June 13, 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 05000352/2000-003, 05000353/2000-003

Dear Mr. Rainey:

On May 13, 2000, the NRC completed an inspection at your Limerick 1 & 2 reactor facilities. The enclosed report presents the results of that inspection. The results of this inspection were discussed on May 19, 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.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the ADAMS Public Library component on the NRC Web site at http://www.nrc.gov/NRC/ADAMS/index.html (The Public Electronic Reading Room).

Sincerely,

/RA/

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

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

Enclosure: Inspection Report 05000352/2000-003, 05000353/2000-003

cc w/encl:
J. J. Hagan, Senior Vice President, Nuclear Operations Station Support
G. Edwards, Chairman, Nuclear Review Board
J. A. Hutton, Director - Licensing, PECO Nuclear
J. D. von Suskil, Vice President - Limerick Generating Station
M. P. Gallagher, Plant Manager- Limerick Generating Station
K. P. Bersticker, Manager, Experience Assessment
Secretary, Nuclear Committee of the Board
Commonwealth of Pennsylvania

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NAME	DFlorek		CCowgill					
DATE	06/13/00		06/13/00					

U.S. NUCLEAR REGULATORY COMMISSION

REGION 1

Docket Nos:	05000352, 05000353
License Nos:	NPF-39, NPF-85
Report No:	05000352/2000-003, 05000353/2000-003
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:	April 2, 2000 to May 13, 2000
Inspectors:	A. Burritt, Senior Resident Inspector B. Welling, Resident Inspector P. Bonnett, Resident Inspector D. Cullison, Project Engineer J. Carrasco, Reactor Inspector L. Peluso, Health Physicist G. Smith, Senior Physical Security Inspector K. Modes, Health Physicist
Approved by:	Curtis Cowgill, Chief Projects Branch 4 Division of Reactor Projects

SUMMARY OF FINDINGS

Limerick Generating Station, Units 1 & 2
NRC Inspection Report 05000352/2000-003, 05000353/2000-003

The report covers a six-week period of resident inspection, and announced radiation safety, in-service inspection, and security inspections by regional specialist inspectors. 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. (See Attachment 1)

- There were no findings identified in this report.

TABLE OF CONTENTS

REPORT DETAILS

Summary of Plant Status:

Unit 1 began this inspection period shutdown for its eighth refueling outage (1R08). Operators restarted the unit and placed it back on-line on April 28, 2000. On May 1, 2000, Unit 1 automatically shutdown (scrammed) due to a main transformer fault. The unit returned to full power on May 5.

Unit 2 began this inspection period operating at 100%. The unit remained at full power throughout the period with exceptions for testing and control rod pattern adjustments.

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

1R01 Adverse Weather Protection (71111.01)

a. Inspection Scope

On May 9, 2000, the inspector performed a verification of plant features and procedures for operation of the ultimate heat sink. An inspection of the residual heat removal service water and emergency service water systems was performed in response to a forecast of unseasonably hot temperatures.

b. Issues and Findings

There were no findings identified.

1R04 Equipment Alignment (71111.04)

a. Inspection Scope

The inspectors performed a partial system verification of redundant Unit 2 equipment during a scheduled maintenance outage of the “B” loop of the emergency service water system.

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, including the 13 KV switchgear room, cable spreading room, and the spray pond pump house, to assess PECO’s control of transient combustible material and ignition sources, fire detection and suppression capabilities, fire barriers, and any related compensatory measures.

b. Issues and Findings

There were no findings identified.

1R06 Flood Protection Measures (71111.06)

The inspector reviewed the internal flood protection measures associated with manually draining the residual heat removal service water/emergency service water spray headers following operation of the systems.

b. Issues and Findings

There were no findings identified.

1R08 In service Inspection Activities (71111.08)

a. Inspection Scope

The inspector reviewed selected In service Inspection activities associated with the mechanical stress improvement process and ultrasonic examination of the N2H recirculation riser nozzle to a safe-end weld, the American Society of Mechanical Engineers Section XI replacements and associated non-destructive examination for residual heat removal (RHR) valve HV-051-1FO24A and reactor core isolation cooling (RCIC) valve HV-050-1F045, and the qualifications and certifications of personnel engaged in these activities.

The inspector performed direct observation of the surface (magnetic particle-MT) and volumetric (ultrasonic-UT) examinations performed on the pipe-to-valve welds for RCIC valve HV-050-1F045. The inspector also observed the calibration activities for the UT examination for these welds. The inspector verified that PECO procedural requirements were met regarding the RHR valve HV-051-1F024A. The inspector verified that the licensee completed all required testing prior to declaring RHR valve HV-051-1FO24A operable.

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 a failed response time test of a turbine control valve fast closure trip system input to the reactor protection system and for a residual heat removal suction valve that failed to close on demand.

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 maintenance activities:

- Unit 1 main steam isolation valve maintenance
- Unit 1 high pressure coolant injection system oil leak and steam leak.

The inspectors observed selected portions of the emergent work, attended planning meetings, and discussed the work with technicians.

b. Issues and Findings

There were no findings identified.

