August 7, 2000

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

SUBJECT: LIMERICK GENERATING STATION-NRC INSPECTION REPORT NOS. 50-352/2000-005, 50-353/2000-005

Dear Mr. Rainey:

During the period June 12 through June 30, 2000, a region-based NRC team conducted a baseline inspection at the Limerick Nuclear Generating Station, Units 1 and 2, Limerick, Pennsylvania. The enclosed report presents the results of the inspection. The inspection findings were discussed with Mr. J. von Suskil and other members of your staff at an exit meeting held at the station on July 7, 2000.

The inspection examined activities conducted under your license as they relate to problem identification and resolution (PI&R), and compliance with the Commission's rules and regulations, and with the conditions of your operating license. Within these areas, the inspection involved selected examination of procedures and representative records, observations of ongoing activities, and interviews with personnel.

Based upon the sample reviewed during this inspection, the team concluded that safety significant issues were being properly entered into the PI&R programs, evaluations or root cause analyses were of generally good quality, and corrective actions for problems and issues were generally adequate and resolved in a timely fashion or scheduled for resolution. There was generally good management attention directed to the PI&R programs as evidenced by the recent initiatives to review and enhance the PI&R programs. Even though the trend indicates that safety significant occurrences at the Limerick Station are decreasing, the team identified areas for improvement in the PI&R program. Specifically, some elements of the PI&R program have not been fully effective in resolving human performance issues. Human performance deficiencies have contributed to various problems occurring at the station including automatic reactor shutdowns, component mis-positionings, and procedure violations. We acknowledge that your staff identified similar findings and that increased management attention has been directed to this area, including the implementation of various enhancements in your PI&R program to improve performance.

Based on the results of the inspection, the NRC has determined that one violation of NRC requirements occurred. The violation is being treated as Non-Cited Violation, consistent with Section VI.A of the Enforcement Policy, issued on May 1, 2000 (65 FR 25368). The NCV involves five examples of failure to implement procedures in accordance with 10 CFR 50, Appendix B, Criterion V. The five examples involved: 1) four instances of failure to properly classify adverse trend corrective action items, and 2) one instance of failure to perform an operability review for over tightened clamps on station diesel cooling systems. If you contest the violation or its severity level, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN.: Document Control Desk, Washington, D.C. 20555-0001, with copies to the Regional Administrator, Region I, and the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, D.C. 20555-0001, and the NRC resident at the Limerick Generating Station.

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 Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/NRC/ADAMS/index.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Wayne D. Lanning, Director
Division of Reactor Safety

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

Enclosures: NRC Inspection Report 05000352/2000-005, 05000353/2000-005

cc w/encl:
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REGION I

Docket Nos.	05000352, 05000353
License Nos.	NPF-39, NPF-85
Report No.	50-352/2000-005, 50-353/2000-005
Licensee:	PECO Energy Correspondence Control Desk P.O. Box 195 Wayne, PA 19087-0195
Facilities:	Limerick Generating Station, Units 1 and 2
Location:	Limerick, PA 19468
Dates:	June 12 -16, 2000 June 26 - 30, 2000
Inspectors:	R. L. Nimitz, Team Leader A. Della Greca, Lead Reactor Inspector C. Cahill, Reactor Inspector D. Cullision, Project Engineer G. Morris, Reactor Inspector
Approved by:	John R. White, Chief Radiation Safety and Safeguards Branch Division of Reactor Safety

SUMMARY OF FINDINGS

IR 05000352-00-05; 05000353-00-05; on 06/12-16&26-30/2000; Limerick Nuclear Generating Station; Units 1&2; Other activities (Problem Identification and Resolution)

The inspection was conducted by a Region based team using NRC Baseline Inspection Procedure 71152, "Identification and Resolution of Problems," and covered the seven cornerstones of the NRC's Regulatory Framework as described in the NRC's revised reactor oversight process (See Attachment 1 to this Inspection Report). This inspection identified one Non-cited Violation (NCV) which was classified as NO COLOR. The significance of issues is indicated by their color (green, white, yellow, red) and is determined by the Significance Determination Process.

Problem Identification and Resolution

Overall, the Limerick Nuclear Generating Station was found to have an adequate problem identification and resolution (PI&R) program. Observations showed a well used multi-tier problem reporting system that included a daily multi-departmental panel review of each newly issued corrective action item to assess its significance, to assign responsibility, and to assign priority for resolution through the action item tracking process. Problem cause analysis was adequate for individual items including operability and reportability evaluations. Corrective actions were generally effective and found to be timely and commensurate with the safety significance of the issue. Based on numerous interviews conducted during this inspection, workers at the station felt free to input safety issues into the station's PI&R programs. The team identified areas for improvement in the PI&R program. For example, some elements of the PI&R program have not been fully effective in resolving common causes, particularly human performance issues. Human performance is a cross-cutting issue that had been identified as a contributor to various problems occurring at the station including automatic reactor shutdowns, component mis-positionings, and procedure violations. PECO identified similar areas for improvement and has initiated specific documented plans and actions to address this matter and improve performance in PI&R.

