

July 13, 2001

Mr. Oliver D. Kingsley, President  
Exelon Nuclear  
Exelon Generation Company, LLC  
Quad Cities Nuclear Power Station  
4300 Winfield Road  
Warrenville, IL 60555

SUBJECT: QUAD CITIES NUCLEAR POWER STATION  
NRC INTEGRATED INSPECTION REPORT 50-254/01-10; 50-265/01-10

Dear Mr. Kingsley:

On June 30, 2001, the NRC completed an inspection at your Quad Cities Units 1 and 2 reactor facilities. The enclosed report documents the inspection findings which were discussed on June 27, 2001, with Mr. Tulon and other members of your staff.

The 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 selected procedures and records, observed activities, and interviewed personnel.

No findings of significance were identified.

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Sincerely,

*/RA/*

Mark A. Ring, Chief  
Branch 1  
Division of Reactor Projects

Docket Nos. 50-254; 50-265  
License Nos. DPR-29; DPR-30

Enclosure: Inspection Report 50-254/01-10; 50-265/01-10

See Attached Distribution

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket Nos: 50-254; 50-265  
License Nos: DPR-29; DPR-30

Report No: 50-254/01-10; 50-265/01-10

Licensee: Exelon Nuclear

Facility: Quad Cities Nuclear Power Station, Units 1 and 2

Location: 22710 206th Avenue North  
Cordova, IL 61242

Dates: May 17 through June 30, 2001

Inspectors: C. Miller, Senior Resident Inspector  
J. Adams, Resident Inspector  
T. Madeda, Physical Security Inspector  
T. Ploski, Emergency Preparedness Inspector

Approved by: Mark Ring, Chief  
Branch 1  
Division of Reactor Projects

## SUMMARY OF FINDINGS

IR 05000254-01-10, IR 05000265-01-10, on 05/17 - 06/30/2001, Exelon Nuclear, Quad Cities Nuclear Power Station, Units 1 & 2.

The inspection was conducted by resident and specialist inspectors. Based on the results of this inspection, there were no findings. 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

### 1. REACTOR SAFETY

#### Plant Status

Unit 1 and Unit 2 operated the entire period at or near full power except for minor power decreases for turbine testing and control rod pattern adjustments.

#### 1R01 Adverse Weather (71111.01)

##### a. Inspection Scope

The inspectors selected offsite alternating current power sources and the turbine building closed cooling systems, both risk significant systems that can be challenged by elevated air and water temperatures. In addition, the inspectors reviewed the ability of the combination of the drywell coolers, reactor building closed cooling water, and service water to maintain drywell temperature less than the Technical Specification limit.

The inspectors toured the facility and reviewed the drywell, turbine building closed cooling water, reactor building closed cooling water, service water, and alternating current transformer temperatures and observed the materiel condition of the installed cooling and temperature control equipment. The inspectors compared indicated equipment temperatures and drywell temperatures with temperature alarm setpoints where applicable. The inspectors reviewed the following documents:

- Updated Final Safety Analysis Report, Sections 6.2, 9.2, and 9.5;
- Technical Specification 3.6.1.5, Drywell Air Temperature;
- Technical Specification 3.6.1.5, Bases;
- Quad Cities Operating Procedure 0010-10, "Required Hot Weather Routines," Revision 1;
- Quad Cities Operating Surveillance Procedure, "Environmental Qualification Area Temperature Surveillance," Revision 5;
- Quad Cities Operating Surveillance Procedure, "Drywell Average Air Temperature Monitoring," Revision 0; and
- Condition Reports Q2001-01388, Q2001-01515, Q2001-01628, Q2001-01897, and Q2001-01904.

##### b. Findings

No findings of significance were identified.

#### 1R04 Equipment Alignments (71111.04)

##### a. Inspection Scope

On June 12, 2001, the inspectors verified the system alignment of the Unit 1, Unit 2, and the Unit ½ emergency diesel generators. The inspectors verified the correct system alignment of the emergency diesel generators during a period of increased susceptibility to the offsite alternating current power sources due to inclement weather.

