December 3, 2001

EA-01-296

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 50-254/01-16; 50-265/01-16

Dear Mr. Kingsley:

On November 15, 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 November 13, 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.

Based on the results of this inspection, the inspectors identified one issue of very low safety significance (Green). In addition, the inspectors identified one issue associated with the Licensed Operator Requalification Program which was not quantified in terms of risk (No Color). Both of these issues were determined to involve violations of NRC requirements. However, because of their very low safety significance and because they have been entered into your corrective action program, the NRC is treating these issues as Non-Cited Violations, in accordance with Section VI.A.1 of the NRC's Enforcement Policy. If you deny these Non-Cited Violations, you should provide a response with the basis for your denial, within 30 days of the date of this inspection report, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 20555-001; with copies to the Regional Administrator, Region III; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-001; and the NRC Resident Inspector at the Quad Cities Nuclear Power Station.

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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 50-254/01-16, 50-265/01-16

cc w/encl: W. Bohlke, Senior Vice President, Nuclear Services
C. Crane, Senior Vice President - Mid-West Regional
J. Cotton, Senior Vice President - Operations Support
J. Benjamin, Vice President - Licensing and Regulatory Affairs
K. Ainger, Director - Licensing
R. Hovey, Operations Vice President
J. Skolds, Chief Operating Officer
R. Helfrich, Senior Counsel, Nuclear
DCD - Licensing
T. J. Tulon, Site Vice President
G. Barnes, Quad Cities Station Manager
W. Beck, Regulatory Affairs Manager
W. Leach, Manager - Nuclear
Vice President - Law and Regulatory Affairs
Mid American Energy Company
M. Aguilar, Assistant Attorney General
Illinois Department of Nuclear Safety
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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:	50-254/01-16; 50-265/01-16
Licensee:	Exelon Nuclear
Facility:	Quad Cities Nuclear Power Station, Units 1 and 2
Location:	22710 206th Avenue North Cordova, IL 61242
Dates:	October 1 through November 15, 2001
Inspectors:	K. Stoedter, Senior Resident Inspector J. Adams, Resident Inspector S. Orth, Senior Radiation Protection Inspector P. Pelke, Reactor Inspector D. Pelton, Senior Operations Engineer P. Young, Operator Licensing Examiner
Approved by:	Mark Ring, Chief Branch 1 Division of Reactor Projects

SUMMARY OF FINDINGS

IR 05000254-01-16, IR 05000265-01-16 on 10/01 - 11/15/2001, Exelon Nuclear, Quad Cities Nuclear Power Station, Units 1 & 2, Licensed Operator Requalification Program, Maintenance Rule.

The inspection was conducted by resident and regional inspectors. This inspection identified one Green issue and one No Color issue, both of which involved Non-Cited Violations. 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.

Cornerstone: Mitigating Systems

No-Color. The inspectors identified a Non-Cited Violation wherein the facility licensee had failed to follow procedural requirements to evaluate a senior reactor operator (SRO) licensed individual in an SRO licensed position during the year 2001 annual licensed operator requalification examination (10 CFR 55.59).

The finding was of very low safety significance because the SRO licensed individual held an "inactive" SRO license (i.e., would not be assigned to licensed duties unless his license was restored to an active status in accordance with 10 CFR 55.53) (Section 1R11).

Green. On October 24, 2001, the inspectors determined that the licensee failed to count Unit 1 and Unit 2 battery room ventilation system air handling unit drive belt failures as maintenance preventible functional failures and repeat maintenance preventible functional failures where appropriate. The licensee's incorrect assessment of these equipment failures resulted in a failure to develop and implement appropriate action plans for the battery room ventilation systems on Units 1 and 2, assess the Unit 2 battery room ventilation system for (a)(1)classification, and monitor the performance of the systems against licensee-established goals.

The failure to properly implement maintenance rule requirements was considered a Non-Cited Violation of 10 CFR 50.65. The risk significance of the issue was determined to be of very low safety significance because the batteries supported by the battery room ventilation systems did not experience an actual loss of safety function (Section 1R12).

Licensee Identified Findings

No findings of significance were identified.

Report Details

1. REACTOR SAFETY

Plant Status

Unit 1 operated at or near full power for the entire inspection period with only minor power reductions to conduct required turbine valve testing with one exception. On October 20, 2001, power on Unit 1 was reduced to 73.5 percent to perform control rod maintenance and testing. Unit 1 was restored to full power on October 21, 2001.

Unit 2 operated at or near full power for the entire inspection period with only minor power reductions to conduct required turbine valve testing.

1R01 Adverse Weather (71111.01)

a. Inspection Scope

The inspector reviewed the completed QCOP 0010-01, Revision 15, "Winterizing Checklist." The inspector reviewed QCOP 0010-02, Revision 10, "Cold Weather Routines," which provides guidance for inspections of various plant locations and equipment during cold weather conditions to prevent freezing. The Inspector toured various areas of the plant susceptible to freezing in cold weather and performed spot checks of items completed in the checklist. The inspector also reviewed Condition Reports Q2000-04320, Q2001-00464, Q20000-04493, and Q2000-04452 which addressed problems related to cold weather and the winterizing checklist. The inspector verified that the new above ground exterior suction line and gate valve for the clean condensate storage tank was heat traced and included in the winterizing checklist. The inspector observed repair of the Limitorqe operator (Work Order No. 00374508-01 and AR No. 00082901) for the ice melt valve MO ½-4405-6, which is used during the winter to recirculate a portion of the condenser discharge flow back to the intake flume for deicing.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignments (71111.04)

.1 Quarterly Equipment Alignments

a. Inspection Scope

The inspectors verified the system alignment of the Unit ½ emergency diesel generator and the Unit 1A train of core spray while redundant equipment was out of service for maintenance activities. The inspectors verified that the as-found system configuration and operating parameters supported the continued ability of the system to perform its intended functions. The inspectors accomplished the verifications by comparing the as-found configuration of the accessible portions of the diesel generators and the 1A

train of core spray to the configuration specified in the respective Quad Cities operating procedures. The inspectors reviewed design and licensing information and discussed system configuration and performance with licensee personnel.

b. Findings

No findings of significance were identified.