Cornerstone: Cross-cutting

– NO COLOR. A Non-cited Violation of 10 CFR 50, Appendix B, Criterion V, was identified associated with five examples of failure to implement the written procedures of the corrective action program, an activity affecting quality. Four examples involved failure to properly classify adverse trend corrective action items as required by the corrective action program procedure LR-CG-10. The adverse trend items were associated with various topics including component mis-positioning, procedure adherence, and reactor downpower events. The fifth example of failure to implement LR-CG-10 involved failure to conduct an operability evaluation of emergency diesel generators (EDGs) in April 2000, when PECO determined that 70 of 88 flexcoupling clamps on the cooling water systems of its EDGs were over tightened. The failure to implement the procedures of the corrective action program is considered more than a minor violation in that it suggests a programmatic problem that has a credible potential to impact safety and involved more than an isolated occurrence. (4OA2.3)

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Report Details

4. OTHER ACTIVITIES

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity, Emergency Preparedness, Occupational Radiation Safety, Public Radiation Safety, and Physical Protection

4OA2 Identification and Resolution of Problems (IP 71152)

1 General Discussion and Scope

The team evaluated the following aspects of the licensee's Problem Identification and Resolution (PI&R) programs.

- identification, characterization, and entry of problems/issues into the PI&R programs;
- evaluation and prioritization of the problems/issues;
- conduct of operability and reportability determinations for problems/issues, as appropriate;
- completion of corrective actions for problems/issues commensurate with their risk significance;
- identification and capture of problems/issues that could affect the unavailability of equipment tracked by performance indicators or the maintenance rule;
- consideration of total risk associated with combinations of risk significant issues; and
- presence of a work environment that promoted reporting of issues (e.g., safety conscious work environment).

The evaluation covered the seven cornerstones identified in the Regulatory Framework of NRC Manual Chapter 0305, "Operating Reactor Assessment Program" and included a review of cross-cutting issues which could affect multiple cornerstones. The team reviewed problem identification and resolution performance in operations and emergency preparedness, maintenance, engineering, and plant support areas (e.g., security, radiological safety, chemistry, effluent controls and radwaste). Individual issues were evaluated for completeness, accuracy, prompt evaluation of operability and reportability, and extent of condition. The evaluation covered licensee performance since the previous corrective action program inspection at the Limerick Station (July 1998).

The team selected documents from all levels of the PI&R programs, with a focus on risk significance, and evaluated the effectiveness of licensee actions on problems/issues discussed therein. The team reviewed a select example of the following documents: all levels and classes of performance enhancement process (PEP) documents; Non-cited Violations (NCVs); non-conformance reports (NCR); Licensee Event Reports (LERs); action requests (ARs); operating experience (OE) inputs; internal and external audit reports; self-assessments; reactor trip reports; control room deficiencies; operator workarounds; operability evaluations; system health reports; radiological occurrence reports; Nuclear Review Board (NRB) minutes; Plant Operations Review Committee (PORC) minutes, including overview minutes; Independent Station Engineering Group (ISEG) evaluations; selected engineering evaluations; and applicable program

procedures. The specific documents reviewed were chosen to acquire a sufficient cross sectional sample across all of the cornerstones. A listing of PI&R program documents reviewed by the team are listed in Attachment 2 of this report.

The team reviewed the implementation of performance monitoring of selected risk significant systems to verify licensee evaluation of functionality, availability, and equipment condition to ensure that the licensee appropriately captured issues that could affect the unavailability of equipment tracked by performance indicators and the maintenance rule. System selection was based on plant risk insights derived from review of the Limerick Individual Plant Evaluation (IPE) and the systems' significance under the maintenance rule. In addition, the team conducted plant walkdowns and interviewed licensee permanent and contracted staff throughout the inspection to: 1) determine their level of understanding of the problem identification and resolution programs including their effectiveness; and 2) the willingness of employees to raise safety issues for inclusion in the PI&R programs.

2 Problem/Issue Identification

a. Inspection Scope (71152)

The team reviewed issues from various licensee problem identification and resolution programs (See Attachment 2) to determine if identified risk significant problems were appropriately characterized and entered into the PI&R programs for resolution.

b. Issues and Findings

No significant issues or findings were identified during this inspection in the area of problem/issue identification.

