August 10, 2001

Mr. Oliver D. Kingsley
Exelon Nuclear
Exelon Generation Company
200 Exelon Way, KSA 3-E
Kennett Square, PA 19348

SUBJECT: LIMERICK NUCLEAR POWER STATION
INSPECTION REPORT 05000352/2001-006 AND 05000353/2001-006

Dear Mr. Kingsley:

On June 27, 2001, the NRC completed a team inspection of the Limerick Nuclear Power Station. The enclosed report presents the results of that inspection. The results were discussed on July 5, 2001, with Mr. W. Levis, and other members of your staff.

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

On the basis of the sample selected for review, the team concluded that the overall implementation of the corrective action program at Limerick was adequate. In general, problems were properly identified, evaluated and resolved. However, the team noted that prior corrective actions were not fully effective in addressing weaknesses in operability determinations.

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Sincerely,

/RA/

Wayne D. Lanning, Director
Division of Reactor Safety

Docket Nos. 05000352, 05000353
License Nos. NPF-39, NPF-85

Enclosure: Inspection Reports 05000352/2001-006, 05000353/2001-006

cc w/encl:
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W. Bohlke, Senior Vice President - Nuclear Services
J. Cotton, Senior Vice President - Operations Support
J. Skolds, Chief Operating Officer
G. Hunger, Chairman, Nuclear Review Board
M. Gallagher, Director - Licensing, Exelon Generation Company, LLC
J. Benjamin, Vice President - Licensing and Regulatory Affairs
W. Levis, Vice President - Limerick Generating Station
R. C. Braun, Plant Manager, Limerick Generating Station
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REGION I

Docket Nos:	05000352, 05000353
License No:	NPF-39, NPF-85
Report Nos:	05000352/2001-006, 05000353/2001-006
Licensee:	Exelon Generation Company
Facility:	Limerick Generating Station, Units 1 &2
Location:	Evergreen and Sanatoga Roads Sanatoga, PA 19464
Dates:	June 11-27, 2001
Inspectors:	E. H. Gray, Division of Reactor Safety (DRS), Team leader C. Sisco, Operations Engineer, DRS B. Welling, Resident Inspector, Division of Reactor Projects
Approved by:	David C. Lew, Chief Performance Evaluation Branch Division of Reactor Safety

SUMMARY OF FINDINGS

Limerick Generating Station, Units 1 &2
NRC Inspection Reports 05000352/2001-006, 05000353/2001-006

IR 05000352/01-006 and IR 05000353/01-006, on 06/11- 06/27/2001, Exelon Generating Company. Limerick Generating Station, annual baseline inspection of the identification and resolution of problems.

This report includes results of the team inspection by two region based and one resident inspector of the effectiveness of problem identification and resolution at the Limerick Power Station. The inspection was accomplished in accordance with NRC Inspection Procedure 71152, “Identification and Resolution of Problems”.

Identification and Resolutions of Problems

Based on the results of the inspection, there were no findings identified. The team concluded that the overall implementation of the corrective action program was adequate. The licensee was, with a few exceptions, effective at identifying problems. In general, problems were properly captured and characterized in the Performance Enhancement Program (PEP). Based upon the sample reviewed, items entered into PEPs were properly classified and prioritized for resolution. Evaluations and root cause analyses were of good depth and quality. The licensee’s resolution of problems was adequate. The prescribed corrective actions appeared appropriate to correct the problems and were generally completed in a timely manner. However, the team noted that prior corrective actions were not fully effective in addressing weaknesses in operability determinations.

Report Details

4. OTHER ACTIVITIES (OA)

4OA2 Identification and Resolution of Problems (IP 71152)

.1 Effectiveness of Problem Identification

a. Inspection Scope

The team evaluated the effectiveness of licensee problem identification activities. The team reviewed corrective action program (CAP) procedures and documents and interviewed licensee staff to understand the CAP and the threshold for identifying and entering problems into the program. The licensee initiates Performance Evaluation Program Reports (PEPs) to document problems. The team assessed the threshold for entering the CAP by reviewing a sample of PEPs that involved risk significant issues. In addition, the team reviewed the problem description of the sample items to ensure the description accurately bounded the scope of the problem.