The inspectors verified that the emergency diesel generators' as-found configuration and operating parameters supported the system's ability to perform design functions. The inspectors accomplished the verifications by comparing the as-found configuration of the accessible portions of the diesel generators to the configuration specified in Quad Cities Operating Procedure 6600-01, "Diesel Generator 1(2) Preparation for Standby Readiness," Revision 22; or Quad Cities Operating Procedure 6600-01, "Diesel Generator ½ Preparation for Standby Readiness," Revision 18. The inspectors reviewed design and licensing information and discussed the emergency diesel generators configuration and performance with licensee personnel.

##### b. Findings

No findings of significance were identified.

#### 1R05 Fire Protection Walkdowns (71111.05)

##### a. Inspection Scope

The inspectors conducted fire protection walkdowns of the Unit 1, 125 volt direct current panel room (Fire Zone 6.1.A), and the Unit 2, 125 volt direct current panel room (Fire Zone 6.2.A). Each of these fire zones contained equipment related to the Mitigating Systems Cornerstone. The inspectors verified the proper control of transient combustibles and ignition sources, the material condition of fire detection and fire suppression systems, the operational lineup of fire detection and fire suppression systems, the maintenance of fire protection equipment, and the material condition and operational status of fire barriers.

The inspectors reviewed the Quad Cities Units 1 and 2 Updated Fire Hazards Analysis, Section 6.1.A, "Unit 1, 125 Volt Direct Current Panel Room," Revision 12; and Section 6.2.A, "Unit 2, 125 Volt Direct Current Panel Room," Revision 12. The inspectors reviewed the licensee's treatment of problem issues in their corrective actions program as documented in Condition Reports Q2001-01183, Q2001-01918, and Q2001-01921.

##### b. Findings

No findings of significance were identified.



## 1R22 Surveillance Testing (71111.22)

### a. Inspection Scope

On May 29, 2001, the inspectors evaluated Quad Cities Operating Surveillance (QCOS) 6600-42, "Unit 2 Diesel Generator Load Test," Revision 05, to verify that the Unit 2 emergency diesel generator was capable of performing its intended function. During the inspection, the inspectors interviewed operations and engineering department personnel, reviewed the completed test documentation, the Updated Final Safety Analysis Report, and Technical Specifications. The inspectors observed the performance of portions of the surveillance test.

The inspectors reviewed Condition Reports Q2001-01586, Q2001-01444, and Q2001-01218 entering problems identified during the performance of surveillance tests into the corrective action program. The inspectors verified that identified problems were being appropriately entered, reviewed, and characterized for significance.

### b. Findings

No findings of significance were identified.

## **Emergency Preparedness (EP)**

### 1EP2 Alert and Notification System (ANS) Testing (71114.02)

#### a. Inspection Scope

The inspector discussed with corporate Emergency Preparedness (EP) staff the design, equipment, and periodic testing of the public ANS for the Quad Cities Station's Emergency Planning Zone (EPZ) to verify that the system was tested and maintained in accordance with emergency plan commitments. The inspector reviewed records for the 12-month period ending March 2001 related to ANS testing, annual preventive maintenance, and non-scheduled maintenance. The inspector also reviewed the licensee's test criteria for determining whether each model of siren installed in the EPZ would perform as expected if activated. Records used to document and trend component failures for each model of siren were also reviewed and discussed with respect to their use in assessing potential ANS equipment upgrades.

#### b. Findings

No findings of significance were identified.

### 1EP3 Emergency Response Organization (ERO) Augmentation Testing (71114.03)

#### a. Inspection Scope

The inspector discussed with EP staff the station's primary and backup provisions for initiating augmentation of the on-shift emergency organization during normal business

hours and off-hours. The inspector reviewed records of unannounced and announced off-hours staff augmentation drills, which were conducted between April 2000 and May 2001, to determine whether the licensee successfully met its off-hours augmentation drill commitments and had initiated effective corrective actions on drill performance concerns. The inspector discussed the improved, automated ERO call out provisions that were recently implemented in response to self-identified concerns with the previously used call out methodology. The inspector also reviewed a sample of the station's ERO training records. The inspector discussed the licensee's provisions for maintaining acceptable numbers of currently qualified personnel for each key and support ERO position and for updating the ERO call out lists.

b. Findings

No findings of significance were identified.

