV because it involved a failure to meet a requirement not directly related to assessment and notification. (Section 1EP4)

B. Licensee-Identified Violations.

Violations of very low safety significance, which were identified by the licensee have been reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program. These violations and corrective actions are listed in Section 4OA7 of this report.

Report Details

Summary of Plant Status

Unit 1 began this inspection period operating at 100% power and remained at or near that power level except for brief periods of planned testing.

Unit 2 began this inspection period operating at 100% power. On August 2, reactor power was reduced to about 20% and the main generator was taken off-line for repairs to the stator water cooling system. On August 5, the unit was restored to 100% power and remained at or near that power level except for brief periods of planned testing and control rod pattern adjustments.

1. REACTOR SAFETY
Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R01 Adverse Weather Protection (71111.01)

a. Inspection Scope

Since the forecast/potential track of Hurricane Isabel created the potential for tropical force winds in the vicinity of the Limerick facility, the inspectors reviewed Exelon's preparation for the inclement weather. On September 18 and 19, the inspectors verified that Exelon implemented procedure SE-9, "Preparation for Severe Weather." The inspectors walked down the emergency diesel generators and portions of the associated electrical distribution systems. These systems were selected because their safety functions would be relied upon in the event of a loss of offsite power which was more likely during the high winds. The inspectors reviewed the planned maintenance and testing to verify that event mitigation equipment would remain available during the period of inclement weather. The inspectors also toured the site grounds to verify loose material, which could become missiles during high winds, was restrained or removed. This inspection activity represented one sample.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment (71111.04)

a. Inspection Scope

Partial System Walkdown. (71111.04Q) The inspectors performed partial system walkdowns to verify system and component alignment and to note any discrepancies that would impact system operability. The inspectors verified selected portions of redundant or backup systems or trains were available while certain system components were out-of-service. The inspectors reviewed selected valve positions, general condition of major system components, and electrical power availability. This inspection activity represented three samples. The partial walk-downs included the following systems:

- 2A, 2B, 2D residual heat removal while 2C residual heat removal out-of-service
- Unit 1 high pressure coolant injection with reactor core isolation cooling system out-of-service for an isolation instrumentation failure
- D12, D13 and D14 emergency diesel generator (EDG) with D11 EDG out-of-service

Complete System Walkdown. (71111.04S) The inspector performed a complete system walkdown on the Unit 2 reactor core isolation cooling (RCIC) system to verify that the equipment was properly aligned. The walkdown included reviews of valve positions, major system components, electrical power availability, and equipment deficiencies. The inspector reviewed system checkoff lists, system operating procedures, the system piping and instrumentation diagram and updated final safety analysis report. The inspector reviewed outstanding maintenance activities and condition reports associated with the RCIC system to determine if they would adversely affect system operability. The inspector also interviewed the system manager to identify any outstanding design issues, temporary modifications, and operator workarounds affecting RCIC system operation. The inspector verified in the control room and in the RCIC system rooms that valves, including locked valves, were correctly positioned and did not exhibit leakage that would impact the function of the valve. The inspector also verified that electrical power was available, major components were labeled, hangers and supports were functional, and essential support systems were operational. This inspection activity represented one sample. The documents included in the review are listed in the Attachment.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05)

a. Inspection Scope

Tour Plant Areas Important to Reactor Safety. (71111.05Q) The inspectors toured high risk areas at Limerick Units 1 and 2 to assess Exelon's control of transient combustible material and ignition sources, fire detection and suppression capabilities, fire barriers, and any related compensatory measures. The inspectors reviewed the respective pre-fire action plan procedures and Section 9A of the Updated Final Safety Analysis Report. This inspection activity represented 12 samples. The following fire areas were inspected:

- 2A/2C residual heat removal compartment (Fire Area 54)
- 2B/2D residual heat removal compartment (Fire Area 55)
- D21 diesel generator compartment (Fire Area 83)
- D22 diesel generator compartment (Fire Area 85)
- spray pond pump structure, west (fire area 122)
- spray pond pump structure, east (fire area 123)
- Unit 2 reactor enclosure 201' elevation (fire area 65)

- Unit 2 reactor enclosure 253' elevation (fire area 68)
- 2B core spray pump room (fire area 58)
- 2D core spray pump room (fire area 59)
- Unit 2 control rod drive pump area, condensate filter demineralizer equipment, and reactor feed pump lube oil reservoir areas (fire area 102)
- control structure chiller area (fire area 1)

Fire Drill. (71111.05A) The inspector observed an unannounced fire drill in the Unit 1 inverter room on July 15, 2003. The inspector evaluated various aspects of the fire brigade response, including use of protective gear and fire fighting equipment, communications with the main control room, and uses of the pre-fire plan procedure. The inspector discussed the results with the fire protection specialist and station management. This inspection activity represented one sample.

b. Findings

No findings of significance were identified.

1R07 Heat Sink Performance (71111.07B)

a. Inspection Scope

The inspector reviewed performance testing and processes to ensure that the following heat exchangers could perform their design functions as intended:

- Emergency Diesel Generator (EDG) Heat Exchangers
- Residual Heat Removal (RHR) A and B Pump Room Coolers

The EDG heat exchangers included the air coolant heat exchangers, lube oil coolers, and jacket water heat exchangers which provide cooling to the EDGs to support continuous operation under full-load conditions. The RHR pump room coolers remove heat from the pump compartments to ensure operability of the RHR pumps by maintaining room temperature within design limits.

To ensure compatibility with commitments made in response to Generic Letter 89-13, “Service Water System Problems Affecting Safety Related Equipment,” the inspector reviewed Exelon’s inspection, cleaning, and performance monitoring methods and frequency. The inspector compared surveillance test and inspection data to the established acceptance criteria to verify that the results were acceptable and that operation was consistent with design. The inspector walked down the selected heat exchangers to assess the material condition of these areas.

The inspector also reviewed a sample of Condition Reports (CR) related to the selected heat exchangers. This review was done to ensure that Exelon was appropriately identifying, characterizing, and correcting problems related to these components.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification (71111.11)

1. Simulator Evaluation (71111.11Q)

a. Inspection Scope

On July 22, 2003, the inspector observed a licensed operator requalification training program as-found simulator scenario to assess licensed operator performance and the evaluator's critique. The inspector discussed the results with operators, operations management, and instructors. This inspection activity represented one sample. The inspector also referred to the simulator scenario document, LSTS-3120, and the following off-normal plant procedures and emergency operating procedures:

- ON-100, "Failure of a Jet Pump"
- OT-114, "Inadvertent Opening of a Relief Valve"
- T-101, "RPV Control"
- T-100, "Scram/Scram Recovery"

b. Findings

No findings of significance were identified.

