UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION III
2443 WARRENVILLE ROAD, SUITE 210
LISLE, IL 60532-4352

January 27, 2010

Mr. Charles G. Pardee
Senior Vice President, Exelon Generation Company, LLC
President and Chief Nuclear Officer (CNO), Exelon Nuclear
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: QUAD CITIES NUCLEAR POWER STATION, UNITS 1 AND 2
NRC INTEGRATED INSPECTION REPORT 05000254/2009005;
05000265/2009005

Dear Mr. Pardee:

On December 31, 2009, the U.S. Nuclear Regulatory Commission (NRC) completed an integrated inspection at your Quad Cities Nuclear Power Station, Units 1 and 2. The enclosed report documents the inspection findings, which were discussed on January 5, 2010, with Mr. T. 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, three self-revealed findings of very low safety significance were identified. Two of the findings involved a violation of NRC requirements. However, because of their very low safety significance, and because the issues were entered into your corrective action program, the NRC is treating the issues as non-cited violations (NCVs) in accordance with Section VI.A.1 of the NRC Enforcement Policy. Additionally, a licensee-identified violation is listed in Section 4OA7 of this report.

If you contest the subject or severity of an NCV, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with a copy to the Regional Administrator, U.S. Nuclear Regulatory Commission - Region III, 2443 Warrenville Road, Suite 210, Lisle, IL 60532-4352; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the Resident Inspector Office at the Quad Cities Nuclear Power Station. In addition, if you disagree with the characterization of any finding in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region III, and the NRC Resident Inspector at the Quad Cities Nuclear Power Station. The information that you provide will be considered in accordance with Inspection Manual Chapter 0305.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be made available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Website at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

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 05000254/2009005; 05000265/2009005
w/Attachment: Supplemental Information

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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:	05000254/2009005 and 05000265/2009005
Licensee:	Exelon Nuclear
Facility:	Quad Cities Nuclear Power Station, Units 1 and 2
Location:	Cordova, IL
Dates:	October 1 through December 31, 2009
Inspectors:	J. McGhee, Senior Resident Inspector B. Cushman, Resident Inspector R. Orlikowski, Senior Resident Inspector - Duane Arnold M. Bielby, Senior Operations Engineer C. Moore, Operations Engineer M. Mitchell, Senior Radiation Protection Inspector R. Jickling, Senior Emergency Preparedness Inspector C. Mathews, Illinois Emergency Management Agency
Approved by:	M. Ring, Chief Branch 1 Division of Reactor Projects

Enclosure

TABLE OF CONTENTS

SUMMARY OF FINDINGS

IR 05000254/2009005, 05000265/2009005; 10/01/09 - 12/31/09; Quad Cities Nuclear Power Station, Units 1 & 2; Other Activities.

This report covers a 3-month period of inspection by resident inspectors and announced baseline inspections by regional inspectors. Three Green findings were identified by the inspectors. Two of the findings were considered Non-Cited Violations (NCVs) of NRC regulations. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

A. NRC-Identified and Self-Revealed Findings

Cornerstone: Mitigating Systems

- Green. A finding of very low safety significance and a NCV of 10 CFR 50 Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was self-revealed for the installation of an inappropriate component into the Unit 2 emergency diesel generator coolant system. Specifically, the licensee failed to properly perform a part evaluation for a replacement temperature indicator (TI) designated as "augmented quality." This resulted in the TI probe shearing off in the coolant flow stream and causing foreign material to enter the coolant system. Immediate corrective actions included the installation of an appropriately approved TI and recovery of foreign material from the system.

  The same part evaluation process was used for risk-significant components independent of the system being worked. Therefore, this finding was more than minor because, if left uncorrected, this performance deficiency could lead to unplanned unavailability of safety-related or risk-significant equipment and would become a more significant safety concern. The inspectors performed a Phase 1 SDP screening and concluded that the issue was of very low safety significance (Green) because the failure of the TI did not result in unplanned inoperability or loss of function of the diesel generator. The inspectors determined that this finding did not have a cross-cutting aspect. This performance deficiency is not indicative of current licensee performance. The decision to install this type of TI was made in October 2007. The process which allowed this performance deficiency was identified and corrected through procedure and policy revisions in February 2008. (Section 4OA2)

- Green: A finding of very low safety significance and a NCV of TS 3.6.2.4, "Residual Heat Removal (RHR) Suppression Pool Spray," was self-revealed for the licensee's failure to meet the Technical Specification (TS) limiting conditions of operation (LCO) requirement prior to transitioning into an operating mode where the LCO was required to be satisfied. Specifically, Motor Operator (MO) 1-1001-37B for the Unit 1 RHR torus (suppression pool) spray isolation valve was found to have been inoperable when the operating crew transitioned Unit 1 from Mode 4 to Mode 2 on May 30, 2009. The valve actuator had been inadvertently declutched (i.e., motor disengaged) and the valve was not demonstrated operable by stroking the valve electrically after the actuator

motor was declutched. Inspectors determined that the finding was cross-cutting in the area of Problem Identification and Resolution - Corrective Action (P.1(a)) because plant personnel failed to identify the physical contact with the valve actuator that resulted in the valve being declutched; therefore, operators incorrectly assessed the system condition as in compliance with TS 3.6.2.4. Immediate licensee corrective actions included engagement of the motor and stroke testing of the valve.

The finding is more than minor because it was associated with the equipment performance quality attribute of the Mitigating Systems Cornerstone and affected the objective of ensuring availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, failure to verify system availability and capability prior to entering the required modes resulted in fewer available mitigating systems than assumed in the operating risk evaluations. The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1 - Initial Screening and Characterization of findings," Table 4a. Inspectors answered all of the questions for the Mitigating Systems Cornerstone "No." Therefore, the finding screened as Green or very low safety significance. (Section 4OA3)

Cornerstone: Barrier Integrity

- Green. A finding of very low safety significance was self-revealed for the failure to perform maintenance that would ensure the portable emergency flooding pump (Darley pump) was in a standby condition and readily available to accomplish the requirements of QCOA 0010-16, "Flood Emergency Procedure." Specifically, the failure to perform adequate maintenance resulted in the need to replace the battery and gasoline for the pump and, upon pump start, fuel sprayed out of the fuel pump. Although the staged portable pump would not have supported the external flooding emergency response procedure, no violation of regulatory requirements occurred. The inspectors did not identify a cross-cutting aspect associated with this finding because the issue is not reflective of current licensee performance. Immediate corrective actions included replacement of the degraded battery and overhaul of the pump's fuel pump. Other actions included identification of preventative maintenance tasks and establishing a program owner of the pump and support equipment.

  This issue was more than minor because it was associated with the Structures, Systems, and Components (SSC) Performance attribute of the Barrier Integrity Cornerstone objective of maintaining the functionality of spent fuel pool cooling. The finding affected the cornerstone objective of providing assurance that physical design barriers protect the public from radionuclide releases caused by events including external flooding. Specifically, the pump could fail due to maintenance preventable component failure resulting in inadequate or degraded makeup to the spent fuel pool during an external flooding event. The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1 - Initial Screening and Characterization of findings," Tables 4a and 4b. The inspectors determined that even though this equipment is assumed to completely fail, the licensee could provide an alternate portable pump already located on site and capable of performing the safety function during this slow developing event. Since alternate equipment was available and the delay in mobilizing the alternate equipment would not have resulted in loss of capability to mitigate the

impact of the flooding event, the issue is of very low safety significance or Green. (Section 4OA2)

B. Licensee-Identified Violations

A violation of very low safety significance that was identified by the licensee was reviewed by inspectors. Corrective actions planned or taken by the licensee have been entered into the licensee's corrective action program. This violation and associated corrective action tracking number are listed in Section 4OA7 of this report.

REPORT DETAILS

Summary of Plant Status

Unit 1

Unit 1 operated at 100 percent thermal power throughout the evaluated period from October 1 until December 31, 2009, with the exception of planned power reductions for routine surveillances, planned equipment repair, and control rod maneuvers.

Unit 2

Unit 2 operated at or near 100 percent thermal power from October 1 until December 16 with the exception of planned power reductions for routine surveillances and control rod maneuvers. On December 16, 2009, operators attempted to replace a light bulb in the indication circuit for the extraction steam check valve 'A' on the 2D feedwater heaters. The light bulb separated with the base remaining in the socket. During the evolution the 'D' heaters tripped, resulting in a partial loss of feedwater heating and a resulting change in reactor power. Operators lowered power about 150 MWth (50 MWe) by inserting one high reactivity-worth control rod. Power increased by 0.59 percent during the loss of feedwater heating transient. By 10:45 a.m. that same morning, feedwater heaters had been restored and the control rod was withdrawn to restore the unit to 100 percent thermal power. The unit remained at 100 percent power for the duration of the evaluated period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01)

.1 Winter Seasonal Readiness Preparations

a. Inspection Scope

The inspectors conducted a review of the licensee's preparations for winter conditions to verify that the plant's design features and implementation of procedures were sufficient to protect mitigating systems from the effects of adverse weather. Documentation for selected risk-significant systems was reviewed to ensure that these systems would remain functional when challenged by inclement weather. During the inspection, the inspectors focused on plant-specific design features and the licensee's procedures used to mitigate or respond to adverse weather conditions. Additionally, the inspectors reviewed the Updated Final Safety Analysis Report (UFSAR) and performance requirements for systems selected for inspection, and verified that operator actions were appropriate as specified by plant-specific procedures. Cold weather protection, such as heat tracing and area heaters, was verified to be in operation where applicable. The inspectors also reviewed corrective action program (CAP) items to verify that the licensee was identifying adverse weather issues at an appropriate threshold and entering them into the CAP in accordance with station corrective action procedures. Specific documents reviewed during this inspection are listed in the Attachment to this report. The inspectors' reviews focused specifically on the following plant systems due to their risk significance or susceptibility to cold weather issues:

- heating steam, and
- circulating water/de-icing valve.

This inspection constituted one winter seasonal readiness preparations sample as defined in Inspection Procedure (IP) 71111.01-05.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment (71111.04)

.1 Quarterly Partial System Walkdowns

a. Inspection Scope

The inspectors performed partial system walkdowns of the following risk-significant systems:

- 1/2 'B' diesel driven fire pump; and
- Unit 1 emergency diesel generator and diesel generator cooling water pump.