The team also selected a sample of items from other licensee processes to determine whether problems identified within these processes were being appropriately considered for entry into the CAP. Items from the industry operating experience review program were selected to determine whether the licensee was identifying issues applicable to the plant and appropriately entering them into the CAP.

Team members also reviewed the results of performance monitoring of selected risk significant systems including the reactor core isolation cooling, high pressure coolant injection, feedwater, and offsite power systems and security equipment to determine whether the licensee was identifying adverse trends in equipment functionality, availability, and condition. Team members reviewed equipment performance trending procedural requirements and interviewed system engineers and the maintenance rule coordinator to understand the results of the licensee's performance monitoring of selected risk significant systems.

Additionally a sample of licensee safety review board meeting results, plant operating review committee meeting minutes, quality assurance assessments, and self assessments were reviewed to determine whether deficiencies identified as a result of these reviews were being addressed within the CAP. The team specifically reviewed the results of a recent licensee self assessment of the corrective action process to better understand their expectations regarding problem identification.

The team noted that the PEP program included a daily multi-departmental panel review of newly issued PEPs to assess the significance of each PEP and assign responsibility for resolution through the action tracking process. During the inspection, the PEP process was replaced by a new CAP that will be documenting issues in Condition Reports (CRs) rather than in PEPs.

b. Issues and Findings

The team concluded that overall, the licensee was effectively identifying problems and entering them into the CAP at an appropriate level. The team did observe two minor examples where performance monitoring could have been more effectively used by the licensee to identify potential adverse trends in equipment performance and address the problem with the CAP. Specifically,

- The security organization did not consistently use the CAP to identify adverse trends in security equipment related problems. While security personnel initiated maintenance action requests to schedule corrective maintenance, the team observed the CAP was not typically used to identify adverse trends in security equipment performance following maintenance. During the inspection the licensee conducted a review of all maintenance activities of security equipment for the past twelve months and noted that repeat maintenance had been conducted on some security equipment. The licensee concluded the problem was isolated to the security organization and generated PEP#I0012731 to address the problem.

- The extent and application of equipment trending was largely within the purview of the system manager. While the system managers interviewed demonstrated a good understanding of the current status of their systems, the team identified an instance where test data for residual heat removal (RHR) heat exchangers and the spray pond were not consistently plotted and trended to help ensure that equipment problems were identified. The licensee initiated PEP#I0012772 to evaluate and define conditions where trending of test data is needed.

.2 Prioritization and Evaluation of Issues

a. Inspection Scope

The team reviewed a sample of PEPs, generated mostly within the last year, to determine whether the licensee prioritized and evaluated problems commensurate with the potential risk impact on the plant. The team's selection of PEPs included a sample associated with previous NRC non-cited violations (NCV). The team reviewed the items to determine whether the licensee's evaluations of the problems were appropriately detailed to identify the probable causes of the problem and adequately broad to address the extent of the condition. The team also reviewed the licensee's operability and reportability assessments for each item. During the inspection, the team observed how the emergent problems with safety related electrical inverters and the Unit 2 plant going offline due to a main generator lockout were handled by the plant departments.

b. Issues and Findings

The team concluded the licensee was evaluating issues in appropriate detail to identify probable causes. The licensee's evaluations generally bounded the extent of the condition and addressed the potential for common mode failure. The licensee's prioritization of CAP items appropriately reflected the potential safety significance of the problem.

While the licensee evaluated most problems appropriately, the team noted that some instances of deficient operability determinations continue to be identified by NRC inspectors as identified in Section 4OA2.3 of this report.

.3 Effectiveness of Corrective Actions

a. Inspection Scope

The inspectors reviewed the corrective actions associated with selected CAP items to determine whether corrective actions addressed the identified causes of the problem. The inspectors also confirmed that the corrective actions were completed or planned to support the identified schedule. The inspectors reviewed PEPs for repetitive problems to determine whether previous corrective actions were effective.

b. Issues and Findings

Overall, the team concluded the licensee developed and implemented corrective actions that appeared reasonable to address the identified problems. Based on the sample reviewed, corrective actions were generally properly prioritized for implementation and completed in a timely manner. The team noted that the licensee had implemented various initiatives over the past year to make improvements in the area of human performance. While these improvements were successful in reducing the significance of the human performance errors, the rate of errors remained relatively unchanged over the past year.

