

Quad Cities 2

Initiating Events

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Significance: Feb 29, 2000

Identified By: NRC

Item Type: FIN Finding

Ice Melt Valve Failure

Failure of the ice melt valve on January 22, 2000, resulted in some ice formation in the intake area. Operator detection and compensatory measures prevented the ice from affecting the water level in the intake. The valve gate had become detached from the stem. The failure of the ice melt valve was of very low risk significance because it did not result in an increased initiating event frequency for loss of both normal and ultimate heat sinks. The inspectors compared an estimated valve failure rate to the licensee's evaluation. The licensee's evaluation excluded this initiating event from the probabilistic risk assessment because no precursor event had occurred in the history of the station.

Inspection Report# : [2000001\(pdf\)](#)

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Significance: Sep 08, 1999

Identified By: NRC

Item Type: FIN Finding

Maintenance rule functional failures

Problematic feedwater level control equipment on Unit 2 resulted in two reactor vessel water level transients in early 1999. The licensee initially evaluated these two events as not being maintenance rule functional failures, which was inappropriate. An NRC inspection and a subsequent licensee self-assessment identified the error. The licensee re-evaluated the two transients as being functional failures on July 28, 1999. This issue did not increase the frequency of initiating events and therefore was an issue of very low safety significance (Section 1R12).

Inspection Report# : [1999018\(pdf\)](#)

G

Significance: Jul 20, 1999

Identified By: NRC

Item Type: FIN Finding

a 3-inch increase in reactor water level

On Unit 2, a 3-inch increase in reactor water level occurred and required operators to take manual control of the system. Various failures in the level control systems have resulted in about ten similar events since January 1, 1999, in which operators were required to intervene to prevent level transients that could have resulted in a reactor trip. Since the plant effect of the failures is limited to an uncomplicated reactor trip, the failures were considered to be of low risk significance using the significance determination process (Section 1R03).

Inspection Report# : [1999011\(pdf\)](#)

G

Significance: Dec 29, 2001

Identified By: NRC

Item Type: FIN Finding

DEGRADED AND INADEQUATELY TESTED TRANSFORMER AND PROTECTIVE RELAYING RESULTS IN INCREASE IN TRANSIENT AND LOSS OF OFFSITE POWER INITIATING EVENT FREQUENCIES

On August 2, 2001, Unit 2 experienced a transformer failure, reactor scram, and loss of offsite power. The inspectors determined that a lightning strike in conjunction with age related degradation and inadequate testing of the Unit 2 main power transformer and switchyard protective relaying contributed to the event and resulted in an increase in the initiating event frequency for plant transients and a loss of offsite power. The inspectors determined the risk significance of this issue to be very low since all remaining mitigating systems were available to mitigate the transformer rupture, reactor scram, and loss of offsite power.

Inspection Report# : [2001017\(pdf\)](#)

G

Significance: Mar 31, 2001

Identified By: Licensee

Item Type: NCV NonCited Violation

Operator-induced loss of feedwater heating transient

On March 23 the inspectors reviewed an operator-induced loss of feedwater heating transient that occurred on Unit 2. The inspectors found that the operators failed to immediately recognize a reduction in feedwater heating and take prompt action to effectively control the increasing reactor power. The transient resulted in a 33 degree decrease in feedwater inlet temperature adding sufficient positive reactivity to increase reactor thermal power from 2511 to 2578 megawatts, approximately 102.7 percent of maximum licensed power. Exceeding Quad Cities License DPR-30 maximum thermal power of 2511 megawatts thermal was considered a Non-Cited Violation. The risk significance of this event was determined to be very low (Green) due to the relatively small increase a 2.7 percent power change will have on overall core thermal limits (Section 1R14).
Inspection Report# : [2001005\(pdf\)](#)

G

Significance: Aug 15, 2000

Identified By: NRC

Item Type: FIN Finding

Electrical ring bus caused electrical circuit breakers 1-3 and 3-4 to open.

On July 18 a fault on one of the offsite power feeds to the Quad Cities electrical ring bus caused electrical circuit breakers 1-3 and 3-4 to open. This action isolated the fault and resulted in a Unit 2 turbine generator and reactor trip. The response by the switchyard resulted in a loss of power on the Unit 1 reserve auxiliary transformer. The response to the reactor scram on Unit 2 was as designed. Operator performance during this event was determined to have been acceptable. The inspectors reviewed the risk significance of this initiating event for both units using the Significance Determination Process. All mitigating equipment was available for Unit 2 following the uncomplicated trip, and this event was screened as having very low risk significance (GREEN.) One of two auxiliary transformers for Unit 1 was de-energized during the event, but the unit did not trip and all mitigating equipment was available. Therefore, this event was also screened as GREEN for Unit 1.
Inspection Report# : [2000011\(pdf\)](#)

G

Significance: Jun 30, 2000

Identified By: NRC

Item Type: FIN Finding

operators did not control reactor vessel inventory

During operator response to a reactor trip on May 22, operators did not control reactor vessel inventory prior to the operating reactor feedwater pump tripping on high reactor vessel water level. Additionally, operators had not started a reactor feedwater pump by the time a reactor low level condition existed. This resulted in a second engineered safety feature actuation. The inspectors reviewed this issue using the significance determination process for a transient with a loss of feedwater and determined this was of very low risk significance (Section 1R14).
Inspection Report# : [2000007\(pdf\)](#)

G

Significance: Jun 30, 2000

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

Maintenance work and emerging work - 2B reactor water cleanup pump seal line disconnect

On June 10, maintenance workers disconnected a seal line to the 2B reactor water cleanup pump that was not properly isolated by the out-of-service tagout and discovered that the line was pressurized to about 1000 psig. The resulting spray caused a spread of contamination in the room and a potential hazard to the workers. No personnel injuries occurred as a result of this event. Failure to hang the proper out-of-service for the maintenance activity was considered a Non-Cited Violation (NCV) of Technical Specifications. The inspectors considered this event of very low safety significance due to the ability to isolate the leak and the availability of mitigating equipment (Section 1R13).
Inspection Report# : [2000007\(pdf\)](#)

G

Significance: Jun 30, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

adjustments to the wrong instrument, causing a reactor trip on Unit 2

On May 5 an instrument technician performing a calibration of the main steam line high steam flow detectors made adjustments to the wrong instrument, causing a reactor trip on Unit 2. Failure to implement the calibration procedure for the proper channel instrument was considered an NCV of Technical Specification 6.8.A.1. The safety significance of this event was minimal due to the availability of mitigating equipment (Section 4OA.3).
Inspection Report# : [2000007\(pdf\)](#)

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Significance: Feb 29, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Too Few Intermediate Range Nuclear Instruments During Refueling

From February 1 through 5, 2000, Unit 2 had less than the number of operable intermediate range nuclear instruments per channel (three) for the reactor protective system required by Technical Specification 3.1.A. Only two of four instruments were operable on the "B" channel and three of four were operable on the "A" channel. During this time, the reactor was in Mode 5 (refuel) and operators performed core alterations by moving irradiated fuel in the vessel. This issue is considered a non-cited violation consistent with the Interim Enforcement Policy for pilot plants Unit 2 was in cold shutdown with all control rods inserted. This issue was determined to be of very low risk significance because shutdown margin calculations and refueling interlocks provided assurance of adequate shutdown margin. Source range nuclear instruments provided a rod block function during refueling. Intermediate range nuclear instrument indication would not have been available until after the point where a reactivity excursion had occurred because the neutron level during refueling operations was too low for the intermediate range nuclear instruments.

Inspection Report# : [2000001\(pdf\)](#)

G

Significance: Feb 29, 2000

Identified By: NRC

Item Type: FIN Finding

Safe Shutdown Makeup Pump Valve Failure

On January 19, 2000, during planned maintenance activities, maintenance workers determined that the safe shutdown makeup pump system was inoperable due to a Unit 2 safe shutdown makeup pump injection valve failure to operate. The valve failure was evaluated using the Significance Determination Process and was found to be of very low risk significance because all other mitigating systems were available.

Inspection Report# : [2000001\(pdf\)](#)

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Significance: Feb 29, 2000

Identified By: NRC

Item Type: FIN Finding

Unit 2 Automatic Depressurization System Valves Taken Out-Of-Service in Mode 3

On January 22, 2000, operators did not recognize entry into a Technical Specification action statement when relief valves were removed from service with the reactor in Mode 3. Upon discovery, about 4-1/2 hours later, the valves were returned to service. The Technical Specification action statement was not exceeded. The unavailability of the relief valves was evaluated by the NRC's Senior Reactor Analyst as part of the Significance Determination Process for shutdown issues. This issue was determined to be of very low risk significance because the reactor was in hot shutdown with vessel pressure at approximately 50 psig.

Inspection Report# : [2000001\(pdf\)](#)

G

Significance: Feb 29, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Emergency Diesel Generator Ventilation Power Supply Switch Out of Position

On January 28, 2000, with Unit 1 operating at full power and with Unit 2 in Mode 5 (refuel), an operator identified that the Unit 2 emergency diesel generator room ventilation fan power select switch was selected to the Unit 1 power supply. The Unit 2 emergency diesel generator was inoperable, but remained available for service. Since the shared emergency diesel generator was already inoperable to Unit 2, this condition left no operable emergency diesel generators for Unit 2. This issue is considered a non-cited violation consistent with the Interim Enforcement Policy for pilot plants. This issue was considered to be of very low safety significance because the Unit 1 diesel generator would not have been overloaded by the Unit 2 emergency diesel generator room ventilation fan. The Unit 2 emergency diesel generator was also available.

Inspection Report# : [2000001\(pdf\)](#)

G

Significance: Feb 29, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Post Maintenance Testing

On February 10, 2000, with Unit 2 in startup mode, the high pressure coolant injection pump failed to start during testing due to incomplete maintenance. A maintenance foreman erroneously signed off the work package as being completed when it was not. This issue is considered a non-cited violation consistent with the Interim Enforcement Policy for pilot plants. This issue was of very low risk significance since the system pressure was low, decay heat was low, and redundant methods of inventory injection were either operating or available.

Inspection Report# : [2000001\(pdf\)](#)

G

Significance: Jan 19, 2000

Identified By: NRC

Item Type: FIN Finding

Corrective Action Deficiencies Related to Heaters in the Contaminated Condensate Storage Tanks Allowed Degradation of the Heaters

The inspectors found that corrective action deficiencies related to heaters in the contaminated condensate storage tanks allowed degradation of the heaters to the extent that high pressure injection systems could have been adversely affected. The risk significance for the loss of heaters in the contaminated condensate storage tanks was low, partially because both units were shut down during times when the high pressure injection sources could have been rendered inoperable due to lack of sufficient tank heating.

Inspection Report# : [1999025\(pdf\)](#)

G

Significance: Jan 19, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Contaminated Condensate Storage Tank Heaters Inoperable

The inspectors found that design control deficiencies related to heaters in the contaminated condensate storage tanks allowed degradation of the heaters to the extent that high pressure injection systems could have been adversely affected. Modifications to the system did not evaluate the facility change as required by 10 CFR 50.59. This was considered to be a non-cited violation of 10 CFR 50.59. This issue was first documented by the licensee in August 1999 and addressed in Inspection Report 50-254/99020; 50-265/99020. The risk significance for the loss of heaters in the contaminated condensate storage tanks was low, partially because both units were shut down during times when the high pressure injection sources could have been rendered inoperable due to lack of sufficient tank heating.

Inspection Report# : [1999025\(pdf\)](#)

G

Significance: Dec 03, 1999

Identified By: NRC

Item Type: FIN Finding

Corrective Actions for a Design Control Problem with Software Backups were not Timely or Complete

The inspectors found that two failures of a high pressure coolant injection valve to close in September and October 1999 were not properly classified in the maintenance rule program. Licensee engineers initially failed to consider the second failure of the 1-2301-5 valve to close on October 4, 1999, as a repetitive maintenance preventable functional failure, and failed to monitor the system under (a)(1) of the maintenance rule. This is considered an unresolved item. The valve failure was found to be of low risk significance because the inboard isolation valve was available.

Inspection Report# : [1999023\(pdf\)](#)

G

Significance: Nov 19, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Ensure ADS Valves Qualified for Minimum Possible Voltage

Four of the five Unit 1 automatic depressurization system relief valves were not initially qualified for the degraded voltage conditions that would be seen under accident conditions. The licensee had not originally accounted for the voltage drop that would occur between the station batteries and the valve solenoids when specifying the minimum voltage for which the valves needed to be qualified. The licensee subsequently identified a test report, done for another nuclear station, which qualified the valves to a lower voltage. The inspectors, in conjunction with the Office of Nuclear Reactor Regulations, reviewed the test and accepted it under condition that a ten volt penalty be applied to account for some test deficiencies. The licensee also performed calculations to show that the actual available voltage to the valves, under degraded conditions, was above the accepted minimum voltage. A non-cited violation was identified.

Inspection Report# : [1999021\(pdf\)](#)

G

Significance: Oct 20, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Promptly Correct Control Room Emergency Ventilation System Deficiency

The inspectors identified two examples of inadequate corrective action regarding the Units 1 and 2 safety-related control room emergency ventilation system. In 1995 the licensee identified emergency diesel generator overloading concerns and degraded voltage concerns. This degraded and nonconforming condition was not corrected, and the design basis for the emergency diesel generator system and control room emergency ventilation system were not changed to reflect the condition. Also, safety-related electrical drawing discrepancies with the control room emergency ventilation system were identified in 1997 and never corrected. A non-cited violation for 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action" with two examples was identified. In utilizing the Significance Determination Process, this issue was determined to have low risk

significance because control room habitability was assumed to be maintained for the 1 hour to start control room cooling and, therefore, there was no impact on the ability of control room operators to operate the required mitigating systems. Also, the design basis event was estimated to have a very low initiating event frequency (Section 1R16).