1EP5 Correction of Emergency Preparedness Weaknesses and Deficiencies (71114.05)

a. Inspection Scope

The inspector reviewed the Nuclear Oversight staff's audit and field observation reports to ensure that these assessments met the requirements of 10 CFR 50.54(t). The inspector reviewed and discussed the EP staff's periodic self-assessment reports, as well as the critiques of EP drills and the biennial exercise that were conducted between January 2000 and June 2001 to satisfy emergency plan commitments. The inspector reviewed a sample of condition reports and related records resulting from the aforementioned assessments and other EP program reviews to determine whether the licensee had initiated acceptable corrective actions on identified concerns.

b. Findings

No findings of significance were identified.

**4. OTHER ACTIVITIES (OA)**

4OA2 Performance Indicator Verification (71151)

a. Inspection Scope

The inspector verified for accuracy and completeness the data for the Physical Protection Performance Indicators (PI) pertaining to Fitness-For-Duty Personnel Reliability, Personnel Screening Program, and Protected Area Security Equipment. Specifically, a sample of plant reports related to security events, security shift activity logs, fitness-for-duty reports, and other applicable security records were reviewed for the period between December 2000 and May 2001.

The inspector reviewed the licensee's records for the period January 2001 through March 2001 that were related to the following PIs to verify that the licensee's data gathering and assessment processes were consistent with industry guidelines and

associated licensee procedures: ANS; ERO Drill Participation; and Drill and Exercise Performance.

b. Findings

No findings of significance were identified.

4OA3 Event Follow-up (71153)

.1 Review of Licensee Event Reports

a. Inspection Scope

The inspectors performed an onsite review of records to evaluate root causes and corrective actions for issues identified in licensee event reports, discussed in the Findings Section below, using Inspection Procedure 71153, "Event Follow-up."

For issues described in the licensee event reports, the inspectors evaluated the timeliness, completeness, and adequacy of corrective actions in accordance with requirements of 10 CFR Part 50, Appendix B, Criterion XVI.

b. Findings

(Closed) Licensee Event Report 50-254/2000-009-00; 50-254/2000-009-01: Wiring error in the average power range monitor flow biased neutron flux instrument. On November 3, 2000, the 1B channel of the reactor protective system flow biased neutron flux trip was found to be inoperable during reactor startup. Poor wiring practices, poor second verification practices, and inadequate post maintenance testing of nuclear instrumentation wiring led to inoperability of the setpoints for the 1B channel of the flow biased neutron flux trip. Maintenance workers failed to follow wiring requirements in the work request, failed to use lift and land sheets when removing and re-terminating the wires, and failed to label the wires that were lifted during the maintenance activity. A Non-Cited Violation for a failure to follow the Work Request instruction was issued in Inspection Report 50-254/00-15, Section 1R19. The inspectors determined that the risk significance of this event was very low (GREEN) because of the short amount of time that the unit was in Mode 1 with the wiring error, because the A channel was operable, and because the wiring error actually caused the flow biased neutron flux trip to be more conservative. The licensee wrote Condition Reports Q2000-04070 and Q2000-04071 to address issues related to the neutron flux trip. The inspectors reviewed the licensee's root cause and corrective actions and determined that they appeared reasonable. This issue is closed.

(Closed) Licensee Event Report 50-254/2000-008-00: Secondary Containment Breach Due to Open One Inch Conduit. On October 20, 2000, the licensee identified an open line in the Unit 1 high pressure coolant injection room with air flow into the room. The line was immediately capped to close the breach. The root cause of the event could not be determined; however, evidence exists that indicates the condition has existed prior to 1993. The licensee wrote Condition Reports Q2000-03761 and Q2000-03937 to address the issues associated with this event. The inspectors reviewed the condition reports, root

cause report, and the licensee's corrective actions. The inspectors reviewed the significance of the event and determined it to be minimal because secondary containment pressure surveillance test results met acceptance criteria with the conduit in an uncapped condition. The LER was reviewed by inspectors and no findings of significance were identified. This issue is closed.