.2 Semi-Annual Equipment Alignment

a. Inspection Scope

The inspectors performed a semi-annual review of the automatic depressurization system in the mitigating systems cornerstone. The inspectors walked down accessible portions of the system and compared the as-found configuration to the configuration specified on piping and instrument diagrams and system lineup procedures. Condition reports, open work requests, temporary modifications, permanent modifications, operator workarounds, operator challenges, and system operating procedures were reviewed to gain additional insights into system operation. The inspectors also discussed system performance, maintenance, and testing with operations and engineering.

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 station blackout diesel generator day tank room (Fire Zone SBO-2) and battery room (Fire Zone SBO-5B), and the Unit 2 station blackout diesel generator day tank room (Fire Zone SBO-8) and battery room (Fire Zone SBO-6B). 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 discussed issues associated with the fire zones with the fire marshal, fire protection engineer, and licensee management. The inspectors also reviewed Condition Report 80782, “Discrepancy Between the Fire Hazards Analysis Description of the Station Blackout Building and the Station Blackout Building.”

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification (71111.11)

.1 Quarterly Review of Licensed Operators' Requalification Testing and Training

a. Inspection Scope

On October 30, 2001, the inspectors observed and assessed Crew D licensed operator performance during licensed operator as-found simulator training sessions. The first exercise scenario involved an electro-hydraulic control pump trip, a main turbine stop valve failure, a steam leak inside containment, and an anticipated transient without scram requiring an emergency depressurization and containment flooding. The second exercise scenario included a fuel pool radiation monitor failure, an inadvertent start of the high pressure coolant injection system, a steam leak outside containment with a failure of the group one and reactor building vent isolations.

During the observations, the inspectors focused on the operators' response to alarms, the unit supervisor's command and control of crew activities, communication practices, procedural adherence, and the shift manager's implementation of emergency plan requirements. The inspectors verified that the operators properly completed all critical tasks during each of the scenarios. The inspectors observed the training evaluators' assessment of the crew's performance ensuring deficiencies were identified and critiqued.

b. Findings

No findings of significance were identified.

.2 Facility Operating History

a. Inspection Scope

The inspectors reviewed the plant's operating history from July 1999 through August 2001, to assess whether the Licensed Operator Requalification Training (LORT) program had addressed operator performance deficiencies noted at the plant.

b. Findings

No findings of significance were identified.

.3 Licensee Requalification Examinations

a. Inspection Scope

The inspectors reviewed the annual requalification operating and written examination material to evaluate general quality, construction, and difficulty level. The operating examination material consisted of dynamic simulator scenarios and job performance measures (JPMs). The biennial written examination material included a total of 44 open reference multiple choice questions (including reactor operator and senior reactor operator written and simulator static examinations). The inspectors reviewed the

methodology for developing the examinations, including the LORT program two year sample plan, probabilistic risk assessment insights, previously identified operator performance deficiencies, and plant modifications. The inspectors assessed the level of examination material duplication during the current year annual examination (through three examinations) and with last year's annual examinations. The inspectors also interviewed members of the licensee's training staff and discussed various aspects of the examination development.

b. Findings

No findings of significance were identified.

.4 Licensee Administration of Requalification Examinations

a. Inspection Scope

The inspectors observed the administration of the requalification operating test to assess the licensee's effectiveness in conducting the test and to assess the facility evaluators' ability to determine adequate performance using objective, measurable performance standards. The inspectors evaluated the performance of two operating shift crews during two dynamic simulator scenarios and five JPMs in parallel with the facility evaluators. The inspectors observed the training staff personnel administering the operating test, including pre-examination briefings, observations of operator performance, individual and crew evaluations after dynamic scenarios, techniques for JPM cuing, and the final evaluation briefing for licensed operators. The inspectors noted the performance of the simulator to support the examinations. The inspectors also reviewed the licensee's overall examination security program.

b. Findings

No findings of significance were identified.

.5 Licensee Training Feedback System

a. Inspection Scope

The inspectors assessed the methods and effectiveness of the licensee's processes for revising and maintaining its LORT program up-to-date, including the use of feedback from plant events and industry experience information. The inspectors interviewed licensee personnel (operators, instructors, training management, and operations management) and reviewed the applicable licensee's procedures.

b. Findings

No findings of significance were identified.

.6 Licensee Remedial Training Program

a. Inspection Scope

The inspectors assessed the adequacy and effectiveness of the remedial training conducted since the previous annual requalification examinations and the training planned for the current examination cycle to ensure that they addressed weaknesses in licensed operator or crew performance identified during training and plant operations. The inspectors reviewed remedial training procedures and individual remedial training plans, and interviewed licensee personnel (operators, instructors, and training management). In addition, the inspectors reviewed the licensee's current examination cycle remediation packages for unsatisfactory operator performance on the written and operating examinations to ensure that remediation and subsequent re-evaluations were completed prior to returning individuals to licensed duties.

b. Findings

No findings of significance were identified.

