

July 24, 2000

Mr. G. Rainey, President
PECO Nuclear
Nuclear Group Headquarters
Correspondence Control Desk
P. O. Box 195
Wayne, PA 19087-0195

SUBJECT: NRC'S LIMERICK REPORT 05000352/2000-004 AND 05000353/2000-004

Dear Mr. Rainey:

On June 30, 2000, the NRC completed an inspection at your Limerick 1 and 2 reactor facilities. The enclosed report presents the results of that inspection. The results of this inspection were discussed on July 7, 2000, with Mr. J. von Suskil and other members of your staff.

This inspection was an examination of 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. Within these areas, the inspection consisted of a selected examination of procedures and representative records, observations of activities, and interviews with personnel.

Based on the results of this inspection, there were no findings.

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Sincerely,

/RA/

Curtis J. Cowgill, Chief
Projects Branch 4
Division of Reactor Projects

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

Enclosure: Inspection Report 05000352/2000-004 and 05000353/2000-004

Mr. G. Rainey

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cc w/encl:

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REGION I

Docket Nos: 05000352
05000353

License Nos: NPF-39
NPF-85

Report No: 05000352/2000-004
05000353/2000-004

Licensee: PECO Energy
Correspondence Control Desk
P. O. Box 195
Wayne, PA 19087-0195

Facility: Limerick Generating Station, Units 1 & 2

Location: Evergreen and Sanatoga Roads
Sanatoga, PA 19464

Dates: May 14, 2000 to June 30, 2000

Inspectors: A. Burritt, Senior Resident Inspector
B. Welling, Resident Inspector
D. Cullison, Project Engineer
L. Peluso, Health Physicist
C. Sisco, Operations Inspector

Approved by: Curtis Cowgill, Chief
Projects Branch 4
Division of Reactor Projects

SUMMARY OF FINDINGS

Limerick Nuclear Power Plant
Inspection Report 05000352/2000-004, 05000353/2000-004

The report covers a seven-week period of resident inspection and announced inspections by a regional radiation specialist and a regional operations inspector. The significance of issues is indicated by their color (green, white, yellow, red) and was determined by the Significance Determination Process in Inspection Manual Chapter 0609.

- There were no findings in this report.

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REPORT DETAILS

Summary of Plant Status

Unit 1 began this inspection period operating at 100% power. On June 4, unit load was reduced to approximately 60% power to repair an emergent main condenser waterbox leak. The unit was returned to 100% power on June 5. The unit remained at full power throughout the remainder of the period except for minor load reductions for planned testing and control rod pattern adjustments.

Unit 2 began this inspection period operating at 100% power. The unit remained at full power throughout the period except for minor load reductions for planned testing and control rod pattern adjustments.

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

1R04 Equipment Alignment (71111.04)

a. Inspection Scope

The inspectors performed a complete walkdown of the 'A' train of the residual heat removal service water system. The inspectors reviewed valve positions, electrical power availability, component labeling, and equipment deficiencies.

The inspectors performed partial system walkdowns of the D12 emergency diesel generator and the Unit 2 reactor core isolation cooling system. These inspections verified critical portions of redundant or backup systems/trains while a system was out of service.

b. Issues and Findings

There were no findings identified.

1R05 Fire Protection (71111.05)

a. Inspection Scope

The inspectors toured high fire risk areas at both Limerick units to assess PECO's control of transient combustible material and ignition sources, fire detection and suppression capabilities, fire barriers, and any related compensatory measures. The fire areas included:

- Unit 1 Static Inverter Room - fire area 20
- Remote Shutdown Panel Room - fire area 26
- Auxiliary Equipment Room - fire area 25
- Unit 1 "A" Battery Room - fire area 9
- Unit 2 "B" Battery Room - fire area 10
- Unit 1 "B" Battery Room - fire area 8
- Unit 2 "A" Battery Room - fire area 11
- E22 4KV Switchgear Room - fire area 17

b. Issues and Findings

There were no findings identified.

1R11 Licensed Operator Requalification Program Evaluation (71111.11B)

a. Inspection Scope

.1 Limited Senior Reactor Operator (LSRO) Requalification Inspection

The following records were reviewed and activities observed to determine the effectiveness of the licensed operator requalification training program of those senior reactor operators licensed only to conduct fuel handling activities (LSRO).