Inspection Report# : [1999020\(pdf\)](#)

G

Significance: Sep 08, 1999

Identified By: NRC

Item Type: FIN Finding

A grounded resistor in the governor circuit that caused a failure of the Unit 2 reactor core isolation cooling pump

On August 26, 1999, the licensee identified a grounded resistor in the governor circuit that caused a failure of the Unit 2 reactor core isolation cooling pump. The inspectors used the significance determination process to identify this event as having very low safety significance for the loss of offsite power initiating event due to the availability of other mitigating equipment (Section 1R22.2).

Inspection Report# : [1999018\(pdf\)](#)

G

Significance: Sep 08, 1999

Identified By: NRC

Item Type: FIN Finding

Motor-operated valve dynamic testing

During motor-operated valve dynamic testing on August 4, 1999, the Unit 1 residual heat removal cross-tie valve (19A) failed to fully close. However, approximately one month after the failure occurred, the licensee's corrective action program did not include a plan to determine the cause of the failure or to address any potential generic considerations for other valves (Section 1R22.1). No safety functions were affected and no risk increase resulted from this particular valve failure.

Inspection Report# : [1999018\(pdf\)](#)

Significance: N/A Sep 08, 1999

Identified By: NRC

Item Type: FIN Finding

Removal of a high pressure injection pump in parallel with testing on an emergency diesel generator

On two occasions, the licensee's work authorization process allowed removal of a high pressure injection pump in parallel with testing on an emergency diesel generator. The inspectors identified that on one occasion, planned conditional core damage probability was increased to greater than that allowed by licensee administrative procedures. The actual risk was lower because the licensee did not perform the work on both systems together. The significance of this finding was not assessed by the significance determination process due to the instantaneous risk involved and the fact that the work was not performed as planned following NRC discussions with plant management (Section 1R13).

Inspection Report# : [1999018\(pdf\)](#)

G

Significance: Sep 03, 1999

Identified By: NRC

Item Type: FIN Finding

Copy of post-modification test not retained

The inspectors identified that the Unit 1 post modification test for a design change package on the fuel transfer pump was not retained by the licensee. This item had very low risk significance. The licensee had retained the Unit 2 test and had signature evidence that the Unit 1 test was performed.

Inspection Report# : [1999017\(pdf\)](#)

G

Significance: Jul 20, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Corrective Action for Flooding Procedures.

Corrective actions were not implemented for an inadequate flood protection procedure originally identified by the licensee in 1997. The procedures did not provide adequate instructions to protect the plant structurally under the forces of severe flood waters. This issue was inappropriately closed in the corrective action program without resolution. This was a non-cited violation for inadequate corrective action. A qualitative risk assessment of the impact of the procedure deficiencies concluded that the issues were of low risk significance since adequate time would be available to make procedure changes and take action during a flooding event. (Section 1R06).

Inspection Report# : [1999011\(pdf\)](#)

G

Significance: Jul 16, 1999

Identified By: NRC

Item Type: FIN Finding

Corrective actions to address a Unit 1 emergency diesel generator failure

Corrective actions to address a January 1998 Unit 1 emergency diesel generator (EDG) failure to start were postponed in some cases and in others only partially completed. (Reference Report Section 4OA1.3, page 5) This item was categorized by the significance determination process as being of low risk significance based on occasional EDG start failures, redundant EDGs and available off site power.

Inspection Report# : [1999012\(pdf\)](#)

G

Significance: Jul 16, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Excessive thrust conditions, found during testing of motor operated valves

Excessive thrust conditions, found during testing of motor operated valves (MOVs) from March 1997 through July 2, 1999, were not identified to management and did not receive appropriate corrective action to preclude recurrence. As a result, the cause of the problem was not identified and appropriate corrective action was not taken. This is a non-cited violation. This item was categorized by the significance determination process as being of low risk significance. (Reference Report Section 4OA1.4) Since nine of the ten valves found outside the acceptable thrust windows functioned as required during testing, the issue was determined to be of low risk significance and was categorized as "Green."

Inspection Report# : [1999012\(pdf\)](#)

G

Significance: Jul 15, 1999

Identified By: NRC

Item Type: FIN Finding

The surveillance procedure for evaluating thermal performance of the residual heat removal heat exchangers

The surveillance procedure for evaluating thermal performance of the residual heat removal heat exchangers contained errors which resulted in the licensee overestimating the heat removal capability of the 1A heat exchanger. This item had very low risk significance, since the heat exchanger was still capable of removing its design heat load.

Inspection Report# : [1999014\(pdf\)](#)

G

Significance: Jul 15, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Three Examples of Design Control Relating to Original Plant Design

A non-cited design control violation with multiple examples was identified during close out of two unresolved items from the architect-engineer inspection (50-254/265-98201). The issues dealt with ensuring adequate net positive suction head for the emergency core cooling system pumps, ensuring the residual heat removal service water piping was analyzed for its design condition, and determining the adequacy of a thermal relief valve. All the examples in the Non-Cited Violation resulted from original design deficiencies. The licensee's analyses showed that the pumps were operable. Therefore, this issue screened out of the significance determination process as having very low risk significance

Inspection Report# : [1999014\(pdf\)](#)

G

Significance: Feb 01, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to adequately address the erosion of the RHRSW room coolers' supply piping

Green. The inspectors identified a failure to promptly identify and correct conditions adverse to quality involving the erosion of safety-related residual heat removal service water piping. The licensee's corrective actions for the piping leak included replacing the affected piping and performing ultrasonic testing on similar piping for the other trains. During this inspection, NRC inspectors identified that the corrective actions were inadequate in that the ultrasonic testing was not able to examine the area of the piping affected by the erosion as evidenced by the subsequent failure. This finding was determined to be of very low safety significance because the equipment was still capable of performing its intended safety function. A Non-Cited Violation of 10CFR 50 Appendix B, Criterion XVI was identified.

Inspection Report# : [2001015\(pdf\)](#)**Significance:** N/A Nov 15, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO FOLLOW OPERATOR REQUALIFICATION PROGRAM PROCEDURAL REQUIREMENTS

No color. The inspectors identified a Non-Cited Violation wherein the facility licensee had failed to follow procedural requirements to evaluate a senior reactor operator (SRO) licensed individual in an SRO licensed position during the year 2001 annual licensed operator requalification examination (10 CFR 55.59). The finding was of very low safety significance because the SRO licensed individual held an "inactive" SRO license (i.e., would not be assigned to licensed duties unless his license was restored to an active status in accordance with 10 CFR 55.53).

Inspection Report# : [2001016\(pdf\)](#)



Significance: Nov 15, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO MEET 10 CFR 50.65 REQUIREMENTS

On October 24, 2001, the inspectors determined that the licensee failed to count Unit 1 and Unit 2 battery room ventilation system air handling unit drive belt failures as maintenance preventable functional failures and repeat maintenance preventable functional failures where appropriate. The licensee's incorrect assessment of these equipment failures resulted in a failure to develop and implement appropriate action plans for the battery room ventilation systems on Units 1 and 2, assess the Unit 2 battery room ventilation system for (a)(1)classification, and monitor the performance of the systems against licensee-established goals. The failure to properly implement maintenance rule requirements was considered a Non-Cited Violation of 10 CFR 50.65. The risk significance of the issue was determined to be of very low safety significance because the batteries supported by the battery room ventilation systems did not experience an actual loss of safety function.

Inspection Report# : [2001016\(pdf\)](#)



Significance: Sep 30, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO VERIFY ADEQUATE FILL OF THE HIGH PRESSURE COOLANT INJECTION SYSTEM AS REQUIRED BY TECHNICAL SPECIFICATIONS

On December 27, 2000, the licensee discovered that the high pressure coolant injection system was not filled with water from the pump discharge valve to the system isolation valve following maintenance activities. Technical Specification Surveillance Requirement 4.5.A.1.a.1 required the licensee to verify that the high pressure coolant injection system was filled with water every 31 days. The inspectors determined that greater than 31 days had elapsed since the licensee had verified that the high pressure coolant injection system was properly filled. The failure to perform the surveillance requirement within 31 days also resulted in the high pressure coolant injection system being inoperable for greater than the Technical Specification 3.5.A.3.a.3 allowed outage time of 14 days. The failure to meet the requirements of Technical Specification 3.5.A.3.a.3 and Surveillance Requirement 4.5.A.1.a.1 was considered a Non-Cited Violation. The risk significance of this event was determined to be very low since all remaining mitigation systems were available to provide water to the reactor during an event.

Inspection Report# : [2001014\(pdf\)](#)



Significance: May 16, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to meet requirement of 10 CFR 50.59.

On June 15, 2000, station personnel removed two of the three rainbow pumps from the site. Quad Cities Updated Final Safety Analysis Report, Section 9.2.5, specifies that portable pumps (called rainbow pumps) of sufficient capacity (5100 gallons per minute) are onsite to provide makeup water to the ultimate heat sink in the event of a Lock and Dam 14 failure on the Mississippi River. The inspectors determined that the licensee had made a change to the facility as described in the Quad Cities Updated Final Safety Analysis Report without first determining if the change required a license amendment, contrary to the requirements of 10 CFR 50.59. The failure to meet the requirements of 10 CFR 50.59 was considered a Non-Cited Violation. The risk significance of this event was determined to be very low due to the very small initiating event frequency of the lock and dam failure, the slow rate of event progression once the initiating event occurs, and the availability of other onsite sources of water not credited in the event analysis.

Inspection Report# : [2001008\(pdf\)](#)



Significance: Mar 31, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

Surveillance testing involving timing of the Unit 1 and Unit 2 emergency diesel generators shortly after the engines had been shut down from previous runs

Inspectors identified that on two occasions, March 9 and March 27, the licensee performed technical specification required surveillance testing involving timing of the Unit 1 and Unit 2 emergency diesel generators shortly after the engines had been shut down from previous runs. Station procedures were inadequate in prescribing the conditions for performance of the tests. Procedures did not prevent preconditioning of the air start

systems, fuel systems, and other engine and electrical components. Inadequate procedures for testing was considered a Non-Cited Violation of 10 CFR Appendix B, Criterion V, "Instruction Procedures and Drawings." The risk significance was very low (Green) because inspectors determined that testing practices had not led to declining performance of the diesel generators (Section 1R22).

Inspection Report# : [2001005\(pdf\)](#)



Significance: Dec 31, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Place the "A" Train of the Reactor Protection System in the Tripped Condition

On November 6, 2000, the Number 2 turbine control valve fast closure trip failed to cause a half scram as expected during a Unit 2 surveillance test. The licensee then repeated the test three more times and the fast closure trip successfully caused the expected half scram each time. The licensee declared the trip function operable without taking the actions of Technical Specification 3.1.A, Action 1 for an inoperable channel. Generic Letter 91-18 states that repetitive testing to achieve acceptable results without first identifying and correcting the root cause of any problem is not an acceptable means for verifying operability. A subsequent autopsy of the pressure switch for the control valve fast closure trip found evidence of fretting which produced metallic particles believed to have caused the initial failure. The inspectors determined the Number 2 turbine control valve fast closure trip had been declared operable without adequate justification. The failure to implement the required actions of Technical Specification 3.1.A-1 for an inoperable channel of the turbine control valve fast closure trip was considered a Non-Cited Violation (50-265/00-20-01). The finding was determined to be of very low safety significance due to the level of redundancy and diversity of the reactor protection system. During the period of time that the Number 2 turbine control valve fast closure trip was inoperable, a sufficient number of turbine control valve fast closure channels remained operable to result in an automatic scram, if required. Additionally, the turbine control valve fast closure trip is considered an anticipatory trip and, if inoperable, the reactor scram could still have been initiated by the reactor vessel high pressure or the average power range monitor high flux trips.

Inspection Report# : [2000020\(pdf\)](#)



Significance: Dec 15, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Seal Tops of Electrical Cabinets

The team identified that electrical cabinets in the auxiliary electric equipment room were not sealed at the top to protect equipment from water damage. The failure to seal the top of the cabinets was considered a Non-Cited Violation (NCV 50-254/00-16-01; NCV 50-265/00-16-01) of Operating Licenses DPR-29 and DPR-30, Section h.3.F (Section 1R05.2.b.1). The failure to seal the cabinets, a fire protection feature, involved very low risk (Green) because a fire protection defense-in-depth element, as described by MC 0609, Appendix F, Fire Protection Significance Determination Process, was not affected.

Inspection Report# : [2000016\(pdf\)](#)



Significance: Dec 15, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Provide Fire Stops in Cable Trays

The team identified that fire stops were not installed in divisional cable trays for which specified separation had not been maintained. The failure to install fire stops was considered a Non-Cited Violation (NCV 50-254/00-16-02; NCV 50-265/00-16-02) of Operating Licenses DPR-29 and DPR-30, Section H.3.F (Section 1R05.2.b.2). The failure to install fire stops, a fire protection feature, involved very low risk (Green) because a fire protection defense-in-depth element, as described by MC 0609, Appendix F, Fire Protection Significance Determination Process, was not affected.

Inspection Report# : [2000016\(pdf\)](#)



Significance: Nov 20, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Surveillance testing for torus temperature instrumentation components required by Technical Specification 4.2.F.1 had not been performed since installation in 1990 and 1991.

On October 4, 2000, the licensee identified that surveillance testing for torus temperature instrumentation components required by Technical Specification 4.2.F.1 had not been performed since installation in 1990 and 1991. Condition Report Q2000-03512 was written to address the issue. Failure to perform testing of the instrumentation was considered a Non-Cited Violation of Technical Specification 4.2.F.1 (Section 4OA3). Failure to check instrument accuracy by this 18-month surveillance for Unit 1 and Unit 2 involved very low risk because when the surveillance was subsequently performed, instrument accuracy of the temperature indication loop was within acceptable tolerance.