Problems and issues were, in general, appropriately characterized and entered into the PI&R programs. There was generally a complete and accurate identification of the problem or issue, in a timely manner, commensurate with its significance and ease of discovery. Classification and prioritization of the problem or issue generally reflected its safety significance.

The station had a functioning Operating Experience (OE) Program that identified and processed information for distribution from sources both outside and inside the station. The team identified that OE items were properly processed via the system. However, one example was identified where an item placed in return status was not reassigned for review in a timely manner. OE item AR No. A1214103, NRC Information Notice 99-15, dated May 1999, (involving misapplication of 10 CFR 71 cask licensing basis) was placed in return status in August 1999, but was not reassigned for review and evaluation until May 2000 (10 months later). This item was, however, acted on by the cognizant group who received the information through other channels. The licensee had recognized similar issues and placed this matter into its corrective action program.

Self-assessment activities (SA) were actively pursued and SA findings were entered into the PI&R programs. Nuclear Quality Assurance(NQA), NRB and PORC performed overviews of station performance in the PI&R area.

The team concluded that overall, problem/issue identification was adequate at the Limerick Station.

3 Problem/Issue Cause Analysis

a. Inspection Scope (71152)

The team reviewed selected issues (See Attachment 2) from the PI&R program to determine if an appropriate problem/issue cause analysis was performed for conditions adverse to quality. The team evaluated the licensee's evaluation and disposition of any operability or reportability issues associated with these problems/issues.

b. Issues and Findings

The team found that there was generally good analysis of the cause of individual issues within the PI&R programs, including operability and reportability analysis.

Notwithstanding, one violation of 10 CFR 50, Appendix B, Criterion V, was identified, involving five examples of failure to implement problem identification and resolution program procedure, LR-CG-10, as discussed below.

Licensee procedure LR-CG-10, Rev. 4 Section 7.9.4, describes the process to issue adverse trend Performance Enhancement Program (PEP) action documents (i.e., trend PEPs), when apparent adverse trends are identified. The procedure specifies that a PEP, of at least the next highest category, be initiated to capture the analysis and identify appropriate corrective actions for adverse trends. A Class C PEP requires sufficient information to determine if additional investigation is warranted, a Class B PEP requires that an apparent cause analysis be completed, and a Class A PEP requires the use of specially trained personnel to conduct a structured evaluation to determine root causes.

The team found that the licensee had identified and issued trend PEPs for adverse trends, including component mis-positionings. However, four examples were identified where trend PEPs were not classified (for purposes of problem analysis) at a level of at least one significance level higher classification to ensure adequate review and evaluation of problem causes. As such, these trend PEPs did not always initiate detailed root cause analysis, including common cause analysis, to identify the cause(s) of the problem. For example, simple tracking of the rate of the problem appeared to be occurring in the area of component mis-positioning despite an increasing trend indicating that its common cause(s) may not be fully identified and corrected. Specific example PEPs include I0010737, Increased Occurrence of Down Power Events (Classification 3B), dated 4/19/2000; I0010608, Adverse Trends on Resolution of Operations PEP issues (Classification 3B), dated 3/17/2000; I0011184 FME Trend PEP (Classification 3B), dated 5/12/2000; and I0009497, a 1998 Adverse Component Mis-positioning Trend Analysis (Classification 3C), dated 3/17/99. Because each of these

PEPs included at least one Class A or B PEP as examples, each PEP was required to have been Classified as a Class A PEP requiring a detailed root cause analysis by appropriately qualified individuals as specified in procedures. The team's review indicated that these four adverse trend PEPs, had not received a formal root cause evaluation, and would not have received one based on their classification. The team also identified that the March 1999 adverse trend PEP, for component mis-positioning, had not received a formal root cause analysis.

A fifth example of failure to implement the problem identification and resolution procedure was identified in the area of failure to conduct an operability evaluation in accordance with the corrective action program procedure. Specifically, the licensee discovered on April 7, 2000, that its 14 emergency diesel generator (14EDG) had a jacket water leak on the cooling water line to the turbo-charger. The specific location of the leak was at a 2-inch flexcoupling on the control side of the turbo-charger. Action Request (A/R) A1260170 was initiated to document the deficiency and provide an operability recommendation for 14 EDG. Based on the maximum leak rate, the licensee determined that the 14 EDG was operable. The licensee also determined that the flexcoupling leak was a repeat maintenance item (the leak was due to improper tightening of the flexcoupling clamp during its installation) and that installation procedures for the clamps did not contain the recommended vendor torque values. The licensee appropriately conducted an extent of condition review of the eight EDGs and identified that 70 of the 88 flexcoupling clamps on the cooling water systems of these diesels were over-tightened. Although the licensee had conducted an operability review for the specific defective flexcoupling clamp found on the 14 EDG turbo-charger and found the diesel generator to be operable, the team identified that no additional operability reviews were conducted for the additional (aggregate) deficiencies, identified through the licensee's extent of condition review, on the safety-related diesels. This is inconsistent with Procedure LR-CG-10, Section 7.7.2, which requires that organizations responsible for implementation of corrective actions ensure that additional conditions adverse to quality (CAQs), identified during completion of corrective actions, including generic implication reviews, be evaluated for potential operability and reportability impact. Contrary to this requirement, the licensee did not evaluate, in the aggregate, the additional over tightened flexcoupling clamps and their potential operability impact on the eight EDGs. The licensee subsequently conducted an operability review of the EDGs, and associated over tightened couplings, as documented in evaluation number 5, of PEP I0011098, and found them to be operable.

