

July 29, 1999

Mr. Oliver D. Kingsley
President, Nuclear Generation Group
Commonwealth Edison Company
ATTN: Regulatory Services
Executive Towers West III
1400 Opus Place, Suite 500
Downers Grove, IL 60515

SUBJECT: NRC RADIATION SAFETY INSPECTION REPORT 50-254/99013(DRS);
50-265/99013(DRS)

Dear Mr. Kingsley:

On July 2, 1999, the NRC completed a routine inspection at your Quad Cities Nuclear Station. The enclosed report presents the results of that inspection.

The inspection was an examination of activities conducted under your license as they relate to radiation safety and to compliance with the Commission's rules and regulations and with the conditions of your license. Within these areas the inspection consisted of a selective examination of procedures and representative records, observations of activities, and interviews with personnel. Specifically, this inspection focused on the implementation of your radiological effluents and radiological environmental monitoring programs.

During this inspection, one issue of low risk significance was identified. This issue is discussed in the enclosed report.

Following the first Quarter of 1999, your staff identified a white performance indicator in the occupational radiation cornerstone, attributable to 7 high radiation area occurrences during the previous 12 calendar quarters. We recognize that your staff implemented corrective actions to improve performance in this area, which included a reduction in the number of high radiation areas within the site, signed accountability logs, and reduced electronic dosimetry alarm setpoints. During previous inspections, the NRC staff has evaluated these incidents and your corrective actions. The most recent results of our reviews are documented in NRC Inspection Reports Nos. 50-254/98022(DRS) and 50-265/98022(DRS); 50-254/98016(DRS) and 50-265/98016(DRS); 50-254/97025(DRS) and 50-265/97025(DRS); and 50-254/97009(DRS) and 50-265/97009(DRS). At this time, we do not plan any additional oversight of this area above the baseline inspection program.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be placed in the NRC Public Document Room (PDR).

We will gladly discuss any question you have concerning this inspection.

Sincerely,

Original /s/ W. Slawinski for

Gary L. Shear, Chief
Plant Support Branch

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

Enclosure: Inspection Report 50-254/99013(DRS); 50-265/99013(DRS)

cc w/encl: D. Helwig, Senior Vice President
H. Stanley, PWR Vice President
C. Crane, BWR Vice President
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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: 50-254/99013(DRS); 50-265/99013(DRS)

Licensee: Commonwealth Edison Company

Facility: Quad Cities Nuclear Power Station
Units 1 and 2

Location: 22710 206th Avenue North
Cordova, IL 61242

Dates: June 28 - July 2, 1999

Inspectors: S. K. Orth, Senior Radiation Specialist
K. J. Lambert, Radiation Specialist

Approved by: Gary L. Shear, Chief, Plant Support Branch
Division of Reactor Safety

SUMMARY OF FINDINGS

Quad Cities Nuclear Power Station, Units 1 & 2
NRC Inspection Report 50-254/99013(DRS); 50-265/99013(DRS)

The report covers a 1-week period of announced inspection by two regional radiation specialists. This inspection focused on public radiation safety and included a review of gaseous and liquid radiological effluents and of the radiological environmental monitoring program.

Public Radiation Safety

- Green. The inspectors identified a lack of documentation for the licensee's review of changes to the Offsite Dose Calculation Manual. Although an independent technical review determined that the changes maintained a sufficient level of effluent control, the licensee did not maintain documentation to support this determination. (Section 2PS3.3)

Report Details

2. RADIATION SAFETY

2PS1 Gaseous and Liquid Effluent

.1 Walkdown of Effluent Systems and Review of Ongoing Activities

1. Inspection Scope

The inspectors reviewed the liquid and gaseous effluent system to assess its material condition and operability, and observed the collection of effluent samples.

2. Observations and Findings

The inspectors verified that the gaseous and liquid effluent systems were in good material condition and as described in the Final Safety Analysis Report. Radiation monitors were operable and provided accurate indications in the control room.

At the time of this inspection, the Unit 1 service water monitor was out-of-service. During a routine surveillance, the monitor had failed to properly alarm when the flow to the monitor was isolated. The inspectors verified that the licensee entered the issue into its corrective action system, performed the applicable compensatory samples, and restored the monitor to operation.

The inspectors also verified that chemistry technicians performed liquid and gaseous sampling of effluents according to station procedures.

.2 Releases of Gaseous and Liquid Radiological Effluents

3. Inspection Scope

The inspectors reviewed records of liquid effluent releases, abnormal releases, and compensatory sampling and analyses.

4. Observations and Findings

The inspectors verified that radiological effluent releases and resultant offsite doses were well below regulatory limits. The inspectors also verified that the licensee's staff completed the quantification of batch liquid effluent discharges in accordance with the Offsite Dose Calculation Manual (ODCM) and station procedures. During 1998, the licensee appropriately evaluated and documented two abnormal effluent releases in the annual radioactive effluent report. Additionally, compensatory sampling for out-of-service effluent monitors was performed in accordance with Technical Specifications and station procedures.

