



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
REGION I
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August 10, 2009

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

**SUBJECT: LIMERICK GENERATING STATION - NRC INTEGRATED
INSPECTION REPORT 05000352/2009003 AND 05000353/2009003**

Dear Mr. Pardee:

On June 30, 2009, the U. S. Nuclear Regulatory Commission (NRC) completed an inspection at your Limerick Generating Station Units 1 and 2. The enclosed integrated inspection report documents the inspection results which were discussed on July 17, 2009, with Mr. C. Mudrick and other members of your staff.

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

This report documents one NRC-identified finding of very low safety significance (Green). This finding did not involve a violation of NRC requirements. 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 it is entered into your corrective action program (CAP), the NRC is treating this finding as a non-cited violation (NCV), consistent with Section VI.A.1. of the NRC Enforcement Policy. If you contest the NCV in this report, you should provide a response within 30 days of the date of this inspection report, with basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administration, Region I; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the Limerick facility. In addition, if you disagree with the characterization of the cross-cutting aspect of any finding on 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 1 and the NRC Senior Resident Inspector at the Limerick facility. The information you provide will be considered in accordance with Inspection Manual Chapter 0305.

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

Sincerely,

/RA/

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

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

Enclosure: Inspection Report 05000352/2009003 and 05000353/2009003
w/Attachment: Supplemental Information

cc w/encl:

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Chairman, Board of Supervisors of Limerick Township

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

Sincerely,

/RA/
 Paul G. Krohn, Chief
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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: 05000352/2009003 and 05000353/2009003

Licensee: Exelon Generation Company, LLC

Facility: Limerick Generating Station, Units 1 & 2

Location: Sanatoga, PA 19464

Dates: April 1, 2009 through June 30, 2009

Inspectors: E. DiPaolo, Senior Resident Inspector
N. Sieller, Resident Inspector
J. Lilliendahl, Reactor Inspector
T. Moslak, Health Physicist
T. Burns, Reactor Inspector

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

Enclosure

TABLE OF CONTENTS

SUMMARY OF FINDINGS	3
1. REACTOR SAFETY	4
1R01 Adverse Weather Protection.....	4
1R04 Equipment Alignment	5
1R05 Fire Protection	6
1R06 Flood Protection Measures	6
1R08 Inservice Inspection	7
1R11 Licensed Operator Requalification Program	8
1R12 Maintenance Effectiveness	9
1R13 Maintenance Risk Assessments and Emergent Work Control	9
1R15 Operability Evaluations	10
1R18 Plant Modifications	12
1R19 Post-Maintenance Testing	12
1R20 Refueling and Other Outage Activities	13
1R22 Surveillance Testing	13
2. RADIATION SAFETY	14
2OS1 Access Control to Radiologically Significant Areas	14
4. OTHER ACTIVITIES.....	17
4OA1 Performance Indicator (PI) Verification	17
4OA2 Identification and Resolution of Problems.....	18
4OA3 Event Follow-up	19
4OA5 Other Activities	20
4OA6 Meetings, Including Exit.....	21
4OA7 Licensee-Identified Violations.....	21
ATTACHMENT: SUPPLEMENTAL INFORMATION	21
SUPPLEMENTAL INFORMATION	A-1
KEY POINTS OF CONTACT	A-1
LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED.....	A-2
LIST OF DOCUMENTS REVIEWED	A-2
LIST OF ACRONYMS	A-8

SUMMARY OF FINDINGS

IR 05000352/2009003, 05000353/2009003; 04/01/2009 - 06/30/2009; Limerick Generating Station, Units 1 and 2; Operability Evaluations.

The report covered a three-month period of inspection by resident inspectors and announced inspections by regional reactor inspectors. One Green finding was identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process (SDP)." Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. Cross-cutting aspects associated with findings are determined using IMC 0305, "Operating Reactor Assessment Program," dated January 2009. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight," Revision 4, dated December 2006.

A. NRC-Identified and Self-Revealing Findings

Cornerstone: Mitigating Systems

- Green. The inspectors identified a Green finding associated with the failure to adequately assess erratic time delay relay operation on Unit 2 High Pressure Coolant Injection (HPCI) system operability in a timely manner commensurate with the potential safety significance. Following a failed surveillance test, the Unit 2 HPCI system was considered operable despite erratic operation of a system time delay relay and the operators' failure to adequately address the relay's design basis function. Exelon placed this issue in the CAP (IR 933745). Exelon's corrective actions included: performing operations shift crew briefings on the issue; emphasizing the need for applying a questioning attitude; and requesting timely engineering support for emergent Technical Specifications (TS) equipment issues. Also, a structured operability determination template was added to the corrective action program IR form.

This finding is more than minor because it was associated with the human performance attribute of the Mitigating Systems cornerstone, and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors assessed the finding using IMC 0609, Attachment 4, "Phase 1 – Initial Screening and Characterization of Findings" and determined the finding to be of very low safety significance (Green) because it did not represent a loss of safety function of a single train for greater than the TS allowed outage time; was not associated with a design or qualification deficiency; and did not screen as risk significant due to seismic, flooding, or severe weather events. This finding has a crosscutting aspect in Human Performance, Decision-Making, because Exelon did not make a safety-significant decision using a systematic process, especially when faced with uncertain or unexpected plant conditions, to ensure safety is maintained [H.1(a)]. Specifically, Exelon did not obtain timely interdisciplinary input and review on a safety significant decision in that site engineering did not review the operations decision and operations did not implement the subsequent engineering recommendation until two days after the failed surveillance. (Section 1R15)

B. Licensee-Identified Violations

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

REPORT DETAILS

Summary of Plant Status

Unit 1 began the inspection period operating at full rated thermal power (RTP). On May 22, operators reduced power to approximately 60 percent to facilitate main turbine valve testing, control rod scram time testing, main condenser waterbox cleaning, and fuel channel bow testing. The unit was restored to full power on May 23. Unit 1 remained at full RTP for the remainder of the inspection period.

Unit 2 began the inspection period in Operational Condition (OPCON) 5, Refueling, for refueling outage 2R10. On April 11, Unit 2 entered OPCON 2 (Startup). Operators synchronized the unit to the electrical grid ending refueling outage 2R10 on April 13. Full RTP power was achieved on April 14. On April 15, operators reduced power to approximately 95 percent in response to increasing speed on both the 'A' and 'B' recirculation pump motor-generator sets. Following brief down powers to facilitate control rod pattern adjustments on April 16 and April 18 to approximately 80 and 85 percent respectively, operators returned Unit 2 to full RTP on April 19. On May 30, operators reduced power to approximately 70 percent to facilitate main turbine valve test and control rod scram time testing. The unit returned to full RTP on May 31. Unit 2 remained at full RTP for the remainder of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01 - 2 samples)

.1 Summer Readiness of Offsite and Alternate Alternating Current (AC) Power Systems

a. Inspection Scope

The inspectors performed a review of plant features and procedures for the operation and continued availability of the offsite and alternate AC power system to evaluate the readiness of the systems prior to seasonal high grid loading. The inspectors reviewed Exelon's procedures affecting these areas and the communications protocols between the transmission system operator and Exelon. This review focused on changes to the established program and material condition of the offsite and alternate AC power equipment. The inspectors assessed whether appropriate procedures and protocols were established and implemented to monitor and maintain availability and reliability of both the offsite AC power system and the onsite alternate AC power system. The inspectors evaluated the material condition of the associated equipment by interviewing the responsible system manager, reviewing open work orders, and walking down portions of the offsite and alternate AC power system including the 500kV and 220kV switchyards. Documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

.2 Readiness of Seasonal Extreme Weather Conditions

a. Inspection Scope

The inspectors performed a review of Exelon's readiness for the onset of seasonal high temperatures. The review focused on the emergency service water (ESW) and residual heat removal service water (RHRSW) pumps, valves, and electrical components located in the spray pond pump house. The inspectors performed a walkdown of the building, reviewed applicable procedures, and interviewed operators and engineers to assess whether appropriate procedures and protocols were in place to monitor and maintain spray pond pump house temperatures within applicable design limits. Documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment

.1 Partial Walkdown (71111.04Q - 3 samples)

a. Inspection Scope

The inspectors performed partial walkdowns of the plant systems listed below to verify operability when safety-related equipment in the opposite train was either inoperable, undergoing surveillance testing, potentially degraded, or following realignment after a system equipment outage. The inspectors used TS, Exelon operating procedures, plant piping and instrumentation diagrams (P&ID), and the Updated Final Safety Analysis Report (UFSAR) as guidance for conducting partial system walkdowns. The inspectors reviewed the alignment of system valves and electrical breakers to ensure proper in-service or standby configurations as described in plant procedures and drawings. During the walkdowns, the inspectors evaluated the material condition and general housekeeping of the systems and adjacent spaces. The documents reviewed are listed in the Attachment. The inspectors performed walkdowns of the following areas:

- Unit 2 'A' Loop of core spray when 'B' loop was out of service (OOS);
- 'B' Loop ESW header following 'B' pump system outage window; and
- 'B', 'C', and 'D' RHRSW pumps when 'A' pump was OOS.

b. Findings

No findings of significance were identified.

.2 Complete System Walkdown (71111.04S - 1 sample)

a. Inspection Scope

The inspectors conducted one complete system walkdown of the Unit 1 Reactor Core Isolation Cooling (RCIC) system to verify that equipment was properly aligned and there were no apparent deficiencies that could affect the ability of the system to perform its functions. The walkdown included reviews of valve positions, major system

components, electrical power availability, and general equipment condition. The inspectors reviewed system check lists, operating procedures, P&IDs and the UFSAR to assist in the walkdown. The inspectors also reviewed outstanding maintenance activities and issue reports (IRs) associated with the Unit 1 RCIC system to ensure there were no outstanding issues that could adversely affect the RCIC system function. The documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05Q - 6 samples)

Fire Protection - Tours

a. Inspection Scope

The inspectors conducted a tour of the six areas listed below to assess the material condition and operational status of fire protection features. The inspectors verified that combustible materials and ignition sources were controlled in accordance with Exelon's administrative procedures. Fire detection and suppression equipment was verified to be available for use, and passive fire barriers were verified to be maintained in good material condition. The inspectors also verified that station personnel implemented compensatory measures for OOS, degraded, or inoperable fire protection equipment in accordance with the station's fire plan. The documents reviewed are listed in the Attachment. The inspectors toured the following areas:

- D22 Diesel Generator Room (including fuel oil/lube oil tank room); Fire Area 85;
- Class 1E Battery Room #1, Fire Area 3;
- Service Water Pipe Tunnel, Fire Area 75;
- Unit 1 General Equipment Area Room 523, Fire Area 47;
- Spray Pond Pump Structure, eastern half, Fire Area 123; and
- Spray Pond Pump Structure, western half, Fire Area 122.

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures (71111.06 - 1 sample)

a. Inspection Scope

The inspectors reviewed the UFSAR and related flood analysis documents to identify areas that can be affected by internal flooding, to identify features designed to alert operators of a flooding event, and to identify features designed for coping with internal flooding. The inspectors performed a walkdown of the Unit 2 'A' and 'C' Core Spray Pump Rooms (Reactor Building, Elevation 177') and adjacent areas. The inspectors observed flood protection features to assess their ability to minimize the impact of a flooding event. The inspectors performed a review of operator actions contained in off-normal procedures for flooding to verify that the actions can reasonably be used to achieve the desired outcome. The documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

1R08 Inservice Inspection (71111.08 - 1 sample)

a. Inspection Scope

The purpose of this inspection was to assess the effectiveness of the licensee's inservice inspection (ISI) program for monitoring degradation of reactor pressure vessel internals, reactor coolant system boundary, risk significant piping system boundaries, and the containment boundary. The inspector assessed the ISI activities using requirements and acceptance criteria for component examination specified in the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section XI and applicable NRC Regulatory Requirements.

The inspector selected a sample of nondestructive examination (NDE) activities for observation and also performed a documentation review of additional NDE activities for compliance with the requirements of ASME Section XI. The sample selection was based on the inspection procedure objectives, sample availability, and risk priority of those components and systems where degradation could result in a significant increase in risk of core damage. The inspector verified by documentation review that test procedures and examiner qualifications were current and in accordance with the ASME Code requirements. Also, the inspector reviewed examiner qualifications for use of the performance demonstration initiative (PDI) manual ultrasonic test procedures to examine welds. The inspector selected a sample of IRs to evaluate the licensee's effectiveness in the identification and resolution of relevant indications discovered during the observed ISI activities. The documents reviewed are listed in the Attachment. The inspector's observation and documentation review of non-destructive testing included the following:

- Ultrasonic testing (UT), manual PDI-UT of pipe to pipe weld HBB-217-2-FW51, Residual Heat Removal (RHR) system, carbon steel, 24" dia, 0.375" wall thickness;
- Magnetic particle test of integral welded attachment of lugs to carbon steel piping. Main Steam system, welds APE-2MS-LC-8SWN and APE-2MS-LC-8SWP;
- Visual examination (VT-1) of jet pumps 2, 10 and 11 main wedges, auxiliary wedges, wedge restrainer brackets set screws and rods. In vessel visual inspection (IVVI) was performed remotely to assess structural integrity of jet pump components;
- Liquid penetrant of field welds 4, 5, 6, stainless steel, 0.179 inch wall thickness. Welds of pipe to valves in HPCI system for installation of new vent at location DBB-203-002E; and
- The inspector reviewed selected jet pump structural members and component base materials to evaluate examiner skill, test equipment performance, examination technique, and inspection environment (water clarity). The inspector selected jet pump nonconforming conditions identified in IR 899245, IR 899251 and IR 898982 for this process inspection review. Notification Reports Li2R10-IVVI-09-06R1, Li2R10-IVVI-09-09 and Li2R10-IVVI-09-18 were initiated to report mechanical wear on components for comparison with previous examination results.

The inspector selected three ASME Section XI repair/replacement plans for review where welding on a pressure boundary was scheduled to be performed. The review was performed to evaluate specification and control of the welding process detailed in the

work order, determine that qualified weld procedures and welders were used for the welding, and that completed weld examinations were performed in accordance with the ASME code requirements. The three ASME Section XI repair/replacement work orders reviewed were:

- C0227170, Removal and replacement of a portion of three inch nominal diameter carbon steel emergency service water supply piping, HBC-245-2, to Unit 2 HPCI pump compartment unit coolers, 2A-V209 and 2B-V209. Replacement of portions of this system piping was required to eliminate the effects of corrosion at this location;
- C0228288, Repair of localized wall thinning and installation of a single two inch half coupling on RHRSW system piping. Installation will be to common loop "B" return piping from RHR heat exchangers 1B-E205 and 2B-E205 with new field welds W-1013, 1014, 1015 and 1016; and
- C0218608, Planned replacement of two thirty-six inch butterfly valves HV-012-212 and 214 and adjacent piping in system 012 located in the cooling tower return lines to the RHRSW/ESW wet-well. Valves fail to seat with excess leak-by. Existing valves and portions of piping replaced will be like-for-like replacement to be welded in the same configuration.