Inspection Report# : [2000015\(pdf\)](#)

G

Significance: Sep 30, 2000

Identified By: NRC

Item Type: FIN Finding

Inadequate operability documentation forms for Problem Identification Form Q2000-2372, regarding a design deficiency for Units 1 and 2 high pressure coolant injection motor speed changers

The inspectors found that the July 3 and August 23, 2000 supporting operability documentation forms for Problem Identification Form Q2000-2372, regarding a design deficiency for Units 1 and 2 high pressure coolant injection motor speed changers, did not adequately support the operability of the system. Inspectors reviewed the risk significance of the motor speed changer being inoperable and found the risk to be very low (GREEN) since the change to core damage frequency was less than E-6/year. In addition, operators were briefed on the potential problems with the system, and the licensee installed design changes to correct the problem on both units (Section 1R15).

Inspection Report# : [2000014\(pdf\)](#)

G

Significance: Sep 30, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Degraded condition of fire door 128

On September 15, the inspectors determined that the bottom latch in the inactive leaf of door 128, a 3-hour rated fire door, was not properly latched. The fire protection engineer determined that the degraded door also resulted in the inoperability of the emergency diesel generator room carbon dioxide fire suppression system. This finding constituted a violation of Quad Cities Operating Licensee DPR-29. This violation is being treated as a Non-Cited Violation (50-265/00-14-01), consistent with Section VI.A.1 of the May 1, 2000, Enforcement Policy (Section 1R05). The inspectors evaluated the degraded condition of fire door 128 using the fire protection Significance Determination Process, and evaluation techniques discussed with Senior Risk Analysts and Fire Protection Engineers in Region III and NRR. Since the degradation of the fire door was minimal, and the area of the turbine building directly in front of the door (within 15 to 20 feet) was relatively free of combustibles and cables, the inspectors determined that the possibility of a fire in the Unit 2 emergency diesel generator room spreading to damage the shared emergency diesel generator was not credible. Therefore the significance of this finding was considered very low (GREEN).

Inspection Report# : [2000014\(pdf\)](#)

G

Significance: Sep 30, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to implement modifications to correct a previously identified design deficiency which could have made the motor speed changer inoperable in accident situations

Inspectors found that the licensee failed to implement modifications to correct a previously identified design deficiency which could have made the motor speed changer inoperable in accident situations. The failure to implement corrective actions for this condition was a violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action." This violation is being treated as a Non-Cited Violation (50-254/00-14-02; 50-265/00-14-02), consistent with Section VI.A.1 of the May 1, 2000, Enforcement Policy. The inspectors found that the risk significance for internal and external events was very low (GREEN) since unavailability of the high pressure coolant injection system resulted in a change to core damage frequency of less than E-6/year. The licensee implemented modifications on both units to correct the design deficiency (Section 1R15).

Inspection Report# : [2000014\(pdf\)](#)**Significance:** N/A Sep 15, 2000

Identified By: NRC

Item Type: FIN Finding

WHITE Performance Indicators for Units 1 and 2 Safety System Functional Failures

The licensee's August 14, 2000, root cause report for the high number of safety system functional failures on both units listed three root causes: inadequate knowledge of complex systems, a system vice functional focus, and inadequate integration of the new NRC inspection program into the station's processes. Corrective actions listed by the licensee included: Maintenance department clarification of expectations for troubleshooting, Engineering department revision of a troubleshooting procedure to require formal troubleshooting plans, Regulatory Affairs requirement for root cause evaluation of any performance indicator which is "threatened" (less than 50 percent margin to the WHITE threshold), Regulatory Affairs requirement for root cause evaluations to include a section on cumulative effects of the system failure on a "threatened" performance indicator, Regulatory Assurance modification of corrective action program to implement root cause requirements for a "threatened" performance indicator, Plant Health Committee requirement for monthly review of performance indicators, development or revision of process to address a cumulative focus on NRC Mitigating Systems Cornerstone and functional health, Engineering action to expand use of formal troubleshooting techniques and enhance troubleshooting skills and troubleshooting procedure. The inspectors found no current concerns with the individual root cause reports for these issues. Inspectors validated the licensee assertion that poor troubleshooting and poor root causes were an issue at Quad Cities. Two of the ten events from the individual root cause evaluations were repeats of earlier events, and the root cause efforts were not effective initially. Inspectors found weaknesses in the overall root cause report for the multiple safety system functional failures as follows: • The overall root cause evaluation failed to incorporate one of two February 2000 events. Human performance events did not get full coverage in the overall root cause, some events for the safety system functional failures involving human performance were not included. • The evaluation was focused on problems which would cause an NRC performance indicator change, and to a lesser amount on why such a large number of failures were occurring at Quad

Cities. The report listed actions to review another method for trending cumulative impact of failures, but another method was not ready for review at the end of the inspection. The inspectors determined that the licensee's search for similar failures focused on the recently instituted category of "performance indicator" and thereby eliminated a number of previous safety system functional failures that occurred in 1997 and 1998. • The corrective action for troubleshooting failed to incorporate the operations department, and only focused on maintenance and engineering. Although the licensee did not entirely agree with all of the weaknesses identified by the inspectors, nevertheless, the licensee revised several of the root cause evaluations to ensure appropriate actions were developed to address the inspector's concerns.

Inspection Report# : [2000013\(pdf\)](#)



Significance: Sep 15, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

One corrective action problem was found on August 16, 2000, and involved a previously identified design deficiency with the high pressure coolant injection system

One corrective action problem was found on August 16, 2000, and involved a previously identified design deficiency with the high pressure coolant injection system. Problem Identification Form Q1997-04485 documented that the auto initiation signal for high pressure coolant injection did not electrically seal in as described in the updated final safety analysis. However, the tracking item for correcting this problem was closed without corrective action being completed. Condition Report Q2000-02954 was written to again track corrective actions to this problem. This was considered a Non-Cited Violation (NCV) of Criterion XVI, "Corrective Action," of 10 CFR 50, Appendix B. Inspectors considered this problem to be of very low risk significance (GREEN) since it would not have prevented the system from starting automatically or being initiated manually.

Inspection Report# : [2000013\(pdf\)](#)



Significance: Aug 15, 2000

Identified By: NRC

Item Type: FIN Finding

Contribution of fire risk to core damage frequency associated with the safe shutdown makeup pump discharge valve being in a degraded condition.

On July 19 during a regulatory conference, the licensee discussed the contribution of fire risk to core damage frequency associated with the safe shutdown makeup pump discharge valve being in a degraded condition. Based on the information presented during the conference, the NRC concluded that this condition was of very low safety significance due to the short duration (2 days) the condition existed.

Inspection Report# : [2000011\(pdf\)](#)

Significance: N/A May 16, 2000

Identified By: NRC

Item Type: FIN Finding

Surveillance Testing

During logic testing on March 21, 2000, the Unit 1 high pressure coolant injection auxiliary oil pump failed to properly operate. This condition rendered the system inoperable for automatic initiation for approximately one year. The risk from internal events for this condition was determined to be very low (GREEN) in Inspection Report 50-254/2000003; 50-265/2000003. The effect on risk due to external events, specifically fires, was determined to be potentially significant during a preliminary Significance Determination Process review. However, this issue was also the substantial contributor to a YELLOW high pressure coolant injection unavailability performance indicator, which represents performance that minimally reduces safety margin and requires NRC oversight. Therefore, the NRC considers the inspection findings and the performance indicator to be a single issue and agency action will be determined based on application of the Action Matrix for the YELLOW performance indicator.

Inspection Report# : [2000005\(pdf\)](#)

Barrier Integrity



Significance: Jan 19, 2000

Identified By: NRC

Item Type: FIN Finding

Failure not classified as a functional failure under the Maintenance Rule

A failure of a Unit 2 containment spray system valve was not properly classified as a maintenance rule functional failure under the maintenance rule program. This individual classification failure was corrected and did not impact the licensee's ability to demonstrate maintenance effectiveness for the system. The valve failure was considered to be of low risk significance using the Significance Determination Process because the other train of containment spray was fully functional. (Section 1R12)

Inspection Report# : [1999025\(pdf\)](#)

G

Significance: Jan 19, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Overthrust of Motor-Operated Valve 2-1001-34A

During surveillance testing on December 12, 1999, residual heat removal torus spray/test return valve 2-1001-34A closed with 116,831 pounds of thrust which was almost double the previous as-left thrust setting of the valve. This value also exceeded the seismic thrust limit for the valve.

Corrective actions recommended to determine extent of condition after failure of a similar valve in 1998 were not taken. This was considered to be a non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI. The excessive thrust problem was considered to have low risk significance because the valve remained operable.

Inspection Report# : [1999025\(pdf\)](#)

G

Significance: Sep 08, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to promptly correct a design deficiency with the standby gas treatment system.

The licensee discovered during surveillance testing on August 23, 1999, that both standby gas treatment trains may not have functioned as designed during a postulated loss of Bus 19. The item had been previously identified in 1992 but not adequately corrected. No design change or design evaluation justifying the degraded condition had been performed. Failure to take corrective action for this design problem was a Non-cited Violation of Criterion XVI of 10 CFR Part 50, Appendix B. This problem resolution violation could not be classified with a risk significance due to its programmatic nature. However, since 1992 the inspectors were not aware of any failures of the administrative controls that would have jeopardized standby gas treatment operability. Therefore, from an equipment standpoint, this finding has a very low risk significance (Section 40A1).

Inspection Report# : [1999018\(pdf\)](#)

G

Significance: Jul 20, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Secondary Containment Penetration.

Secondary containment integrity did not exist from 1981 until May 1997 due to an unsealed 1 inch diameter penetration. This was a non-cited violation of Technical Specification 3.7 (Section 40A3). This issue had very low risk significance. Test results showed that the standby gas treatment system could still maintain negative pressure in secondary containment with leak pathways up to 4 inches in diameter.

Inspection Report# : [1999011\(pdf\)](#)

G

Significance: Nov 20, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Three examples of failure to follow procedures.

On November 3, 2000, the 1B channel of the reactor protective system flow biased neutron flux trip was found to be inoperable during reactor startup from the Unit 1 refueling outage 16. The licensee determined that poor wiring practices, poor second verification practices, and inadequate post maintenance testing of nuclear instrumentation wiring led to the malfunction. Maintenance workers failed to follow the wiring requirements in the work request, did not use lift and land sheets when removing and re-terminating the wires, and failed to label the wires which were lifted during the maintenance activity. Failure to follow the procedure (work request) for wiring was considered an example of a Non-Cited Violation. The risk significance of this event was very low because of the short amount of time that the unit was in Mode 1, because the "A" channel of flow biased trip setpoints was still operable, and because the wiring error actually caused the flow biased neutron flux trip to be more conservative (Example A). On October 14, 2000, during disassembly of the Unit 1 reactor for refueling outage 16, reactor service technicians opened a flanged connection of the reactor head vent piping with approximately 5 to 8 psig steam pressure still in the reactor vessel and initiated a steam release to the refueling floor area which lasted for several hours. Numerous procedural, process, and communication problems contributed to the event. Personnel safety, procedure adherence, procedure adequacy, and lack of control of reactor vessel disassembly activities were all concerns brought out by this event. The failure to follow procedures during vessel disassembly was considered an example of a Non-Cited Violation. The risk significance was evaluated as very low because the amount of reactor vessel inventory released to secondary containment was very low, and secondary containment integrity requirements were met (Example B). On October 22, 2000, workers attempting to replace a local power range monitor inadvertently lifted the local power range monitor tube off its seat in the reactor vessel bottom head. This caused highly contaminated radioactive water from the bottom of the reactor vessel to drain directly onto the workers. The draining stopped immediately after the local power range monitor tube was released and resealed back into the vessel. One worker was contaminated such that a meter held to his body read 5 rem per hour on contact. Extraordinary actions by radiation protection workers resulted in the removal of the majority of the highly contaminated material quickly, such that the overall external shallow dose equivalent for the individual was estimated at 2.784 rem, and the internal dose received by the worker was estimated at 45 millirem. Problems involved in this event included workers not adhering to the instructions by radiation protection technicians, workers not having procedures with them and performing steps of two different procedures concurrently, and workers not informing operators or radiation protection technicians that they were taking actions that could allow water to be drained from the reactor vessel. In addition, the

procedures were not adequate to control the work. The failure to follow procedures during local power range monitor replacement was considered an example of a Non-Cited Violation. The safety significance of this event was very low because sufficient makeup capacity to fill the vessel was available even if the local power range monitor failed to reseal, the local power range monitor tube was resealed quickly and the reactor vessel drainage stopped, and the contamination was mostly external and was removed quickly (Example C).

Inspection Report# : [2000015\(pdf\)](#)



Significance: Jun 30, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Corrective Action for Delinquent ASME Code Work Packages

The inspectors identified a failure of the corrective action program where ASME Code Class 1, 2 and 3 Replacement and Repair program requirements for work package reviews were not met. On four occasions the licensee did not realize that the Code work packages were not meeting 10 CFR 50.55a ASME Code requirements. In each case, corrective actions were not taken to correct the situation. Failure to promptly identify and correct the failure to meet ASME code requirements for work packages was considered a Non-Cited Violation of 10 CFR 50, Appendix B, Criterion XVI. The safety significance of this issue was considered very low based on the absence of adverse consequences and the fact that no technical problems were identified.