With regard to operability determinations, the team identified that corrective actions have not been fully effective to prevent further problems in this area. Specifically, the team noted instances in which the station had not properly assessed degraded plant conditions or significant changes in plant conditions for impact on system operability. These examples were similar to previous NRC inspection issue where the licensee did not perform an operability determination of multiple degraded emergency diesel generator couplings. (Reference Inspection Report 50-352;353/2000-005, June 2000). While the licensee initiated PEP#11747 in September 2000 to address this problem, corrective actions have not precluded further problems as follows:

- A May 2001 operability determination for the 2B safeguard piping fill pump was not performed in accordance with station procedures and did not consider the as-found degraded condition. This issue contributed to a Green finding in NRC Inspection Report 50-352;353/2001-005. (PEP I0012658)

- In October 2000, the station did not assess the operability impact of low electrolyte level in a safety related station battery in a timely manner. This, along with other factors, led to a licensee identified condition that existed longer than allowed by the technical specifications. This was a licensee identified non-cited violation in NRC Inspection Report 2000-009. (PEP I0011892, LER 1-00-004)

- In March 2001, an operability determination for a potentially degraded 2B residual heat removal heat exchanger was not performed in a timely manner.

This issue was reviewed during the period of NRC Inspection Report 2001-004, and was considered minor. (PEP I0012388)

- Degraded conditions and/or deficient procedures associated with a Unit 2 suppression pool cleanup pump were not properly assessed for operability. In February 2001, the pump tripped repeatedly as operators were attempting to lower suppression pool level using Emergency Operating Procedures. This issue was reviewed during the period of NRC Inspection Report 2001-003, and was considered minor. (PEP I0011668)

.4 Safety Conscious Work Environment

a. Inspection Scope

The team reviewed the licensee's Safety Conscious Work Environment program implementation (Employee Concern Program) and considered during interviews with plant personnel if conditions were apparent or existed that would challenge the establishment of a safety conscious work environment at Limerick.

b. Issues and Findings

There were no findings identified during this part of the inspection.

4OA6 Management Meetings

.1 Exit Meeting Summary

The team presented the inspection results to Mr. W. Levis and other members of the Limerick staff during an exit meeting on July 5, 2001. The licensee acknowledged the findings presented. No information examined or reviewed during the inspection was considered to be proprietary.

PARTIAL LIST OF PERSONNEL CONTACTED

J. Armstrong, Director - Site Engineering
J. Bowers, Maintenance and Technical Training Manager*
R. Braun, Limerick Plant Manager
E. Callan, Director - Maintenance*
R. Dickenson, Nuclear Oversight Manager*
T. Dougherty, Shift Operations Superintendent
K. Gallogly, Regulatory Assurance Manager
S. Gamble, Regulatory Assurance*
M. Golson, Radwaste/Environmental Manager*
J. Hunter, Regulatory Assurance
L. Harding, Regulatory Assurance*
M. Kaminski, Radiation Engineering Manager
W. Levis, Site VP*
J. Krais, Design Engineering Senior Manager
W. O'Malley, Operations Senior Manager*
S. Simpson, Chem/RW Manager*
R. Smith, NMD
G. Snyder, Reactor Engineering*
J. Stone, Director - Work Management*
J. Tucker, Plant Engineering Senior Manager
P. Weyhmuller, Generation Systems Engineering Manager