Also, the inspector performed a visual evaluation of the primary containment and additional structural members attached to the liner to assess the condition of the protective coating. The evaluation included accessible locations on Elevations 213', 253', 286', 297' and 303'. The inspector performed this visual evaluation to determine the extent of any peeling, blistering, coating loss or other damage as a result of corrosion, foreign material impact or lack of maintenance.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program (71111.11 - 1 sample)

Resident Inspector Quarterly Review

a. Inspection Scope

On June 2, 2009, the inspectors observed licensed operator simulator requalification training on the 'A' operating crew. Simulator Training Scenario LSTS-3336 tested the operators' ability to respond to a leak from the reactor coolant system complicated by emergency core cooling system failures and the inability to scram the reactor. The inspectors observed licensed operator performance including operator critical tasks, which are required to ensure the safe operation of the reactor and protection of the nuclear fuel and primary containment barriers. The inspectors also assessed crew dynamics and supervisory oversight to verify the ability of operators to properly identify and implement appropriate TS actions, regulatory reports, and notifications. The inspectors observed training instructor critiques and assessed whether appropriate feedback was provided to the licensed operators. The documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12 - 2 samples)

a. Inspection Scope

The inspectors evaluated Exelon's work practices and follow-up corrective actions for two issues within the scope of the maintenance rule. The inspectors reviewed the performance history of these structures, systems, and components (SSCs) and assessed the effectiveness of Exelon's corrective actions, including any extent-of-condition determinations to address potential common cause or generic implications. The inspectors assessed Exelon's problem identification and resolution actions for these issues to evaluate whether Exelon had appropriately monitored, evaluated, and dispositioned the issues in accordance with Exelon procedures and the requirements of 10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance." In addition, the inspectors reviewed the maintenance rule classifications, performance criteria, and goals for these SSCs and evaluated whether they appeared reasonable and appropriate. The documents reviewed are listed in the Attachment. The inspector reviewed the following samples:

- IR 853914, 'A' control room emergency fresh air system filter failed charcoal analysis; and
- IR 867666, Accident monitoring system inoperable due to source range monitors.

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13 - 4 samples)

a. Inspection Scope

The inspectors evaluated the effectiveness of Exelon's maintenance risk assessments required by 10 CFR 50.65(a)(4). This inspection included discussion with control room operators and risk analysis personnel regarding the use of Exelon's on-line risk monitoring software. The inspectors reviewed equipment tracking documentation, daily work schedules, and performed plant tours to gain assurance that the actual plant configuration matched the assessed configuration. Additionally, the inspectors verified that Exelon's risk management actions, for both planned and emergent work, were consistent with those described in Exelon procedure, ER-AA-600-1042, "On-Line Risk Management." The documents reviewed are listed in the Attachment. Inspectors reviewed the following samples:

- IR 906922, Maintenance hangers discovered to be installed on main steam line piping during operation;
- C0228482, Installation of scoop tube restraint on Unit 1 'A' recirculation pump motor-generator;
- IR 907453, Unit 2 recirculation pump motor-generator scoop tubes locked on electrical brake; and

- On-line Risk Assessment for May 20 during various system outage windows and planned testing.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15 - 6 samples)

a. Inspection Scope

The inspectors assessed the technical adequacy of a sample of six operability evaluations to ensure that Exelon properly justified TS operability and verified that the subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors reviewed the UFSAR to verify that the system or component remained available to perform its intended safety function. In addition, the inspectors reviewed compensatory measures implemented to ensure that the measures worked and were adequately controlled. The inspectors also reviewed a sample of IRs to verify that Exelon identified and corrected deficiencies associated with operability evaluations. The documents reviewed are listed in the Attachment. The inspectors reviewed the following evaluations:

- IR 900755, Emergency Diesel Generator (EDG) D23 overvoltage transient during loss of offsite power testing;
- IR 903026, 'D' main steam isolation valve did not stroke full open;
- IR 906922, Main steam line stresses with maintenance hanger installed;
- IR 69157, Assignment 33, Delays in HPCI system and RCIC system minimum flow valve opening due to flow transmitter saturation at high system flows;
- IR 930414, Unit 2 shutdown cooling system suction line depressurizing due to system boundary valve leakage; and
- IR 932019, Failed Unit 2 HPCI system suction source swap over relay.

b. Findings

Introduction: The inspectors identified a Green finding associated with the failure to adequately assess erratic time delay relay operation on Unit 2 HPCI system operability in a timely manner commensurate with the potential safety significance.

Description: On June 16, 2009, maintenance technicians performed ST-2-055-601-2, "Emergency Core Cooling System-Condensate Storage Tank (CST) Level-Low, Division 2 (HPCI) Functional Test (LIS-55-2N661F)." The test failed due to time delay relay E41A-K78 being found at 19.9 sec vs. the specified acceptable band of 12+/-1.5 sec. The relay provides a time delay prior to swapping the HPCI system suction to the suppression pool on low CST level. The test was marked as "Fail" and no as-left value was recorded for the relay because the relay could not be calibrated to within the required band and operation of the relay delay was erratic. IR 932019 was written to document the condition.

The HPCI system was evaluated by the Operations shift as operable. Operations determined that the purpose of the time delay was to prevent spurious low CST level

signals from causing a premature swap over of HPCI system suction to the suppression pool and that there was no maximum allowable requirement for the time delay.

On June 17, Operations contacted Engineering regarding the issue. Engineering recommended swapping the HPCI system suction source to the safety-related suppression pool because of the erratic operation of the relay and because the HPCI system operation could be affected if the time delay was too long; a longer time delay would result in a lower CST level thus adversely affecting available pump net positive suction head. The suction source was swapped to the suppression pool on the morning of June 18. Maintenance technicians then proceeded with replacement of relay E41A-K78.

The inspectors questioned whether the design basis function of relay E41A-K78 was adequately factored into the conclusion that the HPCI system remained operable. The inspectors noted that no "as-left" data was documented in ST-2-055-601-2 following the maintenance technician's attempts to recalibrate relay E41A-K78. The inspector found that Calculation M-55-33, Revision 4, "HPCI/RCIC Automatic Pump Suction Transfer Delay Timer," calculated the maximum allowable time delay for Unit 2 HPCI system swap over from the CST to the suppression pool as 20.38 seconds. Although Engineering later calculated that the maximum allowed time delay could be as high as 42.32 seconds, based on the present system configuration, the Operations operability conclusion was incorrectly based on there being no established maximum time delay. Exelon entered this issue into the CAP as IR 933745.

Exelon's corrective actions included: Performing operations shift crew briefings on the issue; emphasizing the need for applying a questioning attitude; and requesting timely engineering support for emergent TS equipment issues. Also, a structured operability determination template was added to the corrective action program IR form.

Analysis: The performance deficiency associated with this issue is that operators failed to adequately assess the impact of erratic operation of a Unit 2 HPCI system time delay relay on HPCI operability in a timely manner commensurate with the potential safety significance. Following a failed surveillance test, operations personnel declared the Unit 2 HPCI system operable despite having no "as-left" data for a system time delay relay and failing to adequately address the relay's design basis function. This finding is more than minor because it was associated with the human performance attribute of the Mitigating Systems cornerstone, and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors assessed the finding using Phase 1 of IMC 0609, Attachment 4, "Phase 1 – Initial Screening and Characterization of Findings" and determined the finding to be of very low safety significance (Green) because it did not represent a loss of safety function of a single train; for greater than the TS allowed outage time; was not associated with a design or qualification deficiency; and did not screen as risk significant due to seismic, flooding, or severe weather events.

This finding has a crosscutting aspect in Human Performance, Decision-Making, because Exelon did not make a safety-significant decision using a systematic process, especially when faced with uncertain or unexpected plant conditions, to ensure safety was maintained [H.1(a)]. Specifically, Exelon did not obtain timely interdisciplinary input and review on a safety significant decision in that site engineering did not review the operations decision and operations did not implement the subsequent engineering recommendation until two days after the failed surveillance.

