February 14, 2002

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

SUBJECT: LIMERICK GENERATING STATION - NRC INSPECTION REPORT
50-352/01-17, 50-353/01-17

Dear Mr. Kingsley:

On February 9, 2002, the NRC completed an inspection at your Limerick Generating Station Units 1 and 2. The enclosed report documents the inspection findings which were discussed on February 13, 2002, with Mr. R. Braun and other members of your staff.

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

No findings of significance were identified.

Immediately following the terrorist attacks on the World Trade Center and the Pentagon, the NRC issued an advisory recommending that nuclear power plant licensees go to the highest level of security, and all promptly did so. With continued uncertainty about the possibility of additional terrorist activities, the Nation's nuclear power plants remain at the highest level of security and the NRC continues to monitor the situation. This advisory was followed by additional advisories, and although the specific actions are not releasable to the public, they generally include increased patrols, augmented security forces and capabilities, additional security posts, heightened coordination with law enforcement and military authorities, and more limited access of personnel and vehicles to the sites. The NRC has conducted various audits of your response to these advisories and your ability to respond to terrorist attacks with the capabilities of the current design basis threat (DBT). From these audits, the NRC has concluded that your security programs are adequate at this time.

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 the NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm.html (The Public Electronic Reading Room).

Sincerely,

/RA/

Mohamed Shanbaky, Chief
Project Branch 4
Division of Reactor Projects

Docket Nos.: 50-352; 50-353
License Nos: NPF-39; NPF-85

Enclosure: Inspection Report 50-352/01-17, 50-353/01-17

Attachment 1: Supplemental Information

cc w/encl: C. G. Pardee, Senior Vice President, Mid-Atlantic Regional Operating Group
W. Bohlke, Senior Vice President - Nuclear Services
J. Cotton, Senior Vice President - Operations Support
J. Skolds, Chief Operating Officer
M. Gallagher, Director - Licensing Mid-Atlantic Regional Operating Group
J. Benjamin, Vice President - Licensing and Regulatory Affairs
W. Levis, Vice President - Limerick Generating Station
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OFFICE	RI/DRP		RI/DRP		RI/DRP	
NAME	Bwelling/MS for		DFlorek/DF		MShanbaky/MS	
DATE	02/14/02		02/14/02		02/14/02	

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U.S. NUCLEAR REGULATORY COMMISSION

REGION 1

Docket Nos: 50-352; 50-353

License Nos: NPF-39, NPF-85

Report No: 50-352/01-17, 50-353/01-17

Licensee: Exelon Generation Company, LLC

Facility: Limerick Generating Station, Units 1 & 2

Location: Evergreen and Sanatoga Roads
Sanatoga, PA 19464

Dates: December 30, 2001 thru February 9, 2002

Inspectors: A. Burritt, Senior Resident Inspector
B. Welling, Resident Inspector
J. Talieri, Reactor Engineer
F. Jaxheimer, Reactor Inspector
J. Noggle, Senior Health Physicist
G. Smith, Senior Security Specialist
R. Bhatia, Reactor Inspector

Approved by: Mohamed Shanbaky, Branch Chief
Projects Branch 4
Division of Reactor Projects

SUMMARY OF FINDINGS

IR 05000352-01-17, IR 05000353-01-17; on 12/30-02/09/2002; Exelon Generation Company; Limerick Generating Station, Units 1 and 2; Resident Inspector Report.

This report was conducted by resident inspectors, regional reactor inspectors, a regional security specialist, and a regional health physics specialist. The inspection identified no findings of significance.

The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter 0609, “Significance Determination Process” (SDP). Findings for which the SDP does not apply are indicated by “No Color” or by the severity level of the applicable violation. The NRC’s program for overseeing the safe operation of commercial nuclear power reactors is described at its Reactor Oversight Process website at http://www.nrc.gov/NRR/OVERSIGHT/index.html.

Report Details

Summary of Plant Status

Unit 1 began this inspection period operating at 100% power, in end-of-cycle coastdown. Power level at the end of the period was approximately 94%. The Unit remained within this range of power level except for brief periods of planned testing and maintenance.

Unit 2 began this inspection period operating at 100% power and remained at or near that power level except for brief periods for planned testing and control rod pattern adjustments.

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

1R04 Equipment Alignment (71111.04)

a. Inspection Scope

The inspectors performed a partial walkdown of the Unit 1 'B' residual heat removal subsystem, while the Unit 1 'A' residual heat removal subsystem was out of service for planned maintenance. The inspectors used piping and instrumentation diagram 8031-M-51. The walkdown included reviews of valve positions, major system components, and electrical power availability.