.3 Effluent Monitor Calibrations

5. Inspection Scope

The inspectors reviewed the calibration records for flow rate monitors and for radiation monitors (including the alarm setpoint determinations), and tests of ventilation flow rates.

6. Observations and Findings

The inspectors verified that the licensee calibrated effluent radiation monitors associated with the reactor building vent, main chimney, liquid discharge line, and service water discharge based on technically sound principles and at the frequencies contained in the licensee's ODCM and Technical Specifications. The monitor alarm setpoints were properly determined using the equations found in the ODCM. The inspectors also verified that ventilation flow rates were consistent with the ODCM.

.4 Radiochemical Laboratory Quality Control

1. Inspection Scope

The inspectors reviewed the quality controls associated with radiochemical analyses of effluent and environmental samples.

2. Observations and Findings

The inspectors verified that the chemistry staff performed calibrations and source tests of radiochemistry laboratory instrumentation as required by the licensee's chemistry procedures, which ensured the accuracy of effluent measurements. Performance in interlaboratory comparison programs also demonstrated an acceptable degree of accuracy in measuring radioactivity in both effluent and environmental samples.

2PS3 Radiological Environmental Monitoring

.1 Review of Annual Report and Environmental Impact

a. Inspection Scope

The inspectors reviewed the 1998 Annual Radiological Environmental Operating Report.

2. Observations and Findings

The inspectors verified that the Annual Environmental Operating Report contained sufficient information to satisfy the ODCM and environmental monitoring program requirements. Environmental samples were collected and analyzed as required by the

ODCM, and sample anomalies and associated corrective actions were properly documented. The results of the environmental sampling data did not indicate any discernable radiological impact on the environment from the operation of the facility.

Offsite dose calculations were performed in accordance with the ODCM, and the land use census was completed as required.

.2 Sample Location Walkdowns and Instrument Maintenance

7. Inspection Scope

The inspectors observed the location and operability of selected environmental monitors and the meteorological instrumentation. The inspectors also observed the contractor environmental monitoring technician simulate the collection of environmental samples.

8. Observations and Findings

The inspectors verified that the following sampling and thermoluminescence dosimeter (TLD) locations were as described in the ODCM:

<u>Sample Type</u>	<u>Location Number</u>
• air particulate/iodine cartridge	Q-02, Q-03, Q-07, Q-13, Q-16
• sediment	Q-28
• surface water	Q-33
• TLD	113-1, 201-1, 201-2, 202-1, 216-1, 216-2

Air sampling and meteorological instrumentation maintenance and calibrations were performed at the required frequencies and in accordance with the vendors' procedures.

.3 Offsite Dose Calculation Manual

9. Inspection Scope

The inspectors reviewed the licensee's changes to the ODCM that were implemented since the last NRC inspection of this area (re. Revision 1.9 to Chapters 11 and 12, dated December 1998).

10. Observations and Findings

The inspectors identified a lack of documentation of the licensee's review of Revision

1.9 to Chapters 11 and 12 of the ODCM.

In December of 1998, the licensee revised Chapters 11 and 12 of the ODCM. As part of this revision, the licensee changed a number of sampling points (both added and deleted specified sampling points) and changed the frequency of radioiodine analyses (for air samples) from weekly to biweekly. The purpose of this change was to implement a uniform, system-wide REMP, which was consistent with the NRC's Branch Technical Position on environmental monitoring.

The inspectors reviewed the licensee's safety evaluation and independent technical reviews that were performed to implement this change. Based on the safety evaluation, the licensee concluded that the ODCM change did not result in an unreviewed safety question, which was sufficiently documented by the licensee. Members of the licensee's staff also performed an independent technical review of the changes to determine the effect of the change on the licensee's effluent control program. This review concluded that the change maintained the level of effluent control required by regulation. However, the licensee did not fully document the independent technical review analysis. The radiation protection staff acknowledged this finding and planned to evaluate the guidance for conducting ODCM reviews and the process of documenting these reviews.

The inspectors screened this finding using the significance determination process (SDP) for the public radiation safety cornerstone. Since the licensee had performed the determination required by the licensee's Technical Specifications (Section 6.14.A) and had considered the impact of the change, the inspectors concluded that the lack of documentation did not constitute a violation of regulatory requirements. The inspectors also independently verified that the above changes were consistent with the uniform REMP requirements and maintained the level of environmental monitoring described in Appendix I to 10 CFR Part 50. Based on this analysis, the inspectors concluded that the finding did not compromise the licensee's ability to assess the environmental impact from radiological effluents released from the site; therefore, this finding was considered to be green.