Enforcement: Enforcement action does not apply because the performance deficiency did not involve a violation of a regulatory requirement. Because this finding does not involve a violation of regulatory requirements and has very low safety significance, it is identified as **FIN 05000353/2009003-01, Failure to Adequately Assess Erratic Time Delay Relay Operation on Unit 2 HPCI Operability.**

1R18 Plant Modifications (71111.18 - 2 samples)

Temporary Modifications

a. Inspection Scope

The inspectors reviewed the two temporary plant modifications listed below to ensure that installation of the modifications did not adversely affect systems important to safety. The inspectors compared the modifications with the UFSAR and TS to verify that the modification did not affect system operability, availability, or adversely affect plant operations. The inspectors ensured that station personnel implemented the modification in accordance with the applicable temporary configurations change process. The impact on existing procedures was reviewed to verify Exelon made appropriate revisions to reflect the temporary changes. The documents reviewed are listed in the Attachment. The inspectors reviewed the following samples:

- Install Temporary Mechanical High Speed Stop in 2A MG Set Scoop Tube Positioner; and
- LG 20095022, Lift Lead in Unit 2 Electro-hydraulic Control Main Stop Valve Unit Switch Logic

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing (71111.19 - 6 samples)

a. Inspection Scope

The inspectors reviewed six post-maintenance tests to verify that procedures and test activities ensured system operability and functional capability. The inspectors reviewed Exelon's test procedures to verify that the procedures adequately tested the safety functions that may have been affected by the maintenance activity, and that the acceptance criteria in the procedures were consistent with information in the licensing and design basis documents. The inspectors also witnessed the test or reviewed test data to verify that the results adequately demonstrated restoration of the affected safety functions. The documents reviewed are listed in the Attachment. The inspectors reviewed the following samples:

- C0228366, Repair Unit 2 drywell equipment drain tank primary containment isolation valve, HV-061-231;
- C0228583, Repack Unit 2 'A' outboard main steam isolation valve;
- C0229068, EDG D11 fuel oil strainer high differential pressure during monthly operability run;
- M1715838. Replace Unit 2 HPCI suction swap over relay E41A-K7B;

- R1077557, EDG D21 voltage regulator post maintenance testing and resulting field current board replacement; and
- A1714217, Unit 1 RCIC pump discharge valve, HV-049-1F013, failed to stroke.

b. Findings

No findings of significance were identified.

1R20 Refueling and Other Outage Activities (71111.20 - 1 sample)

a. Inspection Scope

At the beginning of the inspection period, Unit 2 was in OPCON 5 (Refueling) with the reactor cavity flooded. OPCON 2 (Startup) was entered on April 11 and operators synchronized the unit to the electrical grid on April 13 thus ending refueling outage 2R10. During the inspection period, the inspectors conducted several containment walkdowns and monitored plant startup and heatup activities. The inspectors reviewed Exelon's controls associated with the following outage activities:

- Configuration management, including maintenance of defense-in-depth, commensurate with the outage plan for the key safety functions and compliance with the applicable TS when taking equipment out of service;
- Implementation of clearance activities and confirmation that tags were properly hung and that equipment was appropriately configured to safely support the associated work or testing;
- Installation and configuration of reactor coolant pressure, level, and temperature instruments to provide accurate indication and instrument error accounting;
- Status and configuration of electrical systems and switchyard activities to ensure that TS were met;
- Monitoring of decay heat removal operations;
- Impact of outage work on the ability of the operators to operate the spent fuel pool cooling system;
- Reactor water inventory controls, including flow paths, configurations, alternative means for inventory additions, and controls to prevent inventory loss;
- Activities that could affect reactivity;
- Maintenance of secondary containment as required by TS;
- Refueling activities, including fuel handling and fuel receipt inspections; and
- Identification and resolution of problems related to refueling outage activities.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22 - 5 samples)

a. Inspection Scope

The inspectors either witnessed the performance of, or reviewed test data for five surveillance tests (STs) associated with risk-significant SSCs. The reviews verified that Exelon personnel followed TS requirements and that acceptance criteria were appropriate. The inspectors also verified that the station established proper test conditions, as specified in the procedures, that no equipment preconditioning activities

occurred, and that acceptance criteria were met. The documents reviewed are listed in the Attachment. The inspectors reviewed the following samples:

- NF-AB-706, 3D Monicore Periodic Databank Updates, Revision 1 performed on Unit 2 prior to declaring main turbine bypass valves inoperable;
- ST-6-092-324-2, D24 Diesel Generator LOCA/Load Reject Testing Fast Start Operability Test Run;
- ST-6-055-230-1, HPCI Pump, Valve and Flow Test, Unit 1;
- ST-6-055-230-2, HPCI Pump, Valve and Flow Test, Unit 2; and
- ST-6-092-112-2, D22 Diesel Generator 24 hour Endurance Test.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety

2OS1 Access Control to Radiologically Significant Areas (71121.01 - 9 samples)

a. Inspection Scope

During the period April 6 - 10, 2009, the inspector conducted the following activities to verify that the licensee was properly implementing physical, administrative, and engineering controls for access to locked high radiation areas and other radiological controlled areas, and that workers were adhering to these controls when working in these areas during Unit 2 refueling outage 2R10. Implementation of these controls was reviewed against the criteria contained in 10 CFR 20, TS, and the licensee's procedures. Documents reviewed are listed in the Attachment. This inspection activity represents completion of nine samples relative to this inspection area:

Plant Walkdown and Radiation Work Permit Reviews

- During the 2R10 refueling outage, the inspector identified exposure significant work areas in the Unit 2 drywell, fuel floor, turbine building, and reactor building. Specific work activities included, reactor cavity decontamination, traversing incore probe (TIP) replacement, 50A/B valve repairs, fuel shuffle, IVVI, turbine blade replacements, and suppression pool cleaning/inspection. The inspector reviewed radiation survey maps and radiation work permits (RWP) associated with these areas to determine if the associated controls were acceptable. RWPs reviewed included LG-0-09-00092/93 (Repair RHR Check Valves 50A/B), LG-0-09-00063/64 (Reactor Cavity Decontamination), LG-0-09-00005 (TIP Area Access), and LG-0-09-0069 (Reactor Cavity Work Platform Activities);
- The inspector toured the accessible radiological controlled areas, including the drywell, reactor building, turbine building, and fuel floor. With the assistance of a radiation protection technician, independent radiation surveys were performed of selected areas to confirm the accuracy of survey data and the adequacy of postings;
- In evaluating the RWPs, the inspector reviewed electronic dosimeter dose/dose rate alarm set points to determine if the set points were consistent with the survey indications and plant policy. The inspector verified that the workers were

knowledgeable of the actions to be taken when the dosimeter alarms, or malfunctions, for tasks being performed under selected RWPs. Work activities reviewed included reactor cavity decontamination (RWP LG-0-09-0063/64), TIP replacement (LG-09-0005), installation/removal of drywell scaffolding (RWP LG-09-0081), reactor cavity work platform activities (RWP LG-09-0069), turbine repairs (RWP LG-09-0046), and Refuel Floor Outage Middle Activities (RWP LG-08-0060); and

- The inspector reviewed RWPs and associated instrumentation and engineering controls for potential airborne radioactivity areas located in the Unit 2 drywell, reactor building, and fuel floor. The inspector reviewed records related to evaluating airborne radioactivity concentrations and personnel contaminations and confirmed that no worker received an internal dose, in excess of 10 mrem, when performing outage related tasks.

Problem Identification and Resolution

- A review of Nuclear Oversight Objective Evidence Reports was performed to determine if identified problems were entered into the corrective action program for resolution; and
- IRs, associated with radiation protection control access, initiated between January 1, 2009 and April 9, 2009, were reviewed and discussed with the licensee staff to determine if the follow-up activities were being conducted in an effective and timely manner, commensurate with their safety significance.

High Radiation Area and Very High Radiation Area Controls

- Procedures for controlling access to High Radiation Areas and Very High Radiation Areas were reviewed to determine if the administrative and physical controls were adequate. The inspector also reviewed the physical and procedural controls for securing and removing highly contaminated/activated materials stored in the spent fuel pool, and TIP replacement. The inspector discussed with Radiation Protection Management the adequacy of current access controls, including prerequisite communications and authorizations, and verified that any changes made to relevant procedures did not substantially reduce the effectiveness and level of worker protection. Accessible locked high radiation area, in the Unit 2 drywell and reactor building, were verified to be properly secured and posted during plant tours.