.7 Conformance with Operator License Conditions

a. Inspection Scope

The inspectors evaluated the facility and individual operator licensees' conformance with the requirements of 10 CFR 55. The inspectors reviewed the facility licensee's program for maintaining active operator licenses, including the process for tracking on-shift hours for licensed operators. The inspectors also reviewed ten licensed operators' medical records maintained by the facility for ensuring the medical fitness of its licensed operators and to assess compliance with medical standards delineated in ANSI/ANS-3.4 and with 10 CFR 55.21 and 10 CFR 55.25.

b. Findings

One No-Color finding was identified regarding the licensee's failure to follow licensed operator requalification training program procedural requirements in that a senior reactor operator (SRO) licensed individual was not evaluated in an SRO licensed position during the year 2001 annual licensed operator requalification examination. The failure to follow procedural requirements was considered a No Color finding because the significance determination process could not be used to evaluate the failure.

The finding was of very low safety significance because the SRO licensed individual held an "inactive" SRO license (i.e., would not be assigned to licensed duties unless his license was restored to an active status in accordance with 10 CFR 55.53) at the time the issue was identified. Additionally, the individual had not performed licensed duties subsequent to the examination. The individual was subsequently re-evaluated, in an SRO licensed role, and his performance was considered satisfactory.

The inspectors determined that the fact that the licensee had failed to evaluate an SRO licensed individual in an SRO licensed position during the year 2001 annual licensed

operator requalification examination was more than minor, in that, the failure had credible impact on safety. Specifically, the failure to test the individual at the SRO level resulted in the inability to meet the intent of the licensed operator requalification examination process which, in part, is to maintain a high level of confidence that licensed operators continue to possess the requisite knowledge and abilities needed to safely perform licensed duties. The inspectors determined that NRC Inspection Manual Chapter 0609, Appendix I, "Operator Requalification Human Performance Significance Determination Process (SDP)," could not be used to evaluate this issue. As a result, the failure of the licensee to evaluate an SRO licensed individual in an SRO licensed position during the year 2001 annual licensed operator requalification examination was considered to be a "No Color" finding and of very low safety significance.

Code of Federal Regulations (CFR) Title 10, Part 55.59(c) required, in part, that the licensee have a licensed operator requalification program which, upon approval of the Commission, may be developed by using a systems approach to training (SAT). The licensee's Commission approved, SAT based, and Institute of Nuclear Power Operations (INPO) accredited, licensed operator requalification program was based, in part, on the requirements of Quad Cities Procedure TQ-AA-106, "Licensed Operator Requal Training Program." TQ-AA-106, Paragraph 4.4.7.1, required the annual requalification examination be assembled in accordance with Exelon Nuclear Generation Group Procedure NTAFT JLOR04, "Licensed Operator Requal Training Examination Development Job Aid." Exelon Procedure NTAFT JLOR04, Paragraph 5.5.6, required that each SRO be evaluated in an SRO licensed position. Contrary to the above, on October 3, 2001, the inspectors identified that a SRO licensed individual was not evaluated in an SRO licensed position during the year 2001 annual licensed operator requalification examination. The finding was of very low safety significance because the SRO licensed individual held an "inactive" SRO license (i.e., would not be assigned to licensed duties unless his license was restored to an active status in accordance with 10 CFR 55.53) at the time the issue was identified. Additionally, the individual had not performed licensed duties subsequent to the examination. The individual was subsequently re-evaluated, in an SRO licensed role, and his performance was considered satisfactory. Because this issue was of very low safety significance and because the licensee entered it into their corrective action program as Condition Report (CR) Q2001-03091, the failure to follow operator requalification program procedural requirements is considered a **Non-Cited Violation (50-254/01-16-01; 50-265/01-16-01)**, consistent with Section VI.A.1 of the NRC Enforcement Policy.

1R12 Maintenance Rule Implementation (71111.12Q)

a. Inspection Scope

The inspectors reviewed the following risk significant systems associated with the mitigating systems and barrier integrity cornerstones:

Unit	System	Maintenance Rule Function
1	Average Power Range Monitoring	Z0757
2	Process Radiation Monitoring	Z1700
1	Battery Room Ventilation	Z5706

The inspectors reviewed problems documented in condition reports and work requests for appropriate disposition with respect to the Maintenance Rule. The inspectors reviewed the licensee's implementation of the maintenance rule, including a review of scoping, performance criteria, performance monitoring, expert panel meeting minutes, short-term and long-term corrective actions, and current equipment performance status. The inspectors discussed system problems and maintenance rule classifications with engineering personnel. A list of the documents reviewed can be found in the List of Documents Reviewed section of this report.

b. Findings

One Green finding was identified due to the licensee's failure to recognize and count failures of the Unit 1 and Unit 2 battery room ventilation system air handling units as maintenance preventible and repeat maintenance preventible functional failures between August 31, 2000, and November 8, 2001. The licensee's incorrect assessment of these equipment failures resulted in their failure to develop and implement appropriate action plans, assess the Unit 2 battery room ventilation system for (a)(1) classification, and monitor the performance of the system against licensee-established goals.

On October 29, 2001, the inspectors reviewed Condition Report Q2001-01328 which documented repeat failures of the Unit 1 battery room ventilation system air handling unit drive belts. The inspectors determined that the licensee had not characterized the air handling unit belt failures as maintenance preventible functional failures and repeat maintenance preventible functional failures even though the system was unable to perform its safety function without the drive belts. The inspectors discussed this issue with the maintenance rule coordinator. The coordinator stated that the belt failures had not been considered functional failures because the battery room temperature remained above 65^0F (Technical Specification battery temperature limit) at the time of each failure. Following a review of the concern, the licensee agreed that the battery room ventilation air handling unit drive belt failures should have been counted as maintenance preventible functional failures. The licensee entered this condition into their corrective action program as Condition Report 00080755. The licensee's extent of condition review also identified repeat failures associated with the Unit 2 battery room ventilation system air handling unit drive belts.