2. Limited Senior Reactor Operator (LSRO) Requalification (URI 50-352; 50-353/02-04-01) (71111.11B)

a. Inspection Scope

The inspection activities were performed using NUREG 1021, Rev. 8, Supplement 1, "Operator Licensing Examination Standards for Power Reactors"; and Inspection Procedure Attachment 71111.11, "Licensed Operator Requalification Program," Appendix A "Checklist for Evaluating Facility Testing Material." License reactivations for the past two-year requalification program cycle were reviewed for conformance with the requirements of 10 CFR 55.53 (f)(2).

b. Findings

Introduction. The inspector identified a non-cited violation of 10 CFR 55.53(f)(2) having very low safety significance (Green). The issue regarded the licensee's method used to reactivate senior operator licenses to support refueling. The operator licenses were reactivated without the required direct supervision being present during the shift under-instruction time. The Limited Senior Reactor Operator (LSRO) Requalification Program for Fuel Handlers is a dual site operator license program that applies to both Limerick and Peach Bottom sites.

Description. An unresolved item (URI 50-352 and 50-353/02-04-01 was identified during the biennial Licensed Operator Requalification Program inspection conducted the week of May 20, 2002, and documented in report 50-352; 50-353/02-04-01 and 50-277; 50-278/02-04-01. The methods and standards used at Limerick and Peach Bottom to re-activate LSRO licensees did not meet the requirements of 10 CFR 55.53(f)(2). 10 CFR 55.53(f)(2) requires, in part, that the LSRO stand one shift under-instruction, under the direction of a senior operator, and in the position to which the individual will be assigned. The site practice in the period of 1992-2002 had been to have LSRO licensees stand one 8 or 12 hour shift under-instruction watch that consisted of checking in with the shift manager, spending some time in the main control room reviewing refueling related instrumentation and plant status, reviewing the applicable unit Limiting Condition for Operation (LCO) log, and attending shift briefings. The remainder of the shift time was spent on the refueling floor performing self-directed review and study of procedures, as well as walk-downs and familiarity with equipment. Therefore, the licensee's procedure guidance and practices for re-activating LSRO licenses provided very little direct SRO oversight or feedback while the LSRO was completing the required one shift of under-instruction requirement. In addition, the inspector noted at the time of this inspection that there were three different procedures (A-C-10, revision 3, "Operator Licenses"; OP-AA-105-102, revision 1, "NRC Active License Maintenance"; TQ-AA-131, Revision 0, "Senior Reactor Operator- Limited Requalification Training") that provided conflicting guidance/direction for maintaining and re-activating an LSRO license.

This issue was forwarded to the Office of Nuclear Reactor Regulation (NRR) for further guidance on whether Exelon's practice met the intent of the regulation, and is summarized below:

> Ideally the "under-direction" watch performed for the purpose of reactivating an LSRO license (or a full-scope SRO license for refueling operations alone) should be performed primarily in the fuel handling area during refueling operations (i.e., at a time when the presence of a senior operator is required pursuant to 10 CFR 50.54(m)(2)(iv)). This would clearly meet the intent of 10 CFR 55.53(f)(2), which requires the licensee to complete one shift of shift functions under the direction of a senior operator in the position to which the licensee will be assigned, and the 10 CFR 55.4 definition of *actively perform the functions of a senior operator*, which requires the licensee to fill a position on the shift crew that requires the individual to be licensed and to carry out and be responsible for the duties covered by that position.

However, given the infrequency and short duration of shift functions that require the presence of an (L)SRO on the refueling floor, it may not always be practical for a facility licensee to delay its (L)SRO reactivations until those shift functions are actually underway. In those instances, the NRR has concluded that the facility licensee can satisfy the intent of the regulation by implementing a reactivation program that specifies, in detail, the refueling tasks, activities, and procedures that an (L)SRO must satisfactorily complete or simulate (e.g., by using dummy fuel assemblies) in order to demonstrate watch-standing proficiency. Moreover, such a program shall exercise positive control to ensure that the required tasks, activities, and procedures are completed within a reasonable period of time (ideally, no more than one week) before the (L)SRO is assigned to supervise refueling shift functions.

The NRC's requirements regarding the conduct of under-instruction or training watches are contained in 10 CFR 55.13, which allows trainees to manipulate the controls of a facility "under the direction and in the presence of a licensed operator or senior operator..." [emphasis added] This position is also evident in the responses to Questions #252 and #276 in NUREG-1262, "Answers to Questions at Public Meetings Regarding Implementation of Title 10, Code of Federal Regulations, Part 55 on Operators' Licenses," which indicate that a trainee's activities are to be closely monitored by the responsible person.

On reviewing the September 15, 1993, letter from NRR regarding the licensee's reactivation program, NRR noted that the staff had recommended that the training procedure explicitly capture the facility licensee's past practice and the 10 CFR 55 requirement for the reactivation tasks to be performed under the direction of active SROs. Moreover, Section 8.7 of the LSRO program plan attached to the letter clearly reflected the licensee's expectation that the reactivation must be performed "under the direction of an active SRO or LSRO" and, for one activity, clarified that it could be performed more than 72 hours prior to the start of core alterations as long as it was done "in the company of an active LSRO or SRO."

Based on the above, it appears that the current LSRO reactivation practices at Limerick and Peach Bottom do not meet the intent of the NRC's regulations or the facility licensee's previously approved program plan. To properly reactivate an (L)SRO license per 10 CFR 55.53(f), the individual should stand a watch under the direction and in the presence of an active SRO or LSRO who will directly oversee the trainee's activities, provide feedback as appropriate, and enable an authorized representative of the facility licensee to certify that the operator's qualifications are current and valid. Permitting the trainees to perform self-directed activities on the refueling floor eliminates the opportunity for meaningful feedback, thereby casting doubt on the validity of the resulting certification."

Consequently, the inspector determined that a performance deficiency existed and it was a violation of NRC requirements.

Analysis. The performance deficiency is the method used in the period 1992 - 2002 to re-activate LSRO licensees did not meet the requirements of 10 CFR 55.53(f)(2).

The inspector used NRC Inspection Manual, Manual Chapter (MC) 0612, "Power Reactor Inspection Reports," Appendix B, and MC 0609, Appendix I, "Operator Requalification Human Performance Significance Determination Process (SDP)." The performance deficiency is not subject to traditional enforcement because it did not have actual safety consequences, there was no evidence of willfulness, and it does not impact the NRC's ability to perform its regulatory function. The performance deficiency is more than minor because it is similar to example 2h in Appendix E of MC 0612. MC 0609, Appendix I is entered because the performance deficiency is related to operator license conditions (MC0612, Appendix B, second section C, question # 9). The performance deficiency is an operator requalification issue related to operator license conditions (Appendix I flowchart block # 24, a "YES" response which leads to flowchart block #27). Since the inspection revealed more than 20% of the LSRO license reactivations to support refueling operations did not meet the requirements of 10 CFR 55.53(f)(2), the performance deficiency indicates a "Green Finding." Accordingly, the performance deficiency was determined to be of very low safety significance (Green).