The above-described five examples of failure to implement LR-CG 10, is considered a violation of 10 CFR 50, Appendix B, Criterion V, which requires that activities affecting quality (e.g., problem identification and resolution) be prescribed and accomplished by written procedures. This violation is considered more than a minor violation in that it suggests a programmatic problem that has a credible potential to impact safety and does not involve an isolated case. A subsequent operability review of the diesels, and the associated over tightened flexcoupling clamps, concluded that the diesels were operable. This violation was characterized as "No Color" by the NRC assessment process as described in NRC Manual Chapter 0610* Appendix E. This example of a Severity Level IV Violation is being treated as a Non-Cited Violation (NCV) consistent with Section VI.A of the Enforcement Policy, issued on May 1, 2000 (65 FR 25368). These examples of failure to implement the PI&R programs violation were documented

in PECO's corrective action program as PEPs I0011098 and PEP I0011031. **(NCV 050000357/2000-005-01; 050000358/2000-005-01)**

Overall, the team concluded that problems and issues entered into the problem identification and resolution programs were, in general, properly classified and prioritized for resolution, evaluations and root cause analyses reviewed were generally adequate, and operability and reportability analyses were generally adequate. However, one NCV was identified associated with five instances of failure to implement the PI&R program.

4 Effectiveness of Corrective Actions

a. Inspection Scope (71152)

The team reviewed the effectiveness of corrective actions to verify that corrective actions, commensurate with the problem or issue, were identified and implemented. The review included an evaluation to determine: if the licensee considered extent of condition, generic implications, common cause, and previous occurrences; classification and prioritization of the resolution of the problem/issue commensurate with its safety significance; identification of root and contributing causes of the problem for significant conditions adverse to quality; and evidence of completion of corrective actions in a timely matter commensurate with the safety significance of the issue. A listing of the problems and issues selected for review are presented in Attachment 2 of this report.

b. Issues and Findings

Generally, the team found that corrective actions, commensurate with the problem or issue, were identified and implemented for individual issues. The corrective actions considered extent of condition, generic implications, common cause, and previous occurrences. Further, there was identification of root and contributing causes of the problem for significant conditions adverse to quality and evidence of completion of corrective actions in a timely matter commensurate with the safety significance of the issue.

The team identified that the licensee had initiated various PI&R review and improvement initiatives over the past two years to improve performance in the PI&R area and had reduced the rate of recurrence of significant problems/issues over that time period. Notwithstanding, the team identified that, despite these PI&R program enhancement efforts, areas for improvement continued to exist within the PI&R program, and that its previous enhancement efforts had not been fully effective, particularly in the area of human performance. Examples include recent automatic reactor shutdowns, component mis-positioning events, and procedure adherence problems.

The licensee had self-identified areas for enhancement in its PI&R programs and has placed this issue into its PI&R program (PEP I0011031, dated March 13, 2000). As part of its enhancement efforts, the licensee had developed a draft leadership plan to address areas for improvement in the PI&R programs, implemented special teams to review various PI&R program elements, and had issued other PEPs to address additional areas for enhancement within the PI&R programs. The licensee also established a PEP Review Board to review and critique selected PEPs and had established a PEP mentor program to provide individual support of personnel

documenting PEPs. In addition, the licensee also established and implemented supplementary training for personnel on elements of the PI&R program.

Overall, the team concluded that the licensee's resolution of problems was generally adequate.

5 Identification and Capture of Issues that Could Affect Unavailability of Equipment

a. Inspection Scope (71152)

The team reviewed the licensee's efforts to appropriately identify and capture issues that could affect the unavailability of equipment tracked by the performance indicators and the maintenance rule.

b. Issues and Findings:

No significant issues or findings were identified.

The team concluded that the licensee was identifying and capturing issues that could affect the unavailability of equipment tracked by performance indicators and the maintenance rule.