Inspection Report# : [2000008\(pdf\)](#)

Emergency Preparedness

Occupational Radiation Safety

Significance: N/A Jul 13, 2001

Identified By: NRC

Item Type: FIN Finding

A supplemental inspection was performed by the NRC to assess the licensee's evaluation associated with the failure to provide adequate radiological planning to maintain radiological doses as-low-as

This supplemental inspection was performed by the NRC to assess the licensee's evaluation associated with the failure to provide adequate radiological planning to maintain radiological doses as-low-as-is-reasonably-achievable (ALARA) during the Fall 2000 Unit 1 outage. This performance issue was previously characterized as having low to moderate risk significance (White) in NRC Inspection Report No. 50-254/00-18 (DRS) and 50-265/00-18(DRS). During this supplemental inspection, performed in accordance with Inspection Procedure 95001, the inspector concluded that the licensee performed a comprehensive evaluation of the radiological planning weaknesses. The licensee's evaluation attributed the planning weaknesses to ineffective job management by the radiation protection and construction staffs (root cause). In determining the root cause, the licensee identified contributing factors which included ineffective management of work force changes and drywell temperature control, inadequate monitoring of job duration and identification of changes in duration, and inadequate consideration of work location dose rates and contamination levels when developing revised job dose estimates. The inspector reviewed the licensee's corrective actions, both completed and planned, and concluded that the corrective actions appeared to address the identified root cause and contributing causes. In particular, the licensee implemented an ALARA job standard to provide additional guidance to the staff for identifying and managing changes in radiological work. The purpose of the job standard was to fully identify the changes (both prior to the work and based on the as-found conditions) and to communicate the changes to the station ALARA committee so that the planning could be adequately evaluated to determine if replanning was necessary. Initial implementation of the standard during the Spring 2001 Unit 1 recirculation pump seal replacement was adequate; however, the inspector observed weaknesses in the understanding of staff concerning when the standard was to be applied. Due to the licensee's acceptable performance in assessing the radiological planning problems, the White finding associated with this issue will only be considered in assessing plant performance for a total of four quarters in accordance with the guidance in NRC Manual Chapter 0305, "Operating Reactor Assessment Program." Implementation of the licensee's corrective actions will be reviewed during a future inspection.

Inspection Report# : [2001013\(pdf\)](#)



Significance: Nov 27, 2000

Identified By: NRC

Item Type: FIN Finding

Radiological dose for the Safety Relief Valve (SRV) replacement work results in a determination of a White Finding.

Planning problems caused the dose for the Safety Relief Valve (SRV) replacement work completed during refueling outage Q1R16 to exceed its projected dose by more than 50 percent. Elevated dose rates were encountered in the drywell as a result of cobalt 60 plate-out. The drywell cooling/ventilation system was out of service for maintenance and testing, significantly elevating temperatures in the drywell. Also, less experienced workers performed the SRV job NRC Supplemental Inspection (Report 50-254/01-13, 50-265/01-13): During this supplemental inspection,

performed in accordance with Inspection Procedure 95001, the inspector concluded that the licensee performed a comprehensive evaluation of the radiological planning weaknesses. The licensee's evaluation attributed the planning weaknesses to ineffective job management by the radiation protection and construction staffs (root cause). In determining the root cause, the licensee identified contributing factors which included ineffective management of work force changes and drywell temperature control, inadequate monitoring of job duration and identification of changes in duration, and inadequate consideration of work location dose rates and contamination levels when developing revised job dose estimates. The inspector reviewed the licensee's corrective actions, both completed and planned, and concluded that the corrective actions appeared to address the identified root cause and contributing causes. In particular, the licensee implemented an ALARA job standard to provide additional guidance to the staff for identifying and managing changes in radiological work. The purpose of the job standard was to fully identify the changes (both prior to the work and based on the as-found conditions) and to communicate the changes to the station ALARA committee so that the planning could be adequately evaluated to determine if replanning was necessary. Initial implementation of the standard during the Spring 2001 Unit 1 recirculation pump seal replacement was adequate; however, the inspector observed weaknesses in the understanding of staff concerning when the standard was to be applied. Due to the licensee's acceptable performance in assessing the radiological planning problems, the White finding associated with this issue will only be considered in assessing plant performance for a total of four quarters in accordance with the guidance in NRC Manual Chapter 0305, "Operating Reactor Assessment Program." Implementation of the licensee's corrective actions will be reviewed during a future inspection.

Inspection Report# : [2000018\(pdf\)](#)

Inspection Report# : [2001013\(pdf\)](#)

Public Radiation Safety



Significance: Jul 02, 1999

Identified By: NRC

Item Type: FIN Finding

Lack of Documentation for Offsite Dose Calculation Manual Revisions

The inspectors identified a lack of documentation for the licensee's review of changes to the Offsite Dose Calculation Manual. Although an independent technical review determined that the changes maintained a sufficient level of effluent control, the licensee did not maintain documentation to support this determination. (Section 2PS3.3) This item had very low risk significance based on the results of the independent technical review.

Inspection Report# : [1999013\(pdf\)](#)

Physical Protection

Significance: N/A Jun 14, 2001

Identified By: NRC

Item Type: FIN Finding

A supplemental inspection was performed to assess the licensee's root cause evaluation related to exercise failures during two of four force-on-force contingency exercises.

This supplemental inspection was performed to assess the licensee's root cause evaluation related to exercise failures during two of four force-on-force contingency exercises. This performance issue was characterized as a White finding having a low to moderate risk significance in NRC Inspection Report No. 50-254; 265/00-201. This supplemental inspection determined that the licensee had performed a comprehensive evaluation which identified the root cause and contributing factors associated with the exercise failures noted above. The licensee's evaluation identified that the root cause of the exercise finding was a failure to effectively accomplish exercise control activities. Contributing factors were human performance errors by some security force response personnel and controllers, a lack of effective controller training, vulnerabilities in some defensive positions, and command and control activities. Licensee corrective actions were implemented to address the root cause and each contributing factor. Those actions appeared effective in correcting the identified deficiencies. Therefore, the White performance finding associated with the exercise failures was closed.

Inspection Report# : [2001011\(pdf\)](#)



Significance: Nov 17, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

An unattended security storage container containing Safeguards Information was found unlocked and open for approximately two hours.

An unattended security storage container containing Safeguards Information was found unlocked and open for approximately two hours (Section 40A3). The inspector reviewed the risk significance of this finding and determined the risk to be very low since no Safeguards Information was

compromised and there have not been greater than two similar findings in four quarters.

Inspection Report# : [2000019\(pdf\)](#)



Significance: Jun 23, 2000

Identified By: NRC

Item Type: FIN Finding

Contingency Response Performance Deficiencies

Deficiencies were noted in the licensee's performance in the contingency response element of the Physical Protection Cornerstone. (The details of this finding are Safeguards Information and are required to be withheld from public disclosure.)

Inspection Report# : [2000201\(pdf\)](#)

Miscellaneous

Significance: N/A Feb 29, 2000

Identified By: NRC

Item Type: FIN Finding

Human Performance Problems

Inspectors found that errors in review, coordination, and implementation of maintenance activities during or near Unit 2 refueling outage number 16 (January and February 2000) led to inoperable safety systems. Operators were unaware that Technical Specification or administrative limiting condition for operation action statements were entered or exceeded. Required nuclear instruments and emergency diesel generators were not operable during some fuel moves (Sections 1R04 and 1R20.4), automatic depressurization system valves were taken out of service while required (Section 1R20.2), the high pressure coolant injection system was inoperable due to incomplete maintenance (Section 1R19.1), and safe shutdown requirements were not properly addressed (Section 1R20.5). Other events included technician errors in which electrical jumpers were installed in incorrect locations for logic used by the reactor protective system and by the emergency core cooling system. While the risk of the individual events was very low, an increase in maintenance activity problems was evident.

Inspection Report# : [2000001\(pdf\)](#)

Significance: N/A Dec 03, 1999

Identified By: NRC

Item Type: FIN Finding

reactor coolant system leakage performance indicator

The inspectors completed verification inspection of the reactor coolant system leakage performance indicator and found very minor discrepancies which did not affect the validity of the reported performance indicator (Section 4OA2.2).

Inspection Report# : [1999023\(pdf\)](#)

Significance: N/A Dec 03, 1999

Identified By: NRC

Item Type: FIN Finding

the public radiation safety performance indicator

The inspectors verified that the licensee had properly evaluated and reported the public radiation safety performance indicator (Section 4OA2.7).

Inspection Report# : [1999023\(pdf\)](#)

Significance: N/A Dec 03, 1999

Identified By: NRC

Item Type: FIN Finding

verification inspection for the residual heat removal unavailability performance indicator.

The inspectors completed the verification inspection for the residual heat removal unavailability performance indicator. The inspectors identified that the licensee had not included 12.5 hours of residual heat removal system unavailability during system logic testing in January 1999. The licensee explained that the rules for system availability, at that time, did not require documenting the safety system unavailability. The licensee elected to report these hours in a future submittal. The extra hours would not cause the residual heat removal system unavailability to cross a color threshold (Section 4OA2.1).

Inspection Report# : [1999023\(pdf\)](#)

Significance: N/A Dec 03, 1999

Identified By: NRC

Item Type: FIN Finding

verification inspection of the licensee's performance indicators

The inspectors completed verification inspection of the licensee's performance indicators for scrams, scrams with loss of normal decay heat removal, reactor coolant specific activity, and primary containment leakage. No findings were identified (Section 4OA2).

Inspection Report# : [1999023\(pdf\)](#)

Significance: N/A Oct 20, 1999

Identified By: NRC

Item Type: FIN Finding

The licensee corrected discrepancies with the safety system functional failure indicator.

The licensee corrected discrepancies with the safety system functional failure indicator previously identified by the NRC in the September report of performance indicator data. The NRC exercised enforcement discretion and did not issue a Notice of Violation (Section 40A3).

Inspection Report# : [1999020\(pdf\)](#)

Significance: N/A Oct 20, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Event Reporting Failure

The inspectors identified two violations of NRC reporting requirements. The licensee failed to notify the NRC within 1 hour of identifying a condition in which the control room emergency ventilation system was found outside the design basis. The licensee also failed to notify the NRC within 4 hours of an event in which the reactor core isolation cooling system was unable to perform a required safety function. The licensee made late notifications, submitted a licensee event report for the control room emergency ventilation system, and planned to submit a licensee event report for the reactor core isolation cooling system failure. These were considered two non-cited violations (Plant Status).

Inspection Report# : [1999020\(pdf\)](#)

Significance: N/A Oct 20, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Notification Failure Under 50.72

The inspectors identified two violations of NRC reporting requirements. The licensee failed to notify the NRC within 1 hour of identifying a condition in which the control room emergency ventilation system was found outside the design basis. The licensee also failed to notify the NRC within 4 hours of an event in which the reactor core isolation cooling system was unable to perform a required safety function. The licensee made late notifications, submitted a licensee event report for the control room emergency ventilation system, and planned to submit a licensee event report for the reactor core isolation cooling system failure. These were considered two non-cited violations (Plant Status).

Inspection Report# : [1999020\(pdf\)](#)



Significance: Oct 08, 1999

Identified By: Licensee

Item Type: FIN Finding

The licensee identified errors in the PI Occupational Radiation Safety Performance Indicator (PI)

Occupational Radiation Safety Performance Indicator (PI). The licensee identified errors in the PI reported to the NRC. Originally, the licensee reported six technical specification high radiation area incidents, which resulted in a white PI. After identifying a missed occurrence and a misinterpretation of the PI criteria, the licensee determined that only two incidents were applicable to the PI, which resulted in the PI indicating that performance was in the licensee response band (green).

Inspection Report# : [1999022\(pdf\)](#)



Significance: Jul 16, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

the repetitive problem of excessive use of overtime.

The root cause report and the corrective actions, approved by the Plant Operations Review Committee and the Corrective Action Review Board, did not fully address the repetitive problem of excessive use of overtime. There were 177 instances between February 1 and 28, 1999, where station procedures were not followed to control overtime of plant workers. Further corrective actions were being developed to ensure that overtime violations did not continue. There were no known incidents where the excessive use of overtime directly impacted or affected the safety of the plant; however, the repetitive failure to follow procedures to control overtime is a non-cited violation. (Reference Report Section 40A1.4, page 8)

Inspection Report# : [1999012\(pdf\)](#)

Significance: SL-IV Aug 14, 2001

Identified By: NRC

Item Type: VIO Violation

FAILURE TO ACCURATELY REPORT PERFORMANCE INDICATOR INFORMATION

The inspectors identified that the licensee failed to report fault exposure hours for the failure of a fuel oil transfer solenoid valve to open during the Unit 2 emergency diesel generator (EDG) 18 month endurance test. The second quarter 2001 data reported to the NRC showed no fault exposure hours recorded for Unit 2 EDG. However, the inspectors found that fault exposure hours from a failed endurance run on May 1, 2001, should have been reported since only the time of the failure's discovery was known with certainty. Fault exposure hours going back to the last successful load test of the EDG on January 14, 2000, were not included in the licensee's July 2001 performance indicator data submittal for the Unit 2 Emergency Alternating Current (AC) - Safety System Unavailability performance indicator. Had the performance indicator data been properly reported, the

performance indicator color would have been Red. Failure to properly report the performance indicator was considered a Severity Level IV violation of 10 CFR 50.9.

Inspection Report# : [2001012\(pdf\)](#)

Significance: N/A May 25, 2001

Identified By: NRC

Item Type: FIN Finding

Adverse performance trend.

The corrective actions to prevent recurrence for an event that resulted in an inadvertent steam release during a breach of the reactor pressure boundary proved to be ineffective to prevent a similar event that occurred six months later. Additionally, corrective actions for the second event were narrow in scope and did not address the aspects in common with the first event. Condition report Q2001-01976 was issued to address the potential common issues. The inspectors concluded that the issue was more than minor since the failure to fully identify and correct deficiencies could be reasonably viewed as a precursor to a significant event. The inspectors reviewed the applicability of the issue with respect to program cornerstones and determined that the issue did not impact a cornerstone. However, this issue contained extenuating circumstances in that the full extent of condition for the October event was not completely identified and corrected, allowing a similar event in April. The combination of these two events indicates an adverse performance trend.

Inspection Report# : [2001009\(pdf\)](#)

Significance: N/A May 25, 2001

Identified By: NRC

Item Type: FIN Finding

Corrective action program problems.

The inspectors concluded that in general the corrective action program was a complete program containing all the necessary attributes to successfully identify and correct issues at Quad Cities. However, over the past year there were several instances of difficulties with problem identification, evaluation and resolution. Most of these were documented in previous findings and violations in inspection reports. In general, these issues have been recognized, and actions have been taken to address them. For most of the issues it is too soon to fully evaluate the effectiveness of these actions so effectiveness is still to be determined. During this inspection, three areas of corrective action program problems were identified. These were the failure to properly implement the M&TE program, several instances when condition reports should have been written and they were not, and, failure to address common causes for similar steam release events on the reactor vessel during the October refueling outage, and in the April maintenance outage.