Enforcement. 10 CFR 55.53(f)(2), requires that LSROs, who wish to reactivate their licenses, complete at least one shift under the direction of a senior operator and "in the position to which the individual will be assigned." Contrary to this requirement, between 1993 and 2002 the licensee re-activated their inactive senior operators limited to fuel handling by allowing them to complete this refuel floor training on their own with no direct supervision from a senior operator. Because of the very low safety significance, and because the issue is in the licensee's corrective action program (ARs # A1295039 and A1378603), it is being treated as a non-cited violation, consistent with Section VI.A.1 of the NRC Enforcement Policy: **NCV 05000352/2003004-01 and 05000353/2003004-01, Did Not Meet 10CFR 55.53(f)(2) When Reactivating Senior Operators to Support Fuel Handling.**

The licensee ceased their prior practice and have initiated a corrective action item to revise their Operator Requalification Program Manual to change their methods for re-certifying inactive SRO license holders to perform Fuel Handling Supervisor duties. This revision will require that "all parts of the reactivation will be performed with the accompaniment of an active SRO or LSRO." In addition, the licensee will initiate further revisions to their program consistent with the following NRR guidance provided as part of this resolution. "*... the facility licensee can satisfy the intent of the regulation by implementing a reactivation program that specifies, in detail, the refueling tasks, activities, and procedures that an (L)SRO must satisfactorily complete or simulate (e.g., by using dummy fuel assemblies) in order to demonstrate watch-standing proficiency. Moreover, such a program shall exercise positive control to ensure that the required tasks, activities, and procedures are completed within a reasonable period of time (ideally, no more than one week) before the (L)SRO is assigned to supervise refueling shift functions*."

1R12 Maintenance Effectiveness (71111.12)

a. Inspection Scope

The inspectors evaluated the follow-up actions for selected system, structure, or component (SSC) issues and reviewed the performance history of these SSCs to assess the effectiveness of Exelon's maintenance activities. The inspectors reviewed Exelon's problem identification and resolution actions, as applicable, for these issues to evaluate whether Exelon had appropriately monitored, evaluated, and dispositioned the issues in accordance with Exelon's procedures and the requirements of 10 CFR 50.65(a)(1) and (a)(2), "Requirements for Monitoring the Effectiveness of Maintenance." In addition, the inspectors reviewed selected SSC classification, performance criteria and goals. The inspectors reviewed the associated maintenance action request and discussed the issue with engineering personnel. This inspection activity represented one sample. The following issue was reviewed:

- Unit 1 high pressure coolant injection suppression pool level instrument (LT-055-1N062B) - failed downscale (A1430781)

b. Findings

No findings of significance were identified.

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

a. Inspection Scope

The inspectors reviewed the assessment and management of selected maintenance activities to evaluate the effectiveness of Exelon's risk management for planned and emergent work. The inspectors compared the risk assessments and risk management actions to the requirements of 10 CFR 50.65(a)(4) and the recommendations of NUMARC 93-01 Section 11, "Assessment of Risk Resulting from Performance of Maintenance Activities." The inspectors evaluated the selected activities to determine whether risk assessments were performed when required and appropriate risk management actions were identified.

The inspectors reviewed scheduled and emergent work activities with work control center planning personnel to verify whether risk management action threshold levels were correctly identified. The inspectors assessed those activities to evaluate whether appropriate implementation of risk management actions were performed in accordance with Exelon's procedures.

The inspectors compared the assessed risk configuration to the actual plant conditions and any in-progress evolutions or external events to evaluate whether the assessment was accurate, complete, and appropriate for the issue. The inspectors performed control room and plant walkdowns to verify whether the compensatory measures identified by the risk assessments were appropriately performed. This inspection activity represented seven samples. The selected maintenance activities included:

- 2C residual heat removal system outage
- U1 reactor core isolation cooling system for an instrumentation problem

- D11 emergency diesel generator out-of-service for modification work
- D12 bus undervoltage device testing (RT-2-092-322-1)
- 2A core spray system outage
- U2 reactor core isolation cooling system outage
- 2B control rod drive pump out-of-service for oil leak repairs

b. Findings

No findings of significance were identified.

1R14 Personnel Performance During Non-routine Plant Evolutions (71111.14)

a. Inspection Scope

Nonroutine/Transient Operations. The inspectors observed and reviewed licensed operator performance in the control room during a return of the 2C reactor feed pump to service following a load drop, a non-routine event. This inspection activity represented one sample. The following documents were reviewed:

- OT-100, “Reactor Low Level”
- OT-110, “Reactor High Level”

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors reviewed operability determinations that were selected based on risk insights, to assess the adequacy of the evaluations, the use and control of compensatory measures, and compliance with the Technical Specifications. In addition, the inspectors reviewed the selected operability determinations to verify whether the determinations were performed in accordance with Exelon Procedure LS-AA-105, “Operability Determinations.” The inspectors used the Technical Specifications, UFSAR, associated Design Basis Documents, and applicable action request and condition report documents during these reviews. This inspection activity represented 5 samples. The issues reviewed included:

- Unit 1 jet pump riser (13/14) brace crack indication (A1360037, ECR 02-00170)
- Standby liquid control system transport time to the reactor longer than calculated (A1337074, CR 94767)
- Main steam isolation valve testing deficiencies (CR 164391, OPE-03-070)
- Unit 2 reactor vessel core shroud operability determination (CR 176283, CR 149887, OPE-03-003 revision 2)

- 2B residual heat removal heat exchanger with spray pond manganese levels above limits established in the associated operability determination. The inspectors evaluated Exelon's monitoring and control of the quality of the spray pond water to ensure that the degraded 2B RHR heat exchanger remained operable. The evaluation was focused on the reliability of the RHR heat exchanger during the 180-day mission time following an assumed event (CRs 149191, 159169, 174978).

The inspector reviewed the following documents:

- Operator Logs
- Exelon Procedure CH-1010, "Chemistry Sampling, Analysis, and Calibration Schedule"
- Exelon Procedure CH-1010, Appendix B, "Chemistry/NPDES Related Sampling and Analysis Schedule"

b. Findings

Introduction. The inspectors identified a finding of very low safety significance (Green) that is also a non-cited violation of Technical Specification 6.8.1, "Procedures," because the chemistry staff did not follow procedures. Specifically, samples were not analyzed for soluble manganese within the required weekly frequency, and when manganese in the spray pond water was above 100 parts-per-billion (ppb), the actions specified in the procedure were not taken.

Description. The operability evaluation (CR 149191) discussed a corrosion mechanism associated with manganese in the spray pond water that had caused significant pitting of the 2B RHR heat exchanger tubes. The operability evaluation documented that "maintaining spray pond chemistry parameters within the limits of CH-1010 ensures the reliability of the RHR heat exchanger post accident." Procedure Ch-1010, "Chemistry Sampling, Analysis, and Calibration Schedule," specifies a weekly frequency for the sampling and analysis of spray pond water and specifies action to be taken within 24 hours if soluble manganese is above 100 ppb, including further investigation through trending or checking other related analysis for appropriate corrective actions.