The inspectors selected these systems based on their risk significance relative to the Reactor Safety Cornerstone at the time they were inspected. The inspectors attempted to identify any discrepancies that could impact the function of the system, and, therefore, potentially increase risk. The inspectors reviewed applicable operating procedures, system diagrams, UFSAR, Technical Specification (TS) requirements, outstanding work orders (WOs), condition reports, and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have rendered the systems incapable of performing their intended functions. The inspectors also walked down accessible portions of the systems to verify system components and support equipment were aligned correctly and operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no obvious deficiencies. The inspectors also verified that the licensee had properly identified and resolved equipment alignment problems that could cause initiating events or impact the capability of mitigating systems or barriers and entered them into the CAP with the appropriate significance characterization. Documents reviewed are listed in the Attachment to this report.

These activities constituted two partial system walkdown samples as defined in IP 71111.04-05.

b. Findings

No findings of significance were identified.

.2 Semi-Annual Complete System Walkdown

a. Inspection Scope

On November 5, 2009, the inspectors performed a complete system alignment inspection of the Unit 2 emergency diesel generator to verify the functional capability of the system. This system was selected because it was considered both safety significant and risk significant in the licensee's probabilistic risk assessment. The inspectors walked down the system to review mechanical and electrical equipment lineups; electrical power availability; system pressure and temperature indications, as appropriate; component labeling; component lubrication; component and equipment cooling; hangers and supports; operability of support systems; and to ensure that ancillary equipment or debris did not interfere with equipment operation. A review of a sample of past and outstanding work orders was performed to determine whether any deficiencies significantly affected the system function. In addition, the inspectors reviewed the CAP database to ensure that system equipment alignment problems were being identified and appropriately resolved. Documents reviewed are listed in the Attachment to this report.

These activities constituted one complete system walkdown sample as defined in IP 71111.04-05.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05)

.1 Routine Resident Inspector Tours (71111.05Q)

a. Inspection Scope

The inspectors conducted fire protection walkdowns which were focused on availability, accessibility, and the condition of firefighting equipment in the following risk-significant plant areas:

- Unit 2 Reactor Bldg. El. 554'0", NW Corner Room - 2A Core Spray, Fire Zone 11.3.3;
- Unit 1 Turbine Bldg. El. 595'0", Diesel Generator, Fire Zone 9.1;
- Unit 1 Turbine Bldg. El. 595'0", Reactor Feed Pumps, Fire Zone 8.2.6.A;
- Crib House Bldg. El. 559'8", Basement, Fire Zone 11.4.A; and
- Crib House Bldg. El. 595'0", Ground Floor/Service Water Pumps, Fire Zone 11.4.B.

The inspectors reviewed areas to assess if the licensee had implemented a fire protection program that adequately controlled combustibles and ignition sources within the plant, effectively maintained fire detection and suppression capability, maintained passive fire protection features in good material condition, and implemented adequate compensatory measures for out-of-service, degraded or inoperable fire protection equipment, systems, or features in accordance with the licensee's fire plan.
The inspectors selected fire areas based on their overall contribution to internal fire risk

as documented in the plant's Individual Plant Examination of External Events with later additional insights, their potential to impact equipment which could initiate or mitigate a plant transient, or their impact on the plant's ability to respond to a security event. Using the documents listed in the Attachment to this report, the inspectors verified that fire hoses and extinguishers were in their designated locations and available for immediate use; that fire detectors and sprinklers were unobstructed; that transient material loading was within the analyzed limits; and fire doors, dampers, and penetration seals appeared to be in satisfactory condition. The inspectors also verified that minor issues identified during the inspection were entered into the licensee's CAP. Documents reviewed are listed in the Attachment to this report.

These activities constituted five quarterly fire protection inspection samples as defined in IP 71111.05-05.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program (71111.11)

.1 Resident Inspector Quarterly Review (71111.11Q)

a. Inspection Scope

On November 4, 2009, the inspectors observed licensed operator continuing training to verify that operator performance was adequate, evaluators were identifying and documenting crew performance problems, and training was being conducted in accordance with licensee procedures. The inspectors evaluated the following areas:

- licensed operator performance;
- crew's communications and accuracy of documentation;
- ability to take timely actions in the conservative direction;
- correct use and implementation of abnormal and emergency procedures;
- control board manipulations;
- oversight and direction from supervisors; and
- ability to identify and implement Emergency Plan actions and notifications.

The crew's performance in these areas was compared to pre-established operator action expectations and lesson objectives. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one quarterly licensed operator requalification program sample as defined in IP 71111.11.

b. Findings

No findings of significance were identified.

.2 Facility Operating History (71111.11B)

a. Inspection Scope

The inspectors reviewed the plant's operating history from January 2007 through September 2009 to identify operating experience that was expected to be addressed by the Licensed Operator Requalification Training (LORT) program. The inspectors verified that the identified operating experience had been addressed by the facility licensee in accordance with the station's approved Systems Approach to Training (SAT) program to satisfy the requirements of 10 CFR 55.59(c). The documents reviewed during this inspection are listed in the Attachment to this report.

b. Findings

No findings of significance were identified.

.3 Licensee Requalification Examinations

a. Inspection Scope

The inspectors performed an inspection of the licensee's LORT test/examination program for compliance with the station's SAT program which would satisfy the requirements of 10 CFR 55.59(c)(4). The reviewed operating examination material consisted of two operating tests, each containing two dynamic simulator scenarios and five job performance measures (JPMs). The two biennial written examinations reviewed consisted of two parts. Each written examination contained 30 questions consisting of 15 written exam questions and 15 static exam questions. The inspectors reviewed the annual requalification operating test and biennial written examination material to evaluate general quality, construction, and difficulty level. The inspectors assessed the level of examination material duplication from week to week during the current year operating test. The examiners assessed the amount of written examination material duplication from week to week for the biennial written examination administered in calendar year 2009. The inspectors reviewed the methodology for developing the examinations, including the LORT program 2-year sample plan, probabilistic risk assessment insights, previously identified operator performance deficiencies, and plant modifications. The documents reviewed during this inspection are listed in the Attachment to this report.

b. Findings

No findings of significance were identified.

.4 Licensee Administration of Requalification Examinations

a. Inspection Scope

The inspectors observed the administration of a requalification operating test to assess the licensee's effectiveness in conducting the test to ensure compliance with 10 CRF 55.59(c)(4). The inspectors evaluated the performance of one operating crew in parallel with the facility evaluators during four dynamic simulator scenarios and evaluated various licensed crew members concurrently with facility evaluators during the

administration of several JPMs. The inspectors assessed the facility evaluators' ability to determine adequate crew and individual performance using objective, measurable standards. The inspectors observed the training staff personnel administer the operating test, including conducting pre-examination briefings, evaluations of operator performance, and individual and crew evaluations upon completion of the operating test. The inspectors evaluated the ability of the simulator to support the examinations.

b. Findings

No findings of significance were identified.

.5 Examination Security

a. Inspection Scope

The inspectors observed and reviewed the licensee's overall licensed operator requalification examination security program related to examination physical security (e.g., access restrictions and simulator considerations) and integrity (e.g., predictability and bias) to verify compliance with 10 CFR 55.49, "Integrity of Examinations and Tests." The inspectors also reviewed the facility licensee's examination security procedure and the implementation of security and integrity measures (e.g., security agreements, sampling criteria, bank use, and test item repetition) throughout the examination process. No examination security compromises occurred during these observations. The documents reviewed during this inspection are listed in the Attachment to this report.

b. Findings

No findings of significance were identified.

.6 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 reviewed the licensee's quality assurance oversight activities, including licensee training department self-assessment reports. The inspectors evaluated the licensee's ability to assess the effectiveness of its LORT program and their ability to implement appropriate corrective actions. This evaluation was performed to verify compliance with 10 CFR 55.59(c) and the licensee's SAT based program. The documents reviewed during this inspection are listed in the Attachment to this report.

b. Findings

No findings of significance were identified.

.7 Licensee Remedial Training Program

a. Inspection Scope

The inspectors assessed the adequacy and effectiveness of the remedial training conducted since the previous biennial requalification examinations and the training from 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. This evaluation was performed in accordance with 10 CFR 55.59(c) and with respect to the licensee's SAT based program. The documents reviewed during this inspection are listed in the Attachment to this report.

b. Findings

No findings of significance were identified.

.8 Conformance With Operator License Conditions

a. Inspection Scope

The inspectors reviewed the facility and individual operator licensees' conformance with the requirements of 10 CFR Part 55. The inspectors reviewed the facility licensee's program for maintaining active operator licenses and to assess compliance with 10 CFR 55.53(e) and (f). The inspectors reviewed the procedural guidance and the process for tracking on-shift hours for licensed operators and which control room positions were granted watch-standing credit for maintaining active operator licenses. The inspectors reviewed the facility licensee's LORT program to assess compliance with the requalification program requirements as described by 10 CFR 55.59(c). Additionally, medical records for 10 licensed operators were reviewed for compliance with 10 CFR 55.53(I). The documents reviewed during this inspection are listed in the Attachment to this report.

b. Findings

No findings of significance were identified.

.9 Annual Operating Test Results and Biennial Written Examination Results (71111.11B)

a. Inspection Scope

The inspectors reviewed the overall pass/fail results of the individual JPM operating tests, the simulator operating tests, and the biennial written examination (required to be given per 10 CFR 55.59(a)(2)) administered by the licensee from September 2009 through November 2009 as part of the licensee's operator licensing requalification cycle. These results were compared to the thresholds established in Inspection Manual Chapter 0609, Appendix I, "Licensed Operator Requalification Significance Determination Process (SDP)." The evaluations were also performed to determine if the licensee effectively implemented operator requalification guidelines established in NUREG 1021, "Operator Licensing Examination Standards for Power Reactors," and

IP 71111.11, “Licensed Operator Requalification Program.” The documents reviewed during this inspection are listed in the Attachment to this report.

This inspection constituted one inspection sample as defined in IP 71111.11.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12)

.1 Routine Quarterly Evaluations (71111.12Q)

a. Inspection Scope

The inspectors evaluated degraded performance issues involving the following risk-significant systems:

- Z2900; Safe Shutdown Makeup Pump, and
- Z4700; Instrument Air.