6 Combinations of Risk Significant Issues

a. Inspection Scope (71152)

The team conducted a review to verify that the licensee was appropriately considering the risk (core damage frequency) associated with combinations of risk significant issues contained in its corrective action backlog.

b. Issues and Findings

No significant findings or issues were identified.

The licensee was appropriately considering the risk (core damage frequency) associated with combinations of risk significant issues. A Senior Reactor Operator (Control Room Supervisor) was assigned to the Work Control Center to interface between work control and the Control Room and monitor risk significant activities. Further, the Work Control Center was performing risk analyses, using risk calculating computer programs, for combinations of ongoing and emergent work activities as well as surveillance activities.

7 Safety Conscious Work Environment

a. Scope (71152)

The team conducted an inspection to assess whether there was indication that licensee personnel (permanent and contracted) may be reluctant to report safety issues. The team conducted interviews with plant personnel at various levels within the organization. The team interviewed contractors and permanent employees to determine if conditions existed that would challenge the establishment of a safety conscious work environment.

b. Issues and Findings

No significant issues or findings were identified.

Plant personnel were generally familiar with the processes that existed for raising safety issues and the team identified no instances where an individual had been restricted from or precluded from identifying safety significant issues. Site management encouraged the identification of problems. Workers had no reservations contacting the NRC if they believed their specific safety concern was not being adequately reviewed by internal programs.

The team concluded that workers at the Limerick Station were not reluctant to raise safety concerns.

8 Comparison of Team Results with Licensee Assessments in the PI&R Area

a. Scope (71152)

The team performed a comparison of the current licensee assessment of its performance in the area of problem identification and resolution relative to the team's overall conclusions.

b. Issues and Findings

No significant issues or findings were identified.

The team concluded that its findings generally compared to the licensee's findings. In particular, recent licensee internal and external audits have identified areas for improvement in the area of PI&R, particularly human performance. The team's findings were consistent with that finding.

4OA6 Management Meetings

1 Exit Meeting Summary

The team periodically met with cognizant licensee personnel during the inspection to discuss inspection issues and findings. On July 7, 2000, the team conducted an exit meeting at the Limerick Station and presented the inspection results to Mr. J. von Suskil and others. The licensee acknowledged the findings presented.

PARTIAL LIST OF PERSONNEL CONTACTED

PECO Nuclear

J. von Suskil, Vice President Limerick Generating Station
V. Angus, Maintenance Rule Coordinator
J. Armstrong, Director Site Engineering
O. Becker, Manager, Maintenance
D. Begian, Experience Assessment Engineer
J. Bendyk, System Manager
K. Bersticker, Experience Assessment Manager
T. Bell, Manager, Limerick Quality Division
R. Biechey, Reactor Operator
R. Boyce, Director, NQA
R. Braun, Limerick Plant Manager
E. Callan, Manager I&C Maintenance
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J. Cook, Supervisor, Maintenance Team 3
T. Dougherty, Shift Manager
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E. Harkness, Director, Maintenance Planning
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W. Harris, Manager, Radiation Protection
J. Hunter, Nuclear Quality Assurance
D. Harding, Supervisor, Maintenance Team 5
E. Kelly, Supervising System Manager
J. Karkoska, Analyst
R. Krieder, Manager, Maintenance Planning
R. Mandik, On-Site EP Manager
M. McCabe, Experience Assessment
R. McKinley, Control Room Supervisor
H. McNally, Manager Nuclear Security
C. Rich, Operations Support Manager
R. Ritter, Maintenance Team Leader
W. Schindleman, Operations Service Manager
R. Shires, Security Analyst
C. Smith, Manager, Nuclear Maintenance Division
D. Thompson, Nuclear Quality Assurance
J. Tucker, Senior Operations Manager
D. Walker, Work Week Manager
A. Wasong, Director, Training
K. Woodrum, Equipment Operator
S. Yurasits, I&C Supervisor

NRC

J. White, Chief, Radiation and Safeguards Branch, DRS

INSPECTION PROCEDURES USED

71152 Identification and Resolution of Problems

ITEMS OPENED, CLOSED, AND DISCUSSED/UPDATED

Opened/Closed

05000357&05000358/2000-005-01	NCV	An NCV of 10 CFR 50, Appendix B, Criterion V was identified associated with five examples of failure to implement the written procedures of the corrective action program.

