# Quad Cities 1
# 1Q/2007 Plant Inspection Findings

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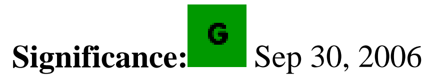
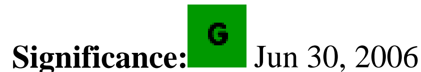
## Initiating Events

**Significance:**  Sep 30, 2006
Identified By: NRC
Item Type: NCV NonCited Violation
**POOR MAINTENANCE WORK PRACTICES AND PROCEDURAL COMPLIANCE ISSUES RESULTS IN TWO FEEDWATER LEAKS AND TWO UNPLANNED POWER REDUCTIONS**
A self-revealed finding was identified due to the discovery of two separate Unit 1 feedwater leaks in July 2006. The leaks were caused by poor maintenance work practices and resulted in two unplanned power reductions. The failure to implement and maintain procedures governing power operations contributed to the leak creation and resulted in a Non-Cited Violation of Technical Specification 5.4.1. Immediate corrective actions included securing the feedwater pumps, performing leak repairs, revising the appropriate procedures, and conducting a review of maintenance work practices.

This finding was more than minor because, if left uncorrected, the poor maintenance work practices and procedural compliance issues could become a more significant safety issue and result in other equipment degradation. This finding was of very low safety significance because the feedwater leaks did not contribute to both the likelihood of an initiating event and that mitigating systems equipment would not be available. This finding affected the work practices component of the human performance cross-cutting area. Specifically, the licensee failed to ensure that supervisory and management oversight of work activities was appropriate to support nuclear safety.
Inspection Report# : 2006006 *(pdf)*

**Significance:**  Jun 30, 2006
Identified By: NRC
Item Type: FIN Finding
**TURBINE/GENERATOR LOAD REJECT AND REACTOR SCRAM DUE TO MAIN POWER TRANSFORMER ISSUES**
A self-revealing Green finding was identified on February 22 when the Unit 1 main turbine tripped causing a reactor scram. The licensee's post-scram efforts determined that the turbine trip was caused by degradation of the main power transformer protective relaying wiring which resulted in the actuation of a protective relay due to an electrical ground. The wiring insulation degradation was a result of electrical conduit bushings not being installed at various junction boxes as required by the main power transformer design specifications. The lack of bushings caused damage to the wire as it was pulled through the electrical conduit during transformer construction.

The failure to follow design specifications when constructing the main power transformer was more than minor because it was a precursor to a significant event (a transient). The inspectors determined that this finding was of very low safety significance because it did not contribute to both the likelihood of a reactor scram and the likelihood that mitigation equipment would not be available. This finding was not considered a violation of regulatory requirements since the main power transformer is a non-safety related component. Corrective actions for this issue included installing new protective relaying wiring external to the transformer. The licensee planned to replace the transformer in the Spring of 2007.
Inspection Report# : 2006005 *(pdf)*

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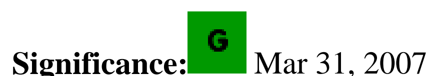
## Mitigating Systems

**Significance:**  Mar 31, 2007
Identified By: NRC
Item Type: FIN Finding

**INADQUATE OVERSIGHT AND PERFORMANCE OF TRAINING RESULTS IN TRIPPING AN OPERATING CONTROL ROOM FAN**
A self-revealed finding was identified on January 1, 2007, when an initial license trainee tripped the "A" control room ventilation system during a training evolution. The inspectors determined that inadequate oversight of the training evolution by the task performance evaluator contributed to this issue. No violation of NRC requirements was identified because the "A" control room ventilation system was non-safety related.

The failure to perform and provide appropriate oversight of training activities was determined to be more than minor because, if left uncorrected, it would lead to the unexpected shut down of other risk significant equipment and the performance of negative training. This finding was of very low safety significance because it did not represent a degradation of the control room radiological barrier, a degradation of the control room smoke or toxic gas barrier, or an actual open pathway in the reactor containment. The inspectors determined that this finding was cross-cutting in the area of Human Performance, Work Practices, because the licensee failed to ensure that the supervisory and management oversight of work activities was appropriate to ensure that nuclear safety was supported.
Inspection Report# : 2007002 *(pdf)*

**Significance:** Dec 31, 2006
Identified By: NRC
Item Type: FIN Finding
**PERFORMANCE OF MAINTENANCE ACTIVITIES WITHOUT A PROCEDURE**
The inspectors identified a Green finding due to the licensee's performance of maintenance without documented work instructions on two occasions. In one instance, the licensee failed to identify that the agitation of the 2A reactor feedwater pump minimum flow valve solenoid constituted a maintenance activity. As a result, actions were not taken to address the undocumented maintenance activity. Immediate corrective actions included briefing personnel on both events, stopping the associated work activities, providing enhanced guidance on manual agitation of equipment, and reinforcing that documented work instructions were required prior to performing maintenance.