Based on discussions with the resident staff, the inspector determined that human performance was acceptable during fuel handling activities during the last refueling outage at Limerick. Accordingly, no review of events was needed.

A sample of the written and in-plant job performance measures for the LSROs was reviewed. A review of the completed training feedback of the licensed operators was conducted.

Observations were made of the annual operating examinations administered by the training staff.

A sample of the medical records, training attendance records, and documentation on maintaining an active license was reviewed.

.2 Licensed Operator Requalification Activities

The inspectors observed licensed operator performance during a simulator training scenario and reviewed the training evaluator's critique.

b. Issues and Findings

There were no findings identified.

1R12 Maintenance Rule Implementation (71111.12)

a. Inspection Scope

The inspectors reviewed licensee follow-up actions with respect to the Maintenance Rule for the following equipment performance problems:

- Emergency diesel generator fuel oil storage tank level switch
- Auxiliary equipment room supply fan failure
- Appendix "R" diesel generator failure to start
- Diesel-driven fire pump failure to start on two occasions

b. Issues and Findings

There were no findings identified.

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

a. Inspection Scope

The inspectors reviewed PECO's risk management for the following emergent and planned maintenance activities:

- Unit 2 reactor core isolation cooling (RCIC) system outage work
- Unit 2 high pressure coolant injection (HPCI) system outage work
- Unit 1 residual heat removal (RHR) "D" system outage work
- D24 emergency diesel generator lube oil keep warm heater

b. Issues and Findings

There were no findings identified.

1R14 Personnel Performance During Nonroutine Plant Evolutions (71111.14)

a. Inspection Scope

The inspectors observed control room operator performance following a loss of control power to the 1C reactor feed pump on May 26, 2000.

b. Issues and Findings

There were no findings identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors reviewed operability evaluations associated with the following plant equipment conditions:

- Reactor core isolation cooling (RCIC) room high energy line break blowout panel was partially blocked
- 2N safety relief valve pilot leakage

b. Issues and Findings

There were no findings identified.

1R19 Post Maintenance Testing (71111.19)a. Inspection Scope

The inspectors observed post-maintenance tests and reviewed test data for the following:

- Unit 2 high pressure coolant injection (HPCI) system
- Unit 1 “D” residual heat removal (RHR) minimum flow valve
- Unit 1 “D” RHR subsystem

b. Issues and Findings

There were no findings identified.

1R22 Surveillance Testing (71111.22)a. Inspection Scope

The inspectors observed or reviewed the results of several scheduled equipment surveillance tests, including:

- Unit 1 - ST-6-092-311-1, D11 Emergency Diesel Generator Slow Start Operability Test Run - May 30
- Unit 1 - ST-6-049-230-1, RCIC Pump, Valve and Flow Test - June 8

The inspectors compared actual test data with established acceptance criteria to ensure that the various systems and components met licensing basis requirements.

b. Issues and Findings

There were no findings identified.

1. **EMERGENCY PREPAREDNESS** **Cornerstones: Public, Occupational Radiation Safety**

1EP6 Drill Evaluation (71114.06)a. Inspection Scope

The inspectors observed selected portions of two emergency preparedness training drills.

b. Issues and Findings

There were no findings identified.

2. RADIATION SAFETY
Cornerstone: Occupational Radiation Safety

2OS1 Access Control to Radiologically Significant Areas (71121.01)

a. Inspection Scope

The effectiveness of access controls to radiologically significant areas was determined for Units 1 & 2 during May 14-19, 2000. Radiation levels in the radiologically controlled areas (RCAs) were reviewed and verified. High radiation area (<1R/hr HRA) (refuel floor) and airborne radioactivity area (control rod drive (CRD) flush and rebuild rooms) barricades and postings were observed and verified. Airborne radioactivity area survey records for the CRD flush and rebuild rooms were reviewed and verified. All locked high radiation areas were checked for Unit 2. The key logbook was reviewed and the locked high radiation area keys were inventoried. Selected workers were interviewed and observed regarding their knowledge of the applicable RWP, dosimetry set points, and job-site radiological conditions for the above tasks.

b. Issues and Findings

There were no findings identified.