Discussed/Updated - None

LIST OF ACRONYMS USED

ADS	Automatic Depressurization System
APRM	Average Power Range Monitor
CFR	Code of Federal Regulations
DC	Direct Current
EOP	Emergency Operating Procedures
ER	Event Response
FME	Foreign Material Exclusion
LA	Lightning Arrester
LCO	Limiting Condition for Operation
LGS	Limerick Generating Station
LER	Licensee Event Report
LOCA	Loss of Coolant Accident
MCRD	Main Control Room Deficiencies
MSIV	Main Steam Isolation Valve
MSPEV	Main Steam Pressure Equalizing Valve
NCV	Non-Cited Violation
NRC	Nuclear Regulatory Commission
OT	Operational Transient
PDR	Public Document Room
PECO	PECO Energy
PEP	Performance Enhancement Program
QA	Quality Assurance
RCA	Root Cause Analysis
RPS	Reactor Protection System
TRIP	Transient Response Implementing Procedures
TS	Technical Specification
UE	Unusual Event
UFSAR	Updated Final Safety Analysis Report

ATTACHMENT 1

NRC's REVISED REACTOR OVERSIGHT PROCESS

The 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.

ATTACHMENT 2

LIST OF DOCUMENTS REVIEWED

PROCEDURES

OPM-C	Operations Policy Manual
A-C-901 R10	Control of Non-conformances
A-C-901-07	Guidance for When to Use an NCR
A-C-905,	Quality Concerns and Allegations
AG-CG-19	Self-Assessment procedure
AG-CG-26.2 R6	Corrective Maintenance Action Request Initiation and Processing
AG-CG-041	Troubleshooting, Rework, and Testing (TRT) Control Process
IC-11-02031 R11	Replacement of Station Battery Cells
M-095-005 R0	Replacement of Safeguard Station Battery Cells
LR-C-4	Operating Experience Assessment Procedure
LR-C-10	Performance Enhancement Program
LR-CG-10	Performance Enhancement Program and Exhibits
RT-6-078-322-0	Appendix R Mobile Operability Test
SE-1-3	Protected Ventilation Source
SI-020	Security Inspection Module
SP-173 R3	D24 Diesel Generator Governor Test
SP-207 R1	D24 Diesel Generator Governor Response Test

PEPs

I0009021	Annunciators on Panel 1A-C870 Failed to Annunciate
I0009156	Inadvertently mis-positioned control rod 46–07 Unit 2
I0009193	Leak from “1B” RHR Heat Exchanger
I0009263	RCIC Steam bypass line would not depressurize/valve problem
I0009324	HV-12-11B RHRSW return to U1 cooling tower failed to close
I0009427	114D load center breaker tripped
I0009497	1998 Adverse Component Mis-positioning Trend Analysis
I0009711	2A condensate pp clearance ground was improperly implied
I0009716	Water drained from U1 CST while draining the U2 HPCI system
I0009911	Relief Valve PM performed effecting ADS valve operability
I0010153	The manual initiation of a MCR Chlorine Isolation
I0010215	Incomplete turnover checklist reviews and documentation
I0010272	Found valves HV-057-247 and 246 out of position
I0010293	U2 HPCI room cooler air operated inlet valve found out of position
I0010439	Failure of the pressure regulator valve caused leak in flow indication
I0010480	Findings of Quarterly Review of Operations’ EFO cards
I0010608	Adverse trends on resolution of Operations PEP Issues
I0010647	Scram caused by during troubleshooting of BOP battery ground
I0010731	Block valves for 2A ADS BU Gas Supply Header found closed
I0010737	Increased occurrence of LGS downpower events
I0010759	Trend PEP to track and address problems with trip procedures
I0010760	Trend PEP to track and address problems with ON’s, OT’s, and STs
I0010793	Work group tagging deficiencies
I0010898	Ops work planning and execution during WW0010
I0010951	RS Individual did not satisfy the TS management requirement
I0011031	Limerick Leadership Plan for Excellence in Human Performance
I0011131	Human Performance Program Improvements
I0011139	Unit Cooler Inlet Valves mis-positioned during post-mod test
I0011239	Work Coordination identified through EFO