Radiation Worker Performance and Radiation Protection Technician Performance

- The inspector observed and questioned radiation workers and radiation protection technicians while conducting various outage tasks, including preparing for TIP replacement, reactor cavity decontamination, and various drywell and fuel floor activities. The inspector determined that the workers were aware of current radiological conditions, access controls, and that the skill level was appropriate with respect to the potential radiological hazards present; and
- The inspector reviewed IRs, related to radiation worker and radiation protection technician errors, and personnel contamination event reports to determine if an observable pattern traceable to a similar cause was evident.

b. Findings

No findings of significance were identified.

2OS2 ALARA Planning and Controls (71121.02 - 9 samples)

a. Inspection Scope

During the period April 6 - 10, 2009, the inspector conducted the following activities to verify that the licensee was properly implementing operational, engineering, and administrative controls to maintain personnel exposure as low as is reasonably achievable (ALARA) for tasks conducted during the Unit 2 refueling outage 2R10. Implementation of these controls was reviewed against the criteria contained in 10 CFR 20, applicable industry standards, and the licensee's procedures. The documents reviewed are listed in the Attachment. This inspection represents completion of nine samples relative to this inspection area:

Radiological Work Planning

- The inspector reviewed pertinent information regarding outage exposure history, current exposure trends, and ongoing activities to assess current performance and outage exposure challenges. The inspector determined the site's 3-year rolling collective average exposure;
- The inspector reviewed the licensee's actions upon identifying that dose rates were elevated compared to assumed dose rates used for ALARA planning. The licensee promptly responded by surveying affected areas, flushing and hydro-lazing systems and components, increasing the use of temporary shielding, and organizationally addressing the dose challenges through multiple Station ALARA Council meetings. Activities were coordinated (IVVI & fuel moves). Crew sizes were reduced. Dose was closely monitored by management, the effectiveness of corrective actions evaluated, and original dose estimates for outage tasks revised;
- The inspector reviewed the 2R10 scheduled outage work and the associated work activity dose estimates and ALARA Plans (AP). Scheduled work included the removal/replacement of the TIP (AP 2009-080), reactor cavity decontamination (AP 2009-058), drywell (DW) shielding removal/reinstallation (AP2009-006), DW scaffolding removal (AP 2009-008), control rod drive exchange (2009-016), repair RHR check valves 50A/B (AP2009-083), and various activities on the reactor cavity work platform (AP 2009-057); and
- The inspector evaluated the departmental interfaces between radiation protection, operations, maintenance crafts, and engineering to identify missing ALARA program elements and interface problems. The evaluation was accomplished by attending a pre-job meeting for reactor cavity decontamination; reviewing recent Station ALARA Council meeting minutes, work-in-progress ALARA reviews, Nuclear Oversight Objective Evidence Reports; and interviewing the acting site Radiation Protection Manager.

Verification of Dose Estimates

- The inspector reviewed the assumptions and basis for the 2R10 outage dose estimates and the licensee's actions upon identifying that increased insoluble Cobalt-60 in the reactor coolant system resulted in elevated dose rates in plant work areas; and
- The inspector reviewed the licensee's procedures and pre-established action plans associated with monitoring and re-evaluating dose estimates when the forecasted cumulative exposure for tasks differed from the actual exposure received. The

inspector reviewed the dose/dose rate alarm reports, work-in-progress evaluations, dose extension authorizations, and exposure data for selected individuals receiving the highest Total Effective Dose Equivalent for the 2R10 outage, to confirm that no individual exposure exceeded the regulatory limit, or met the performance indicator reporting guideline.

Jobs-In-Progress

- The inspector observed various 2R10 jobs-in-progress to evaluate the effectiveness of dose control measures. Jobs observed included TIP replacement, reactor cavity decontamination, drywell scaffolding removal, reactor cavity work platform activities, fuel shuffle, TIP replacement, and turbine rotor repairs. As part of this evaluation, the inspector reviewed the associated RWP, survey maps, shielding effectiveness, and contamination control measures. The inspector also attended the RWP/ALARA briefing for the reactor cavity decontamination.

Source Term Reduction and Control

- The inspector reviewed the status and historical trends for the Unit 2 source term. By reviewing survey data for reactor coolant system piping (BRAC measurements) and interviewing the acting Radiation Protection Manager, the inspector evaluated the recent source term measurements and control strategies. Specific strategies employed by the licensee included performing a reactor soft shutdown, system flushes, installation of permanent and temporary shielding in the DW, vacuuming the seal plate, hydro-lazing of reactor nozzles, and increasing the capacity of the reactor cavity filtration system.

Declared Pregnant Workers

- The inspector determined that no declared pregnant worker was involved in dose intensive, outage related, activities.

Problem Identification and Resolution

- The inspector reviewed elements of the licensee's corrective action program related to implementing ALARA program controls, including Issue Reports, Work-In-Progress reviews, Nuclear Oversight Objective Evidence Reports, and Station ALARA Council meeting minutes to determine if problems were being entered at a conservative threshold and resolved in a timely manner.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator (PI) Verification (71151 - 4 samples)

.1 Initiating Event and Mitigating Systems Cornerstone PIs

a. Inspection Scope

The inspectors sampled Exelon's submittal of the Mitigating Systems cornerstone PIs listed below to verify the accuracy of the data recorded from April 2008 through March 2009. The inspectors utilized performance indicator definitions and guidance contained in Nuclear Energy Institute (NEI) 99-02, "Regulatory Assessment Performance Indicator Guidelines," Revision 5, to verify the basis in reporting for each data element. The inspectors reviewed various documents, including portions of the main control room logs, issue reports, power history curves, work orders, and system derivation reports. The inspectors also discussed the method for compiling and reporting performance indicators with cognizant engineering personnel and compared graphical representations from the most recent PI report to the raw data to verify that the report correctly reflected the data. The documents reviewed are listed in the Attachment.

Cornerstone: Mitigating Systems (4 samples)

- Units 1 and 2 Mitigating System Performance Index: Emergency AC; and
- Units 1 and 2 Safety System Functional Failures.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems

.1 Review of Items Entered into the Corrective Action Program

a. Inspection Scope

As required by Inspection Procedure 71152, "Identification and Resolution of Problems," and in order to help identify repetitive equipment failures or specific human performance issues for follow-up, the inspectors screened all items entered into Limerick's CAP. The inspectors accomplished this by reviewing each new condition report, attending management review committee meetings, and accessing Exelon's computerized database.

b. Findings and Observations

No findings of significance were identified.

.2 Semi-Annual Review to Identify Trends

a. Inspection Scope (71152 - 1 sample)

As required by Inspection Procedure 71152, "Identification and Resolution of Problems," the inspectors performed a review of Exelon's CAP and associated documents to identify whether trends existed that would indicate a more significant safety issue. The review considered the period of January through June 2009 and was focused on repetitive equipment issues. The results of routine inspector CAP item screening, Exelon's trending efforts, and human performance results were also considered. The inspectors reviewed issues documented outside the normal CAP such as Plant Health Committee reports including the Top Ten Equipment Issues List, the Plant Health

Committee Issues List, and the Open Action Items List. The inspectors compared and contrasted their results with the results contained in the Limerick Generating Station Performance Trending reports for the fourth quarter 2008 and first quarter 2009.

b. Findings and Observations

No findings of significance were identified. The review did not reveal any trends that could indicate a more significant safety issue. The inspectors assessed that Exelon was identifying issues at a low threshold and entering the issues into the CAP for resolution.

The inspectors reviewed Exelon's actions in response to a negative trend identified in NRC Inspection Report 05000352/2008005, 05000353/2008005 related to evaluation of equipment issues. Improper evaluation of issues resulted in missed and/or improper functional failure or maintenance preventable functional failure determinations related to the Maintenance Rule program.

The inspectors reviewed IR 840929 which performed a common cause analysis on the NRC-identified issues as well as issues identified by Exelon's Nuclear Oversight. The common cause analysis identified several corrective actions. This included training for system managers on lessons learned from the common cause analysis, planned reviews on system maintenance rule scoping documents and bases documents, and procedure changes to incorporate additional barriers to prevent errors. The inspectors reviewed the status of system reviews. At the time of the inspection, the majority of the systems had been reviewed with the results presented to the Maintenance Rule Expert Panel. The inspector concluded that Exelon's actions taken or planned to address the issues appeared to be comprehensive.