The inspectors reviewed events such as where ineffective equipment maintenance had resulted in valid or invalid automatic actuations of engineered safeguards systems and independently verified the licensee's actions to address system performance or condition problems in terms of the following:

- implementing appropriate work practices;
- identifying and addressing common cause failures;
- scoping of systems in accordance with 10 CFR 50.65(b) of the maintenance rule;
- characterizing system reliability issues for performance;
- charging unavailability for performance;
- trending key parameters for condition monitoring;
- ensuring 10 CFR 50.65(a)(1) or (a)(2) classification or re-classification; and
- verifying appropriate performance criteria for SSCs/functions classified as (a)(2) or appropriate and adequate goals and corrective actions for systems classified as (a)(1).

The inspectors assessed performance issues with respect to the reliability, availability, and condition monitoring of the system. In addition, the inspectors verified maintenance effectiveness issues were entered into the CAP with the appropriate significance characterization. Documents reviewed are listed in the Attachment to this report.

This inspection constituted two quarterly maintenance effectiveness samples as defined in IP 71111.12-05.

b. Findings

No findings of significance were identified.

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

.1 Maintenance Risk Assessments and Emergent Work Control

a. Inspection Scope

The inspectors reviewed the licensee's evaluation and management of plant risk for the maintenance and emergent work activities affecting risk-significant and safety-related equipment listed below to verify that the appropriate risk assessments were performed prior to removing equipment for work:

- Work Week 45 - 1A residual heat removal (RHR) room cooler, 1A RHR service water (RHRSW) loop, 1B RHR seal cooler, 1-1001-16A boroscope and Votes testing, 1-1001-37A MOV equipment qualification inspection; and
- Work Week 51 - Unit 1 250 Vdc battery reconfiguration using Unit 1 125 Vdc alternate battery with emergent Unit 2 125 Vdc battery low specific gravity problems, 2A RHR loop and 2B RHRSW pump unavailability.

These activities were selected based on their potential risk significance relative to the Reactor Safety Cornerstones. As applicable for each activity, the inspectors verified that risk assessments were performed as required by 10 CFR 50.65(a)(4) and were accurate and complete. When emergent work was performed, the inspectors verified that the plant risk was promptly reassessed and managed. The inspectors reviewed the scope of maintenance work, discussed the results of the assessment with the licensee's probabilistic risk analyst or shift technical advisor, and verified plant conditions were consistent with the risk assessment. The inspectors also reviewed TS requirements and walked down portions of redundant safety systems, when applicable, to verify risk analysis assumptions were valid and applicable requirements were met.

These maintenance risk assessments and emergent work control activities constituted two samples as defined in IP 71111.13-05.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

.1 Operability Evaluations

a. Inspection Scope

The inspectors reviewed the following issues:

- IR 987904: 1A RHR Room Cooler Tube Sheet Has Pitting, and
- IR 994823: TS SR 3.8.4.8 Frequency Not Met.

The inspectors selected these potential operability issues based on the risk significance of the associated components and systems. The inspectors evaluated the technical adequacy of the evaluations to ensure that TS operability was properly justified and the subject component or system remained available such that no unrecognized increase in

risk occurred. The inspectors compared the operability and design criteria in the appropriate sections of the TS and UFSAR to the licensee's evaluations to determine whether the components or systems were operable. Where compensatory measures were required to maintain operability, the inspectors determined whether the measures in place would function as intended and were properly controlled. The inspectors determined, where appropriate, compliance with bounding limitations associated with the evaluations. Additionally, the inspectors also reviewed a sampling of corrective action documents to verify that the licensee was identifying and correcting any deficiencies associated with operability evaluations. Documents reviewed are listed in the Attachment to this report.

This operability inspection constituted two samples as defined in IP 71111.15-05.

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing (71111.19)

.1 Post-Maintenance Testing

a. Inspection Scope

The inspectors reviewed the following post-maintenance activities to verify that procedures and test activities were adequate to ensure system operability and functional capability:

- WO 1121775, 250 Vdc Battery Charger #2 4-Hour Load Test;
- WO 1261246, Replace Battery Changeover Relay R12 EC 376690;
- QCMMS 4100-33, ½-4101B Diesel Driven Fire Pump Annual Capacity Test;
- WO 1130535, OP PMT Filter 'B' Train Control Room HVAC; and
- WO1107582, Replace Unit 2 DGCWP Alternate Feed Contactor.

These activities were selected based upon the structure, system, or component's ability to impact risk. The inspectors evaluated these activities for the following (as applicable): the effect of testing on the plant had been adequately addressed; testing was adequate for the maintenance performed; acceptance criteria were clear and demonstrated operational readiness; test instrumentation was appropriate; tests were performed as written in accordance with properly reviewed and approved procedures; equipment was returned to its operational status following testing (temporary modifications or jumpers required for test performance were properly removed after test completion); and test documentation was properly evaluated. The inspectors evaluated the activities against TS, the UFSAR, 10 CFR Part 50 requirements, licensee procedures, and various NRC generic communications to ensure that the test results adequately ensured that the equipment met the licensing basis and design requirements. In addition, the inspectors reviewed corrective action documents associated with post-maintenance tests to determine whether the licensee was identifying problems and entering them in the CAP and that the problems were being corrected commensurate with their importance to safety. Documents reviewed are listed in the Attachment to this report.

This inspection constituted five post-maintenance testing samples as defined in IP 71111.19-05.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

.1 Surveillance Testing

a. Inspection Scope

The inspectors reviewed the test results for the following activities to determine whether risk-significant systems and equipment were capable of performing their intended safety function and to verify testing was conducted in accordance with applicable procedural and TS requirements:

- QCOS 1400-01, 2A Core Spray Pump Performance Test (IST);
- QCIS 0300-02, Unit 1 Division 1 Scram Discharge Volume Calibration and Functional Test (Routine);
- QCOS 7500-05, 1/2 'B' Standby Gas Treatment Operability Test (Routine);
- QCOS 1600-07, Reactor Coolant Leakage in the Drywell (RCS);
- QCEMS 0230-11, Modified Performance Test of Unit 1(2) 125 Vdc Normal or Alternate Battery (Routine); and
- QCOS 6900-14, Station Battery Allowable Value Verification Surveillance (Routine).

The inspectors observed in plant activities and reviewed procedures and associated records to determine the following:

- did preconditioning occur;
- were the effects of the testing adequately addressed by control room personnel or engineers prior to the commencement of the testing;
- were acceptance criteria clearly stated, demonstrated operational readiness, and consistent with the system design basis;
- plant equipment calibration was correct, accurate, and properly documented;
- as-left setpoints were within required ranges, and the calibration frequency were in accordance with TS, the UFSAR, procedures, and applicable commitments;
- measuring and test equipment calibration was current;
- test equipment was used within the required range and accuracy, applicable prerequisites described in the test procedures were satisfied;
- test frequencies met TS requirements to demonstrate operability and reliability; tests were performed in accordance with the test procedures and other applicable procedures, jumpers and lifted leads were controlled and restored where used;
- test data and results were accurate, complete, within limits, and valid;
- test equipment was removed after testing;
- where applicable for inservice testing activities, testing was performed in accordance with the applicable version of Section XI, American Society of

Mechanical Engineers code, and reference values were consistent with the system design basis;

- where applicable, test results not meeting acceptance criteria were addressed with an adequate operability evaluation or the system or component was declared inoperable;
- where applicable for safety-related instrument control surveillance tests, reference setting data were accurately incorporated in the test procedure;
- where applicable, actual conditions encountering high resistance electrical contacts were such that the intended safety function could still be accomplished;
- prior procedure changes had not provided an opportunity to identify problems encountered during the performance of the surveillance or calibration test;
- equipment was returned to a position or status required to support the performance of its safety functions; and
- all problems identified during the testing were appropriately documented and dispositioned in the CAP.

Documents reviewed are listed in the Attachment to this report.

This inspection constituted four routine surveillance testing samples, one inservice testing sample, and one reactor coolant system leak detection inspection samples as defined in IP 71111.22, Sections -02 and -05.

b. Findings

No findings of significance were identified.

1EP4 Emergency Action Level and Emergency Plan Changes (71114.04)

.1 Emergency Action Level and Emergency Plan Changes

a. Inspection Scope

Since the last NRC inspection of this program area, Emergency Plan Annex, Revisions 26 and 27 were implemented based on the licensee's determination, in accordance with 10 CFR 50.54(q), that the changes resulted in no decrease in effectiveness of the Plan, and that the revised Plan as changed continues to meet the requirements of 10 CFR 50.47(b) and Appendix E to 10 CFR Part 50. The inspectors conducted a sampling review of the Emergency Plan changes and a review of the Emergency Action Level (EAL) changes to evaluate for potential decreases in effectiveness of the Plan. However, this review does not constitute formal NRC approval of the changes. Therefore, these changes remain subject to future NRC inspection in their entirety.

This emergency action level and emergency plan changes inspection constituted one sample as defined in IP 71114.04-05.

b. Findings

(1) Unresolved Item (URI) 05000254/2009005-01: “Changes to EAL HU6 Potentially Decrease the Effectiveness of the Plans without Prior NRC Approval”

Introduction: The inspectors reviewed changes implemented to the Quad Cities Station Radiological Emergency Plan Annex EALs and EAL Basis. In Revision 26, the licensee changed the basis of EAL HU6, "Fire not extinguished within 15 minutes of detection within the protected area boundary,” by adding two statements. The two changes added to the EAL basis stated that if the alarm could not be verified by redundant control room or nearby fire panel indications, notification from the field that a fire exists starts the 15-minute classification and fire extinguishment clocks. The second change stated the 15-minute period to extinguish the fire does not start until either the fire alarm is verified to be valid by additional control room or nearby fire panel instrumentation, or upon notification of a fire from the field. These statements conflict with the previous Quad Cities Station Annex, Revision 25, basis statements and potentially decrease the effectiveness of the Plans.

Description: Quad Cities Station Radiological Emergency Plan Annex, Revision 25, EAL HU6, initiating condition stated, "Fire not extinguished within 15 minutes of detection, or explosion, within the protected area boundary." The threshold values for HU6 were, in part: 1) Fire in any Table H2 area not extinguished within 15 minutes of control room notification or verification of a control room alarm; or 2) Fire outside any Table H2 area with the potential to damage safety systems in any Table H2 area not extinguished within 15 minutes of control room notification or verification of a control room alarm. Table H2, Vital Areas, were identified as main control room, reactor building, diesel generator rooms, 4 kilovolt switchgear area, battery rooms, ‘B’ train control room heating-ventilation and air conditioning, service water pumps, and turbine building cable tunnel. The basis defined fire as "combustion characterized by heat and light. Sources of smoke such as slipping drive belts or overheated electrical equipment do not constitute fires. Observation of flame is preferred but is not required if large quantities of smoke and heat are observed."