20S4 Radiation Worker Performance

1. Inspection Scope

During observations of effluent sample collection activities, the inspectors observed radiological control practices of personnel within the radiologically posted area.

2. Observations and Findings

An inspector observed an individual in an office area on the main floor of the turbine building (639' elevation), who was not attentive to duty. Both the inspector and a member of the radiation protection staff observed the individual for a short period of time and noted that the individual was not demonstrating any awareness of his surroundings. Consequently, the RP representative knocked on the window to the office area which attracted the individual's attention and raised his awareness.

The licensee performed radiological surveys of the area and verified that the office area was in a low dose area (i.e., radiation levels were between 0.2 and 0.5 millirem per hour). The licensee stated that the office area was designated for short breaks and to provide temporary relief from the high temperatures in the turbine building. However, the radiation protection manager also stated that these breaks were

expected to be of short duration and that workers were expected to maintain attentiveness and should not loiter or sleep in this area. Although the individual's actions were not a violation of the licensee's procedures or of a regulatory requirement, the licensee acknowledged that the actions were not in accordance with management's expectations and were indicative of poor radiation worker performance. The licensee entered this observation into its corrective action system. Based on the low radiation levels in the area, the inspectors concluded that the individual's actions did not have significant radiological consequences.

4 OTHER ACTIVITIES

40A1 Identification and Resolution of Problems

1. Inspection Scope

The inspectors interviewed members of the radiation protection staff and reviewed the licensee's self assessments, audits, and problem identification forms concerning the radiological effluents program and the REMP.

2. Observations and Findings

The inspectors verified that the radiation protection staff was effectively using the corrective action system to identify and correct problems in the radiological effluents program and the REMP.

40A2 Performance Indicator Verification

1. Inspection Scope

The inspectors verified the licensee's assessment of its performance indicator (PI) for public radiation safety. Specifically, the inspectors reviewed the 1998 annual reports, problem identification forms completed in 1998 and 1999, and the licensee's quarterly dose assessments completed in 1998 and 1999.

2. Observations and Findings

The licensee reported no occurrences in this PI during the previous 4 calendar quarters (2nd Quarter of 1998 through the 1st Quarter of 1999). The inspectors found no problems with the accuracy or completeness of the licensee's PI data.

40A5 Management Meetings

.1 Exit Meeting Summary

The inspectors presented the inspection results to members of licensee management at

the conclusion of the inspection on July 2, 1999. The licensee acknowledged the findings presented and did not identify any information discussed as proprietary.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

- E. Anderson, Radiation Protection Manager
- D. Barker, Radiation Protection, Technical Support Supervisor
- K. Bethard, Regulatory Assurance, NRC Coordinator
- J. Buccifero, Chemistry
- N. Chrissotimos, Regulatory Assurance
- R. Chrznowski, Nuclear Oversight, Assessment Manager
- J. Dimmette, Jr., Site Vice-President
- T. Fuhs, Regulatory Assurance
- T. Hanley, Operations Support Manager
- D. Harmon, System Engineer
- D. Kallenbach, Radiation Protection
- S. Radebaugh, Work Control, Superintendent
- L. Schmeling, Office of Site Vice-President, Executive Assistant
- W. Schmidt, Radiation Protection
- M. Sullivan, Maintenance, Superintendent
- C. Symonds, Operations Training Superintendent
- J. Wooldridge, Radiation Protection

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Closed

None

Discussed

None

LIST OF BASELINE INSPECTIONS PERFORMED

The following inspectable area procedures were used to perform inspections during the report period. Documented findings are contained in the body of the report.

71122-01	Gaseous and Liquid Effluent Treatment Systems	PS1
71122-03	Radiological Environmental Monitoring Program	PS3

LIST OF ACRONYMS USED

CFR	Code of Federal Regulations
DRS	Division of Reactor Safety
NRC	Nuclear Regulatory Commission
ODCM	Offsite Dose Calculation Manual
PDR	Public Document Room
PI	Performance Indicator
PIF	Problem Identification Form
REMP	Radiological Environmental Monitoring Program
RP	Radiation Protection
SDP	Significance Determination Process
TLD	Thermoluminescence Dosimeter

LIST OF DOCUMENTS REVIEWED

Assessments and Audits

“Quad Cities Station, Radiation Protection Department, Focus Area Assessment of the Radiological Gaseous and Liquid Effluent Program,” completed June 26, 1999.

“Quad Cities Station, Radiation Protection Department, Focus Area Assessment of the Radiological Environmental Monitoring Program,” completed June 26, 1999.

Radiation Protection Department Self-Assessment, Radiological Environmental Monitoring Program, dated December 28, 1998.

Radiological Effluents Program, Department Self-Assessment, completed January 21, 1999.