The inspectors determined that this issue was more than minor because if left uncorrected, it could lead to the performance of additional, undocumented maintenance activities on both safety-related and non-safety related equipment. The finding was of very low safety significance because the maintenance did not result in a loss of safety function for any system. The inspectors concluded that this finding was cross-cutting in the area of human performance, work practices in that human error prevention techniques were not utilized, the proper documentation of activities did not occur, and personnel proceeded in the face of uncertainty. No violation of NRC requirements was identified due to the undocumented maintenance being performed on non-safety related equipment.
Inspection Report# : 2006007 *(pdf)*

**Significance:** Dec 31, 2006
Identified By: NRC
Item Type: NCV NonCited Violation
**FAILURE TO ENTER TS 3.1.7 IN A TIMELY MANNER**
The inspectors identified a Green finding and Non-Cited Violation of Technical Specification 3.1.7 due to the licensee's failure to enter the associated limiting condition for operation upon obtaining information which challenged the continued operability of the Unit 1 standby liquid control tank. Corrective actions for this issue included conducting additional reviews of prompt operability documentation and providing feedback to operations and engineering personnel. The licensee was also in the process of developing and implementing guidance to improve the quality and timeliness of operability decisions.

This issue was more than minor because it resulted in the Technical Specification 3.1.7 Limiting Condition for Operation Action Times being exceeded prior to requesting a Notice of Enforcement Discretion from the NRC. In addition, if left uncorrected, the failure to enter Technical Specifications at the appropriate time could result in delaying actions used to ensure continued safe plant operations. This issue was of very low safety significance because the standby liquid control tank leak did not result in a loss of system safety function. The inspectors determined that this finding was cross-cutting in the area of human performance, decision-making in that the licensee did not use conservative assumptions in decision making.
Inspection Report# : 2006007 *(pdf)*

**Significance:** G Dec 15, 2006
Identified By: NRC
Item Type: NCV NonCited Violation
**FAILURE TO DEVELOP CORRECTIVE ACTIONS**
The inspectors identified an NCV of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for failure to assure that conditions adverse to quality were promptly corrected. Specifically, the inspectors concluded that the licensee failed to develop actions to correct conditions adverse to quality identified during root cause investigation activities for a Unit 1 standby liquid control tank leak identified in October 2006. This finding had a cross-cutting aspect in the area of problem identification and resolution because the licensee failed to thoroughly evaluate conditions identified during its root cause investigation for the SLC tank leakage which resulted in the failure to develop appropriate corrective actions. The licensee entered this performance deficiency into the CAP for resolution.

This finding is associated with the Mitigating Systems Cornerstone. The finding was more than minor because if left uncorrected, future conditions adverse to quality would not be fully evaluated or corrected. The inspectors assessed the significance of this finding as very low safety significance because the finding did not represent an actual loss of safety function of the standby liquid control tank.
Inspection Report# : 2006017 *(pdf)*

**Significance:** G Nov 03, 2006
Identified By: NRC
Item Type: NCV NonCited Violation
**Failure to Comply with TS SR 3.8.4.2 for 125 Vdc Battery Terminal Connection Corrosion and Resistance Measurements (Section 1R21.3.b.1)**
The team identified a Non-Cited Violation (NCV) of Technical Specification (TS) Surveillance Requirements (SR) 3.8.4.2, Amendment 199/195, having very low safety significance for failure to meet the TS SR when visible corrosion on Units 1 and 2, 125 Vdc safety-related battery inter-cell and terminal connections was identified. Upon discovery, the licensee's corrective actions included: initially cleaning of all 125 Vdc terminals and connectors; taking connection resistance measurements; and initiating a root cause analysis to identify the cause(s) of this adverse to quality condition.

The finding was more than minor because failure to ensure that Units 1 and 2, 125 Vdc safety-related batteries are being maintained in accordance with vendor specified requirements, applicable procedures and TS SRs could result in unacceptable battery terminal connection resistances and decreased battery capacity, rendering the DC system incapable of performing its intended safety function. Based on the results of the licensee's analysis, the finding was determined to be of very low safety significance using the SDP Phase 1 screening worksheet. The cause of the finding related to the cross-cutting aspect of human performance, work practices, procedures because the licensee failed to maintain procedure compliance. (Section 1R21.3.b.1)

Inspection Report# : 2006003 *(pdf)*

**Significance:** G Nov 03, 2006
Identified By: NRC
Item Type: NCV NonCited Violation
**Battery Connection Resistance Value Specified in TS SRs Insufficient to Ensure Operability (Section 1R21.3.b.2)**
The team identified a NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," having very low safety significance involving the failure to verify and ensure that the 125 Vdc safety-related batteries would remain operable if all the inter-cell and terminal connections were at the resistance value (< 150 micro-ohms) allowed by TS SR 3.8.4.2 and SR 3.8.4.5.