The inspectors also performed partial walkdowns of D21, D22, D23 emergency diesel generators, while the D24 emergency diesel generator was out of service for planned maintenance. The inspectors used procedures S92.9.N, "Routine Inspection of the Diesel Generators," and S92.1.N, "Diesel Generator Setup for Automatic Operation Following Maintenance." The walkdowns included reviews of valve positions, major system components, electrical power availability, and equipment deficiencies.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05)

a. Inspection Scope

The inspectors toured high risk areas at both Limerick units to assess Exelon's control of transient combustible material and ignition sources, fire detection and suppression capabilities, fire barriers, and any related compensatory measures. The inspectors reviewed the respective Pre-Fire Action Plan procedures and Section 9A of the Updated Final Safety Analysis Report (UFSAR). The fire areas included:

- Unit 1 'A' Core Spray Room (fire area 35)
- Unit 1 high pressure coolant injection room (fire area 34)
- Unit 1 reactor core isolation cooling room (fire area 33)

The inspectors also used the NRC's Temporary Instruction 2515/146 in examining hydrogen storage locations. The inspectors verified that greater than 50 feet distance existed between the hydrogen storage locations and the following:

- ventilation intakes
- Safety-related water tanks
- Safety related or risk significant structures, systems, and components.

The inspectors walked down hydrogen lines, hydrogen bulk storage locations, and primary usage locations. The inspectors also discussed information with engineering and operations personnel.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program (71111.11)

a. Inspection Scope

On February 7, 2002, the inspector observed a licensed operator requalification simulator evaluation (as found scenario) to assess licensed operator performance and the evaluator's critique. The inspector discussed the results with operators, operations management, and instructors. The inspector also referred to the simulator scenario document, LLSES 8000, and the following off-normal plant procedures and emergency procedures:

- ON-120, Fuel Handling Problems
- ERP-101, Classification of Emergencies

b. Findings

No findings of significance were identified.

1R12 Maintenance Rule Implementation (71111.12)

a. Inspection Scope

The inspectors reviewed Exelon's actions with respect to the maintenance rule for equipment performance problems associated with:

- D12 emergency diesel generator fuel oil transfer pump trip
- Fiber found in the D24 emergency diesel generator lube oil strainer
- Elevated vibration on the Unit 1 high pressure coolant injection booster pump

The inspectors reviewed associated maintenance action requests (AR) and condition report (CR) corrective action documents including CR 89513, A1351020, A1231775, CR 90714, and A1351673.

b. Findings

No findings of significance were identified.

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

a. Inspection Scope

The inspectors reviewed Exelon's risk management and risk assessments as required by 10 CFR 50.65 (a)(4). The inspectors reviewed the Sentinel on-line risk assessment results, risk management activities, work control center planning and scheduling, and emergent work-related activities. The inspectors reviewed the following emergent and planned maintenance activities.

- Unit 1 'A' residual heat removal system outage window
- D12 emergency diesel generator fuel oil transfer pump trip

b. Findings

No findings of significance were identified.

1R14 Personnel Performance Related to Non-routine Plant Evolutions and Events (71111.14)

a. Inspection Scope

The inspectors observed and reviewed licensed operator performance in the control room during two non-routine events:

- Unit 1 reactor water cleanup non-regenerative heat exchanger swap on January 10
- Unit 2 minor reactor vessel water level transient on January 26

In assessing operator performance, the inspector reviewed the following documents:

- OT-100, Reactor Low Level
- OT-104, Unexpected/Unexplained Positive or Negative Reactivity Insertion

c. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

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

- D12 emergency diesel generator fuel oil transfer pump trip (A1351113)
- 1 'A' core spray full flow test valve failure (A1352034)
- Unit 1 'B' residual heat removal heat exchanger leak (A1354134)

The inspectors reviewed the applicable action request documents, discussed the evaluations with station personnel, and referred to Exelon procedure LS-AA-105, Operability Determinations.

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing (71111.19)

a. Inspection Scope

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

- 1'B' core spray system maintenance
- D24 emergency diesel generator overhaul maintenance
- Unit 1 high pressure coolant injection minimum flow valve maintenance

The inspectors referred to associated testing procedures and work order documents, including:

- ST-6-055-230-1, A1354931, and A1354927

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

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

- ST-2-052-801-1, 1A core spray response time test
- ST-6-092-312-2, D22 emergency diesel generator slow start surveillance test

b. Findings

No findings of significance were identified.

EMERGENCY PREPAREDNESS [EP]

1EP6 Drill Evaluation (71114.06)

a. Inspection Scope

The inspector observed an emergency preparedness drill in the simulator on February 7, 2002. The drill was a regularly scheduled activity that was credited toward the Drill and Exercise Performance and Emergency Response Organization Drill Participation performance indicators. The inspector evaluated the conduct of the drill and adequacy of Exelon's critique of performance to identify weaknesses and deficiencies.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY
Cornerstone: Occupational Radiation Safety

2OS2 ALARA Planning and Controls

a. Inspection Scope

The inspector reviewed the As Low As is Reasonably Achievable (ALARA) plans and dose estimates for the upcoming March 2002, Limerick Unit 1 ninth refueling outage. This included a review of historical plant trends and current operating chemistry parameters associated with shutdown plant piping dose rates. The additional chemistry parameter review was initiated due to some potential dose rate changes associated with noble metal chemical application that was initiated at the beginning of the current fuel cycle. Information reviewed included:

- Historical Limerick Unit 1 outage plant piping dose rate trend data with respect to potential dose rates for the March 2002 refueling outage.