On November 8, 2001, the licensee's maintenance rule expert panel evaluated maintenance rule function Z5706-04 for Unit 1 and Unit 2. Based on the total number of repeat functional failures (5 on Unit 1, and 4 on Unit 2) and exceeding the reliability performance criteria (no more than 5 functional failures per site), both the Unit 1 and 2 battery room ventilation systems were classified as (a)(1) corrective action status.

Title 10 CFR 50.65 (a)(1), requires, in part, that holders of an operating license shall monitor the performance or condition of structures, systems, or components (SSC) within the scope of the rule as defined by 10 CFR 50.65 (b), against licensee-established goals, in a manner sufficient to provide reasonable assurance that such structures, systems, and components, are capable of fulfilling their intended functions.

Title 10 CFR 50.65(a)(2) states, in part, that monitoring as specified in 10 CFR 50.65 (a)(1) is not required where it has been demonstrated that the performance or condition of an SSC is being effectively controlled through the performance of appropriate preventive maintenance, such that the SSC remains capable of performing its intended function.

Contrary to the above, as of November 8, 2001, the licensee failed to demonstrate that the performance or condition of the Unit 1 and Unit 2 battery room ventilation air handling units had been effectively controlled through the performance of appropriate preventive maintenance. In addition, the licensee had not monitored the performance or condition of the Unit 1 and Unit 2 battery room ventilation air handling units against licensee-established goals. Specifically, the licensee failed to identify and properly count five maintenance preventable functional failures for the Unit 1 battery room ventilation air handling unit and four maintenance preventable functional failures for the Unit 2 battery room ventilation air handling unit from August 31, 2000 to November 8, 2001. The repeat failures of battery room ventilation air handling units demonstrated that the performance and the condition of these SSCs was not effectively controlled through the performance of appropriate preventive maintenance. As a result, the licensee had not performed the required goal setting and monitoring. The failure to meet the requirements of 10 CFR 50.65 was considered a **Non-Cited Violation (50-254/01-16-02; 50-265/01-16-02)**. This violation is being treated as a Non-Cited Violation, consistent with Section VI.A.1 of the NRC Enforcement Policy.

The inspectors reviewed the significance of the issue and determined that the issue was more than a minor because it could have an actual or credible impact on safety and the drive belt failures could affect the operability, availability, reliability or function of a mitigating system. The inspectors evaluated this issue using the Phase 1 Significance Determination Process Worksheet for the mitigating systems cornerstone. The battery room ventilation system provides heating and cooling to the 24/48, 125, and 250 volt direct current batteries. These batteries provide power to a number of mitigating systems. If battery temperature drops, then battery capacity decreases. The inspectors determined the issue was of low risk significance (Green) since any drop in battery temperature that may have occurred following the drive belt failures was not significant enough to cause a decrease in battery capacity.

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

a. Inspection Scope

The inspectors reviewed the licensee's evaluation of plant risk for planned maintenance activities on the ½ B diesel fire pump, 345 kilovolt switchyard, and the 1B train of the residual heat removal system. During the inspection, the inspectors assessed the operability of redundant train equipment and verified that the licensee's planning of the maintenance activities minimized the length of time that the plant was subject to increased risk. The inspectors verified that problems with the 2B service water pump seal, an emergent plant condition, were considered for risk by the licensee. The inspectors also interviewed operations, engineering, and work control department personnel and reviewed Nuclear Station Procedure WC-AA-103, "On-Line Maintenance," Revision 4.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors reviewed the operability evaluations associated with air entrainment in the standby liquid control system piping during air sparging, degraded springs on the residual heat removal service water pump discharge check valves, a leak on the residual heat removal heat exchanger, the installation of incorrect fuel injectors on the Unit 2 station blackout diesel generators, and the long-time delay setting on the RMS-9 trip units for the diesel generator cooling water pump motors being set in time band 2 instead of time band 1 as specified by Calculation No. 8913-73-19-7, Revision 0. A list of the documents reviewed by the inspectors can be found in the List of Documents Reviewed section of this report.

The inspectors verified that operability evaluations were performed when required and that completed evaluations were technically adequate, justified continued operation, considered other degraded conditions where applicable, and referenced applicable sections of the Updated Final Safety Analysis Report and other design basis documents.

b. Findings

No findings of significance were identified.

1R19 Post Maintenance Testing (71111.19)

a. Inspection Scope

The inspectors reviewed post maintenance test activities associated with the Number 2 station blackout diesel generator, the Number 2 station blackout diesel generator auxiliary systems, the 1B core spray motor operated valves 1-1402-4B and 1-1402-38B,

the Unit 1 emergency diesel generator, and the 1D residual heat removal service water pump area cooler.

The inspectors verified that the post-maintenance tests demonstrated that the systems and components were capable of performing their intended function. Included in the review were the applicable sections of Technical Specifications, the Updated Final Safety Analysis Report, and vendor manuals. Following the completion of the tests, the inspectors verified that test equipment was removed and that the equipment was returned to the proper configuration.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors observed surveillance testing activities and/or reviewed completed testing packages for surveillance tests associated with Number 2 station blackout diesel generator, Unit 1 emergency diesel generator, Unit 1 reactor water level instrumentation, and the standby gas treatment system. The surveillance tests observed were related to systems in the mitigating systems and barrier integrity cornerstones. A list of the documents reviewed by the inspectors can be found in the List of Documents Reviewed section of this report.

The inspectors verified that Technical Specifications, Updated Final Safety Analysis Report, instrument setpoint calculations and licensee procedural requirements were met during each testing evolution. The inspectors also verified that the testing demonstrated that the structure, system or component was capable of performing its intended safety function.

b. Findings

No findings of significance were identified.