On April 29, 2003, spray pond water was sampled and analyzed. The results of the analysis indicated that soluble manganese was above 100 ppb. The technician informed his supervisor and then obtained a confirmatory sample of spray pond water. The chemistry staff analyzed the second sample on May 16, 2003. The results of the analysis were similar to the first sample on April 29, with soluble manganese above 100 ppb. On May 16 the technician also analyzed samples of spray pond water from samples taken on May 5 and May 12. The results are as follows:

Sample Date	Analysis Date	Analysis Result - Manganese
04-23-03	04-29-03	32 ppb

Sample Date	Analysis Date	Analysis Result - Manganese
04-29-03	04-29-03	251 ppb
04-29-03	05-16-03	231 ppb
05-05-03	05-16-03	187 ppb
05-12-03	05-16-03	442 ppb

The inspector determined that Chemistry staff did not perform the required weekly analysis of the spray pond water sample taken on May 5. The inspector also concluded that when the initial spray pond analysis on April 29, 2003, indicated that the soluble manganese was above 100 ppb, technicians did not analyze the confirmatory sample or samples from May 5 and May 12 until May 16 and therefore took no actions within 24 hours specified in CH-1010 to further investigate through trending or use of another analysis to determine appropriate corrective actions. As a result of not taking action in accordance with CH-1010, on May 9, Exelon operated the 2B RHR system when soluble manganese in the spray pond water was above the limits of CH-1010, and they reduced the long term reliability of the RHR heat exchanger post-accident.

Analysis. The finding is a performance deficiency because the chemistry staff did not properly implement a chemistry procedure for sampling and analysis of the spray pond water. This procedure is within the scope of procedures described in Regulatory Guide 1.33, as required by Technical Specification 6.8.1. Traditional enforcement does not apply, because the issue does not have any actual safety consequences or potential for impacting the NRC's regulatory function and is not the result of any willful violation of NRC requirements or Exelon procedures. The finding is more than minor because it is similar to example 4.a "Insignificant Procedural Errors" in Appendix E of NRC Inspection Manual Chapter 0612, "Power Reactor Inspection Reports." By not following the chemistry sampling and analysis procedure, Exelon adversely affected the safety-related 2B RHR heat exchanger, in that, based on Exelon's operability evaluation, the reliability of the 2B RHR heat exchanger post-accident was reduced. The finding impacts the Mitigating System Integrity Cornerstone because it is associated with the reliability of the 2B RHR subsystem, a mitigating system. This finding is determined to have very low safety significance (Green) by Phase 1 of the Reactor Inspection Findings for At-Power Situations Significance Determination Process because the performance deficiency does not result in a loss of safety function and is not potentially risk significant due to a seismic, flood, fire, or severe weather initiating event.

The inspectors identified that a contributing cause of this finding involved a human performance error because neither a chemistry technician nor the technician's supervisor followed the steps prescribed by procedure CH-1010.

Enforcement. Technical Specification 6.8.1 requires, in part, that written procedures be established, implemented, and maintained covering the applicable procedures in Appendix "A" of Regulatory Guide 1.33, Revision 2, February 1978. Appendix "A" of

Regulatory Guide 1.33 includes chemical control procedures that specify the frequency for sampling and analysis and instructions for maintaining water quality within the prescribed limits. Exelon Procedure CH-1010, "Chemistry Sampling, Analysis, and Calibration Schedule," Attachment B, Section 19, specifies a weekly frequency for the sampling and analysis and specifies "Action Code 300" if soluble manganese is above 100 ppb. Attachment 3, "Action Code 300," states, in part, that when a limit is exceeded, within 24 hours perform corrective action(s) including further investigation through trending, or checking other related analysis for appropriate corrective actions. Contrary to the above, on April 29, 2003, when the initial spray pond water analysis indicated that the soluble manganese was above 100 ppb, technicians did not analyze the April 29 confirmatory sample, the May 5 sample, and the May 12 sample until May 16 and therefore took no actions within 24 hours to further investigate through trending or use of another analysis to determine appropriate corrective actions. Additionally, technicians did not perform the weekly analysis for the sample taken on May 5, 2003, until 11 days had elapsed. Because the failure to properly implement Exelon Procedure CH-1010 is of very low safety significance and has been documented in Exelon's corrective action program as CR 178580, this violation being treated as a non-cited violation (NCV), consistent with Section VI.A. of the NRC Enforcement Policy: **NCV 05000352/2003004-02 and 05000353/2003004-02, Did Not to Follow Chemistry Procedure CH-1010.**

1R19 Post Maintenance Testing (71111.19)

a. Inspection Scope

The inspectors observed portions of post-maintenance testing activities in the field to determine whether the tests were performed in accordance with the approved procedures. The inspectors assessed the test's adequacy by comparing the test methodology to the scope of maintenance work performed. In addition, the inspectors evaluated the test acceptance criteria to verify whether the test demonstrated that the tested components satisfied the applicable design and licensing bases and the Technical Specification requirements. The inspectors reviewed the recorded test data to determine whether the acceptance criteria were satisfied. This inspection activity represented six samples. The maintenance activities reviewed included:

- 2C residual heat removal system outage
- 2A standby liquid control pump squib valve preventive maintenance
- Residual heat removal service water radiation monitor pump trip logic relay replacement
- D12 bus undervoltage device (Relay 127-116) replacement for preventive maintenance
- 2B low pressure coolant injection valve trip unit replacement (PDISL-05-2N658B)
- 2B control rod drive pump oil seal replacement

The inspectors referred to applicable testing procedures and work order documents, including:

- ST-6-048-230-2
- ST-2-012-404-0
- A0752462
- RT-2-092-322-1
- C0206509
- C0206823
- R0909110
- R0931926

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors reviewed and observed portions of the following surveillance tests, and compared test data with established acceptance criteria to verify the systems demonstrated the capability of performing the intended safety functions. The inspectors also verified that the systems and components maintained operational readiness, met applicable Technical Specification requirements, and were capable of performing the design basis functions. This inspection activity represented six samples. The observed or reviewed surveillance tests included:

- ST-6-048-230-2, SLC Pump, Valve, and Flow Test (2B&2C SLC Pumps)
- ST-2-092-322-1, 4KV Emergency D12 Bus Undervoltage Channel/Function Test
- ST-2-042-634-1, Feedwater/Main Turbine Trip Test
- RT-3-047-640-1, Channel Bow Testing
- ST-2-047-411-1, RPS-Scram Discharge Volume Water Level - High; Division IIA Channel C Calibration/Functional Test (LSH-047-1N013C)
- ST-6-092-321-2, D21 Diesel Generator LOCA/Load Reject Testing and Fast Start Operability Test Run

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness

1EP2 Alert and Notification System (ANS) Testing (71114.02)

a. Inspection Scope

The inspector conducted an onsite review of the licensee's ANS to ensure prompt notification of the public to take protective actions. The inspector reviewed: (1) EP-MA-121-1002, "ANS Description Testing Maintenance and Performance Trending Program";

(2) 2002/2003 siren activation/test records; and (3) 2002/2003 siren maintenance records. The inspector interviewed the siren program coordinator and reviewed condition reports associated with siren failures to determine if failures were being immediately assessed and repaired. The inspection was conducted in accordance with NRC Inspection Procedure 71114, Attachment 02, and the applicable planning standard, 10 CFR 50.47(b)(5) and its related 10 CFR 50, Appendix E requirements were used as reference criteria.

b. Findings

No findings of significance were identified.