The finding was more than minor because if left uncorrected, the finding could become a more significant safety concern. Specifically, the 125 Vdc safety-related batteries would become incapable of meeting their design basis function if the inter-cell and connection resistance were allowed to increase to the TS allowed value. The finding was of very low safety significance based on the results of the licensee's analysis and screened as Green using the SDP Phase 1 screening worksheet. (Section 1R21.3.b.2)

Inspection Report# : 2006003 *(pdf)*

**Significance:** G Nov 03, 2006
Identified By: NRC
Item Type: NCV NonCited Violation
**Calculation Input Design Data Discrepancies for the Auxiliary Power Analysis and EDG Loading (Section 1R21.3.b.3)**
The team identified a NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," having very low safety significance involving inadequate design review of the loading calculation for the emergency diesel generators (EDG's). Specifically, the licensee's engineers failed to adequately identify design input data and perform an adequate design review of the design data for the EDGs that was used in the auxiliary power analysis and the EDG loading calculations. The licensee subsequently determined that the EDGs were operable and that the load margin was not adversely affected based on a revised loading calculation.

The finding was more than minor because failing to correctly identify and input the correct equipment design data into the auxiliary power analysis program would result in the load conditions on the EDG's or other areas of the electrical power analysis not being accurately evaluated, resulting in inaccurate determination of EDG loading. The finding was of very low safety significance based on the results of the licensee's analysis and screened as Green using the SDP Phase 1 screening worksheet. (Section 1R21.3.b.3)

Inspection Report# : 2006003 *(pdf)*

**Significance:** G Nov 03, 2006
Identified By: NRC
Item Type: NCV NonCited Violation
**Licensee Used Inappropriate Vortex Analysis Methodology (Section 1R21.3.b.4)**
The team identified a NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," having very low safety significance involving licensee's failure to select an appropriate method for calculating the onset of vortexing at the intake of the high pressure coolant injection (HPCI) and reactor core isolation cooling (RCIC) pumps' suction lines from the contaminated condensate water storage tank (CCST) water storage tank. Additionally, the licensee failed to fully account for the impact of instrument uncertainty in the tank level switch setpoint which determines the point where suction for the pumps is switched from the CCST to the torus. Once identified, the licensee issued IR 00524923 which contained an evaluation of a more appropriate method for determining the onset of vortexing in the tank.

The finding was more than minor because the failure to prevent the formation of vortexing at the intake of the HPCI and RCIC suction lines would result in air entrainment causing pulsating pump flow and/or reduction in pump performance. The finding was of very low safety significance based on the results of the licensee's analysis and screened as Green using the SDP Phase 1 screening worksheet. (Section 1R21.3.b.4)

Inspection Report# : 2006003 *(pdf)*

**Significance:** G Nov 03, 2006
Identified By: NRC
Item Type: NCV NonCited Violation
**Sizing Calculation for ADS/SRV Air Accumulator Storage Tank (Section 1R21 Non-Conservative .3.b.5)**
The team identified a NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," having very low safety significance involving the sizing calculation for the Target Rock ADS/SRV air accumulator tank. Specifically, the team identified that the licensee failed to correctly specify the minimum differential air pressure required to actuate the ADS/SRV valves, failed to include the volume of the piping from the solenoid to the ADS/SRV actuator, and had the wrong assumption for leakage rate used as acceptance criteria in air drop testing. Once identified, the licensee determined that the calculation required revision to correct the problems that were identified by the team.

The finding was more than minor because the failure to have adequate pneumatic pressure and volume in the accumulator tank would result in over-predicting the accumulator capacity. The finding was of very low safety significance based on the results of the licensee's analysis and screened as Green using the SDP Phase 1 screening worksheet. (Section 1R21.3.b.5)

Inspection Report# : 2006003 *(pdf)*

**Significance:** G Nov 03, 2006
Identified By: NRC
Item Type: NCV NonCited Violation
**Discrepant MCC Voltages Used in Degraded MOV Voltage Drop Calculations (Section 1R21.3.b.6)**
The team identified a NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," having very low safety significance concerning the failure to use proper and most current design input for the control circuit voltage drop calculation for safety related motor operated valves in motor control center 28-1B. Subsequently, on September 1, 2006, the licensee determined, based on review of other electrical design calculations, that the affected circuits will have adequate voltage to ensure proper function of the valves components

The finding was more than minor because the licensee failed to update the control circuit voltage drop calculation for the MOVs to reflect the more conservative MCC design input voltage and ensure the correct voltage for the motor contactor pick up was available. This finding has been screened as Green using the SDP Phase 1 screening worksheet. (Section 1R21.3.b.6)

Inspection Report# : 2006003 *(pdf)*

**Significance:** G Nov 03, 2006
Identified By: NRC
Item Type: NCV NonCited Violation
**Inadequate Load Tabulation in Operations Procedure QCOP 6500-28 (Section 1R21.3.b.7)**
The team identified a NCV of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," having very low safety significance for failing to maintain an adequate procedure for establishing an accurate load tabulation to ensure that the bus feeder breakers to Bus 24-1 were not overloaded during bus cross-tie operation. Specifically, the procedure did not require entering the expected load data from Bus 14-1 during a bus cross-tie operation into the load tabulation. Once identified, the licensee entered the finding into their corrective action program as IR 00521012 and planned to revise the procedure.