1R23 Temporary Modifications (71111.23)

a. Inspection Scope

The inspectors reviewed the Temporary Modification Design Change Package 333129, “Introduce Controlled Air In-Leakage in the Sensing Line for the Unit 2 Condenser Hood Vacuum,” Revision 0, and its associated 10 CFR 50.59 screening QC-S-2001-0412, Revision 1. The inspectors compared the contents of these documents against system design basis information including the Updated Final Safety Analysis Report and Technical Specifications. The inspectors verified that the modification had not affected system operability or availability.

The inspectors performed a walkdown of the temporary modification installation verifying consistency with the modification documents and appropriate control of the plant configuration. The inspectors reviewed data obtained during the testing of the modification and observed installed plant instrumentation for condenser vacuum to insure no adverse effects to plant operation. The inspectors discussed the performance of the temporary modification with operators several days after initial installation to verify that the modification performed as expected.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Occupational Radiation Safety (OS)

2OS1 Access Control to Radiologically Significant Areas (71121.01)

.1 Plant Walkdowns and Radiation Work Permit Reviews

a. Inspection Scope

The inspector reviewed the radiological conditions of work areas within radiation areas (RAs) and high radiation areas (HRAs) in the Unit 1 and 2 Reactor Buildings, Turbine Building, and Radwaste Building. The inspector performed independent measurements of area radiation levels and reviewed associated licensee controls to determine if the controls (i.e., surveys, postings, and barricades) were adequate to meet the requirements of 10 CFR Part 20 and the licensee's Technical Specifications.

b. Findings

No findings of significance were identified.

.2 Job In-Progress Reviews

a. Inspection Scope

The inspector observed aspects of work activities that were being performed in RAs and HRAs to ensure that adequate radiological controls were assigned and implemented and to verify that workers demonstrated proper radiation worker practices. In particular, the inspector observed aspects of the licensee's transfer of condensate resin to a high integrity container (in preparation for shipment) and of a locked HRA entry into the main steam isolation valve area. The inspector reviewed engineering controls, radiological postings, and radiation work permit (RWP) requirements and attended pre-job briefings. The inspector also observed worker performance to verify that the workers were complying with radiological requirements and were demonstrating adequate radiological work practices.

b. Findings

No findings of significance were identified.

.3 High Dose Rate High Radiation Area and Very High Radiation Area Controls

a. Inspection Scope

The inspector reviewed the licensee's controls for high dose rate HRAs and very high radiation areas. In particular, the inspector reviewed the licensee's procedures for posting and controlling HRAs to verify the licensee's compliance with 10 CFR Part 20 and its Technical Specifications. The inspector also reviewed the licensee's most recent records of HRA boundary and posting surveillances and performed a walkdown to verify the adequacy of boundaries, controls, and postings. In addition, the inspector reviewed the licensee's controls for highly irradiated material that was stored in spent fuel storage pools and the licensee's inventory of materials currently stored in the spent fuel pool to verify that the licensee implemented adequate measures to prevent inadvertent personnel exposures from these materials.

b. Findings

No findings of significance were identified.

.4 Problem Identification and Resolution

a. Inspection Scope

The inspector reviewed the licensee's condition reports (CRs) (September 2000 through September 2001) concerning problems in HRAs, radiation worker performance, and radiation protection technician performance. The inspector reviewed these documents to assess the licensee's ability to identify repetitive problems, contributing causes, the extent of conditions, and corrective actions which will achieve lasting results.

b. Findings

No findings of significance were identified.

2OS2 As Low As Reasonably Achievable (ALARA) Planning and Controls (71121.02)

.1 Source Term Reduction

a. Inspection Scope

The inspector reviewed the status of the licensee's source term reduction program (2001 Source Term Reduction Plan) to assess if the licensee had an understanding of each unit's source term and a strategy to reduce the source term. In particular, the inspector reviewed the licensee's plans and progress in the following areas:

1. cobalt reduction;
2. shielding;
3. hot spot reduction;
4. system chemical decontaminations; and
5. reactor chemistry controls (Unit 1 and 2 zinc concentrations, hydrogen injection capabilities, and soluble and insoluble cobalt-60 levels).

The inspector also performed independent radiological measurements within the radiologically posted area to verify that the licensee had adequately identified sources that may affect collective exposures.

b. Findings

No findings of significance were identified.

.2 Declared Pregnant Workers

a. Inspection Scope

The inspector reviewed the licensee's controls implemented for declared pregnant workers to verify that these controls were in compliance with 10 CFR 20.1208 and were sufficient to maintain the dose to the embryo/fetus below the federal dose limit. Since the licensee did not have any declared pregnant workers during the 15 months prior to this inspection, the inspector's evaluation was limited to a review of the licensee's procedural controls and to a discussion of the program with a member of the radiation protection staff.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES (OA)

4OA2 Performance Indicator Verification (71151)

a. Inspection Scope

The inspector reviewed the licensee's determination of performance indicators for the occupational and public radiation safety cornerstones (Occupational Exposure Control Effectiveness and RETS/ODCM [Radiological Effluent Technical Specifications/Offsite Dose Calculation Manual] Radiological Effluent Occurrence) to verify that the licensee accurately determined these performance indicators and had identified all occurrences required by these indicators. Specifically, the inspector reviewed CRs (July 2000 through September 2001), quarterly offsite dose calculations for radiological effluents (Calendar Year 2001) and access control transactions (January 2001 through September 2001). During plant walkdowns (Section 2OS1.1), the inspector also verified the adequacy of posting and controls into locked HRAs, which contributed to the Occupational Exposure Control Effectiveness performance indicator.

The inspector also reviewed the licensee's reactor coolant system (RCS) activity performance indicator for the reactor safety cornerstone to verify that the information reported by the licensee was accurate. Specifically, the inspector reviewed the licensee's RCS sample results for maximum dose equivalent iodine-131 (July 2000 through September 2001) and the licensee's sampling and analysis procedures. The inspector also observed a chemistry technician obtain and analyze an RCS sample.