1EP3 Emergency Response Organization (ERO) Augmentation Testing (71114.03)

a. Inspection Scope

The inspector conducted an onsite review of the licensee's ERO augmentation staffing requirements and the process for notifying the ERO to ensure the readiness of key staff for responding to an event and timely facility activation. The inspector reviewed the licensee's emergency plan qualification records for key ERO positions, 2002/2003 communication pager test records and associated condition reports. In addition, the inspector reviewed Procedures TQ-AA-113, "ERO Training and Qualification" and TQ-EP-AA-1102, "ERO Fundamentals." The inspection was conducted in accordance with NRC Inspection Procedure 71114, Attachment 03, and the applicable planning standard, 10 CFR 50.47(b)(2) and its related 10 CFR 50, Appendix E requirements were used as reference criteria.

b. Findings

No findings of significance were identified.

1EP4 Emergency Action Level (EAL) Revision Review (71114.04)

a. Inspection Scope

A regional in-office review of revisions to the emergency plan, implementing procedures and EAL changes was performed to ensure that changes had not decreased the effectiveness of the plan. The revisions covered the period from September 2002 through June 2003. Onsite, the inspector reviewed the 10 CFR 50.54(q) reviews associated with the implementation of a new Standard Emergency Plan and the Limerick Annex Emergency Plan. In addition, the associated Plant Operations Review Committee (PORC) meeting minutes were reviewed to determine the adequacy of the review and approval process. The inspection was conducted in accordance with NRC Inspection Procedure 71114, Attachment 04, and the applicable requirements in 10 CFR 50.54(q) were used as reference criteria.

CR Nos. 00170353, 00170472, 00170499 were generated during the inspection and reviewed by the inspector with respect to minor inconsistencies found between the new standard plan and the annex plan and minor discrepancies regarding outdated information contained in the UFSAR.

b. Findings

Finding 1 - Did Not Perform a 10 CFR 55.54(q) Review

Introduction. The inspector identified a Severity Level IV non-cited violation of 10 CFR 50.54(q) because the licensee decreased the effectiveness of their emergency plan in one area by removing a provision to provide volunteer bus drivers to two school districts within the 10 mile Emergency Planning Zone (EPZ) for evacuating students during a radiological event. The change was implemented without NRC approval.

Description. In 1987, the Atomic Safety and Licensing Appeal Board (ASLB) required the licensee to add a commitment to its emergency plan to provide trained and licensed volunteer bus drivers for assisting two school districts located within the 10 mile EPZ should they need to evacuate school children during a radiological event at the Limerick Generating Station. In 1992, PECO, the previous licensee, removed the provision to provide volunteer bus drivers from the emergency plan. During this inspection, Exelon, the current licensee, could not locate a 10 CFR 50.54(q) decrease-in-effectiveness (DIE) review to understand reasons for its deletion. Further inquiry by Exelon found an administrative procedure describing the activation of volunteer bus drivers and determined that a list of volunteers had been maintained by an individual who had retired in August 2003. Exelon immediately performed a review of the list to ensure they had licensed and trained volunteers capable of fulfilling the function if it were necessary. Exelon has initiated the paperwork to put the provision back in the emergency plan and plans to meet with the school districts to re-evaluate the need to continue to provide the assistance to the schools.

The NRC Region I Regional Counsel reviewed the ASLB ruling and determined that the ruling allows Exelon to re-evaluate the commitment with the two school districts. Should Exelon determine that the school districts do not currently need the assistance from Exelon to provide the bus drivers, Exelon may seek approval from the NRC to remove the provision as stated in 10 CFR Part 50.54(q). Since Exelon was able to provide a current list of volunteers that would have allowed it to fulfill the provision if needed, the inspector determined Exelon was capable of meeting the function. However, the inspector concluded that the change made in 1992 decreased the effectiveness of the emergency plan and the change should have been submitted to the NRC for review and approval before implementation. The licensee did not submit changes to the NRC for approval, which was a violation of 10 CFR 50.54(q).

Analysis. The performance deficiency is that the licensee decreased the effectiveness of the emergency plan without Commission approval as required by 10 CFR 50.54(q). Due to the nature of this issue (impacting the regulatory process), traditional enforcement, in lieu of the Significance Determination Process (SDP), was applied.

This finding was determined to have very low safety significance since Exelon had maintained a list of volunteers that would have been able to perform the function if needed.

Enforcement. 10 CFR 50.54(q) states in part that the "licensee may make changes to these plans without Commission approval only if the changes do not decrease the effectiveness of the plans. Proposed changes that decrease the effectiveness of the approved emergency plans may not be implemented without application to and approval by the Commission." Contrary to the above, in 1992, the licensee decreased the effectiveness of their emergency plan by removing a provision to provide volunteer bus drivers to two school districts within the 10 mile EPZ for evacuating students during a radiological event. The change was not submitted to the NRC for approval prior to implementation. The licensee entered this issue into its corrective action program (CR No. 168298, 166770).

Changing emergency plan provisions without documentation impacts the NRC's ability to perform its regulatory function and is therefore processed through traditional enforcement as specified in Section IV.A.3 of the Enforcement Policy, issued May 1, 2000 (65 FR 25388). According to Supplement VIII of the Enforcement Policy, this finding was determined to be a Severity Level IV violation because it involved a failure to meet a requirement not directly related to assessment and notification. Because the licensee has entered this issue into its corrective action program and it is of very low safety significance, this finding is being treated as a non-cited violation (Severity Level IV) consistent with Section VI.A of the Enforcement Policy: **NCV 05000352/2003004-03 and 05000353/2003004-03 Did Not Perform a 10CFR 50.54(q) Review Resulting in Removal of a Provision Without Prior NRC Approval.**

Finding 2 - Inadequate Emergency Plan Change Documentation

Introduction

The inspector identified a Severity Level IV non-cited violation of 10 CFR 50.54(q). During the implementation of a new Standard Emergency Plan, Exelon did not retain a record that determined whether a decrease-in-effectiveness (DIE) had or had not occurred when Exelon generated the new Standard Emergency Plan that deleted portions of the previous Combined Limerick/Peach Bottom Emergency Plan.

Description

In August 2002, Exelon generated a new Standard Emergency Plan for use by their power stations located in the Midwest, and at Limerick, Peach Bottom and Three Mile Island. Exelon developed annex plans that contained information specific to each station. The inspector reviewed the associated 10 CFR 50.54(q) DIE reviews and determined that Exelon had no documentation to determine whether a DIE had or had not occurred when Exelon generated the new Standard Emergency Plan that deleted portions of the previous Combined Limerick/Peach Bottom Emergency Plan.

Analysis

The performance deficiency is that Exelon did not retain the required record for changes made in the Combined Limerick/Peach Bottom Emergency Plan. Due to the nature of this issue (impacting the regulatory process), traditional enforcement is used in lieu of the Significance Determination Process (SDP).