Instrument Calibrations

High Purity Germanium Detector Calibrations:

Detector ATP 131, completed November 4, 1998;

Detector BTP 837, completed November 4, 1998;

Detector CTP 477, completed November 4, 1998; and

Detector DTP 787, completed November 4, 1998.

Liquid Radioactive Waste Flow Indication Calibration (QCIS 2000-01), completed February 1, 1999.

Liquid Radioactive Waste Radiation Monitor Calibration (QCCP 300-07), completed May 13, 1998.

Main Chimney Flow Rate Indication Calibration (QCIS 5700-17), completed June 2, 1998.

Main Chimney Flow Rate Monitor Calibration (QCIS 1700-17), completed May 13, 1999.

Main Chimney Noble Gas Monitor Calibration (QCCP 0400-17), completed August 6, 1998. Main Chimney System Particulate, Iodine, and Noble Gas (SPING) Monitor Calibration (QCCP 0400-18), completed June 8, 1998.

Unit 1 Reactor Building Vent Flow Rate Indication Calibration (QCIS 1700-19), completed May 13, 1999.

Unit 2 Reactor Building Vent Flow Rate Indication Calibration (QCIS 1700-19), completed April 28, 1998.

Unit 1 Reactor Building Vent Radiation Monitor Calibration (QCIS 1700-07), completed May 13, 1999.

Unit 2 Reactor Building Vent Radiation Monitor Calibration (QCIS 1700-07), completed May 13, 1999.

Unit 1 Service Water Liquid Radiation Monitor Calibration (QCCP 300-07), completed June 11, 1998.

Unit 2 Service Water Liquid Radiation Monitor Calibration (QCCP 300-07), completed April 22, 1998.

Miscellaneous

1998 Annual Radiological Environmental Operating Report.

10 CFR 50.59 Safety Evaluation Form for ODCM Revisions 1.9 to Chapters 11 and 12, dated

December 15, 1999.

Independent Technical Reviews for ODCM, Revision 2.0, dated April 27, 1999, and for ODCM changes: Chapter 11, Revision 1.9 and Chapter 12, Revision 1.9, dated December 16, 1998. Liquid Radioactive Waste Discharge Sheet, Batch numbers: 7057, 7068, 7080, 7094, 7102, 7106, 7118, and 7123.

Monthly Offsite Dose Calculations, completed for January of 1998 through May of 1999.

Quad Cities Nuclear Power Station's Radioactive Effluent Report for January through December 1998.

Survey of Main Turbine Floor Between Units, 693 elevation, dated June 29, 1999.

Unit 1 Service Water Monitor component maintenance history 1994 to 1999.

NGET Requal Study Guide

N-GET Module 1, Nuclear Security Topical Review

N-GET Module 4, Radiation Protection Topical Review

Problem Identification Forms

Q1998-00676, Q1998-01026, Q1998-02192, Q1998-04127, Q1998-04552, Q1998-04722, Q1999-02102, Q1999-02110, Q1999-02208 and Q1999-02223.

Procedures

Teledyne Midwest Laboratory, Sampling Procedures Manual, Revision 3

NSP-AP-3001, Revision 0, "Independent Technical Reviews";

QCCP 0300-02, Revision 6, "Radioactive Liquid Discharge Batch Analysis";

QCCP 0300-03, Revision 4, "Liquid Effluent Monitors Alarm Setpoints";

QCCP 0300-07, Revision 5, "DAM 4/3 Calibration";

QCCP 0400-04, Revision 9, "Reactor Building Vent Gaseous & Particulate Sampling";

QCCP 0400-06, Revision 9, "Main Chimney Gaseous & Particulate Sampling";

QCCP 0400-10, Revision 10, "G.E. Noble Gas Monitor Discriminator Setpoint";

QCCP 0400-16, Revision 6, "Plant Effluent Dose Calculations";

QCCP 0400-17, Revision 2, "G.E. Noble Gas Monitor Efficiency Calibration";

QCCP 0400-18, Revision 5, "SPING 3/4 Calibration";

QCCP 0800-05, Revision 4, "Efficiency Calibration of CRU Gamma Spectrometer Multichannel Analyzer System";

QCCP 0800-19, Revision 3, "Counting Room Quality Control Program";

QCCP 1300-25, Revision 10, "Service Water / RHR Service Water Vault composite Sampling";

QCIS 1700-07, Revision 9, "Reactor Building Ventilation and Fuel Pool Radiation Monitoring Calibration and Functional Test";

QCIS 1700-17, Revision 2, "Main Chimney Sampler Flow Rate Indication Calibration and Functional Test";

QCIS 1700-19, Revision 3, "Reactor Building Vent Sampler Flow Rate Indication Calibration and Functional Test";

QCIS 2000-01, Revision 1, "Radwaste River Discharge Flow Indication Calibration;" and

QCIS 5700-07, Revision 2, "Chimney Flow Rate Indication Calibration."