The basis for Revision 25, EAL HU6 thresholds 1 and 2 stated, in part, the purpose of this threshold is to address the magnitude and extent of fires that may be potentially significant precursors to damage to safety systems. As used here, notification is visual observation and report by plant personnel or sensor alarm indication. The 15-minute period begins with a credible notification that a fire is occurring or indication of a valid fire detection system alarm. A verified alarm is assumed to be an indication of a fire unless personnel dispatched to the scene disprove the alarm within the 15-minute period. The report, however, shall not be required to verify the alarm. The intent of the 15-minute period is to size the fire and discriminate against small fires that are readily extinguished (e.g., smoldering waste paper basket, etc.).

Revision 26 of the Quad Cities Station Radiological Emergency Plan Annex, changed the threshold basis for EAL HU6 by adding the following two statements: 1)"If the alarm cannot be verified by redundant control room or nearby fire panel indications, notification from the field that a fire exists starts the 15-minute classification and fire extinguishment clocks," and 2) "The 15-minute period to extinguish the fire does not start until either the fire alarm is verified to be valid by utilization of additional control room or nearby fire panel instrumentation, or upon notification of a fire from the field."

The two statements added to the basis in Revision 26 conflict with the Revision 25 threshold basis and initiating condition. The changed threshold basis in Revision 26 could add an indeterminate amount of time to declaring an actual emergency until a person responded to the area of the fire and made a notification to the control room of a fire in the event that redundant control room or nearby fire panel indications were not available.

Pending further review and verification by the NRC to determine if the changes to EAL HU6 threshold basis potentially decreased the effectiveness of the Plans, this issue was considered an unresolved item **(URI 05000254/2009005-01; 05000265/2009005-01)**.

1EP6 Drill Evaluation (71114.06)

.1 Emergency Preparedness Drill Observation

a. Inspection Scope

The inspectors evaluated the conduct of an after-hours licensee emergency drill on November 11, 2009, to identify any weaknesses and deficiencies in classification, notification, and protective action recommendation development activities. The after-hours drill was preceded by an unannounced, after-hours drive-in drill. The inspectors observed emergency response operations in the Technical Support Center to determine whether the event classification, notifications, and protective action recommendations were performed in accordance with procedures. The inspectors also attended the licensee drill critique to compare any inspector-observed weakness with those identified by the licensee staff in order to evaluate the critique and to verify whether the licensee staff was properly identifying weaknesses and entering them into the corrective action program. As part of the inspection, the inspectors reviewed the drill package and other documents listed in the Attachment to this report.

This emergency preparedness drill inspection constituted one sample as defined in IP 71114.06-05.

b. Findings

No findings of significance were identified.

.2 Emergency Preparedness Termination and Recovery Drill Observation

a. Inspection Scope

The inspectors evaluated the conduct of an emergency preparedness termination and recovery drill on December 2, 2009, to identify any weaknesses and deficiencies in the conduct of the drill and to assess the licensee's ability to assess performance via a formal critique process in order to identify and correct Emergency Preparedness weaknesses. The inspectors observed emergency response operations in the Technical Support Center to determine whether the recovery and termination activities associated with the drill were performed in accordance with procedures. The inspectors also attended the licensee drill critique to compare any inspector-observed weakness with those identified by the licensee staff in order to evaluate the critique and to verify whether the licensee staff was properly identifying weaknesses and entering them into

the corrective action program. As part of the inspection, the inspectors reviewed the drill package and other documents listed in the Attachment to this report.

This emergency preparedness drill inspection constituted one sample as defined in IP 71114.06-05.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151)

.1 Mitigating Systems Performance Index - Emergency Alternating Current Power System

a. Inspection Scope

The inspectors sampled licensee submittals for the Mitigating Systems Performance Index (MSPI) - Emergency Alternating Current (AC) Power System performance indicator for Quad Cities Units 1 and 2 for the period from the 4th quarter 2008 through the 3rd quarter 2009. To determine the accuracy of the performance indicator (PI) data reported during those periods, PI definitions and guidance contained in the Nuclear Energy Institute (NEI) Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, were used. The inspectors reviewed the licensee's operator narrative logs, MSPI derivation reports, issue reports, event reports and NRC integrated inspection reports for the period of October 1, 2008, through September 30, 2009, to validate the accuracy of the submittals. The inspectors reviewed the MSPI component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable guidance. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the PI data collected or transmitted for this indicator, and none were identified. Documents reviewed are listed in the Attachment to this report.

This inspection constituted two MSPI emergency AC power system samples as defined in IP 71151-05.

b. Findings

No findings of significance were identified.

.2 Mitigating Systems Performance Index - High Pressure Injection Systems

a. Inspection Scope

The inspectors sampled licensee submittals for the Mitigating Systems Performance Index - High Pressure Injection Systems performance indicator for Quad Cities Units 1 and 2 for the period from the 4th quarter 2008 through the 3rd quarter 2009. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the NEI Document 99-02, "Regulatory Assessment Performance

Indicator Guideline," Revision 6, were used. The inspectors reviewed the licensee's operator narrative logs, issue reports, MSPI derivation reports, event reports and NRC integrated inspection reports for the period of October 1, 2008, through September 30, 2009, to validate the accuracy of the submittals. The inspectors reviewed the MSPI component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable guidance. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the PI data collected or transmitted for this indicator, and none were identified. Documents reviewed are listed in the Attachment to this report.

This inspection constituted two MSPI high pressure injection system samples as defined in IP 71151-05.

b. Findings

No findings of significance were identified.

.3 Mitigating Systems Performance Index - Heat Removal System

a. Inspection Scope

The inspectors sampled licensee submittals for the Mitigating Systems Performance Index - Heat Removal System performance indicator for Quad Cities Units 1 and 2 for the period from the 4th quarter 2008 through the 3rd quarter 2009. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, were used. The inspectors reviewed the licensee's operator narrative logs, issue reports, event reports, MSPI derivation reports, and NRC integrated inspection reports for the period of October 1, 2008, through September 30, 2009, to validate the accuracy of the submittals. The inspectors reviewed the MSPI component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable guidance. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the PI data collected or transmitted for this indicator, and none were identified. Documents reviewed are listed in the Attachment to this report.

This inspection constituted two MSPI heat removal system samples as defined in IP 71151-05.

b. Findings

No findings of significance were identified.

.4 Mitigating Systems Performance Index - Residual Heat Removal System

a. Inspection Scope

The inspectors sampled licensee submittals for the Mitigating Systems Performance Index - Residual Heat Removal System performance indicator for Quad Cities Units 1

and 2 for the period from the 4th quarter 2008 through the 3rd quarter 2009. To determine the accuracy of the PI data reported during those periods, the PI definitions and guidance contained in the NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, were used. The inspectors reviewed the licensee's operator narrative logs, issue reports, MSPI derivation reports, event reports and NRC integrated inspection reports for the period of October 1, 2008, through September 30, 2009, to validate the accuracy of the submittals. The inspectors reviewed the MSPI component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable guidance. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the PI data collected or transmitted for this indicator, and none were identified. Documents reviewed are listed in the Attachment to this report.

This inspection constituted two MSPI residual heat removal system samples as defined in IP 71151-05.

b. Findings

No findings of significance were identified.

.5 Mitigating Systems Performance Index - Cooling Water Systems

a. Inspection Scope

The inspectors sampled licensee submittals for the Mitigating Systems Performance Index - Cooling Water Systems performance indicator for Quad Cities Units 1 and 2 for the period from the 4th quarter 2008 through the 3rd quarter 2009. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, were used. The inspectors reviewed the licensee's operator narrative logs, issue reports, MSPI derivation reports, event reports and NRC integrated inspection reports for the period of October 1, 2008, through September 30, 2009, to validate the accuracy of the submittals. The inspectors reviewed the MSPI component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable guidance. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the PI data collected or transmitted for this indicator, and none were identified. Documents reviewed are listed in the Attachment to this report.

This inspection constituted two MSPI cooling water system samples as defined in IP 71151-05.

b. Findings

No findings of significance were identified.

.6 Radiological Effluent Technical Specification/Offsite Dose Calculation Manual Radiological Effluent Occurrences

a. Inspection Scope

The inspectors sampled licensee submittals for the Radiological Effluent Technical Specifications (RETS)/Offsite Dose Calculation Manual (ODCM) Radiological Effluent Occurrences performance indicator for the period of December 2008 through November 2009. The inspectors used PI definitions and guidance contained in the NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6 to determine the accuracy of the PI data reported during those periods. The inspectors reviewed the licensee's issue report database and selected individual reports generated since this indicator was last reviewed to identify any potential occurrences such as unmonitored, uncontrolled, or improperly calculated effluent releases that may have impacted offsite dose. The inspectors reviewed gaseous effluent summary data and the results of associated offsite dose calculations for selected dates between December 2008 and November 2009 to determine if indicator results were accurately reported. The inspectors also reviewed the licensee's methods for quantifying gaseous and liquid effluents and determining effluent dose. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one RETS/ODCM radiological effluent occurrences sample as defined in IP 71151-05.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems (71152)

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

.1 Routine Review of Items Entered into the Corrective Action Program (CAP)

a. Inspection Scope

As part of the various baseline inspection procedures discussed in previous sections of this report, the inspectors routinely reviewed issues during baseline inspection activities and plant status reviews to verify that they were being entered into the licensee's CAP at an appropriate threshold, that adequate attention was being given to timely corrective actions, and that adverse trends were identified and addressed. Attributes reviewed included: the complete and accurate identification of the problem; that timeliness was commensurate with the safety significance; that evaluation and disposition of performance issues, generic implications, common causes, contributing factors, root causes, extent of condition reviews, and previous occurrences reviews were proper and adequate; and that the classification, prioritization, focus, and timeliness of corrective actions were commensurate with safety and sufficient to prevent recurrence of the issue. Minor issues entered into the licensee's CAP as a result of the inspectors' observations are included in the attached List of Documents Reviewed.

These routine reviews for the identification and resolution of problems did not constitute any additional inspection samples. Instead, by procedure they were considered an integral part of the inspections performed during the quarter and documented in Section 1 of this report.

b. Findings

No findings of significance were identified.