#### 4OA5 Other

##### a. Inspection Scope

The inspector toured the Emergency Operations Facility (EOF), which was relocated to Warrenville, IL in June 2001, and reviewed records of equipment and software tests to determine if this new facility was in an acceptable state of operational readiness. The inspector reviewed the licensee's reassessment of its EOF staff's commuting times to determine if sufficient numbers of personnel assigned to each key and support position should be able to commute from their residences to the new EOF within the relevant time commitment. The inspector also reviewed and discussed records related to EOF staff's familiarization tours and information sent to state and county officials on the new EOF. The inspector also toured the onsite Technical Support Center and Operations Support Center to determine if these facilities were in an acceptable state of readiness.

##### b. Findings

No findings of significance were identified.

#### 4OA6 Meetings

##### .1 Inspection Period Exit Meeting

The inspectors presented the inspection results to Mr. Tulon and other members of licensee management at the conclusion of the inspection on June 27, 2001. The licensee acknowledged the findings presented. No proprietary information was identified.

##### .2 Interim Exit Meeting

Senior Official at Exit:	K. Leech, Security Manager
Date:	June 14, 2001
Proprietary Information:	No
Subject:	Plant Safeguards Performance Indicator Verification
Change to Inspection Findings:	No

##### .3 Interim Exit Meeting

Senior Official at Exit:	T. Tulon, Site Vice President
Date:	June 28, 2001
Proprietary Information:	No
Subject:	Emergency Preparedness Program and Performance Indicators Inspection
Change to Inspection Findings:	No

PARTIAL LIST OF PERSONS CONTACTED

Licensee

T. Tulon, Site Vice President  
W. Beck, Regulatory Assurance Manager  
R. Chrzanowski, Nuclear Oversight Manager  
D. Cook, Instrument Maintenance Superintendent  
S. Darin, Engineering  
R. Gideon, Work Control Manager  
D. Kallenbach, Radiation Protection Field Supervisor  
M. McDowell, Operations Manager  
G. DeYoung, Corporate EP Specialist  
S. McCain, Corporate EP Manager  
D. Stobaugh, Corporate EP Specialist  
F. Tague, EP Coordinator

NRC

M. Ring, Chief, Projects Branch 1

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Closed

50-254/2000-009-00; 50-254/2000-009-01	LER	Inoperable Channel of the Average Power Range Monitor Flow Biased Neutron Flux Instrument
50-254/2000-008-00	LER	Secondary Containment Breach Due to Open One Inch Conduit

## LIST OF ACRONYMS AND INITIALISMS USED

ANS	Alert and Notification System
CFR	Code of Federal Regulations
EOF	Emergency Operations Facility
EP	Emergency Preparedness
EPZ	Emergency Planning Zone
ERO	Emergency Response Organization
IDNS	Illinois Department of Nuclear Safety
IFI	Inspection Follow-up Item
LER	Licensee Event Report
PI	Performance Indicator
URI	Unresolved Item
VIO	Violation

LIST OF DOCUMENTS REVIEWED (not previously listed)

1EP2 Alert and Notification System (ANS) Testing

	Quad Cities Offsite Siren Test Plan	Revision 2
	Warning System Annual Maintenance Report for the Quad Cities Station (September 28 through October 23, 2000)	
	Exelon Annual Siren Report for 2000	
	Quad Cities Daily and Monthly Siren Operability Test Reports (January 2001 through March 2001)	
Q2000-02940	Re-evaluation of Monthly ANS Operability Goal	
Q2000-04030	An Iowa Siren Out of Service Due to Road Work	

1EP3 Emergency Response Organization (ERO) Augmentation Testing

EP-AA-112	ERO/Emergency Response Facility Activation and Operation	Revision 2
EP-AA-112-100	Acting Station Director	Revision 0
	ERO Off-hours Augmentation Drill Reports (April 2000 through June 2001)	
	Quad Cities Station ERO Call Lists (January 2001 through May 2001)	
	Quad Cities Station ERO Assignment Roster	May 2001
	Onsite ERO Training Status Summary	June 2001
	ERO Training Course List	June 2001
	Respiratory Qualifications Report	
Q2000-02943	Augmentation Test Failure	
Q2000-03299	Group Page Function Failure	
Q2001-00116	Long-term Availability of Off-site Pagers	
Q2001-00244	Activation of Alpha-numeric Pagers	
Q2001-00774	March Augmentation Drill Using CAN System	
Q2001-01377	False Off-hours Pager Activation	