The finding was more than minor because, if left uncorrected, it could result in an overloaded bus feeder breaker, since Bus 14-1 cross-tie load could not be accounted for in the tabulation of the Bus 24-1 loading. The finding was of very low safety significance based on the results of the licensee's analysis and screened as Green using the SDP Phase 1 screening worksheet. (Section 1R21.3.b.7)

Inspection Report# : 2006003 *(pdf)*

**Significance:** G Nov 03, 2006
Identified By: NRC
Item Type: NCV NonCited Violation
**Inconsistency in Procedures for Cleaning Batteries (Section 1R21.3.b.8)**
The team identified a NCV of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," having very low safety significance for the operations 125 Vdc safety-related battery procedure being discrepant from vendor specified instructions and other plant battery procedures. Specifically, the procedure stated that, "if electrolyte is spilled on batteries, then use only demineralized water for cleaning." This differed from the vendor's specific instructions and other maintenance procedures which stated that electrolyte spill on batteries shall be neutralized with baking soda water solution. The licensee entered the finding into their corrective action program as IR 00525113.

The finding was more than minor because demineralized water will not neutralize the electrolyte spill on the batteries and could lead to undesirable consequences such as corrosion and potentially affect the battery's design function. This finding has been screened as Green using the SDP Phase 1 screening worksheet. (Section 1R21.3.b.8)

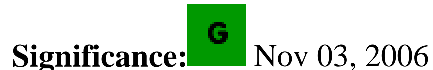
Inspection Report# : 2006003 *(pdf)*

**Significance:** G Nov 03, 2006

Identified By: NRC
Item Type: NCV NonCited Violation
**Failure to Comply with Preventive Maintenance Procedure Requirements Concerning Re-Torquing of Corroded Electrical Terminal Connections (Section 1R21.3.b.9)**
The team identified a NCV of 10 CFR Part 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” having very low safety significance for failure to follow the 125 Vdc station battery preventive maintenance procedure requirement and vendor recommendation not to re-torque corroded battery cell connections. Additionally, the licensee failed to document the as left re-torque values, after re-torquing was performed. Subsequently, the licensee evaluated the as-found conditions and determined the batteries remained operable.

The finding was more than minor because frequent re-torquing of connections will result in distortion of cell posts and connectors, thus degrading rather than improving the connections and may result in affecting the capability of the battery in performing its safety function. This finding has been screened as Green using the SDP Phase 1 screening worksheet. The cause of the finding related to the cross-cutting aspect of human performance, resources, documentation as the documentation, procedures, and work packages used during the battery maintenance did not contain complete, accurate, and up to date information regarding the connection torquing. (Section 1R21.3.b.9).

Inspection Report# : 2006003 *(pdf)*

**Significance:** 

Nov 03, 2006
Identified By: NRC
Item Type: NCV NonCited Violation
**Non-Conservative HPCI Pump Test Acceptance Criteria (Section 1R21.3.b.10)**
The team identified a NCV of 10 CFR Part 50, Appendix B, Criterion XI, “Test Control,” having very low safety significance for failure to ensure that the HPCI pump hydraulic performance tests had acceptance criteria that incorporated the acceptance limits from applicable design documents. If the HPCI pump had degraded to the lower limit of the acceptance band, as listed in the test acceptance criteria, the pump would not have been able to meet the design basis discharge pressure and flow requirements. Following the identification of the issue the licensee entered the issue into the corrective action program as IR 00525592 and verified the operability of the pump based on actual test results.

The finding was more than minor because inadequate pump testing could result in HPCI pump not capable of providing the required design basis flow during accident conditions. The finding was of very low safety significance and screened as Green because subsequent analysis determined that the pumps were currently capable of meeting the design basis discharge pressures and flows. (Section 1R21.3.b.10)

Inspection Report# : 2006003 *(pdf)*

**Significance:**

Nov 03, 2006
Identified By: NRC
Item Type: NCV NonCited Violation
**Non-conservative Safety-Related Air Storage Tank Capacity Test (Section 1R21.3.b.11)**
The team identified a NCV of 10 CFR Part 50, Appendix B, Criterion XI, “Test Control,” having very low safety significance involving the air drop testing for the Target Rock ADS/SRV air accumulator tank. Specifically, the team identified that the licensee failed to correctly specify the minimum accumulator pneumatic pressure required to test the Target Rock ADS/SRV valves. Once identified, the licensee entered the finding into their corrective action program as IR 0052383 to revise the test procedure. An Operability Evaluation for Unit 1 was performed by the licensee to ensure system operability was not affected.