- Chemistry reactor water sample results since March 2000 for cobalt-60 and zinc concentrations. This data was reviewed with respect to current General Electric and Electric Power Research Institute guidance.

The inspector reviewed Exelon's ALARA plans for the Spring 2002 Unit 1 refueling outage. As part of this review, the following highest exposure outage task estimates for the drywell were reviewed:

- in-service inspection
- insulation removal/installation

- scaffold erection/removal
- under vessel work
- control rod drive replacement
- snubber inspection

The accuracy of the exposure estimates were evaluated relative to information and criteria contained in the following documents and interviews:

- Station ALARA council January 24, 2002 meeting minutes
- Limerick Generating Station 1R09 refueling outage 2 month readiness review January 15, 2002 meeting handouts
- Attendance at the January 30, 2002, weekly outage readiness meeting
- ALARA pre job reviews and exposure estimate for the above drywell outage tasks
- Applicable Limerick Unit 1 outage task dose histories
- Work group interviews with respect to: scaffold, in-service inspection, drywell shielding, and snubber work plans and drywell work schedule sequencing
- Interviews with three ALARA radiological engineers and the Radiological Engineering Manager

b. Findings

No findings of significance were identified.

2OS3 Radiation Monitoring Instrumentation (71121.03)

a. Inspection Scope

The inspector reviewed calibration methods and documentation of current calibrations of the Shepherd models 89 and 142 calibrators, the Sr/Yr-90 source rig, and the LGS-730 Co-60 area radiation monitor (ARM) calibrator. These calibrators were used for the calibration of radiation monitoring instrumentation.

The inspector reviewed the calibration methods and associated calibration records, for the following permanent in-plant instruments, relative to requirements contained in applicable calibration procedures:

- Unit 1 and 2 main steam line radiation monitors
- Unit 1 and 2 refuel floor ventilation exhaust radiation monitors
- Radwaste enclosure ventilation exhaust radiation monitor
- Control room ventilation radiation monitor
- Unit 1 and 2 inner transverse in-core probe room ARM
- Unit 1 and 2 refuel floor and refueling bridges ARMs
- Unit 1 and 2 drywell high range gamma monitors
- Unit 1 and 2 turbine enclosure east and west ARMs

Portable health physics survey instrument calibration methods and selected in-use instrument calibration documents were also reviewed for the following radiation survey instruments, contamination survey instruments, personnel electronic dosimeters, and air sample instruments:

- Eberline RO-2 ion chambers (5)
- Eberline RO-2A ion chambers (5)
- Eberline RO-20 ion chambers (3)
- Bicron microR meters (2)
- Eberline EC4-8 area radiation monitors (2)
- Eberline ASP-1/PNR-4 neutron radiation monitor (1)
- Nuclear Enterprises Delta 5 contamination monitors (3)
- Eberline AMP 100/200 radiation monitors (2)
- Rados Rad-51R electronic dosimeters (12)
- Eberline E-520 radiation monitors (2)
- Eberline SAC-4 alpha counters (2)
- Gilian HFS-513A Lapel air samplers (5)
- SAIC Radeco air samplers (2)
- Eberline Low volume air samplers (2)
- Telepole GM radiation survey instrument (3)

Emergency Plan specified self contained breathing apparatus (SCBA) locations in the Unit 1 and Unit 2 control room, the operations support center, the technical support center, and the SCBA Eagle air compressor room were visited and the SCBA units and spare breathing air bottles were examined for operability and inspection history. The current control room shift staffing roster was utilized to review all on-shift control room operators for currency of SCBA use qualifications.

Condition reports with respect to radiation monitoring instrumentation or emergency SCBA use were reviewed from January 1, 2001 through January 7, 2002. Specific condition reports reviewed were: 77682, 75989, 80860, 84341, 86946, 61273, 60932, 61025, 61267, 61278, 86409, 87494.

b. Findings

No findings of significance were identified.

3. SAFEGUARDS
Cornerstone: Physical Protection

3PP1 Access Authorization Program (71130.01)

a. Inspection Scope

The following activities were conducted to determine the effectiveness of Exelon's behavior observation portion of the personnel screening and fitness-for-duty programs as measured against the requirements of 10 CFR 26.22 and Exelon's Fitness-for-Duty Program documents.