Inspection Report# : [2001009\(pdf\)](#)

Significance: N/A May 25, 2001

Identified By: NRC

Item Type: FIN Finding

Test problems on condition reports not identified.

In May of 2001, an inspector observing a surveillance noted that instrument maintenance technicians had difficulty conducting calibrations of differential transmitters on the Unit 2 station blackout diesel air intake filter differential pressure detectors. The results were not repeatable and indicated some out-of-tolerance readings on both instruments. No condition reports were generated for either the difficulty with the tests or the apparent out-of-tolerance results until inspectors intervened. Condition Report Q2001-1549 was issued 12 days later and subsequently, Condition Reports Q2001-1474 and Q2001-1475 were written for the out-of-tolerance readings. The inspectors reviewed the significance of not identifying test problems on condition reports and concluded that the issue was more than a minor issue because if left uncorrected, the issue could become a more significant safety concern. The actual effect on the station blackout diesel was minimal since it did not directly impact operation of the equipment and another diesel was available. However, this corrective action finding is a cross-cutting issue for corrective action process performance and is assigned No Color.

Inspection Report# : [2001009\(pdf\)](#)

Significance: N/A May 25, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to assure that measuring and test equipment was properly calibrated.

In April of 2001, the station Nuclear Oversight staff identified that measurement and test equipment which was found to be out-of-calibration during post-use verifications was not evaluated as required by plant procedure. Also, condition reports on these out-of-tolerance conditions were not written when required by procedures. The licensee initiated a review which identified 159 items of out-of-tolerance equipment which had not been evaluated appropriately. The use of these items was evaluated and appropriate recovery actions taken. Failure to assure that measuring and test equipment used in 2000 and 2001 was properly calibrated was a Non-Cited Violation of 10 CFR 50, Appendix B. The inspectors reviewed the significance of not evaluating out-of-tolerance equipment and determined that the issue was more than a minor issue because if left uncorrected, the issue could become a more significant safety concern. However, since this is a corrective action concern, and no specific cornerstone was impacted, this item is assigned No Color.

Inspection Report# : [2001009\(pdf\)](#)

Significance: N/A May 16, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to report performance indicator data accurately.

Inspectors found that the licensee reported safety system functional failure data improperly. The improperly reported safety system functional failure involved failure of the Unit 2 intermediate range nuclear monitors. Had this been reported properly, it would have caused the safety system functional failure performance indicator for Unit 2 to cross the threshold from Green to White in the first quarter of 2000. The actual submittal showed performance indicator data in the licensee response or Green band. Because a performance indicator would have changed from Green to White, this was considered a Non-Cited Violation of 10 CFR 50.9.

Inspection Report# : [2001008\(pdf\)](#)

Significance: N/A Dec 15, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Technical Errors in Appendix R Safe Shutdown Procedures

The inspectors identified a number of technical errors in safe shutdown procedure QCARP 0050-02. The procedure errors were considered a Non-Cited Violation (NCV 50-254/00-16-03; NCV 50-265/00-16-03) of 10 CFR 50, Appendix R, Section III.L.5 (Section 40A4.1). The technical errors were determined to have no appreciable risk significance (No Color) because the errors would not have impacted safe shutdown. However, the errors were another example of a previously identified adverse trend in human performance.

Inspection Report# : [2000016\(pdf\)](#)

Significance: N/A Nov 20, 2000

Identified By: NRC

Item Type: FIN Finding

The inspectors found that a number of human performance errors during the Q1R16 refueling outage period resulted in undesirable consequences and constituted an adverse trend.

The inspectors found that a number of human performance errors during the Q1R16 refueling outage period, October 14 to November 3, resulted in undesirable consequences and constituted an adverse trend in human performance. These errors resulted from problems with procedure adherence, control of work activities, communications, and procedure quality. Resulting problems included venting the pressurized reactor to containment near maintenance workers who were not adequately prepared for the subsequent release of steam and contamination, inadvertently draining from the reactor vessel bottom head area resulting in significant personnel contamination, and a number of wiring and second verification errors during electrical modifications and maintenance. Although most of these wiring errors were caught and corrected during testing, one error was not caught and resulted in the inoperability of one of two channels of the reactor protective system flow biased trips. While none of these events resulted in equipment performance outside the licensee response band (GREEN), the overall trend indicated problems with adhering to procedures, proper performance of second verification techniques, and the communication and coordination of activities (Section 40A4).

Inspection Report# : [2000015\(pdf\)](#)

Significance: N/A Jun 30, 2000

Identified By: NRC

Item Type: FIN Finding

Cross-Cutting Issues: Human Performance

Inspectors found that several recent events which affected plant operations and/or had the potential to adversely affect personnel safety involved elements of human performance deficiencies. An apparent adverse trend in human performance during the period May 5, 2000 to June 30, 2000, was evidenced by the following incidents. A senior reactor operator failed to implement a Technical Specification surveillance requirement for removing an emergency diesel generator from service. Control room operators experienced problems controlling reactor vessel water level during post-scrum recovery efforts and failed to close a pair of drain valves during a pre-start of the Unit 1 high pressure coolant injection system. Maintenance personnel errors were involved in a reactor trip on May 5, and spread of contamination in the 2B reactor water cleanup room when a fitting was disconnected under 1000 psig pressure on June 10 (Section 40A.4).

Inspection Report# : [2000007\(pdf\)](#)

Significance: N/A Jun 30, 2000

Identified By: NRC

Item Type: FIN Finding

Weakness in Corrective Action Program.

The corrective action program was fully functional and typically identified and corrected conditions adverse to quality. In general, station personnel effectively identified and entered problems into the corrective action program using problem identification forms (PIFs). The significance threshold for entering issues into the program appeared appropriate. However, over the past year issues were identified at Quad Cities where the corrective action process was not vigorously implemented to address the issues. In addition, the licensee's corrective action process had lost over two items a month since January 2000. Although none of these lost items were considered safety significant, and thousands of other action items were opened and closed in that time frame, this represented a weakness in the licensee's program.

Inspection Report# : [2000008\(pdf\)](#)



Significance: Apr 01, 2000

Identified By: Licensee

Item Type: NCV NonCited Violation

On September 10, 1999, the control room emergency ventilation system was inoperable

On September 10, 1999, the licensee identified that the control room emergency ventilation system was inoperable. Flow rates were out-of-

specification due to repositioning of a ventilation damper 9 days previously. The action statement for Technical Specification 3.8.D allowed the system to be inoperable for 7 days. Failing to comply with the allowed outage time requirements was considered a non-cited violation of Technical Specification 3.8.D. This issue was screened as GREEN (very low risk significance) after a Phase 1 Significance Determination Process review (Section 40A3).

Inspection Report# : [2000003\(pdf\)](#)

Last modified : April 01, 2002

Quad Cities 2

Initiating Events

G

Significance: Jun 30, 2000

Identified By: NRC

Item Type: FIN Finding

operators did not control reactor vessel inventory

During operator response to a reactor trip on May 22, operators did not control reactor vessel inventory prior to the operating reactor feedwater pump tripping on high reactor vessel water level. Additionally, operators had not started a reactor feedwater pump by the time a reactor low level condition existed. This resulted in a second engineered safety feature actuation. The inspectors reviewed this issue using the significance determination process for a transient with a loss of feedwater and determined this was of very low risk significance (Section 1R14).

Inspection Report# : [2000007\(pdf\)](#)

G

Significance: Jun 30, 2000

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

Maintenance work and emerging work - 2B reactor water cleanup pump seal line disconnect

On June 10, maintenance workers disconnected a seal line to the 2B reactor water cleanup pump that was not properly isolated by the out-of-service tagout and discovered that the line was pressurized to about 1000 psig. The resulting spray caused a spread of contamination in the room and a potential hazard to the workers. No personnel injuries occurred as a result of this event. Failure to hang the proper out-of-service for the maintenance activity was considered a Non-Cited Violation (NCV) of Technical Specifications. The inspectors considered this event of very low safety significance due to the ability to isolate the leak and the availability of mitigating equipment (Section 1R13).

Inspection Report# : [2000007\(pdf\)](#)

G

Significance: Jun 30, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

adjustments to the wrong instrument, causing a reactor trip on Unit 2

On May 5 an instrument technician performing a calibration of the main steam line high steam flow detectors made adjustments to the wrong instrument, causing a reactor trip on Unit 2. Failure to implement the calibration procedure for the proper channel instrument was considered an NCV of Technical Specification 6.8.A.1. The safety significance of this event was minimal due to the availability of mitigating equipment (Section 40A.3).

Inspection Report# : [2000007\(pdf\)](#)

G

Significance: Feb 29, 2000

Identified By: NRC

Item Type: FIN Finding

Ice Melt Valve Failure

Failure of the ice melt valve on January 22, 2000, resulted in some ice formation in the intake area. Operator detection and compensatory measures prevented the ice from affecting the water level in the intake. The valve gate had become detached from the stem. The failure of the ice melt valve was of very low risk significance because it did not result in an increased initiating event frequency for loss of both normal and ultimate heat sinks. The inspectors compared an estimated valve failure rate to the licensee's evaluation. The licensee's evaluation excluded this initiating event from the probabilistic risk assessment because no precursor event had occurred in the history of the station.

Inspection Report# : [2000001\(pdf\)](#)

G

Significance: Sep 08, 1999

Identified By: NRC

Item Type: FIN Finding

Maintenance rule functional failures

Problematic feedwater level control equipment on Unit 2 resulted in two reactor vessel water level transients in early 1999. The licensee initially

evaluated these two events as not being maintenance rule functional failures, which was inappropriate. An NRC inspection and a subsequent licensee self-assessment identified the error. The licensee re-evaluated the two transients as being functional failures on July 28, 1999. This issue did not increase the frequency of initiating events and therefore was an issue of very low safety significance (Section 1R12).

Inspection Report# : [1999018\(pdf\)](#)

G

Significance: Jul 20, 1999

Identified By: NRC

Item Type: FIN Finding

a 3-inch increase in reactor water level

On Unit 2, a 3-inch increase in reactor water level occurred and required operators to take manual control of the system. Various failures in the level control systems have resulted in about ten similar events since January 1, 1999, in which operators were required to intervene to prevent level transients that could have resulted in a reactor trip. Since the plant effect of the failures is limited to an uncomplicated reactor trip, the failures were considered to be of low risk significance using the significance determination process (Section 1R03).

Inspection Report# : [1999011\(pdf\)](#)

G

Significance: Dec 29, 2001

Identified By: NRC

Item Type: FIN Finding

DEGRADED AND INADEQUATELY TESTED TRANSFORMER AND PROTECTIVE RELAYING RESULTS IN INCREASE IN TRANSIENT AND LOSS OF OFFSITE POWER INITIATING EVENT FREQUENCIES

On August 2, 2001, Unit 2 experienced a transformer failure, reactor scram, and loss of offsite power. The inspectors determined that a lightning strike in conjunction with age related degradation and inadequate testing of the Unit 2 main power transformer and switchyard protective relaying contributed to the event and resulted in an increase in the initiating event frequency for plant transients and a loss of offsite power. The inspectors determined the risk significance of this issue to be very low since all remaining mitigating systems were available to mitigate the transformer rupture, reactor scram, and loss of offsite power.

Inspection Report# : [2001017\(pdf\)](#)

G

Significance: Mar 31, 2001

Identified By: Licensee

Item Type: NCV NonCited Violation

Operator-induced loss of feedwater heating transient

On March 23 the inspectors reviewed an operator-induced loss of feedwater heating transient that occurred on Unit 2. The inspectors found that the operators failed to immediately recognize a reduction in feedwater heating and take prompt action to effectively control the increasing reactor power. The transient resulted in a 33 degree decrease in feedwater inlet temperature adding sufficient positive reactivity to increase reactor thermal power from 2511 to 2578 megawatts, approximately 102.7 percent of maximum licensed power. Exceeding Quad Cities License DPR-30 maximum thermal power of 2511 megawatts thermal was considered a Non-Cited Violation. The risk significance of this event was determined to be very low (Green) due to the relatively small increase a 2.7 percent power change will have on overall core thermal limits (Section 1R14).

Inspection Report# : [2001005\(pdf\)](#)

G

Significance: Aug 15, 2000

Identified By: NRC

Item Type: FIN Finding

Electrical ring bus caused electrical circuit breakers 1-3 and 3-4 to open.

On July 18 a fault on one of the offsite power feeds to the Quad Cities electrical ring bus caused electrical circuit breakers 1-3 and 3-4 to open. This action isolated the fault and resulted in a Unit 2 turbine generator and reactor trip. The response by the switchyard resulted in a loss of power on the Unit 1 reserve auxiliary transformer. The response to the reactor scram on Unit 2 was as designed. Operator performance during this event was determined to have been acceptable. The inspectors reviewed the risk significance of this initiating event for both units using the Significance Determination Process. All mitigating equipment was available for Unit 2 following the uncomplicated trip, and this event was screened as having very low risk significance (GREEN.) One of two auxiliary transformers for Unit 1 was de-energized during the event, but the unit did not trip and all mitigating equipment was available. Therefore, this event was also screened as GREEN for Unit 1.

Inspection Report# : [2000011\(pdf\)](#)

Significance: N/A May 16, 2000

Identified By: NRC

Item Type: FIN Finding

Surveillance Testing

During logic testing on March 21, 2000, the Unit 1 high pressure coolant injection auxiliary oil pump failed to properly operate. This condition rendered the system inoperable for automatic initiation for approximately one year. The risk from internal events for this condition was determined to be very low (GREEN) in Inspection Report 50-254/2000003; 50-265/2000003. The effect on risk due to external events, specifically fires, was determined to be potentially significant during a preliminary Significance Determination Process review. However, this issue was also the substantial contributor to a YELLOW high pressure coolant injection unavailability performance indicator, which represents performance that minimally reduces safety margin and requires NRC oversight. Therefore, the NRC considers the inspection findings and the performance indicator to be a single issue and agency action will be determined based on application of the Action Matrix for the YELLOW performance indicator.