The finding was more than minor because the failure to test the pneumatic accumulator tank at its design basis minimum pressure would result in over-predicting the accumulator capacity. This condition could effect reliable operation of the Target Rock ADS/SRV valves. The finding was of very low safety significance because licensee determined the issue was a test deficiency confirmed not to result in loss of operability per “Part 9900, Technical Guidance, Operability Determination Process for Operability and Functional Assessment. (Section 1R21.3.b.11)

Inspection Report# : 2006003 *(pdf)*

**Significance:** G Nov 03, 2006
Identified By: NRC
Item Type: FIN Finding
**Shift Management Failed to Adequately Document Basis for Operability Determination (Section 1R21.3.b.12)**

Inspection Report# : 2006003 *(pdf)*

**Significance:** G Sep 30, 2006
Identified By: NRC
Item Type: NCV NonCited Violation
**FAILURE TO CORRECT MAIN STEAM SAFETY VALVE TS ISSUES**
The inspectors identified a Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion XVI, due to the licensee's failure to correct a condition adverse to quality. Specifically, the licensee had not implemented timely actions to correct the repeated inability of the main steam safety valves to actuate within Technical Specification values. Immediate corrective actions for this issue included developing a schedule for submitting a required Technical Specification change, determining if the Target Rock valve was suitable for its current application, and reviewing the factors that contributed to the licensee's lack of timeliness.

This issue was more than minor because it affected the mitigating systems objective of ensuring the reliability of systems that respond to initiating events. This finding was of low safety significance because the valve performance did not cause the reactor vessel overpressure limits to be exceeded, did not adversely impact automatic depressurization system operation, and did not significantly impact the licensee's response to an Appendix R event. This finding was attributable to the corrective action program component of the problem identification and resolution cross cutting area. Specifically, the licensee failed to take actions to address this adverse trend in a timely manner commensurate with its significance and complexity.
Inspection Report# : 2006006 *(pdf)*

**Significance:** G Sep 30, 2006
Identified By: NRC
Item Type: NCV NonCited Violation
**UNEXPECTED START OF UNIT 1 EMERGENCY DIESEL GENERATOR**
A self-revealing finding and a Non-Cited Violation of Technical Specification 5.4.1 were identified when operations performed activities which resulted in the unexpected start of the Unit 1 emergency diesel generator. The unexpected actuation was caused by the failure to follow procedures. Immediate corrective actions included discussing this issue with operations personnel, reinforcing procedural adherence and equipment status requirements, and formalizing the use of the "Procedures in Progress" book.

This issue was more than minor because if left uncorrected, it could result in future risk-significant configuration control issues. This finding was of very low safety significance because it did not result in an actual loss of safety function. This finding impacted the work practices component of the human performance cross cutting area. Specifically, the licensee failed to maintain compliance with OP-AA-101-111, "Roles and Responsibilities of On-Shift Personnel."
Inspection Report# : 2006006 *(pdf)*

**Significance:** G Sep 30, 2006
Identified By: NRC
Item Type: NCV NonCited Violation
**FAILURE TO EFFECTIVELY CONTROL CONDITION OF INTERNAL FLOODING PROTECTION CHECK VALVES THROUGH PERFORMANCE OF APPROPRIATE PREVENTIVE MAINTENANCE**
The inspectors identified a Non-Cited Violation of 10 CFR Part 50.65 due to the licensee's failure to demonstrate that the performance and condition of the turbine building internal flooding protection check valves was being effectively controlled through the performance of appropriate preventive maintenance. Immediate corrective actions included assessing the current check valve condition and implementing actions to correct the common mode failure.

This finding was more than minor because it was left uncorrected and resulted in significant check valve degradation. This finding was of very low risk significance because the valve failures did not result in a total loss of the residual heat removal service water system. In addition, the failures did not result in an actual loss of safety function for risk significant maintenance rule equipment.
Inspection Report# : 2006006 *(pdf)*

**Significance:** G Jun 30, 2006
Identified By: NRC
Item Type: FIN Finding
**FAILURE TO EVALUATE AND ADDRESS LONG-STANDING DEGRADATION OF RHRSW SUMP PUMPS PRIOR TO IMPACTING INTERNAL FLOODING PROTECTION EQUIPMENT**
The inspectors identified a Green finding in June 2006 due to the licensee's failure to recognize and address long-standing degradation of the residual heat removal service water (RHRSW) vault sump pumps.