I0011240	Attention to detail issues occurred during test performance
I0011241	Procedure Quality Trend Issues for Operations
I009873	Procedure discrepancy when returning 1A RFP to service
I0009301	Use of Unqualified Craft
I0009310	Repeat Maintenance of Fire Panel 10-C289
I0009376	Repeat Maintenance on Fire Panel A4-278
I0009732	C Chlorine Detection System MRFF
I0009816	BOP Battery Cell Slipped Out of Sling
I0010217	D-12 DG Air Receiver Compartment Gasket Leakage
I0010476	Functional Failure of the “A” Chlorine Detector
I0010612	Performance Issues: D24 Overhaul and Special test Sp-173
I0010740	Power Range Mod Delay
I0010812	Reactor Water Cleanup Mod
I0010820	Weld Deficiencies
I0010842	Inadequate Weld Verification
I0010953	Improve Transition to On-Line Schedule
I0010962	75 Watt Lighting Fixtures with 150 Watt bulbs installed
I0011083	Power Range Installation Problems
I0011098	D-14 Turbocharger Water Supply Pipe Coupling Leak
I0011179	Scram and Turbine Trip from fault at Main Transformer
I0011184	Trend PEP Associated with FME
I0011215	Spurious Actuation of the Fire Protection CO_2 System
I0011244	Appendix R Diesel Generator Failure to Start
I0011254	Diesel Fire Pump Battery
I0011260	Wire found energized during motor determination
I0011264	Clearance and Tagging Self Assessment
I0011327	Adverse Trend in Human Performance
I0011356	LTA Awareness of Surroundings A Direct Contributor to Injuries
I0011357	Adverse Trend Associated with Procedure Use
I0011358	Infrequently Performed Tasks Have lead to Quality Issues
I0011359	record Keeping in Vendor Files
I0011364	Foreign Material Found in RWCU Pump Impeller Eye
I0011425	Evaluate Appendix R Diesel Unavailability
I0008476	Assess Ineffective Engineering Corrective Actions for PEPs
I0008784	“A” Loop ESW High Differential Flow Alarm Repeat Maintenance
I0008796	“B” ESW Loop Declared Inop due to Reverse Flow PMT not Completed
I0008819	Incorrect Value Reported for EDG Fuel Oil Sample
I0008899	D11 D/G Became Inoperable Due to Air Coolant Water Leak
I0009024	Missed Fire Watch for Electric Cord Run under Battery Room Door
I0009038	HV-051-1F007A not Reopened Following Shutdown of RHR Pump
I0009097	ECR showed Battery Emergency Lighting Unit to be Mounted on Seismic I Support
I0009193	Leak from the RHR Heat Exchanger
I0009383	Fire Area 64 Fire Induced Fault Concern-RECW 480V Power Cable
I0009427	114D Load Center Breaker Tripped
I0009956	Inadvertent ESW Pump Start during the Performance of RT
I0009964	Unit 1 HPCI Fails to Start
I0010154	D12 Failed to Start Following Prelube During Slow Start
I0010164	On Unit 1 a RPS Channel A2 Half Scram was Received
I0010220	D23 - #2 Cylinder Relief Valve Adapter Plug Found Loose
I0010619	1B RHR Pump Minimum Flow Valve Found Closed
I0010647	Scram Caused During Troubleshooting of BOP Battery Ground

I0011089 Thin Wall Condition Identified at Valve and Pipe Weld
I0011116 HPCI Shaft Spiral Gear Lock Nut Does Not Match Requirements
I0011141 No Unit 1 Head Flange O-Rings Onsite to Support Reactor Assembly
I0011299 Unqualified Individual Performed PIRL Function
I0011031 Corrective Action process had not Prevented Recurrence of Some Events
I0010485 Security Issues Due to Support Organization Errors
I0011003 Workers Entered Drywell Under Wrong RWP
I0010735 Rad material Outside RCA
I0011124 Radioactive Material Labeling
I0009654 Skin Dose Documentation Deficiencies
I0009617 HP Technician Qualifications
I0010704 RF Interference
I0009722 Workers Crossed Boundary
I0009463 Security
I0009238 Security

Action Requests
1099758 EA for IN 97-48
1224272 MSIV Poppet Separation at River Bend
1237769 Evaluate Alternate Material for Poppet Nut
1265126 Unit 1 RWCU Low Flow
1265666 Track Miscellaneous Tasks for the Work Support Group
1265988 Appendix R Diesel Failed to Start
1266718 Unit 1A RWCU Low Flow/ Head and High Vibration
1262784 Evaluate Options for Replacing Unit 1 Drywell Head O-Rings
12301170 Self assessment for 1999 for Operations Department
1151982 Site Engineering Self Assessment 1998 -
1233196 1999 Self Assessment - Site Engineering Self Assessment Items

Operating Experience
A1159505 IN 98-23; Crosby Relief Valve Setpoint Drift Guide Ring Corrosion
A1161166 GL 98-04; Protective Coatings and Foreign Materials
A1161833 GE SIL 620; BRW5-6 Reactor Recirculation System Pump Discharge Gate Valve
A1167715 SOER 98-1; Safety System Status Control
A1194745 10CFR21; Agastat E7000 Timing Relay Application
A1216917 10CFR21; Rosemount 510DU/710DU C25 Capacitor
A1229308 10CFR21 Engine Systems Inc.; Defect in Woodward Type EGM
A1232212 10CFR21 ABB K-Line Circuit Breaker After Repair
A1239298 10 CFR Part 21 Report - ABB K-Line Breaker Defects
A1243765 10CFR21 - ABB HK Breaker Roller Hardness
A1263221 NRC 10CFR21 Westronics 1200BC Recorders
A1247037 SOER 99-01, Loss of Grid, Recommendations 1A-1E
A1247090 SOER 99-01, Loss of Grid, Recommendation #3
A1258680 NRC Information Notice 2000-06, Offsite Power