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 November 13, 2001. The licensee acknowledged the findings presented. No proprietary information was identified.

.2 Interim Exit Meeting

Senior Official at Exit:	George Barnes
Date:	10/05/01
Proprietary Information:	None
Subject:	Occupational Radiation Safety

.3 Interim Exit Meeting

Senior Official at Exit:	George Barnes
Date:	10/05/01
Proprietary Information:	None
Subject:	Licensed Operator Requalification Program

.4 Interim Exit Meeting

Senior Official at Exit:	George Barnes
Date:	11/06/01
Proprietary Information:	None
Subject:	Licensed Operator Requalification Program (Re-exit of unresolved item from interim exit meeting listed in 3 above)

PARTIAL LIST OF PERSONS CONTACTED

Licensee

T. Tulon, Site Vice President
G. Barnes, Plant Manager
R. Armitage, Training Director
M. Babak, Station Registered Nurse
D. Barker, Radiation Protection Manager
W. Beck, Regulatory Assurance Manager
G. Boerschig, Engineering Manager
R. Chrzanowski, Nuclear Oversight Manager
D. Decker, Simulator Operator
R. Gideon, Work Control Manager
T. Hanley, Shift Operations Supervisor
R. Hebler, Chemistry
D. Kallenbach, Radiation Protection
G. Klone, Operations Training
K. Leech, Security Manager
M. McDowell, Operations Manager
K. Moser, Chemistry Manager
M. Perito, Maintenance Manager
G. Rankin, Radiation Protection
C. Symonds, Exelon Operations Training
J. White, Operations Training Manager
J. Wooldridge, Radiation Protection

NRC

M. Ring, Chief, Reactor Projects Branch 1

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

50-254/00-16-01; 50-265/00-16-01	NCV	Failure to Follow Operator Requalification Program Procedural Requirements
50-254/00-16-02; 50-265/00-16-02	NCV	Failure to Meet 10 CFR 50.65 Requirements

Closed

50-254/00-16-01; 50-265/00-16-01	NCV	Failure to Follow Operator Requalification Program Procedural Requirements
50-254/00-16-02; 50-265/00-16-02	NCV	Failure to Meet 10 CFR 50.65 Requirements

LIST OF ACRONYMS AND INITIALISMS

ALARA	As Low As Reasonably Achievable
ANSI/ANS	American National Standard
CFR	Code of Federal Regulations
CR	Condition Report
HPCI	High Pressure Coolant Injection
HRA	High Radiation Area
IDNS	Illinois Department of Nuclear Safety
INPO	Institute of Nuclear Power Operations
JPM	Job Performance Measure
LORT	Licensed Operator Requalification Training
NCV	Non-Cited Violation
NRC	Nuclear Regulatory Commission
ODCM	Offsite Dose Calculation Manual
OPEX	Operating Experience
OS	Occupational Radiation Safety
PERR	Public Electronic Reading Room
RA	Radiation Area
RCS	Reactor Coolant System
RETS	Radiological Effluent Technical Specifications
RPV	Reactor Pressure Vessel
RWP	Radiation Work Permit
SAT	Systems Approach to Training
SBO	Station Blackout
SDP	Significance Determination Process
SOER	Significant Operational Experience Report
SRO	Senior Reactor Operator
SSC	Structures, Systems, and Components

LIST OF DOCUMENTS REVIEWED

1R11 Licensed Operator Requalification

Number	Subject/Title	Date/Revision
ANS-3.4	Medical Certification and Monitoring of Personnel Requiring Operator Licenses for Nuclear Power Plants	Revision Dated 1976
Classroom Training Plan	Training Years 2000 and 2001	N/A
Condition Report (CR) Q2001-03091	SRO Rotation Requirements of TQ-AA-106 Not Met During Annual Dynamic Exam	October 4, 2001
CR Q2000-03555	Inability to Use Simulator Electronics Ops Logs	October 9, 2000
CR Q2000-04099	U-2 Pneumatic Compressor Tripping on Low Suction Pressure	November 7, 2000
CR Q2000-04323	Automatic Reactor Scram on Low Level	December 6, 2000
CR Q2000-04468	Unit 1 HPCI Took 6.5 Minutes to Vent During QCOS 2300-09	December 27, 2000
CR Q2001-0120	1D2 Heater Trip	January 12, 2001
CR Q2001-00282	SBO Output Breaker Failed to Close	January 26, 2001
CWPI-NSP-TQ-1-8	Shift Technical Advisor Training Program	Revision 1
Job Performance Measure (JPM) LP-006-II	Locally Close a 4160 Volt Breaker with the Pigtail	Revision 3
JPM LS-034-I	Perform the Weekly Turbine-Generator Tests	Revision 10
JPM LP-022-I	Locally Start-up the Safe Shutdown Makeup Pump System	Revision 14
JPM LS-002-I-F	Startup the Standby Gas Treatment System, Recognize and Report Low System Flow	Revision 9
JPM LP-001-I	Locally Start-up the HPCI System to Control RPV Level	Revision 15
Licensee Event Report	Inadequate Fill and Vent Surveillance Performed on High Pressure Coolant Injection Resulting in Air in Discharge Piping	December 27, 2000