2OS2 ALARA Planning and Controls (71121.02)

a. Inspection Scope

The effectiveness of the ALARA planning and controls program was determined for Units 1 & 2 during April 10-14, 2000. The following high exposure work activities with estimated collective exposures greater than 1 person-rem were observed: (1) Control Rod Drive flush and rebuild project and (2) Fuel Pool Clean Up project. For these radiologically significant areas, ALARA Review packages, including Radiation Work Permits (RWP), survey records, shielding, engineering controls, physical postings and barricades, were reviewed and verified. Selected workers were interviewed and observed regarding their knowledge of the applicable RWP, dosimetry set points, and job-site radiological conditions for the above high exposure work activities. Problem reports generated within high radiation areas less than 1 Roentgen per hour (R/hr) were reviewed for the period April 1999 - May 19, 2000.

b. Issues and Findings

There were no findings identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151)

a. Inspection Scope

The inspectors reviewed the accuracy and completeness of the supporting data for the following licensee performance indicators (PI):

- HPCI Unavailability (April 1997 to March 2000)
- Heat Removal System Unavailability (April 1997 to March 2000)
- Unplanned Power Reductions (April 1999 to March 2000)
- Occupational Exposure Control Effectiveness (April 1999 to March 2000)

The records reviewed included operating logs, surveillance test logs, clearances activities, monthly operating reports, and action requests as applicable. The Occupational Exposure Control Effectiveness verification also included a review of three PEPs (I0011003, I0009722, I0009837); one dosimeter discrepancy occurrence and the associated radiological surveys and supporting data.

b. Issues and Findings

There were no findings identified.

4OA3 Event Follow-Up (71153)

.1 (Closed) LER 50-352/1-00-001:

Unplanned actuation of the Engineered Safety Feature (ESF) during refueling. The actuation caused two (2) valves in the Containment Instrument Gas system and four (4) valves in the Drywell Chilled Water system to close as a result of a blown fuse. The most probable cause of the blown fuse was testing in progress on the affected equipment. No violations of NRC requirements were identified during an on-site review and this issue is closed.

.2 (Closed) LER 50-352/1-00-002:

RPS actuation/RX trip. Scram due to generator lockout following failure of a main transformer bushing connection. This event was discussed in NRC inspection report 50-352;353/2000-003. No new issues were identified during the on-site review of this LER.

4OA5 Other.1 Performance Indicator Data Collecting and Reporting Process Review (TI 2515/144)a. Inspection Scope

The inspectors reviewed the licensee's PI data collecting and reporting process and determined whether the data collecting and reporting methods for current PI data are consistent with the guidance contained in NEI 99-02, Revision 0, "Regulatory Assessment Performance Indicator Guideline" for the following indicators:

- Unplanned Power Changes per 7000 Critical Hours
- Mitigating Systems - High Pressure Coolant Injection

b. Issues and Findings

The inspector identified a potential weakness in PECO's method of evaluating for load reductions greater than 20% reactor power. Procedure LR-CG-15-6 "Unplanned Power Changes Per 7,000 Critical Hours" specifies the use of hourly (average) power data when determining if load reductions were greater than the 20% threshold. Using hourly averages in some instances could provide non-conservative results. For example, in November 1999, during a power ascension at Unit 1, a reactor feed pump trip caused an automatic recirculation system runback resulting in a 10% power reduction. Using the hourly average methodology, the feed pump trip event only appeared to be a 5% power reduction. The PECO staff agreed that a vulnerability was created by using hourly average power data and initiated PEP I0011471 to address the issue.

The inspector also noted that the 10% load reduction associated with the feed pump trip event was not identified in the November monthly operating report. This is a minor issue and will also be addressed by PEP I0011471.

There were no findings identified.

4OA6 Meetings, Including Exit.1 Exit Meeting Summary

The regional radiation specialist presented the occupational radiation safety inspection results to members of the licensee management at the conclusion of the inspection on May 19, 2000.

The regional operations inspector presented the limited senior reactor operator requalification inspection results to members of the licensee management at the conclusion of the inspection on May 25, 2000.