1EP5 Correction of Emergency Preparedness (EP) Weaknesses and Deficiencies

	May 31, 2000 Pre-Exercise Report	
	July 12, 2000 Biennial Exercise Report	
	Semi-Annual Health Physics Drill Report	June 2000
	High Range Sampling System and Health Physics Drill Report	December 2000
	Semi-Annual Health Physics Drill Report	June 2001
	2000 Annual Medical Drill Report	August 2000
NO-04-00-PS02	Station Assessment Report on EP Program	
NO-00-00-PS05	Corporate EP Program Assessment	
NO-QC-00-4Q	Plant Support Assessment Plan	
NO-34688-26	Fourth Quarter Assessment of EP Program	
NO-34688-39	Offsite Agency Interface	
	Station Ep Self-Assessment Reports for the Second Through Fourth Quarters of 2000	
	Focus Area Self-Assessment Report - EP Cornerstone	May 2001
Q2000-00597	Training Module on NRC Incident Response	
Q2000-02161	Technical Support Center Priorities in a Drill	
Q2000-02162	Dispatch of Operations Support Center Teams in a Drill	
Q2000-02163	Joint Public Information Center Interface	
Q2000-02527	Incorrect Upload of Onsite Roster in an Exercise	
Q2000-02548	Untimely Emergency Declaration in an Exercise	
Q2000-02607	Plant Public Address System Audibility	
Q2000-02657	Upgrade Accountability Computer Software	
Q2000-04441	Alternate Release Rate Determination	
Q2001-00145	Coordination on Changes to Federal Telephone System	
Q2001-00310	Assembly Area Card Readers	
Q2001-00339	Ineffective Change Management in EP Procedure Review Process	
Q2001-00343	Inadequate Evaluation of EP Procedure Deletion	
Q2001-00372	Potential Temporary Loss of Power to Technical Support Center	
Q2001-00700	Accountability Computer Problem	



#### 4OA1 Performance Indicator (PI) Verification

EP-AA-120-1001	Drill, Exercise, and Event PI, R.EP.01 Guidance	Revision 0
EP-AA-120-1002	ERO Drill Participation PI, R.EP.02 Guidance	Revision 0
EP-AA-120-1003	ANS Reliability PI, R.EP.03 Guidance	Revision 0
RS-AA-122-108	PI-ERO Drill/Exercise Performance	Revision 1
RS-AA-122-109	PI-ERO Drill Participation	Revision 1
RS-AA-122-110	PI-ANS Reliability	Revision 1
Q2001-01313	Minor Error in ERO PI for March 2001 Daily and Monthly Siren Operability Data Sheets for January 2001 Through March 2001	
LS-AA-2160	Monthly Performance Indicator (PI) Data Elements for Protected Area (PA) Security Equipment Performance Index	March 6, 2001
LS-AA-2170	Monthly Performance Indicator (PI) Data Elements for Protected Area(PA) Personnel Screening Program Performance	March 6, 2001
LS-AA-2180	Monthly Performance Indicator (PI) Data Elements for Fitness-For-Duty/Personnel Reliability Program Performance Safeguards Event Logs	March 6, 2001  December 2000 to 2001

#### 4OA5 Other

EOF Relocation to Warrenville Project Plan	
EOF Responder Commuting Time Reassessment	
Communications Equipment Test Results Between Each Nuclear Station and Relocated EOF	
Warrenville EOF Software Testing Project Plan	
Internal Correspondence to All EOF Staff on EOF Relocation	
Exelon EP Monthly Update to Illinois and Iowa State and County Emergency Management Agencies and States' Radiation Protection Agencies	June 2001
Letter to NRC Document Control Desk on EOF Relocation	June 8, 2001