.3 Annual Sample: Review of Operator Workarounds (71152 – 1 sample)

a. Inspection Scope

The inspectors performed an in-depth annual review of plant operator workarounds as documented in Exelon's operator workaround program and corrective action documents. This review was performed to verify that the licensee identified operator workarounds at an appropriate threshold, entered the issues into the CAP, and planned or implemented appropriate corrective actions. The documents reviewed are listed in the Attachment.

b. Findings and Observations

No findings of significance were identified. The inspectors determined that the issues reviewed did not adversely affect the capability of the operators to implement abnormal or emergency operating procedures and had been appropriately classified and prioritized.

4OA3 Event Follow-up (71153 - 3 samples)

.1 Plant Event Review

a. Inspection Scope

For the two plant events listed below, the inspectors reviewed and/or observed plant parameters, reviewed personnel performance, and evaluated performance of mitigating

systems. The inspectors communicated the plant events to appropriate regional personnel and compared the event details with criteria contained in IMC 0309, "Reactive Inspection Decision Basis for Reactors," for consideration of potential reactive inspection activities. The inspectors reviewed Exelon's follow-up actions related to the events to assure that appropriate corrective actions were implemented commensurate with their safety significance.

- IR 907453, Unit 2 dual recirculation pump speed change; and
- IR 911901, Unit 2 main turbine bypass valves opened unexpectedly.

b. Findings

No findings of significance were identified.

.2 (Closed) LER 05000352/2009001: Neutron Flux Monitoring Instrumentation Inoperable.

On January 16, 2009, the Exelon identified that the required number of operable accident monitoring instrumentation channels for neutron flux were not maintained for periods that exceeded TS 3.3.7.5, "Accident Monitoring Instrumentation," allowed outage times. This was because the required minimum number of source range monitor (SRM) channels were not maintained for several periods on Unit 1 (3 periods when all 4 channels of SRMs were inoperable for greater than 48 hours and 2 periods when 3 of 4 channels were inoperable for greater than 7 days) while in OPGON 1. The licensee determined the cause to be the TS and associated Bases not clearly identifying that the SRMs were required to satisfy the accident monitoring instrumentation requirement. The issue was entered into Exelon's CAP as IR 867666. Operator training was performed on the accident monitoring instrumentation requirements for neutron flux monitoring and daily surveillance procedures were revised to include steps to verify the operability of the required instrumentation. In addition, Exelon planned to revise the TS Bases to clarify the accident monitoring instrumentation operability requirements. The enforcement aspects of the violation are discussed in Section 4OA7. No new issues were identified during the review of the LER. This LER is closed.

4OA5 Other Activities

.1 Quarterly Resident Inspector Observations of Security Personnel and Activities

a. Inspection Scope

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

These quarterly resident inspector observations of security force personnel and activities did not constitute any additional inspection samples. Rather, they were considered an integral part of the inspectors' normal plant status review and inspection activities.

b. Findings

No findings of significance were identified.

4OA6 Meetings, Including Exit

Exit Meeting Summary

On July 17, 2009, the resident inspectors presented the inspection results to Mr. C. Mudrick and other members of his staff. The inspectors confirmed that proprietary information was not included in the inspection report.

4OA7 Licensee-Identified Violations

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

- TS LCO 3.3.7.5, "Accident Monitoring Instrumentation," Item 13, requires two channels of Neutron Flux Instruments to be operable in OPCON 1. With less than the required number of operable channels, TS 3.3.7.5 requires restoration of the inoperable channels with 7 days or be in at least Hot Shutdown within the next 12 hours. With no operable channels, TS 3.3.7.5 requires restoration of the inoperable channels within 48 hours or be in at least Hot Shutdown within the next 12 hours. Contrary to TS 3.3.7.5, Unit 1 operated in OPCON 1 for periods longer than allowed without the required number of operable Neutron Flux Instruments due to inoperable Source Range Monitors. Specifically, during the periods from October 5, 2006 to December 18, 2006, and December 14, 2006 to April 21, 2007, less than the required number of operable channels of Neutron Flux Instruments were operable. During the periods from January 20, 2006 to February 20, 2006, December 14, 2006 to December 18, 2006, and February 20, 2007 to April 21, 2007, no operable channels of Neutron Flux Instruments were operable. The issue was entered into Exelon's CAP as IR 867666. The finding was determined to have very low safety significance (Green) using IMC 0609, Appendix M, Significance Determination Process Using Qualitative Criteria, because the SRMs only provide indications to operators following an accident and other instrumentation (i.e., intermediate range monitors and average power range monitors) were available during the time periods in question to ensure the reactor would remain in a safe, shutdown condition.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Exelon Generation Company

C. Mudrick, Site Vice President
E. Callan, Plant Manager
D. DiCello, Manager, Radiation Protection
R. Dickinson, Director, Engineering
P. Gardner, Director, Operations
R. Kreider, Manager, Regulatory Assurance
D. Palena, Manager, Nuclear Oversight
S. Bobyock, Manager, Plant Engineering
F. Michaels, Manager, Electrical Engineering Systems
E. Dennin, Shift Operations Superintendent
C. Gray, Manager, Radiological Engineering
R. Harding, Engineer, Regulatory Assurance
J. Berg, System Manager, HPCI
A. Jain, System Manager, Radiation Monitoring Systems
L. Lail, System Manager, EDGs
R. Gosby, Radiation Protection Technician, Instrumentation
J. Sprucinski, Senior Radiation Protection Technician
R. Harding, Regulatory Assurance
D. Wahl, Environmental Scientist
C. Rich, Manager of Nuclear Training
D. Malinowski, Supervisor Requalification Training
W. Ward, Exam Developer
D. Monahan, Simulator Operator/Instructor
R. Harding, Licensing
J. Mihm, Instructor/Evaluator
S. Cohen, Instructor/Evaluator
R. George, Manager, Electrical Design
C. Pragman, Exelon, Corporate Fire Protection Engineer
P. Tarpinian, Probability Risk Assessment
K. Ferich, Limerick Emergency Planning Manager
M. Crim, Emergency Preparedness Coordinator
R. Rogers, Exelon Facility and Equipment Coordinator
E. Bell, Senior Radiation Protection Technician
D. Kern, Senior radiation Protection Technician
M. Lyate, Radiation Protection Supervisor, Field Operations
T. Moore, Director Work Management
J. Risteter, Radiation Protection Supervisor, Technical Support

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Closed

05000352/2009001	LER	Neutron Flux Monitoring Instrumentation Inoperable (Section 4OA3.2)
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Opened and Closed

05000353/2009003-01	FIN	Failure to Adequately Assess Erratic Time Delay Relay Operation on Unit 2 HPCI Operability (Section 1R15)
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Discussed

None

LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

Procedures

E-5, Grid Emergency, Revision 14
OP-AA-108-107, Switchyard Control, Revision 2
OP-AA-108-107-1001, Station Response to Grid Capacity Conditions, Revision 2
WC-AA-8000, Interface Procedure between Exelon Energy Delivery (COMED/PECO) and
Exelon Generation (Nuclear Power) for Construction and Maintenance Activities,
Revision 2
ARC-MCR-002, E-4 - Spray Pond Pump Station HVAC Trouble, Revision 4
SE-1-3, Protected Ventilation Source, Revision 12
S81.1.A, Startup of Miscellaneous Structure HVAC Systems, Revision 16

Maintenance Rule Documents

(a)(1) Determination for System 035, Main Transformers and Substation, Dated 2/1/08
(a)(1) Action Plan for System 035, Main Transformers and Substations, Dated 4/15/08

Issue Reports

IR 903328, 'A' spray pond HVAC fan recirc damper failed closed
IR 928041, Operations backshift work outside fence vs. min-staffing
IR 925138, Spray pond HVAC exhaust damper seasonal operation