Inspection Report# : [2000005\(pdf\)](#)



Significance: G Feb 29, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Emergency Diesel Generator Ventilation Power Supply Switch Out of Position

On January 28, 2000, with Unit 1 operating at full power and with Unit 2 in Mode 5 (refuel), an operator identified that the Unit 2 emergency diesel generator room ventilation fan power select switch was selected to the Unit 1 power supply. The Unit 2 emergency diesel generator was inoperable, but remained available for service. Since the shared emergency diesel generator was already inoperable to Unit 2, this condition left no operable emergency diesel generators for Unit 2. This issue is considered a non-cited violation consistent with the Interim Enforcement Policy for pilot plants. This issue was considered to be of very low safety significance because the Unit 1 diesel generator would not have been overloaded by the Unit 2 emergency diesel generator room ventilation fan. The Unit 2 emergency diesel generator was also available.

Inspection Report# : [2000001\(pdf\)](#)



Significance: G Feb 29, 2000

Identified By: NRC

Item Type: FIN Finding

Safe Shutdown Makeup Pump Valve Failure

On January 19, 2000, during planned maintenance activities, maintenance workers determined that the safe shutdown makeup pump system was inoperable due to a Unit 2 safe shutdown makeup pump injection valve failure to operate. The valve failure was evaluated using the Significance Determination Process and was found to be of very low risk significance because all other mitigating systems were available.

Inspection Report# : [2000001\(pdf\)](#)



Significance: G Feb 29, 2000

Identified By: NRC

Item Type: FIN Finding

Unit 2 Automatic Depressurization System Valves Taken Out-Of-Service in Mode 3

On January 22, 2000, operators did not recognize entry into a Technical Specification action statement when relief valves were removed from service with the reactor in Mode 3. Upon discovery, about 4-1/2 hours later, the valves were returned to service. The Technical Specification action statement was not exceeded. The unavailability of the relief valves was evaluated by the NRC's Senior Reactor Analyst as part of the Significance Determination Process for shutdown issues. This issue was determined to be of very low risk significance because the reactor was in hot shutdown with vessel pressure at approximately 50 psig.

Inspection Report# : [2000001\(pdf\)](#)



Significance: G Feb 29, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Post Maintenance Testing

On February 10, 2000, with Unit 2 in startup mode, the high pressure coolant injection pump failed to start during testing due to incomplete maintenance. A maintenance foreman erroneously signed off the work package as being completed when it was not. This issue is considered a non-cited violation consistent with the Interim Enforcement Policy for pilot plants. This issue was of very low risk significance since the system pressure was low, decay heat was low, and redundant methods of inventory injection were either operating or available.

Inspection Report# : [2000001\(pdf\)](#)

G

Significance: Feb 29, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Too Few Intermediate Range Nuclear Instruments During Refueling

From February 1 through 5, 2000, Unit 2 had less than the number of operable intermediate range nuclear instruments per channel (three) for the reactor protective system required by Technical Specification 3.1.A. Only two of four instruments were operable on the "B" channel and three of four were operable on the "A" channel. During this time, the reactor was in Mode 5 (refuel) and operators performed core alterations by moving irradiated fuel in the vessel. This issue is considered a non-cited violation consistent with the Interim Enforcement Policy for pilot plants Unit 2 was in cold shutdown with all control rods inserted. This issue was determined to be of very low risk significance because shutdown margin calculations and refueling interlocks provided assurance of adequate shutdown margin. Source range nuclear instruments provided a rod block function during refueling. Intermediate range nuclear instrument indication would not have been available until after the point where a reactivity excursion had occurred because the neutron level during refueling operations was too low for the intermediate range nuclear instruments.

Inspection Report# : [2000001\(pdf\)](#)

G

Significance: Jan 19, 2000

Identified By: NRC

Item Type: FIN Finding

Corrective Action Deficiencies Related to Heaters in the Contaminated Condensate Storage Tanks Allowed Degradation of the Heaters

The inspectors found that corrective action deficiencies related to heaters in the contaminated condensate storage tanks allowed degradation of the heaters to the extent that high pressure injection systems could have been adversely affected. The risk significance for the loss of heaters in the contaminated condensate storage tanks was low, partially because both units were shut down during times when the high pressure injection sources could have been rendered inoperable due to lack of sufficient tank heating.

Inspection Report# : [1999025\(pdf\)](#)

G

Significance: Jan 19, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Contaminated Condensate Storage Tank Heaters Inoperable

The inspectors found that design control deficiencies related to heaters in the contaminated condensate storage tanks allowed degradation of the heaters to the extent that high pressure injection systems could have been adversely affected. Modifications to the system did not evaluate the facility change as required by 10 CFR 50.59. This was considered to be a non-cited violation of 10 CFR 50.59. This issue was first documented by the licensee in August 1999 and addressed in Inspection Report 50-254/99020; 50-265/99020. The risk significance for the loss of heaters in the contaminated condensate storage tanks was low, partially because both units were shut down during times when the high pressure injection sources could have been rendered inoperable due to lack of sufficient tank heating.

Inspection Report# : [1999025\(pdf\)](#)

G

Significance: Dec 03, 1999

Identified By: NRC

Item Type: FIN Finding

Corrective Actions for a Design Control Problem with Software Backups were not Timely or Complete

The inspectors found that two failures of a high pressure coolant injection valve to close in September and October 1999 were not properly classified in the maintenance rule program. Licensee engineers initially failed to consider the second failure of the 1-2301-5 valve to close on October 4, 1999, as a repetitive maintenance preventable functional failure, and failed to monitor the system under (a)(1) of the maintenance rule. This is considered an unresolved item. The valve failure was found to be of low risk significance because the inboard isolation valve was available.

Inspection Report# : [1999023\(pdf\)](#)

G

Significance: Nov 19, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Ensure ADS Valves Qualified for Minimum Possible Voltage

Four of the five Unit 1 automatic depressurization system relief valves were not initially qualified for the degraded voltage conditions that would be seen under accident conditions. The licensee had not originally accounted for the voltage drop that would occur between the station batteries and the valve solenoids when specifying the minimum voltage for which the valves needed to be qualified. The licensee subsequently identified a test report, done for another nuclear station, which qualified the valves to a lower voltage. The inspectors, in conjunction with the Office of Nuclear Reactor Regulations, reviewed the test and accepted it under condition that a ten volt penalty be applied to account for some test deficiencies. The

licensee also performed calculations to show that the actual available voltage to the valves, under degraded conditions, was above the accepted minimum voltage. A non-cited violation was identified.

Inspection Report# : [1999021\(pdf\)](#)

G

Significance: Oct 20, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Promptly Correct Control Room Emergency Ventilation System Deficiency

The inspectors identified two examples of inadequate corrective action regarding the Units 1 and 2 safety-related control room emergency ventilation system. In 1995 the licensee identified emergency diesel generator overloading concerns and degraded voltage concerns. This degraded and nonconforming condition was not corrected, and the design basis for the emergency diesel generator system and control room emergency ventilation system were not changed to reflect the condition. Also, safety-related electrical drawing discrepancies with the control room emergency ventilation system were identified in 1997 and never corrected. A non-cited violation for 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action" with two examples was identified. In utilizing the Significance Determination Process, this issue was determined to have low risk significance because control room habitability was assumed to be maintained for the 1 hour to start control room cooling and, therefore, there was no impact on the ability of control room operators to operate the required mitigating systems. Also, the design basis event was estimated to have a very low initiating event frequency (Section 1R16).

Inspection Report# : [1999020\(pdf\)](#)

G

Significance: Sep 08, 1999

Identified By: NRC

Item Type: FIN Finding

A grounded resistor in the governor circuit that caused a failure of the Unit 2 reactor core isolation cooling pump

On August 26, 1999, the licensee identified a grounded resistor in the governor circuit that caused a failure of the Unit 2 reactor core isolation cooling pump. The inspectors used the significance determination process to identify this event as having very low safety significance for the loss of offsite power initiating event due to the availability of other mitigating equipment (Section 1R22.2).

Inspection Report# : [1999018\(pdf\)](#)

G

Significance: Sep 08, 1999

Identified By: NRC

Item Type: FIN Finding

Motor-operated valve dynamic testing

During motor-operated valve dynamic testing on August 4, 1999, the Unit 1 residual heat removal cross-tie valve (19A) failed to fully close. However, approximately one month after the failure occurred, the licensee's corrective action program did not include a plan to determine the cause of the failure or to address any potential generic considerations for other valves (Section 1R22.1). No safety functions were affected and no risk increase resulted from this particular valve failure.

Inspection Report# : [1999018\(pdf\)](#)

Significance: N/A Sep 08, 1999

Identified By: NRC

Item Type: FIN Finding

Removal of a high pressure injection pump in parallel with testing on an emergency diesel generator

On two occasions, the licensee's work authorization process allowed removal of a high pressure injection pump in parallel with testing on an emergency diesel generator. The inspectors identified that on one occasion, planned conditional core damage probability was increased to greater than that allowed by licensee administrative procedures. The actual risk was lower because the licensee did not perform the work on both systems together. The significance of this finding was not assessed by the significance determination process due to the instantaneous risk involved and the fact that the work was not performed as planned following NRC discussions with plant management (Section 1R13).

Inspection Report# : [1999018\(pdf\)](#)

G

Significance: Sep 03, 1999

Identified By: NRC

Item Type: FIN Finding

Copy of post-modification test not retained

The inspectors identified that the Unit 1 post modification test for a design change package on the fuel transfer pump was not retained by the licensee. This item had very low risk significance. The licensee had retained the Unit 2 test and had signature evidence that the Unit 1 test was performed.

Inspection Report# : [1999017\(pdf\)](#)

G

Significance: Jul 20, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Corrective Action for Flooding Procedures.

Corrective actions were not implemented for an inadequate flood protection procedure originally identified by the licensee in 1997. The procedures did not provide adequate instructions to protect the plant structurally under the forces of severe flood waters. This issue was inappropriately closed in the corrective action program without resolution. This was a non-cited violation for inadequate corrective action. A qualitative risk assessment of the impact of the procedure deficiencies concluded that the issues were of low risk significance since adequate time would be available to make procedure changes and take action during a flooding event. (Section 1R06).

Inspection Report# : [1999011\(pdf\)](#)

G

Significance: Jul 16, 1999

Identified By: NRC

Item Type: FIN Finding

Corrective actions to address a Unit 1 emergency diesel generator failure

Corrective actions to address a January 1998 Unit 1 emergency diesel generator (EDG) failure to start were postponed in some cases and in others only partially completed. (Reference Report Section 4OA1.3, page 5) This item was categorized by the significance determination process as being of low risk significance based on occasional EDG start failures, redundant EDGs and available off site power.

Inspection Report# : [1999012\(pdf\)](#)

G

Significance: Jul 16, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Excessive thrust conditions, found during testing of motor operated valves

Excessive thrust conditions, found during testing of motor operated valves (MOVs) from March 1997 through July 2, 1999, were not identified to management and did not receive appropriate corrective action to preclude recurrence. As a result, the cause of the problem was not identified and appropriate corrective action was not taken. This is a non-cited violation. This item was categorized by the significance determination process as being of low risk significance. (Reference Report Section 4OA1.4) Since nine of the ten valves found outside the acceptable thrust windows functioned as required during testing, the issue was determined to be of low risk significance and was categorized as "Green."

Inspection Report# : [1999012\(pdf\)](#)

G

Significance: Jul 15, 1999

Identified By: NRC

Item Type: FIN Finding

The surveillance procedure for evaluating thermal performance of the residual heat removal heat exchangers

The surveillance procedure for evaluating thermal performance of the residual heat removal heat exchangers contained errors which resulted in the licensee overestimating the heat removal capability of the 1A heat exchanger. This item had very low risk significance, since the heat exchanger was still capable of removing its design heat load.

Inspection Report# : [1999014\(pdf\)](#)

G

Significance: Jul 15, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Three Examples of Design Control Relating to Original Plant Design

A non-cited design control violation with multiple examples was identified during close out of two unresolved items from the architect-engineer inspection (50-254/265-98201). The issues dealt with ensuring adequate net positive suction head for the emergency core cooling system pumps, ensuring the residual heat removal service water piping was analyzed for its design condition, and determining the adequacy of a thermal relief valve. All the examples in the Non-Cited Violation resulted from original design deficiencies. The licensee's analyses showed that the pumps were operable. Therefore, this issue screened out of the significance determination process as having very low risk significance

Inspection Report# : [1999014\(pdf\)](#)

G

Significance: Feb 01, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to adequately address the erosion of the RHRSW room coolers' supply piping

Green. The inspectors identified a failure to promptly identify and correct conditions adverse to quality involving the erosion of safety-related residual heat removal service water piping. The licensee's corrective actions for the piping leak included replacing the affected piping and performing ultrasonic testing on similar piping for the other trains. During this inspection, NRC inspectors identified that the corrective actions were inadequate in that the ultrasonic testing was not able to examine the area of the piping affected by the erosion as evidenced by the subsequent failure. This finding was determined to be of very low safety significance because the equipment was still capable of performing its intended safety function. A Non-Cited Violation of 10CFR 50 Appendix B, Criterion XVI was identified.

Inspection Report# : [2001015\(pdf\)](#)

Significance: N/A Nov 15, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO FOLLOW OPERATOR REQUALIFICATION PROGRAM PROCEDURAL REQUIREMENTS

No color. The inspectors identified a Non-Cited Violation wherein the facility licensee had failed to follow procedural requirements to evaluate a senior reactor operator (SRO) licensed individual in an SRO licensed position during the year 2001 annual licensed operator requalification examination (10 CFR 55.59). The finding was of very low safety significance because the SRO licensed individual held an "inactive" SRO license (i.e., would not be assigned to licensed duties unless his license was restored to an active status in accordance with 10 CFR 55.53).