1R14 Personnel Performance During Nonroutine Plant Evolutions (71111.14)

a. Inspection Scope

The inspectors reviewed control room operator performance following the Unit 1 reactor scram on May 1, 2000. The inspectors observed procedure adherence, communications, and supervisory oversight. Also, the inspectors also reviewed spurious reactor water cleanup and ventilation system isolations caused by reactor vessel level indication spiking or "ringing."

b. Issues and Findings

There were no findings identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

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

- Unit 2 "M" safety relief valve main seat leakage, indicated by elevated tailpipe temperatures;
- Unit 2 main steam isolation valve pilot poppet separation from the valve stem as a result of a design problem;
- Operation of the spray pond pump house ventilation system with the recirculation dampers on both redundant trains failed open.

b. Issues and Findings

There were no findings identified.

1R17 Permanent Plant Modifications (71111.17)

a. Inspection Scope

The inspectors reviewed documentation and work activities for two permanent plant modifications that were installed on Unit 1 during 1RF08.

- Reactor Water Cleanup (RWCU) Modification P741-1, Replace the 'A' RWCU pump and piping
- Reactor Stability/Power Range Neutron Monitoring System Modification P00224

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 1 High Pressure Coolant Injection system maintenance overhaul;
- Unit 1 Main Steam Isolation Valve modifications and repairs;
- Unit 1 High Pressure Coolant Injection system rework.

b. Issues and Findings

There were no findings identified.

1R20 Refueling and Outage Activities (71111.20)

a. Inspection Scope

The inspectors observed and/or reviewed numerous refueling outage activities and controls, including:

- outage configuration management and system restoration
- outage risk assessment
- clearance and tagging
- electrical power alignment
- residual heat removal and alternate decay heat removal system operation
- availability of emergency core cooling systems and makeup water sources
- containment controls and integrity
- fuel handling practices and fuel movement between the spent fuel pool and the reactor core
- reactor startup, including preparations, control rod withdrawal, reactor criticality, and reactor coolant system heatup

b. Issues and Findings

There were no findings identified.

1R22 Surveillance Testing (71111.22)

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

- Unit 1 - ST-2-074-611-1, D Intermediate Range Monitor Functional Test - April 3;
- Unit 1 - ST-1-092-113-1, D13 Diesel Generator 4kV Safeguards Loss of Power Logic System Functional Test and Outage Testing - April 5;
- Unit 1 - ST-2-052-102-1, Loop B Core Spray Logic System Functional Test - April 19;
- Unit 1 - ST-2-042-100-1, Redundant Reactivity Control System Logic System Functional Test - April 18

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.

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 Unit 1 during April 10 through 14, 2000. The inspector: reviewed and verified radiation levels in the radiologically controlled areas: observed and verified high radiation area (HRA) and very high radiation area (VHRA) barricades and postings; reviewed and verified HRA and VHRA survey records from March 29 through April 13, 2000; checked all locked HRAs; reviewed the key logbook and inventoried the locked HRA keys; and interviewed selected workers regarding their knowledge of the applicable radiation work permit dosimetry set points and job-site radiological conditions.

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 the Unit 1 refueling outage during April 10 to 14, 2000. The inspector observed the following high exposure work activities with estimated collective exposures greater than one person-rem:

(1) Control rod drive exchanges
(2) Main steam relief valve and main steam isolation valve replacement modification
(3) "1A" reactor water clean up pump modification
(4) Regenerative heat exchanger vent and drain valve modification.

For these radiologically significant areas the inspector reviewed and verified ALARA review packages, including radiation work permits, survey records, shielding, physical postings, and barricades. The ALARA review packages were also reviewed for the following radiologically significant work activities with estimated collective exposures greater than one person-rem:

(1) Remove/replace drywell insulation
(2) Remove/replace drywell scaffolding
(3) Reactor assembly and disassembly

The exposure tracking system, including total exposure by area and radiation work permit (RWP) and the individual cumulative dose records, was reviewed for the above radiologically significant work activities. 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 with high radiation areas less than one Roentgen per hour were reviewed for the period March 29 through April 13, 2000.

b. Issues and Findings

There were no findings identified.

3. SAFEGUARDS
Cornerstone: Physical Protection

3PP1 Access Authorization Program (71130.01)

a. Inspection Scope

The inspector conducted the following activities to determine the effectiveness of the PECO's behavior observation portion of the personnel screening and fitness-for-duty programs:

- interviews of five supervisors representing the Maintenance, Radiation Protection, and Instrumentation & Control and Security Departments regarding their understanding of behavior observation responsibilities and their ability to recognize aberrant behavior traits,
- review of two Access Authorization / Fitness-for-Duty self-assessments, event reports for four quarters, an audit, and logable events for four quarters,
- interviews of five individuals who perform escort duties,
- review of behavior observation training procedures and records.

b. Issues and Findings

There were no findings identified.