Section 1R04: Equipment Alignment

Issue Reports and Action Requests

A1706245, Turbine oil change required due to elevated particle count

A1684721, Elevated particle count in RCIC turbine lube oil
A1711103, RCIC pump suction from suppression pool PCIV
A1507961, RCIC lube oil cooling water supply valve
IR 900896, Power supply humming/vibrating excessively
IR 9806378, Unit 2 RCIC steam line temperature is reading low
IR 906483, Gross fail on CST level instrument caused RCIC suction transfer

Procedures

2S52.1.A (COL-1), Equipment Alignment for Core Spray Loop 'A' Operation, Revision 7
1 S11.1A (COL-2), Equipment Alignment for Emergency Service Water Loop 'B' System, Revision 48
0.S11.1A (COL), Equipment Alignment of Emergency Service Water Control Switches, Revision 15
S49.1.A, Normal RCIC Line-up for Automatic Operation, Revision 23
1A11.1.A (COL-1), Equipment Alignment of Emergency Service Water Loop "A" System, Revision 43
S11.1.A, ESW System Startup, Revision 30
S81.1.A, Startup of Miscellaneous Structure HVAC Systems, Revision 16
1S49.1.A (COL), Valve Alignment to Assure Availability of the RCIC System, Revision 16

Section 1R05: Fire Protection

Procedures

2F-D-315B, D22 Diesel Generator Room and Fuel Oil and Lube Oil Tank Rooms; 315B and 316B, Elevation 217, Fire Area 85, Revision 5
F-A-323, #1 Class 1E Battery Room, Elevation 217, Fire Area 3, Revision 5
F-R-202, Service Water Pipe Tunnel Room 202 (EI.198) Pre-fire Plan, Revision 4
F-4-500, Unit 1 Standby Liquid Control and General Equipment Areas Pre-fire Plan, Revision 11

Section 1R06: Flood Protection Measures

Procedures

SE-4, Flood, Revision 6
SE-4-1, Reactor Enclosure Flooding, Revision 8
Individual Plant Examination, Limerick Generating Station Units 1 and 2
Updated Final Safety Analysis Report, Chapter 3, Design of Structure, Components, Equipment, and Systems

Section 1R08: Inservice Inspection

NDT Examination Reports

C0227873-03, Liquid Penetrant Examination Data Sheet , welds W-4, 5 and 6, High Pressure Core Injection, new vent shop fabrication
Report 184700, Magnetic Particle Examination Data Sheet, weld APE-2MS-LC-8 SWP, Main Steam System
Report 184600, Magnetic Particle Examination Data Sheet, weld APE-2MS-LC-8 SWN, Main Steam System
Report 489500, Manual PDI Ultrasonic Examination Data Sheet, weld HBB-217-2-FW51, Residual Heat Removal System

NDT Examination Procedures

MA-LG-793-001 R1, Visual Examination of Containment Vessels and Internals

ER-AA-335-002 R4, Liquid Penetrant Examination
ER-AA-335-014 R3, VT-1 Visual Examination
ER-AA-335-003 R3, Magnetic Particle Examination
ER-AA-335-018 R5, Detailed, General, VT-1, VT-2, VT-3 and VT-3C Visual Examination of ASME Class MC and CC Containment Surfaces and Components
GEH-UT-547, Automated Ultrasonic Examination of Jet Pump Beams with Phased Array Technique in Boiling Water Reactors, Version 2
GE-PDI-UT-1 R6, PDI Generic Procedure for UT exam of Ferritic pipe welds
GE-PDI-UT-10, PDI Generic Procedure for the Ultrasonic Examination of Dissimilar Metal Welds
GEH-VT-204 Procedure for In-vessel Visual Inspection of BWR RPV Internals, Version 12
GE-UT-542, Procedure for Phased Array Ultrasonic Examination of Core Shroud Welds H2 and H3, Version 0
GEH-UT-503, Procedure for Automated Ultrasonic Examination of the Shroud Assembly Welds, Version 14

In Vessel Remote Visual Examination

IR 898673, Jet Pump 03 New Wedge Wear
IR 898982, Jet Pump 11 Aux Wedge Gap and Movement
IR 899245, Jet Pump 10 Wear and Aux Wedge Exam-No Change
IR 899251, Jet Pump 02 Wedge and Rod Exam-No Change
IR 898570, Jet Pump 18 New Wedge Wear

Action Requests

IR 845862, Pin Hole ESW Leak at Weld on Bottom of "A" CE Chiller
IR 858703, Emergency Service Water Pin Hole Leak
IR 787443, MH 216 UT Results for Inaccessible RHRSW/ESW Pipe
IR 826737, <1 Drop per Minute ESW Leak
IR 844501, ISI, Incorrect Hold Time for ST-4-041-950-1
IR 840654, ISI FASA-Components Missing From CISI Program
IR 676369, Pin Hole Leak in ESW Piping
IR 843446, Piping Returned to Service without ASME Section XI Exam
IR 889656, HBC-507-01 RHRSW Piping Found Below Minimum Wall

Work Orders

C0227170, Replace portion of three inch HBC-245-2 emergency service water piping for repair of pin hole leak
C0228288, ASME XI Installation of two inch coupling on RHR service water B-Loop
C0218608, ASME XI Replacement of thirty six inch butterfly valves HV-012-212, 214 and adjacent piping

Miscellaneous

LS-AA-125 R12, Corrective Action Program Procedure
IVVI Inspection, 2R10 IVVI Scope Summary
2R10 Shroud Inspection, Unit 2 2R10 Core Shroud Weld Inspection Layouts and Identification
LIM02.G03, ASME Section XI ISI Program Plan (Portions)
LS-AA-126-1001 R5, FASA Self Assessment Report-ASME Section XI In-Service Inspection
NOSA-LIM-08-07 (AR 815712), Surveillance and Test Program Audit
C0228288, Field weld data sheet and checklists for work order 0228288 and ECR 09-00134, welding of carbon steel half coupling, HBC-507-1, W-1013

Section 1R11: Licensed Operator Requalification Program

Miscellaneous

June 2, 2009, Simulator Training Scenario, LTS 3336

Section 1R12: Maintenance Effectiveness

Issue Reports

IR 853914, 'A' CREFAS Filter Failed Charcoal Analysis

Other

Regulatory Guide 1.52, Design, Testing, and Maintenance Criteria for Post Accident Engineered-Safety-Feature Atmosphere Cleanup System Air Filtration and Adsorption Units of Light-Water-Cooled Nuclear Power Plants, Revision 2

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

Procedures

Risk Management Document LG-A-4-010 Limerick Generic (a) (4) Risk Assessment-Recirculation Pump Motor-Generator Set Scoop Tube on Brake, Gagged or Stops Adjusted

Section 1R15: Operability Evaluations

Issue Reports

IR 903036, HV-041-2F022D did not stroke full open per ST-2-041-469-2

Miscellaneous

Regulatory Guide 1.147, Inservice Inspection Coe Case Acceptability, ASME Section XI, Division 1, Revision 15

Operational Technical Decision Making Document for IR 906922

UFSAR Section 8.3, Onsite Power Systems

UFSAR Section 6.2.1, Containment Functional Design

Section 1R18: Plant Modifications

Procedures

WO-C0228647, Install temporary mechanical high speed stop in XY-MY-25001A

Procedure 543.0.C, Clearing an Electrical or Mechanical Stop

IR, 907615, Step change in recirculation speed

UFSAR Chapter 15, Accident Analysis

Technical Specification 3.7.8, Main Turbine Bypass System

Core Operating Limits Report for Limerick Generating Station, Unit 2 Reload 10, Cycle 11

Section 1R19: Post-Maintenance Testing

Procedures

LGS 1 and 2 IST Program, ML-008, Revision 8

ST-4-LLR-911-2, Drywell Sump Drain, Revision 7

ST-6-107-201-0, IST Valve Stroke for New Baseline, Revision 4

ST-2-055-601-2, ECCS Condensate Storage Tank Level Low, Div 2 (HPCI) Functional Test, Revision 7