This issue was determined to be more than minor because a degraded sump pump was left unrepaired for approximately 15 months and ultimately resulted in rendering both of the internal flooding protection check valves for the 1A RHRSW vault inoperable. This finding was determined to be of very low safety significance because an internal flood in the RHRSW area could not have rendered two or more trains of the RHRSW system inoperable concurrently. The inspectors also determined that this finding affected the cross-cutting area of problem identification and resolution because several departments had the opportunity to evaluate and address the degradation of the sump pumps prior to the loss of flood protection occurring. Corrective actions for this issue included performing a historical review of RHRSW vault sump pump maintenance and initiating work requests to inspect and replace all sump pumps not replaced in the last two years.
Inspection Report# : 2006005 *(pdf)*

**Significance:** G Jun 30, 2006
Identified By: NRC
Item Type: NCV NonCited Violation
**FAILURE OF THE 1B CORE SPRAY PUMP TO START DUE TO BREAKER ALIGNMENT ISSUES**
A self-revealing Green finding and a Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," were identified on January 4, 2006, due to the Unit 1 "B" core spray system failing to start during testing. The pump failed to start because of misalignment between the pump breaker's secondary disconnect pins and the breaker cubicle's secondary disconnect slides. Procedural inadequacies contributed to this failure since neither the breaker installation procedure nor the breaker preventive maintenance procedure addressed the importance properly aligning the breaker and cubicle components.

The lack of procedural instructions was determined to be more than minor because if left uncorrected, the lack of instructions could lead of additional safety- related breakers being misaligned during installation. This finding was found to be of low safety significance because additional low pressure injection systems were available for use if needed. Corrective actions for this issue included properly installing a new breaker in the 1B core spray pump breaker cubicle and revising and implementing the appropriate preventive maintenance and breaker installation procedures.
Inspection Report# : 2006005 *(pdf)*

**Significance:** W Jun 29, 2006
Identified By: NRC
Item Type: VIO Violation
**FAILURE TO ESTABLISH MEASURES TO ENSURE THAT THE UNIT 1 ERV ACTUATORS REMAINED SUITABLE FOR OPERATION WHILE OPERATING AT EPU POWER LEVELS**
Title 10 CFR 50, Appendix B, Criterion III, Design Control, requires, in part, that measures be established for the selection and review for suitability of application of materials, parts, equipment, and processes that are essential to the safety-related functions of the structures, systems, and components.

Contrary to the above, the licensee failed to establish measures to ensure that the application of the electromatic relief valve (ERV) actuators (which are essential to perform the safety-related reactor vessel depressurization and reactor overpressure protection functions) was reviewed and remained suitable for operation prior to implementing an extended power uprate (EPU) for Unit 1 in November 2002. This resulted in multiple ERVs becoming inoperable and unavailable due to being

subjected to significantly higher vibration levels during Unit 1 operation at EPU power levels.

The inspectors determined that this finding also affected the cross-cutting area of problem identification and resolution because the licensee failed to fully evaluate historical and predictive information regarding higher than expected main steam line vibrations. Corrective actions included replacing the Unit 1 ERV actuators in January 2006, installing new ERV actuators designed to withstand the increased vibrations experienced during EPU operations in May 2006, and installing an additional modification to reduce the overall main steam line vibration levels. Additional corrective actions were in progress to address the organizational aspects that contributed to this issue.
Inspection Report# : 2006014 *(pdf)*
Inspection Report# : 2007007 *(pdf)*

**Significance:** Jun 29, 2006
Identified By: NRC
Item Type: NCV NonCited Violation
**SSMP Credited as a Redundant System for an Appendix R III.G.2 Fire Area**
The inspectors identified a Non-cited Violation of 10 CFR Part 50, Appendix R, Section III.G.2, having very low safety significance involving the licensee's failure to ensure, in the event of a severe fire, that one redundant train of systems necessary to achieve and maintain hot shutdown conditions was free of fire damage. Specifically, the licensee failed to ensure, in the event of a fire in any of the III.G.2 fire areas, that one redundant train of reactor coolant inventory makeup water remained free of fire damage. Instead the licensee credited the dedicated safe shutdown makeup pump for reactor coolant inventory makeup water in the III.G.2 fire areas. The licensee planned to review the options for resolving this issue and pursue appropriate actions.