Non-Conformance Reports
LG-92-00310-001 Appendix R Diesel Generator
LG-99-02845 R2 D24 Frequency Less Than 57 HZ during SP-173
A1073629 Ground Detection Panel Fuses and Ground Detection Relay Sensitivity
A1152957 MOV NCR Due to Loss of Limitorque Actuator Run Efficiency
A11 55159 EMI Suppression for RRCS SLC and Feedwater Output Circuits

A1158508 HV-55-1F003 NCR Due to Loss of Actuator Run Efficiency
A1169498 ECR 98-02283 Change Eight MCC Breakers and Change Setpoints

Audits/Self Assessments

Work Management Division Self-Assessment 2000
ISEG-L-99-009 Review of Post Maintenance Testing
ISEG-L-99-028 Review of Maintenance Backlog at Limerick
LSR-99-0119 NQA surveillance Report, D24 five-Year PM Overhaul
I0010502 Level-of-Effort ECR Quality Deficiencies
I0011035 Human Performance/Organization Issues Impact Design Change Quality
1998/1999 Radiation Protection Self-Assessment
1999 Plant Division Self-Assessment
2000 Limerick Chemistry Self-Assessment
2000 Nuclear Security Self-Assessment

Licensee Event Reports

2-99-002 Loss of Voltage to 2AY160 Panel Due to Breaker Arcing (PEP I0009720)
2-98-001 Three out of Four Relayed Emergency Trip System Pressure Switches Found Below the Technical Specification Minimum Setting (PEP I0008511)

Non-Cited Violations (NCV)

98-08-01 Steam jet Air ejector sample flow
98-08-07 RETS pressure switches below minimum
98-09-01 Failure to follow procedures for cask handling
99-08-01 Failure to perform a safety analysis for a procedure (PEP I0009959)
99-08-02 Failure to restore the RWCU isolation logic within the allowed outage time (PEP I0009959)
99-04-01 Failure to collect off-gas sample
99-10-02 Non-redundant Rigging

Other Information

Diesel Generator D21 Troubleshooting Plan
Diesel Generator D24 Load Test Results - SP-179, 8/1/97
Diesel Generator D24 Load Test Results - SP-173, 1/22/99
Diesel Generator D24 Load Test Results - LOCA/LOOP, 4/18/99
Diesel Generator D24 Load Test Results - SP-207, 6/14/00
Specification for Post-Fire Safe Shutdown Program Requirements at Limerick Generating Station
99-CG0-1028/10/28/99 Emergency Preparedness Investigation
MAY 20, 2000 LGS Senior Management Report
Lists 1998, 1999, & 2000 Component Mis-positionings
November 30, 1998 EP Practice Drill Report
December 14, 1999 EP Practice Drill Report
List MCR deficiencies >60 days old
May 30, 2000 LGS Equipment Performance and Material Condition Report

NRB/PORC/ISEG Reports and Minutes

Selected 1998/199/2000 reports and minutes including
ISEG-L-98-25 Review of Replacement Program for Safety Related Non-EQ Agastat Relays
ISEG-L-99-13 Impact of PEP Issue Review Leader Population on Generation of Effective Corrective Actions
ISEG-L-00-01 Review of Safety System Unavailability at Limerick and Peach Bottom

ASAR 1998 Annual Summary Assessment Report for Limerick Generating Station
ASAR 1999 Annual Summary Assessment Report for Limerick Generating Station
98-049 Review of Procedure A-C-226, PEP I0008322, and NCR 98-01234 Safety Evaluation
98-053 Review of Unit 1 Suppression Pool Vacuum Breaker Operability
98-054 Review of NCR-98-01367 Safety Evaluation
99-016 Review of ECR 98-3090 Safety Evaluation
99-019 Review of Modification P00781-2 and Special Procedure SP-194
99-048 Overview PORC, August 24, 1999
99-066 Overview PORC, November 23, 1999
00-003 Overview PORC, January 24, 2000
00-027 Overview PORC, May 22, 2000
NRB Meeting 356, dated March 4, 1999
NRB Meeting 358, dated June3, 1999
NRB Meeting 363, dated December 2, 1999

Engineering Change Requests
LG 98-01515 MOV NCR Due to Loss of Limitorque Actuator Run Efficiency
LG 98-01334 MOV NCR Due to Loss of Limitorque Actuator Run Efficiency
LG 00-00686 Evaluate Options for Replacing Unit 1 Drywell Head O-Rings