3PP2 Access Control (71130.02)

a. Inspection Scope

The inspector conducted the following activities to verify that PECO has effective site access controls, and equipment in place designed to detect and prevent the introduction of contraband (firearms, explosives, incendiary devices) into the protected area:

- check of a random sample of twenty personnel, granted unescorted access to the protected and vital areas, to assure that they were properly screened, identified, and authorized,
- observation of site access control activities, including personnel processing through the search equipment during multiple peak ingress periods, package searches, and vehicle searches,
- observation of testing of all access control equipment including metal detectors, explosive material detectors, and X-ray examination equipment,
- review of the Access Control event log, an audit, and three maintenance work requests.

b. Issues and Findings

There were no findings identified.

4. OTHER ACTIVITIES

4OA2 Performance Indicator Verification (71151)

a. Inspection Scope

The inspector reviewed the licensee's programs for gathering and submitting data for the Fitness-for-Duty, Personnel Screening, and Protected Area Security Equipment Performance Indicators. The review included the licensee's tracking and trending reports and security event reports for the Performance Indicator data submitted from the 2nd quarter of 1997 through the 1st quarter of 2000.

b. Issues and Findings

There were no findings identified.

4OA3 Event Follow-Up - Unit 1 Reactor Scram (71153)

a. Inspection Scope

Following a Unit 1 reactor scram on May 1, 2000, the inspectors observed plant parameters and status and evaluated the performance of mitigating systems and PECO's actions. The reactor scram was not complicated, all mitigation equipment remained operable, and there were no operator errors.

The scram was caused by a turbine trip and generator lockout due to a fault on the "C" phase of the main transformer as the unit was approaching 100% power following the 1R08 refueling outage. PECO determined that transmission and substation technicians made an inadequate connection between the "C" phase transformer and its associated busbar during the outage. This item was documented in PECO's corrective action system as PEP I0011179.

b. Issues and Findings

There were no findings identified.

4OA4 Cross-Cutting Issues

Problem Identification and Resolution Issues

a. Inspection Scope

During routine baseline inspection activities and plant status tours, the inspectors assessed whether PECO identified problems and included them in their corrective action system.

b. Issues and Findings

The inspector identified several examples in which PECO had not identified problems with the potential to affect the mitigation systems cornerstone. Although the inspector determined that each problem was a minor issue, there were multiple observations with a similar theme, problems that were not identified by PECO.

The inspectors identified the following:

- Degraded ventilation in the spray pond pump house for support of the operation of the residual heat removal service water and emergency service water pumps. PECO was not aware of two ventilation damper problems that degraded the ventilation capability in the spray pond pump house. This was a minor issue since the residual heat removal service water and emergency service water pumps remained operable with the degraded ventilation.

- Combustible materials were in an area in the spray pond pump house where combustible materials were not permitted. This was a minor issue because there was no credible ignition source in the vicinity of the combustible materials.

- Two emergency core cooling system room cooler isolation valves were mis-positioned. This was a minor issue because the mis-positioned valves did not affect the operability of the room coolers.

- A motorized gate could impede the fire brigade's response to a fire at the spray pond pump house in the event of a loss of power. This was a minor issue because an alternate access route was available to the spray pond pump house.

- Operators did not adequately review a partial high pressure coolant injection system surveillance test. They did not identify and resolve potential problems with lifting and re-landing electrical leads that affected the function of the full flow test valve. The inadequate review was a minor issue because a subsequent evaluation determined that the administrative controls for the lifted leads provided adequate assurance the full flow test valve would function properly.

These NRC-identified items represent missed opportunities on the part of station personnel to identify problems. PECO added each item to their corrective action program. Station management stated that they were aware of opportunities for improvement in problem identification and were assessing the causes.

4OA5 Management Meetings

.1 Exit Meeting Summary

The inspectors presented the inspection results to Mr. von Suskil, and other members of licensee management at the conclusion of the inspection on May 19, 2000. The licensee acknowledged the findings presented.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

M. Alderfer	Senior Manager, Plant Engineering
C. Anders	Director, Site Engineering
F. Cook	Senior Manager, Design Engineering
M. Gallagher	Plant Manager
G. Gellrich	Director, Maintenance
E. Harkness	Director, Outage Management
W. Harris	Manager, Radiation Protection
H. McNally	Security Manager
J. Tucker	Senior Manager, Operations
J. von Suskil	Site Vice President

NRC

A. Burritt, Senior Resident Inspector
P. Bonnett, Resident Inspector
J. Carrasco, Reactor Inspector
D. Cullison, Project Engineer
L. Peluso, Health Physicist
B. Welling, Resident Inspector
G. Smith, Senior Physical Security Inspector

ITEMS OPENED, CLOSED, AND DISCUSSED

None

LIST OF ACRONYMS USED

ALARA	as low as is reasonably achievable
HRA	high radiation area
KV	kilovolts
PECO	PECO Energy
PEP	Performance Enhancement Program
R	Roentgen
RCIC	reactor core isolation cooling
RHR	residual heat removal
RWCU	reactor water cleanup
RWP	radiation work permit
VHRA	very high radiation area

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	Radiation Safety	Safeguards
● Initiating Events	● Occupational	● Physical Protection
● Mitigating Systems	● Public	
● Barrier Integrity		
● Emergency Preparedness		

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.