.2 Daily Corrective Action Program Reviews

a. Inspection Scope

In order to assist with the identification of repetitive equipment failures and specific human performance issues for followup, the inspectors performed a daily screening of items entered into the licensee's CAP. This review was accomplished through inspection of the station's daily condition report packages.

These daily reviews were performed by procedure as part of the inspectors' daily plant status monitoring activities and, as such, did not constitute any separate inspection samples.

b. Findings

No findings of significance were identified.

.3 Semi-Annual Trend Review

a. Inspection Scope

The inspectors performed a review of the licensee's CAP and associated documents to identify trends that could indicate the existence of a more significant safety issue. The inspectors' review was focused on repetitive equipment issues and associated corrective actions, but also considered the results of daily inspector CAP item screening discussed in Section 4OA2.2 above, licensee trending efforts, and licensee human performance results. The inspectors' review nominally considered the 6-month period of January 1, 2009, through June 30, 2009, although some examples expanded beyond those dates where the scope of the trend warranted.

The review also included issues documented outside the normal CAP in major equipment problem lists, repetitive and/or rework maintenance lists, departmental problem/challenges lists, system health reports, quality assurance audit/surveillance reports, self assessment reports, and Maintenance Rule assessments. The inspectors compared and contrasted their results with the results contained in the licensee's CAP trending reports. Corrective actions associated with a sample of the issues identified in the licensee's trending reports were reviewed for adequacy. Additionally, the inspectors reviewed CAP open priority 1, 2, and 3 corrective actions for timeliness. In addition, all open priority 4 action tracking items (ACITs) were reviewed to ensure they were properly categorized and that the justifications for extension were appropriate and properly documented.

This review constituted a single semi-annual trend inspection sample as defined in IP 71152-05.

b. Findings

No findings of significance were identified.

.4 Selected Issue Followup Inspection: Issue Report 966501, "Darley Pump Leaking Gasoline from the Fuel Pump"

a. Inspection Scope

During a review of items entered in the licensee's CAP, the inspectors followed up on a corrective action item documenting gasoline leaking from the fuel pump of the portable emergency flooding pump (Darley pump) on September 17, 2009, during preparations for a pump capacity demonstration run. The pump capacity demonstration was a new procedure developed in response to a non-cited violation (NCV) documented in Inspection Report 05000254/2007005.

This review constituted one in-depth problem identification and resolution sample as defined in IP 71152-05.

b. Findings

Introduction: A finding of very low safety significance was self-revealed for the failure to maintain the portable emergency flooding pump and supporting equipment in a condition required to support implementation of QCOA 0010-16, "Flood Emergency Procedure."

Description: In Inspection Report 05000254/2007005, inspectors documented a NCV of TS 5.4.1 for the licensee's failure to develop adequate surveillance procedures for equipment used during an external flooding event. Corrective action for this issue included revising the external flooding procedure and developing and implementing a procedure to test a portable pump used as the sole source of makeup water to the spent fuel pool following an external flooding event. The action to develop and implement the pump test procedure was issued in May and stated, "Develop test procedure and conduct test to confirm flow of greater than or equal to 200 gpm by mid-July. Brief NRC Resident as appropriate." The action was closed to an Engineering Change (EC) 366481, on July 18, 2007, with no actual test performed. The documented justification for this closure stated that discussions with the NRC resident clarified the intent of the action and no physical testing needed to be performed. Followup discussions with the resident inspectors stationed at Quad Cities in July 2007 had no recollection of the conversation and their understanding of the intended action remained unchanged from the original report.

Licensee staff generated Issue Report (IR) 738335 in February 2008 to document the review of the NCV response and generate a closure package of all related IRs. The lack of preventative maintenance (PM) testing was identified and an action tracking item was generated to "Develop PM/testing requirements for the Darley pump associated with the external flooding event." The original corrective action due date was July 16, 2008. The action was extended several times, and on May 18, 2009, during a review of corrective actions for NRC-identified issues, the licensee staff identified that a CAP

action item (ACIT 624645-03) had been inappropriately closed. In addition, the licensee determined that ACIT 624645-03 was inappropriately tagged as an Action Tracking Item (ACIT) and should have been a corrective action. Issue Report 921197 was generated and ACIT 624645 was upgraded to a corrective action with a July 31, 2009, due date. The test procedure was developed and the pump was scheduled to run on September 17, 2009.

The capacity test was implemented with WO 01247374. When mechanics pulled the pump and support components from the storage location, they found that the engine battery had to be replaced and the gasoline stored with the motor had to be replaced. Since the mechanics performing the test had never operated the pump, they decided to run it in the weld shop before taking it down to the river. When the mechanics started the pump, fuel was spraying out of the fuel pump. They immediately shut down the pump and contained the fuel leak (IR 966501).

The Darley pump fuel system was repaired and the capacity test was completed satisfactorily on September 25, 2009. Review of recent pump operating history and PM tasks revealed that the pump had not been operated since the NCV was identified in 2007. The annual maintenance performed under PM 164250 in July of 2009 changed the oil and inspected the filters and spark plugs with no post-maintenance operation required. The PM also failed to identify that the battery was beyond the expected life and did not determine that the battery would maintain its charge.

Analysis: The inspectors determined that the failure to perform maintenance that would ensure the pump was in a standby condition and readily available to accomplish the requirements of QCOA 0010-16 was a performance deficiency fully within the licensee's ability to control, and therefore a finding. This issue was more than minor because it was associated with the SSC Performance attribute of the Barrier Integrity Cornerstone element of maintaining the functionality of spent fuel pool cooling. The finding affected the cornerstone objective of providing assurance that physical design barriers protect the public from radionuclide releases caused by events including external flooding. Specifically, the pump could fail due to a maintenance preventable component failure resulting in inadequate or degraded makeup to the spent fuel pool during an external flooding event. The inspectors did not identify a cross-cutting aspect associated with this finding because the maintenance issue is a legacy issue and not reflective of current licensee performance. The pump and PM tasks had been in place for several years. Inspectors reviewed maintenance requirements for other temporary equipment staged in support of external events and emergency operating procedures, some of which was put in place after the Darley pump was staged, and did not identify any similar issues.

The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1 - Initial Screening and Characterization of findings," Tables 4a and 4b. The inspectors determined that even though this equipment is assumed to completely fail, the licensee could provide an alternate portable pump already located on site and capable of performing the safety function during this slow developing event. The alternate pump had maintenance and test procedures in place to provide a basis for reliability. Since alternate equipment was available and the delay in mobilizing the alternate equipment would not have resulted in loss of capability to mitigate the impact of the flooding event, the issue is of very low safety significance or Green.

Enforcement: Technical Specification 5.4.1 required that written procedures be established, implemented, and maintained for the items specified in Regulatory Guide 1.33, "Quality Assurance Program Requirements." QCOA 0010-16, "Flood Emergency Procedure," was the licensee procedure used to meet the Regulatory Guide 1.33 requirement for an emergency flooding event. The procedure specified that the portable pump staged in the protected area warehouse is to be used to respond to the event. Although the regulatory guide did not specifically require maintenance procedures for portable equipment, failure to maintain the staged equipment in a condition to be used to mitigate the event does not support timely implementation of the procedure to provide spent fuel pool makeup and is a finding.

Enforcement action does not apply because the performance deficiency did not involve a violation of a regulatory requirement. Because the finding does not involve a violation of regulatory requirements and has a very low safety significance, it is identified as **(FIN 05000254/2009005-02; 05000265/2009005-02)**. The issue was added to the licensee's CAP program as IR 966501 and IR 968809. Immediate corrective actions included replacement of the degraded battery and overhaul of the pump's fuel pump. Other actions included identification of preventative maintenance tasks and establishing a program owner of the pump.

.5 Selected Issue Followup Inspection: Incident Report 984769, "Temperature Indicating Probe Found Broken in the Unit 2 Diesel Generator Coolant System"

a. Inspection Scope

During a review of items entered in the licensee's CAP, the inspectors followed up on a corrective action item documenting a failed temperature indicating probe (TI) in the Unit 2 diesel generator coolant system on October 27, 2009, during planned maintenance on the Unit 2 emergency diesel generator (EDG).

This review constituted one in-depth problem identification and resolution sample as defined in IP 71152-05.

b. Findings

Introduction: A finding of very low safety significance and associated NCV were self-revealed when a TI failed in the Unit 2 diesel generator coolant system.

Description: On October 27, 2009, while performing corrective maintenance on TI 2-6641-8205, technicians noted that the tip had broken off the probe when comparing it to the length of the new TI. This TI provides local indication of the jacket coolant water temperature at the inlet to the diesel engine and provides no alarm function.

The TI was scheduled for replacement in October 2008 when Operations identified the TI reading abnormally at zero degrees. A work order was written and scheduled for October 2009. During the performance of the maintenance, it was noted that the new TI was longer than the one recently removed. A new work order was written to retrieve any foreign material from the system. The broken tip was recovered from the diesel generator coolant system.

The licensee investigation discovered that the installation analysis for this TI was approved under the non-safety below level of design detail (NSBLD) process in October 2007 under Revision 3 of SM-AA-300, "Procurement Engineering Support Activities." Using this provision, "NSBLD changes must be documented and shall identify the change with justification of the change's technical acceptability." The length of the probe was the only difference to the previously installed TI. The TI was installed with a 3.25 inch probe, which was longer than the previous 2 inch probe. The added length increased the shear force from the coolant flow and caused the probe to break off.

An operating experience (OPEX) review would have revealed an event at another nuclear facility where the same make and model TI experienced the same failure mechanism in a diesel generator coolant system. Under Revision 3 of SM-AA-300, OPEX reviews for NSBLD were not required, nor were additional peer reviews required. The lack of an OPEX review was an identified vulnerability by the licensee's corporate supply organization in a common cause analysis which was performed for a lack of technical rigor issued in February 2008. A corrective action from this common cause analysis was to implement Revision 4 of SM-AA-300 which limited NSBLD reviews to non-safety host component applications. Revision 4 was implemented at Quad Cities in February 2008. Since this specific TI is classified as "augmented quality," Revision 4 would prevent use of the NSBLD process of a non-identical replacement. A full item equivalency evaluation would be required for any non-identical replacement.

An extent of condition review is scheduled to be performed at Quad Cities by Procurement Engineering for all NSBLD reviews that were performed under Revision 3 of SM-AA-300 from August 2007 through February 2008.