The inspectors presented the final inspection results to Mr. von Suskil and other members of the licensee management at the conclusion of the inspection on July 7, 2000.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

M. Alderfer	Senior Manager, Plant Engineering
J. Armstrong	Director, Site Engineering
R. Braun	Plant Manager
F. Cook	Senior Manager, Design Engineering
C. Fritz	Senior Training Manager
M. Gallagher	Plant Manager
G. Gellrich	Director, Maintenance
W. Harris	Manager, Radiation Protection
M. Kaminski	Manager, Technical Support and Radiation Protection
J. Tucker	Senior Manager, Operations
A. Wasong	Training Manager
J. von Suskil	Site Vice President

NRC

A. Burritt, Senior Resident Inspector
 D. Cullison, Project Engineer
 L. Peluso, Health Physicist
 B. Welling, Resident Inspector

ITEMS OPENED, CLOSED, AND DISCUSSED

Closed

LER 05000352/1-00-001	Engineered Safety Feature (ESF) automatic actuation of Primary Containment Isolation Valves (PCIVs) due to failed fuse.
LER 05000352/1-00-002	Scram due to generator lockout following failure of main transformer bushing connection.

LIST OF ACRONYMS USED

ALARA	as low as is reasonable achievable
CRD	control rod drive
EDG	emergency diesel generator
ESF	engineered safety feature
HPCI	high pressure core injection
HRA	high radiation areas
LER	licensee event report
PCIV	primary containment isolation valve
RCA	radiologically controlled areas
RCIC	reactor core isolation cooling
RHR	residual heat removal
RWP	radiation work permits
VHRA	very high radiation area

ATTACHMENT 1

NRC's REVISED REACTOR OVERSIGHT PROCESS

The federal Nuclear Regulatory Commission (NRC) recently revamped its inspection, assessment, and enforcement programs for commercial nuclear power plants. The new process takes into account improvements in the performance of the nuclear industry over the past 25 years and improved approaches of inspecting and assessing safety performance at NRC licensed plants.

The new process monitors licensee performance in three broad areas (called strategic performance areas): reactor safety (avoiding accidents and reducing the consequences of accidents if they occur), radiation safety (protecting plant employees and the public during routine operations), and safeguards (protecting the plant against sabotage or other security threats). The process focuses on licensee performance within each of seven cornerstones of safety in the three areas:

Reactor Safety

- Initiating Events
- Mitigating Systems
- Barrier Integrity
- Emergency Preparedness

Radiation Safety

- Occupational
- Public

Safeguards

- Physical Protection

To monitor these seven cornerstones of safety, the NRC uses two processes that generate information about the safety significance of plant operations: inspections and performance indicators. Inspection findings will be evaluated according to their potential significance for safety, using the Significance Determination Process, and assigned colors of GREEN, WHITE, YELLOW or RED. GREEN findings are indicative of issues that, while they may not be desirable, represent very low safety significance. WHITE findings indicate issues that are of low to moderate safety significance. YELLOW findings are issues that are of substantial safety significance. RED findings represent issues that are of high safety significance with a significant reduction in safety margin.

Performance indicator data will be compared to established criteria for measuring licensee performance in terms of potential safety. Based on prescribed thresholds, the indicators will be classified by color representing varying levels of performance and incremental degradation in safety: GREEN, WHITE, YELLOW, and RED. GREEN indicators represent performance at a level requiring no additional NRC oversight beyond the baseline inspections. WHITE corresponds to performance that may result in increased NRC oversight. YELLOW represents performance that minimally reduces safety margin and requires even more NRC oversight. And RED indicates performance that represents a significant reduction in safety margin but still provides adequate protection to public health and safety.

The assessment process integrates performance indicators and inspection so the agency can reach objective conclusions regarding overall plant performance. The agency will use an Action Matrix to determine in a systematic, predictable manner which regulatory actions should be taken based on a licensee's performance. The NRC's actions in response to the significance (as represented by the color) of issues will be the same for performance indicators as for inspection findings. As a licensee's safety performance degrades, the NRC will take more and increasingly significant action, which can include shutting down a plant, as described in the Action Matrix.

More information can be found at: <http://www.nrc.gov/NRR/OVERSIGHT/index.html>.