Enforcement

10 CFR 50.54(q) states in part that the licensee may make changes to the emergency plans without Commission approval only if the changes do not decrease the effectiveness of the plans and the licensee shall retain a record of each change for a period of three years from the date of the change. Contrary to the above, Exelon did not retain a record of its determination whether a DIE had or had not occurred when it generated a new Standard Emergency Plan that deleted portions of the previous Combined Limerick/Peach Bottom Emergency Plan.

Changing emergency plan provisions without documentation impacts the NRC's ability to perform its regulatory function and is therefore processed through traditional enforcement as specified in Section IV.A.3 of the Enforcement Policy, issued May 1, 2000 (65 FR 25388). According to Supplement VIII of the Enforcement Policy, this finding was determined to be a Severity Level IV violation because it involved a failure to meet a requirement not directly related to assessment and notification. Because the licensee has entered this issue into its corrective action program (CR No. 172088) this finding is being treated as non-cited violation (Severity Level IV) consistent with Section VI.A of the NRC Enforcement Policy: **NCV 05000352/2003004-04 and**

05000353/2003004-04, Inadequate Emergency Plan Change Documentation, 10 CFR 50.54(q).

1EP5 Correction of Emergency Preparedness Weaknesses and Deficiencies (71114.05)

a. Inspection Scope

The inspector reviewed corrective actions identified by the licensee pertaining to findings from drill/exercise reports for 2002 and 2003 and the associated conditions reports to determine the significance of the issues and to determine if repeat problems were occurring. Reviewed condition reports and corrective action program procedures are contained in an attachment to this report. In addition, the inspector reviewed the following Nuclear Oversight (NOS) audit reports: (1) 2002 Fourth Quarter Continuous Assessment Report; (2) 2003 First and Second Quarter Continuous Assessment Reports; and (3) EP 50.54(t) Audit Report dated July 2, 2003. In addition, the inspector reviewed memorandum dated February 21, 2003 from NOS concerning EP Performance Issues and Memorandum dated July 17, 2003 issuing a First Level of Escalation Notice regarding continual EP performance issues. These documents were reviewed to assess Exelon's ability to identify issues, assess repetitive issues and the effectiveness of corrective actions through their independent audit process. Also, two common cause reports generated in 2002 and 2003 discussing EP performance issues not being adequately addressed were reviewed. This inspection was conducted according to NRC Inspection Procedure 71114, Attachment 05, and the applicable planning standard, 10 CFR 50.47(b)(14) and its related 10 CFR 50, Appendix E requirements were used as reference criteria.

b. Findings

No findings of significance were identified.

1EP6 Drill Evaluation (71114.06)

a. Inspection Scope

The inspectors evaluated an emergency preparedness exercise on September 25, 2003. The inspectors reviewed the scenarios to identify the timing and location of classification, notification and Protective Action Recommendation (PAR) development activities. During the drill and exercise, the inspectors reviewed checklists and forms used for classification and notification activities, and compared them to the criteria in Exelon's Emergency Plan, EP-AA-1000, and supporting procedures. This inspection activity represented one sample.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151)

a. Inspection Scope

The inspectors sampled licensee submittals for the performance indicators (PIs) listed below for the period from July 2002 through June 2003. To verify the accuracy of the PI data reported during that period, PI definitions and guidance contained in NEI 99-02, "Regulatory Assessment Indicator Guideline," Rev. 2, were used to verify the basis in reporting for each data element. This inspection activity represented nine samples.

- Unit 1 and Unit 2 emergency diesel generator safety system unavailability
- Unit 1 and Unit 2 high pressure coolant injection safety system unavailability
- Unit 1 and Unit 2 unplanned power changes

The inspectors reviewed a selection of Unit 1 and Unit 2 operator log entries, daily plant status reports, condition reports, action requests, the monthly operating reports, and PI data sheets. This information was used to determine whether the licensee adequately identified the number of hours of unavailability for the emergency diesel generators and high pressure coolant injection and the number of unplanned power changes greater than 20 percent that occurred during the previous four quarters. The number was compared to the number reported for the PI during the current quarter. In addition, the inspectors also interviewed licensee personnel associated with the PI data collection, evaluation and distribution.

The inspector reviewed the licensee's procedure for developing the data for the Emergency Preparedness PIs which are:

- Drill and Exercise Performance
- Emergency Response Organization Drill Participation
- Alert Notification System (ANS) Reliability.

The inspector also reviewed Exelon's drill/exercise reports, training records and ANS testing data since the last NRC PI inspection, conducted in 2002 to verify the accuracy of the reported data.

b. Findings

No findings of significance were identified.

4OA2 Problem Identification and Resolution

1. Annual Sample Review - Miswired Feedwater Setpoint Setdown Logic

a. Inspection Scope

The inspectors selected condition report (CR) 113822 for detailed review. The condition report was associated with a mis-wired feedwater set point setdown logic that resulted in complications following a Unit 1 reactor trip. During preventive maintenance, maintenance personnel lifted a wire and after resetting the feedwater logic they landed the wire on the wrong terminal. Exelon's investigation identified that the root cause was a failure to use the lifted lead log when lifting a wire to reset the feedwater logic during the preventive maintenance. Contributing causes also included that the work package was deficient in that it allowed lifting the wire to reset the logic and a less than adequate post maintenance test. The condition report was reviewed to ensure that the full extent of the issues were identified, an appropriate evaluation was performed, and appropriate corrective actions were specified and prioritized. The inspectors evaluated the report against the requirements of Exelon's corrective action program as delineated in procedure LS-AA-125, "Corrective Action Program" and 10 CFR 50, Appendix B.

b. Findings and Observations

There were no findings identified associated with the reviewed sample; however, the inspectors noted that the Maintenance Department investigation of the mis-wired logic circuit did not identify all related deficiencies. These include:

- The technician did not lift the wire specified by the work order. He actually lifted a different wire based on skill of the craft. (failure to follow work instruction)
- The lifted lead log was not used for other leads lifted in the work order, and this was not addressed in the extent of condition review. (additional examples of the failure to use the lifted lead log)
- The use of the lifted lead log as specified by the work order was inconsistent; some steps specifically required logging the lifted leads, and others did not. (work order deficiency)
- At least one other instance was identified that involved wiring manipulations performed in the post maintenance test section of the work order activity. (work order deficiency)
- Some work order activities involved repeating completed sections of the work order when calibrating redundant components. This approach effectively circumvents a number of worker verifications steps. (work order deficiency)

The inspector also noted that the maintenance staff did not develop an event and causal factor chart as specified in LS-AA-125-1001, "Root Cause Analysis Manual."

The inspectors determined that the associated corrective actions were adequate and timely to preclude a recurrence of the same event; therefore, no violation of regulatory requirements or findings were identified.

2. Annual Sample Review - Reactor Vessel Low Level Condition While Placing 2B RFP in Service

a. Inspection Scope

On July 27, 2002, reactor operators did not follow Operating Procedure SO6.1.C, "Placing a Standby Reactor Feed Pump in Service," which resulted in a transient where Unit 2 reactor water level increased from the normal level of 35" to 47" and then dropped to 14". This led to NCV 50-353/02-05-02, discussed in inspection report 50-352/353/02-05, section 1R14.