Analysis: The inspectors determined that the approval of an inappropriate component designated as "augmented quality" was a performance deficiency and a finding. The same parts evaluation process was used for risk-significant components independent of the system being worked. Therefore, this finding was more than minor because, if left uncorrected, this performance deficiency could lead to unplanned unavailability of safety-related or risk-significant equipment and would become a more significant safety concern. This performance deficiency challenged the Mitigating Systems Cornerstone attribute of Equipment Performance by challenging equipment availability and reliability.

The inspectors performed a Phase 1 SDP screening and concluded that the issue was of very low safety significance (Green) because the failure of the TI did not result in unplanned inoperability or loss of function of the diesel generator. The inspectors determined that this finding did not have a cross-cutting aspect. This performance deficiency is not indicative of current licensee performance. The decision to install this type of TI was made in October 2007. The process which allowed this performance deficiency was identified and corrected through procedure and policy revisions to SM-AA-300 in February 2008.

Enforcement: The TI was designated "augmented quality" in the licensee's quality assurance program. The licensee's quality assurance program applied controls equivalent to safety-related components for Class 1E equipment qualification to "augmented quality" equipment and systems. This correlation is applicable to several Appendix B criteria included in the program such as both Section 3 - "Design Control," and Section 5 - "Instructions Procedures and Drawings," of the licensee's Quality Assurance program for "augmented quality."

Title 10 CFR 50, Appendix B, Criterion V states in part that activities affecting quality shall be prescribed by instructions and procedures of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions or procedures.

Contrary to the above, on October 30, 2007, SM-AA-300 was not appropriate to the circumstances in that it did not require an approval process with technical rigor equivalent to the process used for safety-related components when a non-identical temperature indicating probe designated "augmented quality" was approved for use. That part was approved for use through a NSBLD review per Revision 3 of SM-AA-300 instead of undergoing a full item equivalency evaluation, and the part subsequently failed resulting in foreign material in the diesel generator coolant system. The foreign material did not cause any adverse consequences in this instance.

Because this issue is of very low safety significance, and this issue has been entered into the licensee's corrective action program as Issue Report 984769, this issue is being treated as an NCV consistent with Section VI.A.1 of the NRC Enforcement Policy **(NCV 05000265/2009005-03).**

Corrective actions for this event included replacement of the TI with an appropriately approved TI. The licensee has also scheduled to perform an extent of condition review of NSBLD reviews performed under Revision 3 of SM-AA-300 from August 2007 through February 2008.

4OA3 Follow-Up of Events and Notices of Enforcement Discretion (71153)

.1 (Closed) Licensee Event Report 05000254/2009-003-00: "Failure of RHR Torus Spray Isolation Valve to Open Due to Declutch Mechanism Problems"

a. Inspection Scope

Inspectors reviewed the event, evaluation, and corrective actions for the motor operated valve failure reported in Licensee Event Report (LER) 05000254/2009-003. Documents reviewed as part of this inspection are listed in the Attachment to this report. This LER is closed.

This event follow-up review constituted one sample as defined in IP 71153-05.

b. Findings

Introduction: A finding of very low safety significance and an NCV of Technical Specification (TS) 3.6.2.4, "Residual Heat Removal (RHR) Suppression Pool Spray," was self-revealed for the licensee's failure to meet the TS limiting condition for operation (LCO) requirements prior to transitioning into an operating mode where the LCO was required to be satisfied. Specifically, MO 1-1001-37B, motor operator for the Unit 1 RHR torus (suppression pool) spray isolation valve, was found to have been inoperable when the operating crew transitioned Unit 1 from Mode 4 to Mode 2 on May 30, 2009. The valve actuator had been inadvertently declutched (i.e., motor disengaged) and the valve was not demonstrated operable by stroking the valve electrically after the actuator motor was declutched.

Discussion: On June 4, 2009, with Unit 1 in Mode 1 at 100 percent power following startup from a forced outage, MO 1-1001-37B, torus spray shutoff valve, was determined to be inoperable because it would not open remotely using the control switch during performance of the residual heat removal power operated valve test surveillance.

The torus spray valve had been closed using the motor and a clearance order had been placed on the valve during the outage. Another motor operated valve in the residual heat removal system on that same clearance, MO 1-1001-7C, RHR 'C' torus suction line isolation valve, had failed to open on May 28, 2009, when the clearance tag was removed and valve stroking was being performed to restore the component to a standby configuration. Operators reported manually declutching (disengaging the actuator motor) the 7C valve while placing the clearance tag in order to verify the valve was closed. Inspectors identified that the action of manually verifying valve position was not a normal practice as supported by OP-AA-103-105, "Limitorque Motor-Operated Valve Operations," and Operations department management. Investigation into the 7C failure revealed that the actuator lubricant was degraded in the area of the clutch return spring preventing the motor from engaging when called upon from the control circuit. The RHR 'C' valve actuator was rebuilt using MOV Long Life grease, new tripper cams, new trip lever assembly, and a new outer declutch arm snap ring. The rebuilt actuator was verified to operate correctly in all modes and returned to service prior to unit restart on May 30, 2009.

Inspectors interviewed operating personnel regarding the positioning of MO 1-1001-37B torus spray valve. Operators stated that they did not manually declutch the 37B valve since the valve was already closed (normal position) when they hung the tag. The licensee's investigation attempted to identify both how the motor on the 37B valve was declutched and why the actuator did not return to the motor mode of operation automatically as designed. The licensee verified that the actuator was not able to transition from the motor mode to the manual mode without external (human) intervention.

Although the licensee could not identify how or when the valve actuator motor was declutched, the licensee's investigators concluded that the declutch lever was most likely bumped during work activities on top of the Torus during the recent outage with the unit in Mode 4. Investigation further determined that with the valve motor disengaged, increased friction in the actuator caused by degraded lubricant in the area of the clutch return spring prevented the engagement of the motor to open the valve. The actuator motor was engaged by manually manipulating the declutch lever and stroke testing the valve.

Inspectors reviewed the grease sampling methodology and the preventative maintenance frequency for the SMP-00 type actuators and determined that both were conducted in accordance with the industry standards for these type valves.

Analysis: The failure of plant personnel to demonstrate operability of MO 1-1001-37B by stroking the valve electrically prior to changing modes was a performance deficiency. The finding is more than minor because it was associated with the equipment performance quality attribute of the Mitigating Systems Cornerstone and affected the objective of ensuring availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, failure to verify system availability and capability prior to entering the required modes resulted in fewer

available mitigating systems than assumed in the operating risk evaluations. Inspectors determined that the finding was cross-cutting in the area of Problem Identification and Resolution - Corrective Action because plant personnel failed to identify the valve actuator contact that resulted in the valve being declutched; therefore, operators incorrectly assessed the system condition as in compliance with TS 3.6.2.4 (P.1(a)).

The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1 - Initial Screening and Characterization of Findings," Table 4a. Inspectors answered all of the questions for the Mitigating Systems Cornerstone "No." Therefore, the finding screened as Green or very low safety significance.

Enforcement: Technical Specification 3.0, "Limiting Condition for Operation (LCO) Applicability," LCO 3.0.4 stated in part that when an LCO is not met, entry into a mode in the Applicability shall only be made:

- when the associated actions to be entered permit continued operation while in the mode or other specified condition in the Applicability for an unlimited time;
- after performance of a risk assessment addressing inoperable systems and components, and acceptability of entering the mode; or
- when an allowance is stated in the specification.

Technical Specification 3.6.2.4, "Residual Heat Removal (RHR) Suppression Pool Spray," required two RHR suppression pool spray subsystems to be operable in Modes 1, 2 and 3.

Contrary to the above, on May 30, 2009, the licensee changed operating modes from Mode 4 to Mode 2 with the MO 1-1001-37B valve inoperable in violation of TS 3.6.2.4 LCO conditions since only one RHR suppression pool (Torus) spray subsystem was operable. Specifically, TS 3.6.2.4 had no allowance provided to permit mode change with less than two subsystems operable, no prior risk assessment was performed, and the specification did not permit operation for an unlimited time, the mode change resulted in non-compliance with TS LCO 3.6.2.4.

Because this finding is of very low safety significance, and this issue has been entered into the licensee's corrective action program as IR 928048, this violation is being treated as an NCV consistent with Section VI.A.1 of the NRC Enforcement Policy **(NCV 05000254/2009005-04)**.

Immediate corrective actions for this event included engagement of the actuator motor by manually manipulating the declutch lever and stroke testing the valve. Since the hardened grease in this area of the actuator assembly was only an issue if the actuator was manually declutched, the valve was left in standby, and overhaul of the valve actuator was scheduled for the next refueling outage.

4OA5 Other Activities

.1 World Association of Nuclear Operators Plant Assessment Report Review

a. Inspection Scope

The inspectors reviewed the final report for the World Association of Nuclear Operators plant assessment conducted in February 2009. The inspectors reviewed the report to ensure that issues identified were consistent with the NRC perspectives of licensee performance and to verify if any significant safety issues were identified that required further NRC followup.

b. Findings

No findings of significance were identified.

.2 Quarterly Resident Inspector Observations of Security Personnel and Activities

a. Inspection Scope

During the inspection period, the inspectors conducted observations of security force personnel and activities to ensure that the activities were consistent with licensee security procedures and regulatory requirements relating to nuclear plant security. These observations took place during both normal and off-normal plant working hours.

These quarterly resident inspector observations of security force personnel and activities did not constitute any additional inspection samples. Rather, they were considered an integral part of the inspectors' normal plant status review and inspection activities.

b. Findings

No findings of significance were identified.

4OA6 Management Meetings

.1 Exit Meeting Summary

On January 5, 2010, the inspectors presented the inspection results to T. Tulon and other members of the licensee staff. The licensee acknowledged the issues presented. The inspectors confirmed that none of the potential report input discussed was considered proprietary.

.2 Interim Exit Meetings

Interim exits were conducted for:

- The results of the licensed operator requalification training program inspection and with the site vice president, Mr. T. Tulon, on October 2, 2009.
- The licensed operator requalification training biennial written examination and annual operating test examination materials were discussed with the training manager, Mr. K. Moser, on November 12, 2009.

- The licensed operator requalification training program annual inspection results with operations training manager, Mr. D. Snook, on November 20, 2009, via telephone.
- The results of the Radiological Effluent TS/Offsite Dose Calculation Manual Radiological Effluent Occurrences performance indicator verification program inspection with the plant manager, Mr. R. Gideon, on December 16, 2009.
- The annual review of Emergency Action Level and Emergency Plan changes with the licensee's emergency preparedness coordinator, Mr. F. Swan, via telephone on December 21, 2009.