Inspection Report# : [2001016\(pdf\)](#)



Significance: G Nov 15, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO MEET 10 CFR 50.65 REQUIREMENTS

On October 24, 2001, the inspectors determined that the licensee failed to count Unit 1 and Unit 2 battery room ventilation system air handling unit drive belt failures as maintenance preventable functional failures and repeat maintenance preventable functional failures where appropriate. The licensee's incorrect assessment of these equipment failures resulted in a failure to develop and implement appropriate action plans for the battery room ventilation systems on Units 1 and 2, assess the Unit 2 battery room ventilation system for (a)(1)classification, and monitor the performance of the systems against licensee-established goals. The failure to properly implement maintenance rule requirements was considered a Non-Cited Violation of 10 CFR 50.65. The risk significance of the issue was determined to be of very low safety significance because the batteries supported by the battery room ventilation systems did not experience an actual loss of safety function.

Inspection Report# : [2001016\(pdf\)](#)



Significance: G Sep 30, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO VERIFY ADEQUATE FILL OF THE HIGH PRESSURE COOLANT INJECTION SYSTEM AS REQUIRED BY TECHNICAL SPECIFICATIONS

On December 27, 2000, the licensee discovered that the high pressure coolant injection system was not filled with water from the pump discharge valve to the system isolation valve following maintenance activities. Technical Specification Surveillance Requirement 4.5.A.1.a.1 required the licensee to verify that the high pressure coolant injection system was filled with water every 31 days. The inspectors determined that greater than 31 days had elapsed since the licensee had verified that the high pressure coolant injection system was properly filled. The failure to perform the surveillance requirement within 31 days also resulted in the high pressure coolant injection system being inoperable for greater than the Technical Specification 3.5.A.3.a.3 allowed outage time of 14 days. The failure to meet the requirements of Technical Specification 3.5.A.3.a.3 and Surveillance Requirement 4.5.A.1.a.1 was considered a Non-Cited Violation. The risk significance of this event was determined to be very low since all remaining mitigation systems were available to provide water to the reactor during an event.

Inspection Report# : [2001014\(pdf\)](#)



Significance: G May 16, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to meet requirement of 10 CFR 50.59.

On June 15, 2000, station personnel removed two of the three rainbow pumps from the site. Quad Cities Updated Final Safety Analysis Report, Section 9.2.5, specifies that portable pumps (called rainbow pumps) of sufficient capacity (5100 gallons per minute) are onsite to provide makeup water to the ultimate heat sink in the event of a Lock and Dam 14 failure on the Mississippi River. The inspectors determined that the licensee had made a change to the facility as described in the Quad Cities Updated Final Safety Analysis Report without first determining if the change required a license amendment, contrary to the requirements of 10 CFR 50.59. The failure to meet the requirements of 10 CFR 50.59 was considered a Non-Cited Violation. The risk significance of this event was determined to be very low due to the very small initiating event frequency of the lock and dam failure, the slow rate of event progression once the initiating event occurs, and the availability of other onsite sources of water not credited in the event analysis.

Inspection Report# : [2001008\(pdf\)](#)

G

Significance: Mar 31, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

Surveillance testing involving timing of the Unit 1 and Unit 2 emergency diesel generators shortly after the engines had been shut down from previous runs

Inspectors identified that on two occasions, March 9 and March 27, the licensee performed technical specification required surveillance testing involving timing of the Unit 1 and Unit 2 emergency diesel generators shortly after the engines had been shut down from previous runs. Station procedures were inadequate in prescribing the conditions for performance of the tests. Procedures did not prevent preconditioning of the air start systems, fuel systems, and other engine and electrical components. Inadequate procedures for testing was considered a Non-Cited Violation of 10 CFR Appendix B, Criterion V, "Instruction Procedures and Drawings." The risk significance was very low (Green) because inspectors determined that testing practices had not led to declining performance of the diesel generators (Section 1R22).

Inspection Report# : [2001005\(pdf\)](#)

G

Significance: Dec 31, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Place the "A" Train of the Reactor Protection System in the Tripped Condition

On November 6, 2000, the Number 2 turbine control valve fast closure trip failed to cause a half scram as expected during a Unit 2 surveillance test. The licensee then repeated the test three more times and the fast closure trip successfully caused the expected half scram each time. The licensee declared the trip function operable without taking the actions of Technical Specification 3.1.A, Action 1 for an inoperable channel. Generic Letter 91-18 states that repetitive testing to achieve acceptable results without first identifying and correcting the root cause of any problem is not an acceptable means for verifying operability. A subsequent autopsy of the pressure switch for the control valve fast closure trip found evidence of fretting which produced metallic particles believed to have caused the initial failure. The inspectors determined the Number 2 turbine control valve fast closure trip had been declared operable without adequate justification. The failure to implement the required actions of Technical Specification 3.1.A-1 for an inoperable channel of the turbine control valve fast closure trip was considered a Non-Cited Violation (50-265/00-20-01). The finding was determined to be of very low safety significance due to the level of redundancy and diversity of the reactor protection system. During the period of time that the Number 2 turbine control valve fast closure trip was inoperable, a sufficient number of turbine control valve fast closure channels remained operable to result in an automatic scram, if required. Additionally, the turbine control valve fast closure trip is considered an anticipatory trip and, if inoperable, the reactor scram could still have been initiated by the reactor vessel high pressure or the average power range monitor high flux trips.

Inspection Report# : [2000020\(pdf\)](#)

G

Significance: Dec 15, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Seal Tops of Electrical Cabinets

The team identified that electrical cabinets in the auxiliary electric equipment room were not sealed at the top to protect equipment from water damage. The failure to seal the top of the cabinets was considered a Non-Cited Violation (NCV 50-254/00-16-01; NCV 50-265/00-16-01) of Operating Licenses DPR-29 and DPR-30, Section h.3.F (Section 1R05.2.b.1). The failure to seal the cabinets, a fire protection feature, involved very low risk (Green) because a fire protection defense-in-depth element, as described by MC 0609, Appendix F, Fire Protection Significance Determination Process, was not affected.

Inspection Report# : [2000016\(pdf\)](#)

G

Significance: Dec 15, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Provide Fire Stops in Cable Trays

The team identified that fire stops were not installed in divisional cable trays for which specified separation had not been maintained. The failure to install fire stops was considered a Non-Cited Violation (NCV 50-254/00-16-02; NCV 50-265/00-16-02) of Operating Licenses DPR-29 and DPR-30, Section H.3.F (Section 1R05.2.b.2). The failure to install fire stops, a fire protection feature, involved very low risk (Green) because a fire protection defense-in-depth element, as described by MC 0609, Appendix F, Fire Protection Significance Determination Process, was not affected.

Inspection Report# : [2000016\(pdf\)](#)

G

Significance: Nov 20, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Surveillance testing for torus temperature instrumentation components required by Technical Specification 4.2.F.1 had not been performed since installation in 1990 and 1991.

On October 4, 2000, the licensee identified that surveillance testing for torus temperature instrumentation components required by Technical Specification 4.2.F.1 had not been performed since installation in 1990 and 1991. Condition Report Q2000-03512 was written to address the issue. Failure to perform testing of the instrumentation was considered a Non-Cited Violation of Technical Specification 4.2.F.1 (Section 4OA3). Failure to check instrument accuracy by this 18-month surveillance for Unit 1 and Unit 2 involved very low risk because when the surveillance was subsequently performed, instrument accuracy of the temperature indication loop was within acceptable tolerance.

Inspection Report# : [2000015\(pdf\)](#)

G

Significance: Sep 30, 2000

Identified By: NRC

Item Type: FIN Finding

Inadequate operability documentation forms for Problem Identification Form Q2000-2372, regarding a design deficiency for Units 1 and 2 high pressure coolant injection motor speed changers

The inspectors found that the July 3 and August 23, 2000 supporting operability documentation forms for Problem Identification Form Q2000-2372, regarding a design deficiency for Units 1 and 2 high pressure coolant injection motor speed changers, did not adequately support the operability of the system. Inspectors reviewed the risk significance of the motor speed changer being inoperable and found the risk to be very low (GREEN) since the change to core damage frequency was less than E-6/year. In addition, operators were briefed on the potential problems with the system, and the licensee installed design changes to correct the problem on both units (Section 1R15).

Inspection Report# : [2000014\(pdf\)](#)

G

Significance: Sep 30, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Degraded condition of fire door 128

On September 15, the inspectors determined that the bottom latch in the inactive leaf of door 128, a 3-hour rated fire door, was not properly latched. The fire protection engineer determined that the degraded door also resulted in the inoperability of the emergency diesel generator room carbon dioxide fire suppression system. This finding constituted a violation of Quad Cities Operating Licensee DPR-29. This violation is being treated as a Non-Cited Violation (50-265/00-14-01), consistent with Section VI.A.1 of the May 1, 2000, Enforcement Policy (Section 1R05). The inspectors evaluated the degraded condition of fire door 128 using the fire protection Significance Determination Process, and evaluation techniques discussed with Senior Risk Analysts and Fire Protection Engineers in Region III and NRR. Since the degradation of the fire door was minimal, and the area of the turbine building directly in front of the door (within 15 to 20 feet) was relatively free of combustibles and cables, the inspectors determined that the possibility of a fire in the Unit 2 emergency diesel generator room spreading to damage the shared emergency diesel generator was not credible. Therefore the significance of this finding was considered very low (GREEN).

Inspection Report# : [2000014\(pdf\)](#)

G

Significance: Sep 30, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to implement modifications to correct a previously identified design deficiency which could have made the motor speed changer inoperable in accident situations

Inspectors found that the licensee failed to implement modifications to correct a previously identified design deficiency which could have made the motor speed changer inoperable in accident situations. The failure to implement corrective actions for this condition was a violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action." This violation is being treated as a Non-Cited Violation (50-254/00-14-02; 50-265/00-14-02), consistent with Section VI.A.1 of the May 1, 2000, Enforcement Policy. The inspectors found that the risk significance for internal and external events was very low (GREEN) since unavailability of the high pressure coolant injection system resulted in a change to core damage frequency of less than E-6/year. The licensee implemented modifications on both units to correct the design deficiency (Section 1R15).

Inspection Report# : [2000014\(pdf\)](#)**Significance: N/A** Sep 15, 2000

Identified By: NRC

Item Type: FIN Finding

WHITE Performance Indicators for Units 1 and 2 Safety System Functional Failures

The licensee's August 14, 2000, root cause report for the high number of safety system functional failures on both units listed three root causes:

inadequate knowledge of complex systems, a system vice functional focus, and inadequate integration of the new NRC inspection program into the station's processes. Corrective actions listed by the licensee included: Maintenance department clarification of expectations for troubleshooting, Engineering department revision of a troubleshooting procedure to require formal troubleshooting plans, Regulatory Affairs requirement for root cause evaluation of any performance indicator which is "threatened" (less than 50 percent margin to the WHITE threshold), Regulatory Affairs requirement for root cause evaluations to include a section on cumulative effects of the system failure on a "threatened" performance indicator, Regulatory Assurance modification of corrective action program to implement root cause requirements for a "threatened" performance indicator, Plant Health Committee requirement for monthly review of performance indicators, development or revision of process to address a cumulative focus on NRC Mitigating Systems Cornerstone and functional health, Engineering action to expand use of formal troubleshooting techniques and enhance troubleshooting skills and troubleshooting procedure. The inspectors found no current concerns with the individual root cause reports for these issues. Inspectors validated the licensee assertion that poor troubleshooting and poor root causes were an issue at Quad Cities. Two of the ten events from the individual root cause evaluations were repeats of earlier events, and the root cause efforts were not effective initially. Inspectors found weaknesses in the overall root cause report for the multiple safety system functional failures as follows: • The overall root cause evaluation failed to incorporate one of two February 2000 events. Human performance events did not get full coverage in the overall root cause, some events for the safety system functional failures involving human performance were not included. • The evaluation was focused on problems which would cause an NRC performance indicator change, and to a lesser amount on why such a large number of failures were occurring at Quad Cities. The report listed actions to review another method for trending cumulative impact of failures, but another method was not ready for review at the end of the inspection. The inspectors determined that the licensee's search for similar failures focused on the recently instituted category of "performance indicator" and thereby eliminated a number of previous safety system functional failures that occurred in 1997 and 1998. • The corrective action for troubleshooting failed to incorporate the operations department, and only focused on maintenance and engineering. Although the licensee did not entirely agree with all of the weaknesses identified by the inspectors, nevertheless, the licensee revised several of the root cause evaluations to ensure appropriate actions were developed to address the inspector's concerns.

Inspection Report# : [2000013\(pdf\)](#)



Significance: Sep 15, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

One corrective action problem was found on August 16, 2000, and involved a previously identified design deficiency with the high pressure coolant injection system

One corrective action problem was found on August 16, 2000, and involved a previously identified design deficiency with the high pressure coolant injection system. Problem Identification Form Q1997-04485 documented that the auto initiation signal for high pressure coolant injection did not electrically seal in as described in the updated final safety analysis. However, the tracking item for correcting this problem was closed without corrective action being completed. Condition Report Q2000-02954 was written to again track corrective actions to this problem. This was considered a Non-Cited Violation (NCV) of Criterion XVI, "Corrective Action," of 10 CFR 50, Appendix B. Inspectors considered this problem to be of very low risk significance (GREEN) since it would not have prevented the system from starting automatically or being initiated manually.

Inspection Report# : [2000013\(pdf\)](#)



Significance: Aug 15, 2000

Identified By: NRC

Item Type: FIN Finding

Contribution of fire risk to core damage frequency associated with the safe shutdown makeup pump discharge valve being in a degraded condition.

On July 19 during a regulatory conference, the licensee discussed the contribution of fire risk to core damage frequency associated with the safe shutdown makeup pump discharge valve being in a degraded condition. Based on the information presented during the conference, the NRC concluded that this condition was of very low safety significance due to the short duration (2 days) the condition existed.