Exelon conducted an investigation to determine the root and contributing causes of this transient and assigned corrective actions to prevent recurrence. The inspector reviewed the root cause analysis and corrective actions related to CR 117264, "Reactor Level Transient During Swap from S/U Level Control," to ensure that classification and disposition of the issue was completed in a timely manner and that actions taken to prevent recurrence were appropriate. The inspector also reviewed the Operations Department "Human Performance Plan." These reviews included confirmation that necessary procedure changes were made and that Exelon addressed the human performance and work control aspects of the event as well as the equipment issues.

b. Findings

No findings of significance were identified.

4OA3 Event Followup (71153)

1. (Closed) LER 05000352; 353/1-03-002, Core Alteration Without Refueling Enclosure Secondary Containment Integrity

a. Inspection Scope

Inspectors reviewed the LER and CR 149526, which documented this event in the corrective action program, to verify that the cause of the event was identified and that corrective actions were reasonable. Exelon determined the event was caused by a human performance error and less than adequate procedures.

b. Findings

Introduction. A Green self-revealing, non-cited violation of Technical Specifications was identified because Exelon did not maintain refueling area secondary containment integrity while performing core alterations during a refueling outage.

Description. On March 16, 2003, during the Unit 2 2R07 refueling outage, operators breached the refueling area secondary containment to drain the reactor cavity after they had begun exercising control rods. Control rod exercising is considered a core alteration which requires refueling area secondary containment integrity in accordance with Technical Specification 3.6.5.1.2.

Exelon's investigation of this event identified two causes. First, operators did not verify Technical Specification compliance upon breach of the refueling area secondary containment. Secondly, Exelon determined that procedural guidance for verifying secondary containment integrity prior to control rod withdrawal was less than adequate.

Analysis. Performing core alterations without refueling area secondary containment integrity is a performance deficiency, because it is a violation of Technical Specification 3.6.5.1.2. Traditional enforcement does not apply, because the issue did not have any actual safety consequences or potential for impacting the NRC's regulatory function and was not the result of any willful violation of NRC requirements or Exelon procedures. The finding was considered more than minor, in that the issue was associated with the human performance attribute of the Barrier Integrity cornerstone, and it affected the cornerstone objective. The Barrier Integrity cornerstone objective was affected because secondary containment functionality was not maintained when required by Technical Specifications. This finding was determined to be of very low safety significance (Green) by NRC Inspection Manual Chapter 0609, Appendix G, Shutdown Operations Significance Determination Process, because the Appendix G checklist item for containment control was not met for the applicable plant conditions. This item did not require quantitative assessment and therefore screened as Green per the Appendix G, Section 1 guidance.

The inspectors also noted that a contributing cause of this finding was related to the human performance cross-cutting area. Specifically, operators did not properly verify Technical Specifications compliance when breaching secondary containment. Operators should have ensured that they complied with Technical Specifications when initiating a change to plant conditions.

Enforcement. Limerick Unit 2 Technical Specification 3.6.5.1.2 states, in part, that refueling area secondary containment integrity shall be maintained during core alterations. Contrary to the above, on March 16, 2003, during the 2R07 refueling outage, Exelon performed core alterations without maintaining secondary containment integrity. Because this non-compliance with Technical Specifications is of very low safety significance and has been entered into the corrective action program (CR 149526), this violation is being treated as a non-cited violation, consistent with Section VI.A of the NRC Enforcement Policy: **NCV 05000352/2003004-05 and**

05000353/2003004-05, Performed Core Alterations Without Maintaining Secondary Containment Integrity.

2. (Closed) LER 05000353/2-03-002, Main Steam Isolation Valve (MSIV) Closure Time during Hot Conditions

On March 03, 2003, during MSIV closure time testing, two MSIVs operated faster than the Technical Specification required 3.0 second minimum closure time. No specific cause was identified for the unacceptable stroke time; however, inadequacies in the test method were identified. The issues with the test methodology were documented in NRC inspection report 05000352/2003003, 05000353/2003003, section 1R22. The LER was reviewed by the inspectors and no additional findings of significance were identified. Exelon documented the MSIVs operating faster than required in condition report 147485. This LER is closed.

4OA5 Other (86370)

Cornerstone: Public Radiation Safety

a. Inspection Scope

On August 13-19, 2003, the inspector observed portions of the shipment of a Type B quantity of radioactive material to General Electric. The shipment containing spent reactor fuel was made using an NRC-licensed Type B packaging [USA/9225/B(U)F-85]. This detailed review was performed using the requirements contained in 10 CFR Parts 20 and 71, and 49 CFR Parts 100-177. Specific items reviewed by the inspector included:

- Procedure M-053-011, Rev 0, Fuel Transfer GE 9 Rod Storage Container to NAC PWR/BWR Transport Canister;
- A-C-930, Rev 0, Radwaste and Radioactive Material QA Program;
- Limerick Generating Station registration as a cask user, dated July 3, 2003;
- Conformance with Certificate of Compliance for package USA/92225/B(U)F-85; and
- Cask receipt, unloading from cask trailer, cask disassembly, and cask loading.

b. Findings

No findings of significance were identified.

4OA6 Meetings, Including Exit

Exit Meetings

On June 25, 2003, the Operations Training Manager at Limerick, who is also the program administrator for the Limerick-Peach Bottom LSRO Program was notified by telephone that the Regional Office planned to disposition the unresolved item 50-352; 50-353/02-04-01 concerning LSRO license reactivation as an NCV.

On July 10, 2003, the inspector presented exit results to Mr. Ron DeGregorio and members of Exelon's staff at the conclusion of the heat sink inspection. On July 31, 2003, the inspector presented the inspection results to Mr. R. DeGregorio and other members of his staff at the conclusion of the emergency preparedness program inspection. On August 18, 2003 a telephone exit was conducted between Mr. R. Conte, Chief Operational Safety Branch Region I, the inspector and with Mr. C. Arnone and other members of both the Limerick and Peach Bottom staff to discuss the inspection results of the emergency preparedness program inspection. The licensee acknowledged the findings. No proprietary information was provided to the inspectors during this inspection.

On October 9, 2003, the resident inspectors presented the inspection results to Mr. DeGregorio and other members of his staff, who acknowledged the findings. The inspectors confirmed that proprietary information was not provided or examined during the inspection.

4OA7 Licensee-identified Violations

Inspection Scope

The following violations of very low significance were identified by the licensee and are violations of NRC requirements which meets the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600 for being dispositioned as NCVs.

- 10 CFR 50.54(q), follow and maintain in effect emergency plan. Exelon did not properly inventory or maintain emergency response equipment kits located at local hospitals. This issue was discovered during an Exelon nuclear oversight audit (CR No. 00163144).

- 10 CFR 50.54(q), follow and maintain in effect emergency plan. Exelon did not make available public education brochures for emergency response actions to operators of recreational areas in the 10 mile EPZ. This issue was discovered during an Exelon nuclear oversight audit (CR No.00163029).