D. Ney, PA DEP BRP*

D. Lew, Chief, Performance Evaluation Branch*, NRC, Region I, DRS

Note: * Indicates Presence at the 7/5/01 Exit Meeting

ITEMS OPENED, CLOSED, AND DISCUSSED/UPDATED

Opened	None
Closed	None

INSPECTION PROCEDURE USED

71152 Identification and Resolution of Problems

LIST OF ACRONYMS USED

CAPCO	Corrective Action Program Coordinator
CAP	Corrective Action Program
CFR	Code of Federal Regulations
CR	Condition Report
EDG	Emergency Diesel Generator
EOP	Emergency Operating Procedures
HPCI	High Pressure Coolant Injection
HP	Health Physics
IFI	Inspector Followup Item
LCO	Limiting Condition for Operation
LER	Licensee Event Report
LGS	Limerick Generating Station
NCR	Nonconformance Report
NCV	Non-Cited Violation
NRC	Nuclear Regulatory Commission
OLM	Online Maintenance
PEP	Performance Enhancement Program (Report)
RCIC	Reactor Core Isolation Cooling
QA	Quality Assurance
TOP	Trending Organizational Performance
TS	Technical Specifications
UFSAR	Updated Final Safety Analysis Report

Limerick Documents Reviewed List for Inspection 50- 352/353-00-006

Background Information

AD-AA-1101	Change Management Procedure dated 12/14/2000
AG-CG-3, R7	System Manager's Responsibilities
AG-CG-026.1, R4	Equipment Trouble/Deficiency Tag Initiation and Processing
AG-CG-104, R1	Nuclear Plant Performance Monitoring Program
EI-AA-1, R0	Nuclear Policy - Raising of Issues by Employees
EI-AA-101, R0	Employee Concerns Program
ER-AA-1, R0	Nuclear Policy - Equipment Reliability
LR-CG-10, Rev. 4	Performance Enhancement Program (PEP)
LR-CG-10-01, R2	Root Cause Flow Chart and User's Manual
LR-CG-10-02, R1	Class B PEP Evaluations - Apparent Cause
LR-CG-10-03, R2	Class A PEP Evaluations - Full Root Cause
LR-CG-10-04, R2	Corrective Action Process Heirarchy
LR-CG-10-05 to 13	PEP Thresholds for various areas
NOM-C-10.3 R0,	PEP Thresholds for the Operations
LS-AA-125, Rev 0	Corrective Action Program (CAP) Procedure (Replacing PEPs)
NOM-C-11.1, Rev. 1	Operability (Evaluation or Determination) Procedure

HPCI System Health Report for the 1st Quarter of 2001
RCIC System Health Report for the 1st Quarter of 2001
ESW System Health Report for the 1st Quarter of 2001
FW System Health Report for the 1st Quarter of 2001

Offsite Power (035,220/500kv) System Health Report for the 1st Quarter of 2001

Operating Experience Items (Part 21s, GE Sils, OEs, SERs, Info Notices, etc. for the period of 6/1/00 to 6/1/01

NRC identified issues for the period of 6/1/00 to 6/1/01

Performance Enhancement Program Reports (PEPs)

I0010612	D24 EDG
I0011098	EDG Couplings
I0011310	Inadequate Relay Continuity PMT
I0011315	1A RFPT Loss of Power
I0011338	Continuous assessments process procedural non-comp
I0011340	OJT/TPE candidate evaluator same person
I0011354	Remote Shutdown Panel Inoperable
I0011371	Weakness on equipment challenges
I0011371	Weakness on Equipment Challenges
I0011403	System Managers Task Qualifications
I0011442	Unsat WV/DV Verifications
I0011453	Unplanned LCO for Relay Failure
I0011478	CRS not notified of D13 inop during test
I0011511	M&TE Usage Not Documented
I0011523	Control Rod Drift
I0011549	D22 unavail and inop time extensions
I0011553	Ops training issues id during inpo visit
I0011555	Failure to Document on IC-100 Form
I0011559	D22 Run Aborted due to Relay Problem
I0011595	Weaknesses in PPIS
I0011624	Extending PEP Evaluation Date
I0011646	HPCI Inop for S/P Suction Valve Failure
I0011654	I&C ST on Unit 2 Rather Than Unit 1
I0011668	Maintenance Rule Scope
I0011685	Relay Failure
I0011747	Self assess of operability determinations
I0011747	Self Assessment of Operability Determinations
I0011756	Training qualification tracking and documentation
I0011774	Adverse Trend PEP Classification
I0011776	Operability Review for New CAQ Not Performed
I0011777	Repeat Maintenance of RCIC 2F018
I0011887	Operators use alt indications vs the P-1
I0011892	Low Electrolyte Level in Unit 1 Battery
I0011904	I&C PM on Wrong Component
I0011914	HPCI ST Incorrect
I0011918	Adverse Trend in Worker Verification
I0011931	HPCI Outboard PCIV Isolation
I0011933	Root Cause of Maint Lifted Lead Incidents
I0011984	Inadvertent opening of #1 bypass valve on Unit 1
I0011986	RISH-026-1K 621 Left Out of Acceptable Range During Cal.
I0012002	Adverse trend of procedure errors
I0012031	RCIC Min Flow Valve Closed During IST Testing