The finding was more than minor because this failure could have affected the mitigating systems cornerstone objective and safe shutdown. Specifically, the licensee failed to ensure that one redundant train of reactor coolant inventory makeup water was available, and instead relied on an alternate shutdown system without an analysis and procedures that demonstrated full compliance with all of the requirements of 10 CFR Part 50, Appendix R, Section III.G.3 and III.L, or requesting prior NRC approval. The finding was not suitable for SDP evaluation, but has been reviewed by NRC management and was determined to be a finding of very low safety significance.
Inspection Report# : 2006002 *(pdf)*

**Significance:** Jun 29, 2006
Identified By: NRC
Item Type: NCV NonCited Violation
**Failure To Ensure One Redundant Train of RHRSW Free of Fire Damage**
The inspectors identified a NCV of 10 CFR Part 50, Appendix R, Section III.G.2, having very low safety significance (Green) involving the licensee failure to ensure, in the event of a severe fire, that one redundant train of systems necessary to achieve and maintain hot shutdown conditions was free of fire damage. Specifically, the licensee failed to ensure, in the event of a fire in Fire Areas TB-III, 13-1 or 24-1, that one redundant train of residual heat removal service water (RHRSW) remained free of fire damage. Instead the opposite unit’s RHRSW train was cross-tied (i.e., an alternative SSD activity) and credited for torus cooling during hot shutdown for a III.G.2 fire area. In addition, the licensee failed to have analyses and procedures that demonstrated full compliance with all of the requirements of 10 CFR Part 50, Appendix R, Section III.G.3, and Section III.L. The licensee planned to review the options for resolving this issue and pursue the appropriate actions.

The finding was more than minor because the failure to ensure one redundant train of RHRSW was available for torus cooling for hot shutdown could have affected the mitigating systems cornerstone objective and SSD. The finding was not suitable for SDP evaluation, but has been reviewed by NRC management and was determined to be a finding of very low safety significance.
Inspection Report# : 2006002 *(pdf)*

**Significance:** Jun 29, 2006
Identified By: NRC
Item Type: NCV NonCited Violation
**Procedure Included Unapproved Fuse Repair for Appedix R**
The inspectors identified a NCV of 10 CFR Part 50, Appendix B, Criterion V, “Instruction, Procedures, and Drawings,”

having very low safety significance (Green) involving inadequate procedure steps. Specifically, The licensee failed to provide adequate procedure steps in-accordance with Appendix R requirements for hot shutdown and allowed the replacement (i.e., a repair) of breaker fuses prior to attaining hot shutdown. Specifically, QCNPS's Procedure QOP 6500-10 "Local Control of 4160 and 480 Volt Motor Operated Circuit Breaker," Revision 8, included a hot shutdown repair to replace any circuit breaker's control fuses that were believed to be blown due to a fire-induced failure. This fuse replacement constituted a hot shutdown repair which was not allowed by 10 CFR Part 50, Appendix R. Once identified, the licensee revised procedure QOP 6500-10 and added steps to manually close breakers using a local pushbutton.

The finding was more than minor because the failure to include adequate procedure steps could have affected the mitigating systems cornerstone objective and SSD. Performing the repair activities could have delayed and/or complicated shutdown of the plant. The finding was of very low safety significance because the licensee could have manually charged the breaker's spring and closed the breaker using the pushbutton located at the breaker.
Inspection Report# : 2006002 *(pdf)*

**Significance:**

Jun 29, 2006
Identified By: NRC
Item Type: NCV NonCited Violation
**Failure to Maintain Acceptable Pre-Fire Plans**
The inspectors identified a NCV of QCNPS's license condition for fire protection, having very low safety significance (Green) involving the lack of complete and accurate information in the QCNPS's fire pre-plans for various plant fire areas. Specifically, the licensee failed to include important information in the fire pre-plans, such as hydrogen and electrical hazards, to assist the fire brigade to fight a fire within those plant fire areas.

The finding was more than minor because the failure to provide adequate warnings and guidance related to hydrogen and electrical hazards in the fire pre-plans could have adversely impacted the fire brigade's ability to fight a fire, thereby, increasing the likelihood of a fire which would challenge SSD and could have affected the mitigating systems cornerstone objective. The inspectors determined that this issue also affected the cross-cutting area of Problem Identification and Resolution, Corrective Action Program, because the licensee failed to identify the presence of hydrogen and oxygen hazards in Fire Areas RB-7 and RB-19 during their review as part of the fire pre-plan improvement effort conducted as a result of previously identified corrective action (IR 00221528). As a result, the licensee did not take actions to address safety issues in a timely manner. The finding was of very low safety significance because of the extensive training provided to the fire brigade members to deal with unexpected contingencies.
Inspection Report# : 2006002 *(pdf)*

**Significance:**

Jun 29, 2006
Identified By: NRC
Item Type: NCV NonCited Violation
**Failure to Have a Calculation for Hose Stations That Did Not Meet Code Requirements to Ensure Adequate Water Pressure and Flow Rate**
The inspectors identified a NCV of QCNPS's license condition for fire protection, having very low safety significance (Green) involving adequacy of water pressure and flow rate at standpipes with hose connections. Specifically, the licensee failed to provide calculations to ensure that an adequate water pressure and flow rate were available to meet the QCNPS's FPP requirements. The licensee planned to perform calculations to verify water flow at all affected standpipes with hose connections.