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Exelon Generation Company

C. Arnone, EP Director
E. Callan, Director - Operations
W. Harris, Radiation Protection Manager
P. Holland, Offsite Coordinator
J. Karkoska, MAROG Emergency Preparedness Manager
S, Mannix, MAROG EP, Sirens
C. Mudrick, Director - Engineering
C. Rich, Manager Operations Training Manager
G. Sosson, Engineering Branch Manager

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Closed

50-352; 50-353/02-04-01	URI	Licensee's methods and standards used to reactivate staff licensees to support refueling outages appeared to be inconsistent with the requirements of 10 CFR 55.53(f)(2). (IR Section 1.R11)
50-352; 50-353/1-03-002	LER	Core Alteration Without Refueling Enclosure Secondary Containment Integrity
05000353/2-03-002	LER	MSIV Closure Time during Hot Conditions

Opened and Closed

05000352 and 05000353/2003004-01	NCV	Did Not Meet 10 CFR 55.53(f)(2) When Reactivating Senior Operators to Support Fuel Handling. (Section 1R11)
05000352 and 05000353/2003004-02	NCV	Did Not Follow Chemistry Procedure CH-1010 (Section 1R15)
05000352 and 05000353/2003004-03	NCV	Did Not Perform a 10 CFR 50.54(q) Review Resulting in Removal of a Provision Without Prior NRC Approval. (Section 1EP4)

05000352 and 05000353/2003004-04	NCV	Did Not Retain a Record of the 10 CFR 50.54(q) Review of the Deleted Portions of the Emergency Plan. (Section 1EP4)
05000352 and 05000353/2003004-05	NCV	Performed Core Alterations Without Maintaining Secondary Containment Integrity (Section 4OA3)

LIST OF DOCUMENTS REVIEWED

Section 1R04: Equipment Alignment

P&ID 8031-M-49, Sheet 2, Unit 2 Reactor Core Isolation Cooling
Drawing 049-01, Unit 2 Reactor Core Isolation Cooling (steam side) Rev 0
Drawing 049-02, Unit 2 Reactor Core Isolation Cooling (water side) Rev 0

Exelon Procedure, S49.9.A, Rev22, "Routine Inspection of RCIC system."

Exelon action requests A1324665, A1357381, A1368115, A1400070, A1408103, A1413020, A1417785, A1419225

Section 1R07: Heat Sink Performance

Condition Reports:

76196	104021	141513
78605	115166	142874
78616	117920	146219
83768	120385	156783
84724	129359	162780
86428	134424	166240
92517	139639	
93943		

Design Basis Documentation
L-S-02, Rev. 13, Emergency Service Water System
System 092A, Diesel Generator and Auxiliary Systems

Procedures and Test Results
RT-2-011-390-1: 1A RHR Room Cooler Air to Water Heat Transfer Test (1EV210), 11/27/2002
RT-2-011-390-2: 2A RHR Room Cooler Air to Water Heat Transfer Test (2EV210), 11/29/2001
RT-2-011-391-1: 1B RHR Room Cooler Air to Water Heat Transfer Test (1FV210), 11/2/2001
RT-2-011-391-2: 2B RHR Room Cooler Air to Water Heat Transfer Test (2BV210), 12/11/2001

Work Orders to Clean and Examine Unit Coolers:
R0950348- 1FV210, 1B and D RHR Pump Room Unit Cooler F, 2/3/2003
R0871761- 1HV210, 1B and D RHR Pump Room Unit Cooler H, 6/23/2003
R0870433- 1CV210, 1A and C RHR Pump Room Unit Cooler C, 6/18/2003
R0861355- 2CV210, 2A and C RHR Pump Room Unit Cooler C, 5/15/2003

R0846503- 2BV210, 2B and D RHR Pump Room Unit Cooler B, 11/25/2002

24 Month Diesel Exchanger Inspections and Cleanings

D11 (1/29/2002)	D21 (5/29/2003)
D12 (2/6/2003)	D22 (5/6/2003)
D13 (8/1/2002)	D23 (1/29/2003)
D14 (9/27/2002)	D24 (5/18/2002)

Other Documents
UFSAR 9.2, Water Systems
Emergency Diesel Generator Heat Exchanger Performance Monitoring Plan
ER-AA-340-1001, Rev. 0, GL 89-13 Program Implementation Instructional Guide
Letter dated January 29, 1990, Peach Bottom Atomic Power Station, Units 2 and 3/Limerick Generating Station, Units 1 and 2 Response to NRC Generic Letter 89-13, Service Water System Problems Affecting Safety-Related Equipment
System Health Overview Reports: Emergency Service Water (June 2003)
Emergency Diesel Generators (January 2003)
LM-414, RHR and Core Spray Room Temperature Response Following a DBA LOCA - Normal and Power Rerate Conditions

Section 1EP2: Alert and Notification System (ANS) Testing

EP-AA-1000, Standard Emergency Plan, Revision 14
EP-AA-1008, Limerick Annex Plan, Revision 3
LS-AA-125, Corrective Action Program, Revision 5
LS-AA-127, Passport Action Tracking, Revision 3
LS-AA-125-1006, CAP Process Expectations, Revision 4
LS-AA-126, Self Assessment Program, Revision 3
NO-AA-200-002, NOS Audit Procedure, Revision 1
LS-AA-106, Plant Operations Review Committee (PORC), Revision 0
PORC 02-101, PORC Meeting Minutes, April 9, 2002
PORC 02-016, PORC Meeting Minutes, June 7, 2002
PORC 02-018, PORC Meeting Minutes, August 23, 2002
EP-AA-121-1001, Automated Call-out System Maintenance
EP-AA-122-1001, Conduct of call-in drills
LS-AA-126, Self Assessment Program, Revision 3
LS-AA-126-1001, Focus Self Assessment, Revision 1

Condition Reports:

CR 00162421	CR 108359	CR 00165208
CR 00157510	CR 124900	CR 00161229
CR 0015393	CR 00160195	CR 00163125
CR 00144433	CR 00161234	CR 00138788
CR 00140568	CR 00161298	CR 00092328
CR 92934	CR 00162168	
CR 1083511		

LIST OF ACRONYMS

ANS	Alert and Notification System
ASLB	Atomic Safety Licensing Board
CFR	Code of Federal Regulations
CR	Condition Report
DIE	decrease in effectiveness
EAL	Emergency Action level
EDG	Emergency Diesel Generator
EPZ	Emergency Preparedness Zone
ERO	Emergency Response Organization
LCO	Limiting Condition of Operation
LER	Licensee Event Report
LGS	Limerick Generating Station
LSRO	Limited Senior Reactor Operator
MC	Manual Chapter
MSIV	Main Steam Isolation Valve
NCV	Non-cited Violation
NOS	Nuclear Oversight
NRC	Nuclear Regulatory Commission
NRR	Office of Nuclear Reactor Regulation
PI	Performance Indicator
PORC	Plant Operations Review Committee
PPB	parts-per-billion
RCIC	Reactor Core Isolation Cooling
RHR	Residual Heat Removal
SDP	Significance Determination Process
SRO	Senior Reactor Operator
SSC	System, Structure, or Component
UFSAR	Updated Final Safety Analysis Report
URI	Unresolved Item