Five supervisors representing the Operations, Maintenance, Radiation Protection, Security, and Emergency Planning departments were interviewed on January 16, 2002, regarding their understanding of behavior observation responsibilities and the ability to recognize aberrant behavior traits. Two (2) Access Authorization/Fitness-for-Duty self-

assessments, two semiannual Fitness-for-Duty performance data reports, an audit, and event reports and loggable events for the four previous quarters were reviewed during January 14-16, 2002. On January 16, 2002, five (5) individuals who perform escort duties were interviewed to assess their knowledge level of those duties. Behavior observation training procedures and records were reviewed on January 15, 2002.

b. Findings

No findings of significance were identified.

3PP2 Access Control (71130.02)

a. Inspection Scope

The following activities were conducted during the inspection period to verify that Exelon 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 as measured against 10 CFR 73.55(d) requirements, the Physical Security Plan, and Procedures.

Site access control activities were observed, including personnel and package processing through the search equipment during peak ingress periods on January 15 and 16, 2002. Two vehicle searches were observed on January 15, 2002. On January 16, 2002, testing of all access control equipment, including metal detectors, explosive material detectors, and X-ray examination equipment, was observed. The Access Control event log, an audit, and three (3) self-assessments were also reviewed.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES [OA]

4OA1 Performance Indicator Verification (71151)

a. Inspection Scope

The inspector reviewed implementation of Exelon's Occupational Exposure Control Effectiveness Performance Indicator Program to verify that occurrences meeting the criteria specified in Nuclear Energy Institute (NEI) 99-02, Regulatory Assessment Performance Indicator Guideline, Revision 1, were identified and reported as Performance Indicator occurrences. Specifically, the inspector reviewed Condition Reports, and other pertinent documents, for occurrences involving locked high radiation areas, very high radiation areas, and unplanned personnel exposures covering the first quarter 2001 through the fourth quarter 2001, against the specified criteria.

b. Findings

No findings of significance were identified.

4OA3 Event Follow-Up (71153)

.1 LER 1-97-014

In December 1997, the 'B' residual heat removal service water system pump tripped on a spurious high radiation signal, when a worker bumped a degraded cable for the 'B' residual heat removal service water radiation monitor. Chemistry sampling verified there was no release of radioactive material, and the cable was replaced. This issue was documented in Exelon's corrective action program as PEP I0007739. No findings of significance were identified. This LER is closed.

4OA6 Meetings, Including Exit

.1 Exit Meetings

The inspectors presented the inspection results to Mr. Braun, Plant Manager and other members of station management on February 13, 2002.

The physical security inspector presented the results of a physical security inspection to Exelon representatives at the conclusion of the inspection on January 17, 2002.

The health physics inspector presented the results of a pre-outage ALARA planning inspection, conducted on January 28 to February 1, 2002, to members of Exelon management at the conclusion of the inspection on February 1, 2002. The health physics inspector also conducted an occupational radiation safety inspection on January 7 to January 11, 2002. The results of the inspection were discussed with members of the Exelon staff on January 11, 2002.

The inspectors asked Exelon whether any materials examined during the inspections should be considered proprietary. No proprietary information was identified.

ATTACHMENT 1 - SUPPLEMENTAL INFORMATION

a. Key Points of Contact

Exelon Generation Company

R. Braun	Plant Manager
E. Callan	Director - Maintenance
W. Harris	Radiation Protection Manager
M. Kaminski	Regulatory Assurance Manager
W. Levis	Site Vice President
C. Mudrick	Director - Engineering
W. O'Malley	Director - Operations
J. Stone	Director - Outage Management
P. Supplee	Manager, Nuclear Security
J. Tucker	Senior Manager - Plant Engineering

The Wackenhut Company

T. Ely	Project Manager
J. Lotz	Training Supervisor

b. List of Items Opened, Closed, and Discussed

Closed

LER 1-97-014	Residual Heat Removal Service Water System Pump Trip on High Rad Signal

c. List of Documents Reviewed

LAR-00-002, Security Program Audit, February 2000
NOA-LG-01-02, Continuous Assessment Report, June 2001
NOA-LG-01-03, Continuous Assessment Report, September 2001
Exelon Fitness-for-Duty Training Requirements
Fitness-for-Duty Performance Data Report, January-June 2001
Fitness-for-Duty Performance Data Report, July-December 2001
Loggable Event Log - 2001

d. List of Acronyms

ALARA	as low as reasonably achievable
AR	action request
ARM	area radiation monitor
CFR	Code of Federal Regulations
CR	Condition Report
DBT	Design Basis Threat
LER	licensee event report
LGS	Limerick Generating Station
NEI	Nuclear Energy Institute
SCBA	self-contained breathing apparatus
SDP	significance determination process
UFSAR	Updated Final Safety Analysis Report