Miscellaneous

Calculation M-55-33, HPCI/RCIC Automatic Pump Suction Transfer Delay Timer, Revision 7

Issue Reports and Action Requests

IR, 792483, D11 fuel oil basket strainer high differential pressure
A1630526, D21 diesel generator voltage regulator PM/calibration
IR 935048, DG21 voltage regulator rectifier outputs not balanced

Work Orders

R1077557, D21 diesel generator voltage regulator PM/testing

Miscellaneous

Alarm Response Card 1AC514,F-3, F.D. Strainer Differential Pressure High, Revision 1
MA-AA-716-012, Post Maintenance Testing, Revision 11

Section 1R20: Refueling and Other Outage Activities

Miscellaneous

2R10 Decay Heat Addendum
Limerick 2R10 Shutdown Safety Plan
OU-LG-104, Limerick Generating Station Shutdown Safety Management Program, Revision 7
OU-AA-1-3, Shutdown Safety Management Program, Revision 8
GP-2-, Normal Plan Startup, Revision 130

Section 1R22: Surveillance Testing

Issue Reports

IR 915854, Flow gage used in Unit 2 HPCI in-service testing not conforming to ASME requirements
IR 924540, D22 load swings during D22 24 hour endurance run
IR 895736, Loop B core spray injection line high pressure

Procedures

ST-6-092-112-2, D22 Diesel Generator 24 Hour Endurance Test
ST-6-055-230-1, HPCI Pump, Valve, and Flow Test

Section 20S1: Access Control to Radiologically Significant Areas

Section 20S2: ALARA Planning Guide

Procedures:

RP-AA-12, Internal Dose Control Program Description, Revision 0
RP-AA-201-1001, Radiological Instruction Sheet for Escorted Visitors, Revision 0
RP-AA-203, Exposure Control and Authorization, Revision 3
RP-AA-210, Dosimetry Issue, Usage, and Control, Revision 11
RP-AA-220, Bioassay Program, Revision 5
RP-AA-222, Methods for Estimating Internal Exposure from In Vivo and In Vitro Bioassay Data, Revision 3
RP-AA-250, External Dose Assessments From Contamination, Revision 4

RP-AA-270, Prenatal Radiation Exposure, Revision 3
RP-LG-300-102, Removing Items from the Spent Fuel Pool, Reactor Cavity, Equipment Pit, or Cask Pit, Revision 2
RP-AA-301, Radiological Air Sampling Program, Revision 2
RP-AA-350, Personnel Contamination Monitoring, Decontamination, and Reporting, Revision 7
RP-AA-376, Radiological Postings, Labeling, and Markings, Revision 2
RP-AA-400, ALARA Program, Revision 5
*RP-AB-460, TIP Area Access Controls, Revision 1
RP-LG-400-1003, Emergent Dose Control and Authorization, Revision 2
RP-LG-400-1002, Department Dose Zealot, Revision 2
RP-LG-401-1001, Reactor Cavity and Equipment Pit Decontamination, Revision 4
RP-AA-401, Operational ALARA Planning and Controls, Revision 9
RP-AA-403, Administration of the Radiation Work Permit Program, Revision 1
RP-AA-460, Controls for High and Very High Radiation Areas, Revision 13
RP-AA-500, Radioactive Material Control, Revision 13
RP-LG-460-1016, Radiation Protection Controlled Keys, Revision 6
RP-LG-400-1021, Reactor Cavity Draindown, Revision 1
RP-LG-500-1012, Breach and Control of Radioactive Systems, Revision 1
CY-LG-120-1301, Outage Cobalt Limits, Revision 2
RT-0-100-460-0, High Radiation and Locked High Radiation Door Preventative Maintenance Inspection, Revision 3
M-074-009, Traversing Incore Probe Detector and Transfer Cable Replacement, Revision 1
M-200-014, Reactor Nozzle Hydrolazing for Unit 2

Issue Reports

Access Control/ALARA related (71121.01/02):

875084, 886701, 888347, 889479, 891207, 894192, 894989, 895639, 896667, 897020, 897168, 898196, 901593, 899158, 900237, 897029, 899472, 876088, 895732, 895732, 899098, 885515, 872986, 899098, 899053, 899022, 899028, 899032, 897130, 901141, 897020, 897168, 898368, 901621, 902193, 899305

Station ALARA Council Meeting Minutes

Meeting Nos.: 2009-01, 2009-02, 2009-03, 2009-04, 2009-05, 2009-06, 2009-07, 2009-08

ALARA Plans/Associated Work-In-Progress Reviews:

2009-001, Suppression Pool Inspection/Cleaning
2009-002, 50B Differential Pressure Modification
2009-006, Drywell Shielding Installation/Removal
2009-008, Drywell Scaffolding Installation/Removal
2009-009, Drywell Insulation Removal/Installation
2009-010, Snubber Inspections
2009-012, Drywell RPV Nozzle and Skirt ISI and Associated Work
2009-016, 2R10 CRD Exchange and Support Work
2009-083, RHR Check Valves 50 A/B Repairs
2009-057, Anticipated Crud Burst
2009-058, Reactor Cavity Decontamination
2009-080, TIP Replacement

Nuclear Oversight Reports

Dated: 03/23-04/03/2009, 02/16/2009, 01/21/2009

Miscellaneous Reports:

Dose and Dose Rate Alarm Report for period March 1 – April 09, 2009
Electron Dosimetry Dose/Dose Rate Alarm Set-point Basis
Action Plan for Anticipated Crud Burst
Action Plan for Elevated Dose Rates

Section 40A1: Performance Indicator (PI) Verification

Procedures

NEI 99-02, Regulatory Assessment Performance Indicator Guideline

Issue Reports and Action Requests

A1672034, D14 EDG unresponsive from MCR
IR 843638, D13 EDG voltage higher than max allowed per ST-6-092-323-1
IR 784402, D24 EDG high generator bearing temperature alarm

Other

LER 2008-004-00, Remote Shutdown Procedure Error, December 31, 2008
LER 2009-001-00, Neutron Flux Accident Monitoring Instrumentation Inoperable, March 13, 2009

Section 40A2: Problem Identification and Resolution

Procedures

OP-AA-102-103, Operator Work-Around Program, Revision 2
OP-AA-102-103-1001, Operator Burden Impact Assessment Program, Revision 000
OP-AA-108-111, Adverse Condition Monitoring and Contingency Planning, Revision 5
Maintenance Manpower Planning System, Tier 3 Goal Related ARs, Operations Work Arounds
Maintenance Manpower Planning System, Tier 3 Goal Related ARs, Main Control Room
Deficiencies

LIST OF ACRONYMS

AC	alternating current
ADAMS	Agencywide Documents Access Management System
ALARA	as low as reasonably achievable
AP	ALARA plans
ASME	American Society of Mechanical Engineers
CAP	Corrective Action Program
CFR	Code of Federal Regulations
CST	condensate storage tank
DW	drywell
EDG	emergency diesel generator
ESW	emergency service water
HPCI	high pressure coolant injection
IMC	Inspection Manual Chapter
IR	issue report
ISI	inservice inspection
IVVI	in vessel visual inspection

LER	licensee event report
NCV	non-cited violation
NDE	nondestructive examination
NEI	Nuclear Energy Institute
NRC	Nuclear Regulatory Commission
OPCON	operational condition
OOS	out of service
P&ID	pipng and instrumentation drawing
PARS	Publicly Available Records
PDI	performance demonstration initiative
PI	performance indicator
RCIC	reactor core isolation cooling
RHR	residual heat removal
RHRSW	residual heat removal service water
RTP	rated thermal power
RWP	radiation work permit
SDP	significance determination process
SRM	source range monitor
SSC	structure, system, component
ST	surveillance test
TIP	traversing incore probe
TS	technical specification
UFSAR	updated final safety analysis report
UT	ultrasonic testing