I0012050	Tywrap Found in Panel Resulted in Inop PCIV
I0012063	Repeat Maintenance on D13 EDG gage
I0012068	1B RFPT Vibration and Shaft Sleeve Crack
I0012094	Operators worksheet error (wrong rwcu f/d regen)
I0012175	Clearance tag on wrong 120 vac feed (LTA self check)
I0012202	Adverse trend contractor human performance incidents
I0012211	Valve 009-2080A found in throttled position
I0012296	LT-055-1N062B Found Out of Cal Low
I0012304	D12 EDG tank fill valve left open
I0012308	2C RAP did not trip on high level
I0012314	2N SRV Lifted
I0012331	I&C Techs Closed Wrong Air Supply Valve
I0012353	RCIC Oil Level
I0012378	RCIC Gross Failure Alarms
I0012383	PEPs in Planned Not Taken to Assigned - Timeliness
I0012388	2B RHR Heat Exchanger Not Tested
I0012414	2N SRV inadvertently lifted and remained open during S/D
I0012420	Rx level transient (manual to auto)
I0012420	Rx level transient occurred from manual to auto
I0012450	RWCU dump to CST valve (08-2161) found open
I0012461	LPRM cable found disconnected under-vessel
I0012478	Ops performed breaker task different than directed by ST
I0012478	Ops performed breaker test different than directed by ST
I0012490	Failure to Comply with WO and ECR Instruction
I0012498	Operators waived from written requal exam
I0012531	HPCI Steam Supply Valve Contacts Failed
I0012536	Failure to comply with procedures
I0012543	RVH-003-223 found closed
I0012559	Failure to Document on IC-100 Form
I0012575	Adverse Trend for 1998 Agastat Relays
I0012577	D-11 edg missing bolt
I0012600	1B RHR Min Flow Valve Failed to Stroke
I0012636	Wrong cir water box cleaned during load drop
I0012641	Untested Snubber
I0012658	2B Safeguard Fill Pump Inoperable - Oil Sample
I0012710	Inadequacies in the Corrective Action Process and Implementation
I0012723	Safeguard Fill Valve Found Out of Position
I0012731	Trending Security system maintenance (Issued as part of the PI&R)
I0012746	Issues related to initiation of PEPs (Issued as part of the PI&R)
I0012772	Trending of test data (Issued as part of the PI&R inspection)
I0012827	Operability Determinations (Issued as part of the PI&R inspection)

Self Assessments

Identification and Resolution of Problems, self assessment done during 5/14-6/8/2001

Memorandum dated 3/21/2001 reporting the Nuclear Safety Review Board meeting of 3/15-3/16/2001. By D. G. Eisenhut, NSRB Chairman

Limerick Generating Station Year 2000 Self Assessment for 1/1/2000 to 5/31/2000

PORC 01-134	Plant Operations Review Committee Meeting minutes for 5/16/01
PORC 01-013	Plant Operations Review Committee Meeting minutes for 3/1/01
PORC 00-047	Plant Operations Review Committee Meeting minutes for 9/25/00
CAR-LG-01-01	Continuous Assessment Report for Jan-March 2001, dated 5/2/01
NOA-LG-00-4Q	Continuous Assessment Report for Sept-Dec 2000, dated 2/13/01
LAR-00-007	Nuclear QA Assessment Report for 5/1/00 to 8/31/2000

Trending Organization Performance Reports (TOPs)

Various