The inspectors confirmed that none of the potential report input discussed was considered proprietary. Proprietary material received during the inspection was returned to the licensee.

4OA7 Licensee-Identified Violations

The following violation of very low significance (Green) was identified by the licensee and is a violation of NRC requirements which meets the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600, for being dispositioned as an NCV.

- Technical Specification 5.5.1 requires implementation of the Offsite Dose Calculation Manual. Offsite Dose Calculation Manual, Revision 8, Part 12.2.1, Radioactive Liquid Effluent Monitoring Instrumentation, Section C requires that when the service water effluent gross activity monitor is operated with less than the minimum number of operable channels, the licensee shall collect and analyze grab samples for beta or gamma activity once per 12 hours. Contrary to the above, grab samples were not collected while the Unit 1 service water effluent gross activity monitor was inoperable from June 2-20, 2009. Specifically, following fuse replacement, the licensee failed to recognize that the instrument remained uninitialized; therefore, that compensatory samples were required. The finding was documented in the licensee's corrective action program as IR 933472. Corrective actions included returning the monitor to service and reviewing captured monitor data from June 2-20, 2009, to ensure that no release events occurred during the monitor outage, revising the monitor repair and maintenance procedures to clear direct communication with the Chemistry Department subject matter experts during work on the system, and reinforcing the expectation that control room operators turn over all abnormal indications to supervisors each shift. The finding was determined to be of very low safety significance because, although the finding related to the effluent release program, it was not a failure to implement the effluent program or an event that resulted in a dose to the public in excess of Appendix I criterion or 10 CFR 20.1301(e).

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

T. Tulon, Site Vice President
R. Gideon, Plant Manager
D. Kimler, Shift Operations Superintendent
S. Darin, Engineering Manager
W. Beck, Regulatory Assurance Manager
J. Burkhead, Nuclear Oversight Manager
J. Garrity, Work Control Manager
K. Moser, Training Manager
V. Neels, Chemistry/Environ/Radwaste Manager
D. Collins, Radiation Protection Manager
D. Thompson, Security Manager

Nuclear Regulatory Commission

M. Ring, Chief, Reactor Projects Branch 1

Illinois Emergency Management Agency

R. Zuffa, Unit Supervisor, Resident Inspector Section

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Opened

05000254/2009005-01; 05000265/2009005-01	URI	Changes to EAL HU6 Potentially Decrease the Effectiveness of the Plans without Prior NRC Approval
05000254/2009005-02; 05000265/2009005-02	FIN	Darley Pump Leaking Gasoline from the Fuel Pump
05000265/2009005-03	NCV	Temperature Indicating Probe Found Broken in the Unit 2 Diesel Generator Coolant System
05000254/2009005-04	NCV	Failure of RHR Torus Spray Isolation Valve to Open Due to Declutch Mechanism Problems

Closed

05000254/2009005-02; 05000265/2009005-02	FIN	Darley Pump Leaking Gasoline from the Fuel Pump
05000265/2009005-03	NCV	Temperature Indicating Probe Found Broken in the Unit 2 Diesel Generator Coolant System
05000254/2009005-04	NCV	Failure of RHR Torus Spray Isolation Valve to Open Due to Declutch Mechanism Problems
05000254/2009003-00	LER	Failure of RHR Torus Spray Isolation Valve to Open Due to Declutch Mechanism Problems

LIST OF DOCUMENTS REVIEWED

The following is a list of documents reviewed during the inspection. Inclusion on this list does not imply that the NRC inspectors reviewed the documents in their entirety, but rather, that selected sections of portions of the documents were evaluated as part of the overall inspection effort. Inclusion of a document on this list does not imply NRC acceptance of the document or any part of it, unless this is stated in the body of the inspection report.

Section 1R01

- QCOP 0010-01; Winterizing Checklist; Revision 48
- QCOP 0010-02; Required Cold Weather Routines; Revision 28
- WC-AA-107; Seasonal Readiness; Revision 06
- IR 99493; U-2 FW Heater LCV Response to Lowering Circulating Water Inlet Temp
- WO 1183498; Cycle CW De-Ice Valve
- WO 1282535; Ice Melt Valve Stuck Shut
- QCOP 4400-06; Circulating Water System De-icing; Revision 14
- ECR 59777; Design Alternate Method for Operation of Ice Melt Valve
- IR 993018; Wire Rope Rating on Ice Melt Valve
- IR 986355; Ice Melt Valve Stuck Shut
- WO 01194645; MM Union Leaking Inside U1 Cond Demin Vault (HTG STM)
- WO 01215488; MM Repair Piping Leak Underground Next to Cribhouse
- WO 01242820; MM Seal Cracks in Ceiling Above Bus 23-1

Section 1R04

- QCOP 4100-01; Firewater System Lineup for Standby Operation; Revision 4
- QCOP 6600-01: Diesel Generator 1(2) Preparation For Standby Operation; Revision 38
- WO #01272234; EM Change RMS-9 Setting at SWGR 19 CUB 5D Per EC 377092
- WO #01107582; EM Replace U2 DGCWP Alternate Feed Contactor
- WO #920850; IM CAL DG HX 2-6661B Cooling Water Inlet PI 2-3941-67A
- WO #945963; IM CAL DG HX 2-6661B Cooling Water Outlet PI 2-3941-67B
- WO #01107581; EM Replace U2 DGCWP Normal Feed Contactor
- WO #01245102; EM Support OP QCOS 6600-17 U2 DGCW Pump Alternate Feed Test
- QCOS 6600-17; Operating Cycle Diesel Cooling Water Pump Alternate Power Feed Test for Appendix R; Revision 15
- EC 360507; Unit 2 EDG Voltage Regulator (Place EDG in Droop Mode Prior to Synchronization to the Grid)
- EC 377665; TMOD to Bypass Faulty SSES Switch Local/Remote Contact at U2 Diesel Generator

Section 1R05

- OP-AA-201-008; Pre-fire Plan Manual Index - Pre-Plan RB-16; Revision 2
- Pre-plan TB-74; Fire Zone 9.1, Unit 1 Turbine Bldg. El. 595’-0”, Diesel Generator; Revision 24
- Pre-plan TB-73; Fire Zone 8.2.6.A, Unit 1 Turbine Bldg. El. 595’-0”, Reactor Feed Pumps; Revision 24
- Pre-plan CH-44; Fire Zone 11.4.A, Crib House Bldg. El. 559’-8” Basement; Revision 0
- Pre-plan CH-45; Fire Zone 11.4.B, Ground Floor/Service Water Pumps; Revision 22

Section 1R11

- SY-AA-101-132; Assessment and Response to Suspicious Activity and Security Threats; Revision 14
- QCOA 0010-20; Security Event; Revision 25
- EP-AA-1006; Radiological Emergency Plan Annex for Quad Cities Station; Revision 27
- Requalification Examination Results/Calendar Year 2009
- Quad Cities, Units 1 and 2 NRC Integrated Inspection Reports; dated various from January 2007 through September 2009
- OP-AA-105-102; Attachment 1; Active License Tracking Log (for 1st & 2nd Quarters of 2009); Revision 9
- OP-AA-105-102; Attachment 2, Reactivation of License Log (2 for LSRO, 2 RO); Revision 9
- Quad Cities Classroom Sample Plan for Training Years 2008 and 2009; 6/18/2009
- Quad Cities Simulator Sample Plan for Training Years 2008 and 2009
- 71111.11 Appendix C Responses/Justifications; 9/28/2009
- TQ-AA-224-F070; Evaluation Feedback Summary, LORT Cycle 08-1 through 08-5; LORT Cycle 09-1 through 09-4
- TQ-AA-1002; Attachment 3; LORT Quarterly Curriculum Review Committee Meeting Minutes; all of 2008 and first two quarters of 2009
- Special LORT CRC Meeting Minutes; 1/23/2009
- TQ-AA-150; Operator Training Programs; Revision 2
- TQ-AA-150-F07; Simulator Evaluation Form – STA or IA
- TQ-AA-150-F08; Simulator Evaluation Form – Individual
- TQ-AA-150-F09; Simulator Evaluation Form – Crew
- TQ-AA-210-5101; Training Observation Forms; dated various
- TQ-AA-306; Simulator Management
- TQ-AA-306-F06; BWR Critical Condition for Cold Startup; Revision 0
- TQ-AA-306-F07; BWR Power Coefficient of Reactivity and Control Rod Worth; Revision 0
- TQ-AA-306-F08; BWR Xenon Worth; Revision 0
- TQ-AA-306-F06; BWR Site Specific Shutdown Margin and Reactivity Anomaly Tests
- TQ-AA-306-JA-02; Simulator Testing Report Update
- Differences between the Quad Cities Simulator and Quad Cities U-1 & U-2; Revision 14; 7/17/09
- Differences between the Quad Cities Simulator and Quad Cities U-1 & U-2; Revision 15; 9/29/09
- LS-AA-126-1005; Attachment 2; Check-In Self-Assessment Report Template
- LS-AA-126-1001; Attachment 2; FASA Self-Assessment Report
- Simulator Malfunction Test Procedure, Grid Frequency Disturbance (ED16)
- Simulator Malfunction Test Procedure, Reactor Building Instrument Air System (IA02)
- Simulator Malfunction Test Procedure, Main Steam Isolation Valve Closure (MS01)
- Quad Cities Simulator Malfunction Testing Schedule; Revision 8; 5/5/2008
- Simulator Transient Tests; dated various
- Safety System Functional Failure, Rolling Twelve Months Unit 1 and Unit 2; 9/28/09
- Action Request Reports; various dates for LORT 2009
- LORT Attendance Sheets; 2009

Section 1R12

- Enterprise Maintenance Rule Production Database for the following systems:

  - Z2900; Safe Shutdown Makeup Pump
  - Z4700; Instrument Air

- System Engineer Notebook and Accountability Logs for the following systems:

  - Safe Shutdown Makeup Pump
  - Instrument Air

- IR 712670; Safe shutdown makeup pump failed surveillance; 12/17/07
- IR 713041; Broken SSMP part not found during repairs; 12/18/07
- IR 711934; SSMP Suction line did not fill during fill; 12/14/07
- IR 712059; SSMP fails to sustain flow and pressure; 12/15/07
- IR 731013; SSMP Sparking on Startup; 2/4/08
- IR 729984; SSMP failed operability test per TIC-1982; 2/1/08
- IR 729951; SSMP Local FIC failed PMT; 1/31/08
- IR 734472; MRULE A-1 determination for SSMP required; 2/11/08
- IR 741838; SSMP feed breaker problems during system restoration; 2/27/08
- IR 787063; Local SSMP flow controller not reading correctly; 6/16/08
- IR 890904; SSMP controller connector degraded; 3/10/09
- IR 930013; Historical FME identified in SSMP piping inspection; 6/10/09
- IR 956294; SSMP FIC Valve position discrepancy with local valve indication; 8/21/09
- IR 947201; FPI – SSMP Breaker and fuse coordination for CT-2; 7/29/08
- IR 1003024; SSMP Draws a vacuum when starting for PMT; 12/09/09
- IR 1002036; Drain valve for SSMP room cooler may be blocked; 12/06/09
- IR 991490; NCV 09-006-02 Closure package – SSMP Breaker coordination 11/10/09
- IR 673268; 1B Instrument Air Compressor Excessive Leakage; 9/20/07
- IR 762652; 1A Instrument Air Compressor Trip; 04/12/08
- IR 856509; Red Trend Code for 1/2B Instrument Air Compressor – EC 364602
- IR 871161; 1A Instrument Air Compressor Trip; 01/24/09
- IR 871939; 1A Instrument Air Compressor Trip; 01/26/09
- IR 977823; 1A Instrument Air Compressor Tripped Due to Low Oil Pressure; 2/7/09
- IR 936122; Compressor does not auto start; 6/27/09

Section 1R13

- WO #01075655; EM Perform Boroscope INSP of MO 1-1001-16A MOV
- WO #01120751; EM MOV 1-1001-37A MOV EQ Inspection
- WO #01123089; MM Inspect/Clean 1B RHR Pump Seal Cooler
- WO #01131318; EM Votes Test MOV 1-1001-16A
- WO #01190642; MM U-1A RHR HX Room Cooler Air/Water Side Clean Inspect

Section 1R15

- IR 849245; 1B RHR Room Cooler Heat Exchanger Has Tube Sheet Pitting
- WO 862709; 1B RHR Air/Water Side Room CLR CLN/INSP
- IR 987904; 1A RHR Room Cooler Heat Exchanger Tube Sheet Has Pitting
- WO 01190642; MM U-1A RHR HX Room Cooler Air/Water Side Clean Inspect

- IR 849681; 1B RHR Room Cooler Reassembled at Risk
- EC 373177; Determination of Minimum Wall Thickness of Tubesheet for RHR Room Cooler 1-574B
- IR 994823; TS SR 3.8.4.8 Frequency Not Met
- QC-SURV-01; Risk Assessment for Missed Surveillance for U2 125 Vdc Battery

Section 1R19

- QCMMS 4100-32; 1/2 -4101A Diesel Driven Fire Pump Annual Capacity Test; Revision 24
- WO 1261246; Replace Battery Changeover Relay R12 EC 376690
- EC 376690; ½ A Fire Pump Controller Replace Battery Changeover Relay R12; Revision 1
- QCOS 4100-01; Monthly Diesel Fire Pump Test; Revision 28
- QCOP 4100-03; Diesel Fire Pump Operation; Revision 17
- QCMMS 4100-33; ½ - 4101B Diesel Driven Fire Pump Annual Capacity Test; Revision 24
- WO 1121775; 250 Vdc Battery Charger #2 4 Hour Load Test
- WO 1130534; Control RM HVAC Air Filter Unit In Place DOP LK Test
- QCOS 5750-02; Control Room Emergency Filter System Test; Revision 45
- QCIS 5700-04; Main Control Room Air Filter Unit DOP-Freon Test; Revision 0
- QCOS 6600-17; Operating Cycle Diesel Cooling Water Pump Alternate Power Feed Test for Appendix R; Revision 15
- QCEPM 0400-15; Emergency Diesel Generator Transfer Panel Inspection; Revision 9
- WO 01107582; Replace Unit 2 DGCWP Alternate Feed Contactor

Section 1R22

- QCOS 1400-01; Quarterly Core Spray System Flow Rate Test; Revision 38
- QCOS 1400-07; Core Spray Pump Performance Test; Revision 10
- QCOS 7500-05; Standby Gas Treatment System Monthly Operability Test; Revision 30
- QCIS 0300-02; Unit 1 Division 1 Scram Discharge Volume Rochester Instruments Calibration and Functional Test; Revision 09
- QCOS 1600-07, Revision 027; Reactor Coolant Leakage in the Drywell
- QCEMS 0230-11; Modified Performance Test of Unit 1(2) 125 Vdc Normal or Alternate Battery; Revision 0
- QCOS 6900-02; Station Safety Related Battery Quarterly Surveillance; Revision 33
- QCOP 6900-24; Transfer of Unit 2 125 Vdc Battery Bus Between Normal and Alternate Battery; Revision 12
- QCOS 6900-14; Station Battery Allowable Value Verification Surveillance; Revision 13

Section 1EP4

- Quad Cities Station Radiological Emergency Plan Annex; Revisions 25, 26, and 27

Section 1EP6

- EP-AA-1006; Radiological Emergency Plan Annex for Quad Cities Station; Revision 27
- Quad Cities Generating Station 2009 Termination and Recovery Drill Briefing Package; December 2, 2009
- EP-AA-115; Termination and Recovery; Revision 7
- EP-AA-111-F-01; Termination/Recovery Checklist; Revision A

Section 4OA1

- CY-QC-120-724; Continuous Liquid Effluent Analysis; Revision 1
- CY-QC-120, 723; Allocation of Radioactive Liquid Discharges; Revision 0
- CY-QC-120-720; Plant Effluent Dose Calculations; Revision 4
- CY-QC-120-725; Gaseous Release of Tritium Calculation; Revision 1
- Cy-QC-120-726; Fe-55, Sr-89, Sr-90 and Gaseous Alpha Release; Revision 3
- NEI 99-02; Regulatory Assessment Performance Indicator Guideline, Revision 6
- Enterprise Maintenance Rule Production Database for the following systems:

    - Z2300; High Pressure Coolant Injection System
    - Z1000; Residual Heat Removal System
    - Z6600; Diesel Generator System
    - Z1300; Reactor Core Isolation Cooling System
    - Z9700; 345 kV Switchyard

- System Engineer Notebook and Accountability Logs for the following systems:

    - Residual Heat Removal
    - RHR Service Water
    - Reactor Core Isolation Cooling
    - HPCI
    - Emergency Diesel Generators

Section 4OA2Q

- IR 984769; Well Broke Off TI in Diesel Generator Coolant System
- WO 1198663; U-2 EDG Eng Temp Indicator TI-2-6641-8205 Not Working
- WO 1280197; Well Broke Off TI In U2 Diesel Generator Coolant System
- SM-AA-300; Procurement Engineering Support Activities; Revision 5
- IR 624645; Flood Emergency Pump Testing Documentation; 05/02/07
- IR 638004; Clarify UFSAR 3.4.1.1 Required Flow Rate to SFP During Flood; 06/07/07
- IR 738335; NCV 07-005-02 GR NCV & X-cutting WRT External Flooding Event; 02/19/08
- IR 921197; Inappropriate ACIT Closure of Darley Pump NCV; 05/18/09
- IR 927463; Request For Darley Pump Testing in On-line Schedule; 06/03/09
- IR 966501; Darley Pump Leaking Gasoline from the Fuel Pump; 09/17/09
- IR 968809; Adequacy of Preventative Maintenance on Darley Pump; 09/22/09
- WO 01247374; Darley Pump Baseline Testing; 9/17/09
- QCOA 0010-16; Flood Emergency Procedure; Revision 12
- QCMMS 1500-12; Portable Emergency Flood Pump Capacity Test; Revision 0
- QCOP 4100-19; Emergency Portable Pump Operations; Revision 7
- PMID/RQ 164250; Perform Maintenance on the External Portable Pump; 09/17/09

Section 4OA3

- 10 Medical Files for Licensed Operators; Various Dates
- Licensee Event Report 254/09-003; “Failure of RHR Torus Spray Isolation Valve Due to Declutch Mechanism Problems; 8/3/09
- IR 928048; MO 1-1001-37B Failed to Open During QCOS 1000-09; 6/4/09
- IR 924666; 1-1001-7C Will Not Open; 5/28/09
- OP-AA-103-105; Limitorque Motor-operated Valve Operations; Revision 1

Section 4OA7

- AR 933472, Service Water Effluent Radiation Monitor Inoperable; 6/20/09

LIST OF ACRONYMS USED

AC	Alternating Current
ADAMS	Agencywide Document Access Management System
ACIT	Action Tracking Item
CAP	Corrective Action Program
CFR	Code of Federal Regulations
DGCWP	Diesel Generator Cooling Water Pump
EAL	Emergency Action Level
EC	Engineering Change
EDG	Emergency Diesel Generator
IMC	Inspection Manual Chapter
IP	Inspection Procedure
IR	Issue Report
IST	Inservice Test
JPM	Job Performance Measure
LCO	Limiting Condition for Operation
LER	Licensee Event Report
LORT	Licensed Operator Requalification Training
MO	Motor Operator
MOV	Motor Operated Valve
MSPI	Mitigating System Performance Index
NCV	Non-Cited Violation
NEI	Nuclear Energy Institute
NRC	U.S. Nuclear Regulatory Commission
NSBLD	Non-Safety Below Level of Design Detail
OP	Operations
OPEX	Operating Experience
ODCM	Offsite Dose Calculation Manual
PARS	Publicly Available Records
PI	Performance Indicator
PM	Planned or Preventative Maintenance
PMT	Post Maintenance Test
RCS	Reactor Coolant System
RETS	Radiological Effluent Technical Specification
RHR	Residual Heat Removal
RHRSW	Residual Heat Removal Service Water
SAT	Systems Approach to Training
SDP	Significance Determination Process
SSC	Systems, Structures, and Components
TI	Temperature Indicator
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
URI	Unresolved Item
Vdc	Volt direct current
WO	Work Order

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be made available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Website at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

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 05000254/2009005; 05000265/2009005
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Letter to C. Pardee from M. Ring dated January 27, 2010

SUBJECT: QUAD CITIES NUCLEAR POWER STATION, UNITS 1 AND 2 INTEGRATED INSPECTION REPORT 05000254/2009005; 05000265/2009005

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