Medical Evaluation Records	Various	N/A
NSP-OP-AA-105-102	Active NRC License List	October 4, 2001
NTAFT IMP01	Remedial Training Notification and Action on Failure - Various, 2000/2001	Revision 3
NTAFT LOR02	Licensed Operator Requal Training Classroom Attendance Sheets - Years 2000, 2001	Revision 1
NTAFT JLOR04	Nuclear Generation Group Licenced Operator Requal Training Examination Development Job Aid	Revision 01
NTAFT JLOR05	Nuclear Generation Group Licenced Operator Requal Training Examination Administration Job Aid	Revision 1
OP-AA-101-111	Roles and Responsibilities of On-Shift Personnel	Revision 0
OP-AA-105-101	Administrative Process for NRC License and Medical Requirements	Revision 0
OP-AA-105-102	NRC Active License Maintenance	Revision 0
Quad Cities Simulator Sample Plan for 2001	Group 1 and Group 2	September 6, 2001
Regulatory Guide 1.134	Medical Evaluation of Nuclear Power Plant Personnel Requiring Operator Licenses	Revision 1
RS-AA-115	Operating Experience (OPEX)	Revision 2
RO Requal Static 2001 Exam	Crew “B”	September 20, 2001
RO Written Requal Exam, 2001	Crew “B”	September 21, 2001
Significant Operational Experience Report (SOER) Recommendations	Operations Job Task Analysis Links - Various	September 5, 2001
SRO Requal Static 2001 Exam	Crew “B”	September 18, 2001
SRO Written Requal Exam, 2001	Crew “B”	September 21, 2001

TQ-AA-106	Licensed Operator Requal Training Program	Revision 0
TQ-AA-201	Examination Security and Administration	Revision 0
TQ-AA-210-4102	Performance Review Committee Data Sheet - Various, 200/2001	Revision 1

1R12 Maintenance Rule Implementation

Number	Subject/Title	Date/Revision
Q2001-02093	Unit 1 Average Power Range Monitor 5 Failed the Flow Portion of Quad Cities Operating Surveillance Procedure 700-06	July 5, 2001
Q2001-01793	Reactor Vent SPING Mid-Range Detector Failed Calibration	June 8, 2001
Q2001-02013	Reactor Vent Sample Vacuum Pump Stopped Collecting Required Samples	June 26, 2001
Q2001-01328	Rework - Unit 1 Battery Room Heating Ventilation and Air Conditioning Belt Replacement	May 3, 2001
WR 990218992	Drive Belts Broken, Battery Room Heating Ventilation and Air Conditioning Inoperable	October 13, 2000
WR 990231072	The Fan Has Shredded One of its Two Belts, Please Replace	November 22, 2000
WR 990250822	One of the Fan Belts is Broken and One is Slipping	January 20, 2001
WR 990265609	Belts Broken/Replace	March 22, 2001
WR 990204866	One of the Two Belts is Broken	October 25, 2001

1R15 Operability Evaluations

Number	Subject/Title	Date/Revision
Q1999-02857	Operability of Standby Liquid Control System During Air Sparging	August 8, 1999
Q2001-00811	Foreign Material From Tail End of Spring From A Check Valve in the Residual Heat Removal Service Water System	March 14, 2001

Q2001-02961	Nuclear Regulatory Commission Questioned Resolution of Standby Liquid Control Sparging Operability Issue	September 21, 2001
Q2001-03054	Residual Heat Removal Service Water Pump Discharge Check Valve Found With Broken Springs	October 02, 2001
Q2001-03191	Residual Heat Removal Service Water Pump Check Valve Surveillance Found Check Valve Degraded But Functional	October 16, 2001
Q2001-03159	1A Residual Heat Removal Heat Exchanger Leaking From Reactor Side Into Service Water Side	October 11, 2001
CR 79779	Incorrect Fuel Injectors Installed on Unit 2 Station Blackout Diesel Generator	October 26, 2001

1R19 Post Maintenance Testing

Number	Subject/Title	Date/Revision
WR 99165824	1D Residual Heat Removal Service Water Pump Area Cooler Cleaning and Inspection	October 22, 2001
WR 00359344	Diesel Generator Load Test (Unit 1)	October 10, 2001
WR 00358987	Diesel Generator Fuel Oil Transfer Test (Unit 1)	October 10, 2001
WR 00360260	Diesel Generator Air Compressor Test (Unit 1)	October 10, 2001
QCOS 1400-08	Core Spray Power Operated Valve Test for 1-1402-38B	Revision 13
QCOS 1400-08	Core Spray Power Operated Valve Test for 1-1402-4B	Revision 13
QCOS 0005-04	Inservice Testing Valve Position Indication Surveillance for 1-1402-4B and 1-1402-38B	Revision 8
WR 00357620	Number 2 Station Blackout Diesel Generator Starting Air Compressor Test	October 5, 2001
WR 00339177	Number 2 Station Blackout Diesel Generator Direct Current Lubricating Oil Pump Test	October 5, 2001
WR 00339175	Number 2 Station Blackout Diesel Generator Jacket water Booster Pump Test	October 5, 2001

WR 99182422	Number 2 Station Blackout Diesel Generator Two Year Periodic Inspection	October 2, 2001
WR 00339178	Number 2 Station Blackout Diesel Generator Load Test	October 5, 2001

1R22 Surveillance Testing

Number	Subject/Title	Date/Revision
QCOS 6620-05	Station Blackout Diesel Generator 2 Fuel Oil Transfer Pump Quarterly Test	October 6, 2001 Revision 10
QCMMS 6600-03	Unit One Diesel Generator Two Year Inspection	October 9, 2001 Revision 14
QCIS 0200-03	Low and Low-Low Reactor Water Level Analog Trip System Calibration and Functional Test	October 16, 2001 Revision 13
QCOS 7500-05	Standby Gas Treatment System Monthly Operability Test	October 17, 2001 Revision 22
QCOS 6620-10	Station Blackout Diesel Generator 2 Endurance/Margin and Full Load Reject Test	November 5, 2001 Revision 11