The finding was more than minor because the failure to provide an adequate water pressure and flow rate at standpipes with hose connections could hamper the fire brigades ability to fight a fire, thereby, increasing the likelihood of a fire which would challenge SSD and could have affected the mitigating systems cornerstone objective. The finding was of very low safety significance because other defense-in-depth fire protection elements remained unaffected in all fire areas.
Inspection Report# : 2006002 *(pdf)*

**Significance:**

Jun 29, 2006
Identified By: NRC
Item Type: NCV NonCited Violation
**Failure to Meet NFPA Code Requirements for Class A Fire Extinguishers**

The inspectors identified a NCV of QCNPS's license condition for fire protection, having very low safety significance (Green) involving adequacy of number of Class A fire extinguishers. Specifically, the licensee failed to have an adequate number of Class A fire extinguishers available where significant fire hazards existed to meet the NFPA 10 Code requirements to suppress and/or extinguish Class A fire hazards. The licensee planned to evaluate putting more Class A fire extinguishers into the plant.

The finding was more than minor because failure to have an adequate number of Class A fire extinguishers available could potentially escalate a small fire into a larger fire since only standpipes with hose connections were available and their use required a trained fire brigade to extinguish the fire. As a result, non-fire brigade personnel would be prevented from moving quickly to suppress and/or extinguish a small fire and the potential for an escalated fire could have affected the mitigating systems cornerstone objective. The finding was of very low safety significance because most fire areas and zones have fire detectors that would alarm in the control room and the fire brigade would respond to a fire in these areas. In addition, other defense-in-depth fire protection elements remained unaffected and a fire in these areas would not result in a loss of dedicated SSD systems.
Inspection Report# : 2006002 *(pdf)*

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# Barrier Integrity

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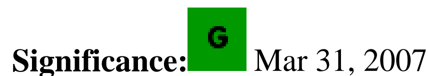
# Emergency Preparedness



**Significance:** Mar 31, 2007
Identified By: NRC
Item Type: NCV NonCited Violation
**FAILURE TO COMPLETE HYDROSTATIC TESTS ON ALL SCBA AIR BOTTLES AT PROCEDURAL REQUIRED INTERVALS**
The inspectors identified a Green finding and a Non-Cited Violation of NRC requirements on February 8, 2007, due to the licensee's failure to complete hydrostatic tests on multiple self-contained breathing apparatus (SCBA) air bottles at the required frequency. The inspectors determined that approximately 12 percent of the in-service emergency response related SCBA air bottles had not been tested within the previous 3-year period as required by licensee procedures.

The issue was more than minor because it was associated with the facilities/equipment attribute of the Emergency Preparedness Cornerstone. The finding also affected the cornerstone objective of ensuring the licensee was capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. The inspectors determined that the issue resulted in a failure to comply with 10 CFR 50.54(q) and the Emergency Plan requirements associated with one of the Planning Standards in 10 CFR 50.47(b). The issue also represented a degradation of the emergency worker protection portion of the Planning Standard provided in 10 CFR 50.47(b)(10) that involved more than an isolated, small percentage of the licensee's SCBA equipment. Since the finding did not represent a functional failure of the Planning Standard, the finding was determined to be of very low safety significance. This finding was also cross-cutting in the area of Human Performance, Resources, because the principal cause of the problem was the lack of an adequate procedure and process to ensure that SCBA bottles were tested at the proper frequency and tracked in the licensee's inventory. Corrective actions for this issue included hydrostatic testing of the affected bottles, verification that all other SCBA bottle hydrostatic tests were current, expanding the SCBA bottle monthly inspection requirements, and plans to re-evaluate the process used to introduce newly acquired SCBA equipment into the licensee's inventory.
Inspection Report# : 2007002 *(pdf)*

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# Occupational Radiation Safety

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## Public Radiation Safety

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## Physical Protection

Physical Protection information not publicly available.

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## Miscellaneous

**Significance: N/A** Dec 15, 2006
Identified By: NRC
Item Type: FIN Finding
**Biennial PI&R Inspection Summary**
In general, the station identified issues and entered them into the corrective action program (CAP) at the appropriate level. In addition, issues that were identified from operating experience reports and instances where previous corrective actions were ineffective or inappropriate were also entered into the CAP. The inspectors concluded that issues were properly prioritized and generally evaluated well. The inspectors determined that conditions at the Quad Cities station were conducive to identifying issues. The licensee staff at Quad Cities was aware of and generally familiar with the CAP and other station processes, including the Employee Concerns Program, through which concerns could be raised. One finding of very low safety significance (Green) was identified associated with the effectiveness of the corrective action program. The finding originated from the review of a root cause investigation conducted for the Unit 1 standby liquid control tank through-wall leak.

Inspection Report# : 2006017 *(pdf)*

Last modified : June 01, 2007