2OS1 Access Control to Radiologically Significant Areas

Number	Subject/Title	Date/Revision
AR 47625-04	Common Cause Analysis -- Unplanned Spread of Contamination Events	March 22, 2001
AR 51425-02	Common Cause Analysis -- Radiological Control Over Work Activities	May 9, 2001
CR Q2000-03642	N.O. Identified Poor Rad Worker Practices in a Contaminated Area	October 15, 2000
CR Q2000-03644	N.O. Identified Poor Rad Worker Practices on the Refuel Floor	October 15, 2000
CR Q2000-03718	Workers ED was Alarming	October 17, 2000
CR Q2000-03766	N.O. Identified Communication Problem for Dosimetry Placement	October 18, 2000
CR Q2000-03788	N.O. Identified a RWP and ALARA Plan Instruction was not Followed/Implemented	October 20, 2000
CR Q2000-03821	Multiple PCEs, DW1 Installing LPRM Flush Cans	October 22, 2000

CR Q2000-03886	G.E. Workers Fail to Communicate Their Job Scope with R.P.T.'s	October 24, 2000
CR Q2000-03964	Worker Fails to Exit U-1 Drywell when Accumulated ED Alarm was Reached	October 28, 2000
CR Q2000-04005	Exiting Guardhouse Contamination Monitors In-correct	October 29, 2000
CR Q2000-04032	N.O. Identified Incorrect Action to Whole Body Contamination Monitor Alarm	October 30, 2000
CR Q2000-04049	N.O. Identified Inconsistent Whole Body Contamination Monitor Instructions	October 31, 2000
CR Q2000-04148	RP Personnel did not Meet Management's Expectations	November 13, 2000
CR Q2000-04163	Redundant Trips into High Rad Area During Q1R16	October 16, 2000
CR Q2000-04361	RP Issues Related to the 1-1201-143 Valve Job	December 12, 2000
CR Q2000-04470	Extra Trips into Hi Rad Areas	December 27, 2000
CR Q2001-00183	ALARA Brief not Performed for Breach of RW Cond Transfer Line	January 16, 2001
CR Q2001-00726	Use of Expired Revision to QCRP 6020-03	March 6, 2001
CR Q2001-00815	Material Found in 1A RHR Room with High Dose Rates	March 14, 2001
CR Q2001-00996	Improper Radiation/Contamination Control Practice at Trackway No. 1	March 29, 2001
CR Q2001-01018	Personnel did not Communicate with RPT Prior to Entering U2 HPCI	April 1, 2001
CR Q2001-01048	Rad Boundary Moved by Truck Driver	April 5, 2001
CR Q2001-01095	RP Self Assessment Deficiency and Recommendations	April 9, 2001
CR Q2001-01111	Radworker Performance Issue -- Fuel Pool Clean Up Project	April 11, 2001
CR Q2001-02235	Worker Makes Multiple Entries on Wrong RWP	July 17, 2001
CR Q2001-02317	RP Person Stepped into Contaminated Area	July 23, 2001
QAP 1150-5	Access to TIP Room	Revision 4

QCAP 0270-02	Controls to Prevent Personnel Overexposures and Contamination While Working on the Refuel Floor	Revision 4
QCFHP 0500-01	Attachment A, Spent Fuel Storage Pool Inventory Log (as of October 5, 2001)	Revision 3
QCFHP 0500-01	Spent Fuel Storage Pool Inventory Control and Audit	Revision 3
QCRP 5210-01	Attachment A, HRA Barricade Checklist (completed October 1, 2001)	Revision 8
QCRP 5210-01	High Radiation Area Inspections	Revision 8
QCRP 5310-02	High Radiation Area Padlock and Key Inventory	Revision 3
RP-AA-460	Controls for High and Very High Radiation Areas	Revision 1
RWP 04007356	Fuel Handling: General Tasks/Pool Work	Revision 5
RWP 04007408	At Power Entries of HWC Areas: Valving/Surveys/Inspections/HPCI and RCIC Venting	Revision 2

2OS2 ALARA Planning and Controls

Number	Subject/Title	Date/Revision
	Source Term Reduction Plan	September 2001
RP-AA-270	Prenatal and Postnatal Programs	Revision 1

4OA1 Performance Indicator Verification

Number	Subject/Title	Date/Revision
	Counting Room Sample Counting Guide	March 21, 2001
	Survey: Radwaste Basement 572'6" elv.	December 6, 2000
	Survey: Radwaste Basement 572'6" elv.	December 16, 2000
	Survey: Radwaste Basement 572'6" elv.	December 17, 2000
	Survey: Radwaste Basement 572'6" elv.	December 18, 2000

	Survey: Radwaste Basement 572'6" elv.	December 19, 2000
	Survey: Radwaste Basement S.E. Corner 572'6" elv.	December 7, 2000
	Survey: Radwaste Basement S.E. Corner 572'6" elv.	December 10, 2000
	Survey: Radwaste Basement S.W. Corner 572'6" elv.	December 16, 2000
	Survey: Radwaste Basement S.W. Corner 572'6" elv.	December 19, 2000
CR Q2000-04400	Unexpected Increase in Dose Rates Caused the RW Bsmnt to be Controlled as a LHRA	December 16, 2000
CR Q2001-01215	The Eyewash Station in Radwaste Truckbay Control Room Drains Outside the RPA	April 20, 2001
CR Q2001-02421	Door Found Open in TB Ventilation Ductwork to the Main Chimney (Unmonitored Pathway)	July 31, 2001
QCCP 0200-01	Attachment A (Page 1 of 1), Reactor Water Radionuclide Analysis (completed on October 4, 2001 for Units 1 and 2)	Revision 9
QCCP 0200-01	Reactor Water Iodine Analysis	Revision 9
QCCP 1300-16	Reactor/Turbine Building Sample Panel Sample Collection	Revision 12