Inspection Report# : [2000011\(pdf\)](#)

Barrier Integrity



Significance: Jun 30, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Corrective Action for Delinquent ASME Code Work Packages

The inspectors identified a failure of the corrective action program where ASME Code Class 1, 2 and 3 Replacement and Repair program requirements for work package reviews were not met. On four occasions the licensee did not realize that the Code work packages were not meeting 10 CFR 50.55a ASME Code requirements. In each case, corrective actions were not taken to correct the situation. Failure to promptly identify and correct the failure to meet ASME code requirements for work packages was considered a Non-Cited Violation of 10 CFR 50, Appendix B, Criterion XVI. The safety significance of this issue was considered very low based on the absence of adverse consequences and the fact that no

technical problems were identified.

Inspection Report# : [2000008\(pdf\)](#)



Significance: Jan 19, 2000

Identified By: NRC

Item Type: FIN Finding

Failure not classified as a functional failure under the Maintenance Rule

A failure of a Unit 2 containment spray system valve was not properly classified as a maintenance rule functional failure under the maintenance rule program. This individual classification failure was corrected and did not impact the licensee's ability to demonstrate maintenance effectiveness for the system. The valve failure was considered to be of low risk significance using the Significance Determination Process because the other train of containment spray was fully functional.(Section 1R12)

Inspection Report# : [1999025\(pdf\)](#)



Significance: Jan 19, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Overthrust of Motor-Operated Valve 2-1001-34A

During surveillance testing on December 12, 1999, residual heat removal torus spray/test return valve 2-1001-34A closed with 116,831 pounds of thrust which was almost double the previous as-left thrust setting of the valve. This value also exceeded the seismic thrust limit for the valve.

Corrective actions recommended to determine extent of condition after failure of a similar valve in 1998 were not taken. This was considered to be a non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI. The excessive thrust problem was considered to have low risk significance because the valve remained operable.

Inspection Report# : [1999025\(pdf\)](#)



Significance: Sep 08, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to promptly correct a design deficiency with the standby gas treatment system.

The licensee discovered during surveillance testing on August 23, 1999, that both standby gas treatment trains may not have functioned as designed during a postulated loss of Bus 19. The item had been previously identified in 1992 but not adequately corrected. No design change or design evaluation justifying the degraded condition had been performed. Failure to take corrective action for this design problem was a Non-cited Violation of Criterion XVI of 10 CFR Part 50, Appendix B. This problem resolution violation could not be classified with a risk significance due to its programmatic nature. However, since 1992 the inspectors were not aware of any failures of the administrative controls that would have jeopardized standby gas treatment operability. Therefore, from an equipment standpoint, this finding has a very low risk significance (Section 40A1).

Inspection Report# : [1999018\(pdf\)](#)



Significance: Jul 20, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Secondary Containment Penetration.

Secondary containment integrity did not exist from 1981 until May 1997 due to an unsealed 1 inch diameter penetration. This was a non-cited violation of Technical Specification 3.7 (Section 40A3). This issue had very low risk significance. Test results showed that the standby gas treatment system could still maintain negative pressure in secondary containment with leak pathways up to 4 inches in diameter.

Inspection Report# : [1999011\(pdf\)](#)



Significance: Nov 20, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Three examples of failure to follow procedures.

On November 3, 2000, the 1B channel of the reactor protective system flow biased neutron flux trip was found to be inoperable during reactor startup from the Unit 1 refueling outage 16. The licensee determined that poor wiring practices, poor second verification practices, and inadequate post maintenance testing of nuclear instrumentation wiring led to the malfunction. Maintenance workers failed to follow the wiring requirements in the work request, did not use lift and land sheets when removing and re-terminating the wires, and failed to label the wires which were lifted during the maintenance activity. Failure to follow the procedure (work request) for wiring was considered an example of a Non-Cited Violation. The risk significance of this event was very low because of the short amount of time that the unit was in Mode 1, because the "A" channel of flow biased trip

setpoints was still operable, and because the wiring error actually caused the flow biased neutron flux trip to be more conservative (Example A). On October 14, 2000, during disassembly of the Unit 1 reactor for refueling outage 16, reactor service technicians opened a flanged connection of the reactor head vent piping with approximately 5 to 8 psig steam pressure still in the reactor vessel and initiated a steam release to the refueling floor area which lasted for several hours. Numerous procedural, process, and communication problems contributed to the event. Personnel safety, procedure adherence, procedure adequacy, and lack of control of reactor vessel disassembly activities were all concerns brought out by this event. The failure to follow procedures during vessel disassembly was considered an example of a Non-Cited Violation. The risk significance was evaluated as very low because the amount of reactor vessel inventory released to secondary containment was very low, and secondary containment integrity requirements were met (Example B). On October 22, 2000, workers attempting to replace a local power range monitor inadvertently lifted the local power range monitor tube off its seat in the reactor vessel bottom head. This caused highly contaminated radioactive water from the bottom of the reactor vessel to drain directly onto the workers. The draining stopped immediately after the local power range monitor tube was released and resealed back into the vessel. One worker was contaminated such that a meter held to his body read 5 rem per hour on contact. Extraordinary actions by radiation protection workers resulted in the removal of the majority of the highly contaminated material quickly, such that the overall external shallow dose equivalent for the individual was estimated at 2.784 rem, and the internal dose received by the worker was estimated at 45 millirem. Problems involved in this event included workers not adhering to the instructions by radiation protection technicians, workers not having procedures with them and performing steps of two different procedures concurrently, and workers not informing operators or radiation protection technicians that they were taking actions that could allow water to be drained from the reactor vessel. In addition, the procedures were not adequate to control the work. The failure to follow procedures during local power range monitor replacement was considered an example of a Non-Cited Violation. The safety significance of this event was very low because sufficient makeup capacity to fill the vessel was available even if the local power range monitor failed to reseat, the local power range monitor tube was resealed quickly and the reactor vessel drainage stopped, and the contamination was mostly external and was removed quickly (Example C).

Inspection Report# : [2000015\(pdf\)](#)

Emergency Preparedness

Occupational Radiation Safety

Significance: N/A Jul 13, 2001

Identified By: NRC

Item Type: FIN Finding

A supplemental inspection was performed by the NRC to assess the licensee's evaluation associated with the failure to provide adequate radiological planning to maintain radiological doses as-low-as

This supplemental inspection was performed by the NRC to assess the licensee's evaluation associated with the failure to provide adequate radiological planning to maintain radiological doses as-low-as-is-reasonably-achievable (ALARA) during the Fall 2000 Unit 1 outage. This performance issue was previously characterized as having low to moderate risk significance (White) in NRC Inspection Report No. 50-254/00-18 (DRS) and 50-265/00-18(DRS). During this supplemental inspection, performed in accordance with Inspection Procedure 95001, the inspector concluded that the licensee performed a comprehensive evaluation of the radiological planning weaknesses. The licensee's evaluation attributed the planning weaknesses to ineffective job management by the radiation protection and construction staffs (root cause). In determining the root cause, the licensee identified contributing factors which included ineffective management of work force changes and drywell temperature control, inadequate monitoring of job duration and identification of changes in duration, and inadequate consideration of work location dose rates and contamination levels when developing revised job dose estimates. The inspector reviewed the licensee's corrective actions, both completed and planned, and concluded that the corrective actions appeared to address the identified root cause and contributing causes. In particular, the licensee implemented an ALARA job standard to provide additional guidance to the staff for identifying and managing changes in radiological work. The purpose of the job standard was to fully identify the changes (both prior to the work and based on the as-found conditions) and to communicate the changes to the station ALARA committee so that the planning could be adequately evaluated to determine if replanning was necessary. Initial implementation of the standard during the Spring 2001 Unit 1 recirculation pump seal replacement was adequate; however, the inspector observed weaknesses in the understanding of staff concerning when the standard was to be applied. Due to the licensee's acceptable performance in assessing the radiological planning problems, the White finding associated with this issue will only be considered in assessing plant performance for a total of four quarters in accordance with the guidance in NRC Manual Chapter 0305, "Operating Reactor Assessment Program."

Implementation of the licensee's corrective actions will be reviewed during a future inspection.

Inspection Report# : [2001013\(pdf\)](#)



Significance: Nov 27, 2000

Identified By: NRC

Item Type: FIN Finding

Radiological dose for the Safety Relief Valve (SRV) replacement work results in a determination of a White Finding.

Planning problems caused the dose for the Safety Relief Valve (SRV) replacement work completed during refueling outage Q1R16 to exceed its projected dose by more than 50 percent. Elevated dose rates were encountered in the drywell as a result of cobalt 60 plate-out. The drywell cooling/ventilation system was out of service for maintenance and testing, significantly elevating temperatures in the drywell. Also, less experienced

workers performed the SRV job NRC Supplemental Inspection (Report 50-254/01-13, 50-265/01-13): During this supplemental inspection, performed in accordance with Inspection Procedure 95001, the inspector concluded that the licensee performed a comprehensive evaluation of the radiological planning weaknesses. The licensee's evaluation attributed the planning weaknesses to ineffective job management by the radiation protection and construction staffs (root cause). In determining the root cause, the licensee identified contributing factors which included ineffective management of work force changes and drywell temperature control, inadequate monitoring of job duration and identification of changes in duration, and inadequate consideration of work location dose rates and contamination levels when developing revised job dose estimates. The inspector reviewed the licensee's corrective actions, both completed and planned, and concluded that the corrective actions appeared to address the identified root cause and contributing causes. In particular, the licensee implemented an ALARA job standard to provide additional guidance to the staff for identifying and managing changes in radiological work. The purpose of the job standard was to fully identify the changes (both prior to the work and based on the as-found conditions) and to communicate the changes to the station ALARA committee so that the planning could be adequately evaluated to determine if replanning was necessary. Initial implementation of the standard during the Spring 2001 Unit 1 recirculation pump seal replacement was adequate; however, the inspector observed weaknesses in the understanding of staff concerning when the standard was to be applied. Due to the licensee's acceptable performance in assessing the radiological planning problems, the White finding associated with this issue will only be considered in assessing plant performance for a total of four quarters in accordance with the guidance in NRC Manual Chapter 0305, "Operating Reactor Assessment Program." Implementation of the licensee's corrective actions will be reviewed during a future inspection.

Inspection Report# : [2000018\(pdf\)](#)

Inspection Report# : [2001013\(pdf\)](#)

Public Radiation Safety



Significance: Jul 02, 1999

Identified By: NRC

Item Type: FIN Finding

Lack of Documentation for Offsite Dose Calculation Manual Revisions

The inspectors identified a lack of documentation for the licensee's review of changes to the Offsite Dose Calculation Manual. Although an independent technical review determined that the changes maintained a sufficient level of effluent control, the licensee did not maintain documentation to support this determination. (Section 2PS3.3) This item had very low risk significance based on the results of the independent technical review.

Inspection Report# : [1999013\(pdf\)](#)

Physical Protection



Significance: Jun 23, 2000

Identified By: NRC

Item Type: FIN Finding

Contingency Response Performance Deficiencies

Deficiencies were noted in the licensee's performance in the contingency response element of the Physical Protection Cornerstone. (The details of this finding are Safeguards Information and are required to be withheld from public disclosure.)

Inspection Report# : [2000201\(pdf\)](#)

Significance: N/A Jun 14, 2001

Identified By: NRC

Item Type: FIN Finding

A supplemental inspection was performed to assess the licensee's root cause evaluation related to exercise failures during two of four force-on-force contingency exercises.

This supplemental inspection was performed to assess the licensee's root cause evaluation related to exercise failures during two of four force-on-force contingency exercises. This performance issue was characterized as a White finding having a low to moderate risk significance in NRC Inspection Report No. 50-254; 265/00-201. This supplemental inspection determined that the licensee had performed a comprehensive evaluation which identified the root cause and contributing factors associated with the exercise failures noted above. The licensee's evaluation identified that the root cause of the exercise finding was a failure to effectively accomplish exercise control activities. Contributing factors were human performance errors by some security force response personnel and controllers, a lack of effective controller training, vulnerabilities in some defensive positions, and command and control activities. Licensee corrective actions were implemented to address the root cause and each contributing factor. Those actions appeared effective in correcting the identified deficiencies. Therefore, the White performance finding associated with the exercise failures was closed.

Inspection Report# : [2001011\(pdf\)](#)



Significance: Nov 17, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

An unattended security storage container containing Safeguards Information was found unlocked and open for approximately two hours.

An unattended security storage container containing Safeguards Information was found unlocked and open for approximately two hours (Section 40A3). The inspector reviewed the risk significance of this finding and determined the risk to be very low since no Safeguards Information was compromised and there have not been greater than two similar findings in four quarters.

Inspection Report# : [2000019\(pdf\)](#)

Miscellaneous

Significance: N/A Jun 30, 2000

Identified By: NRC

Item Type: FIN Finding

Cross-Cutting Issues: Human Performance

Inspectors found that several recent events which affected plant operations and/or had the potential to adversely affect personnel safety involved elements of human performance deficiencies. An apparent adverse trend in human performance during the period May 5, 2000 to June 30, 2000, was evidenced by the following incidents. A senior reactor operator failed to implement a Technical Specification surveillance requirement for removing an emergency diesel generator from service. Control room operators experienced problems controlling reactor vessel water level during post-scrum recovery efforts and failed to close a pair of drain valves during a pre-start of the Unit 1 high pressure coolant injection system. Maintenance personnel errors were involved in a reactor trip on May 5, and spread of contamination in the 2B reactor water cleanup room when a fitting was disconnected under 1000 psig pressure on June 10 (Section 40A.4).

Inspection Report# : [2000007\(pdf\)](#)

Significance: N/A Jun 30, 2000

Identified By: NRC

Item Type: FIN Finding

Weakness in Corrective Action Program.

The corrective action program was fully functional and typically identified and corrected conditions adverse to quality. In general, station personnel effectively identified and entered problems into the corrective action program using problem identification forms (PIFs). The significance threshold for entering issues into the program appeared appropriate. However, over the past year issues were identified at Quad Cities where the corrective action process was not vigorously implemented to address the issues. In addition, the licensee's corrective action process had lost over two items a month since January 2000. Although none of these lost items were considered safety significant, and thousands of other action items were opened and closed in that time frame, this represented a weakness in the licensee's program.

Inspection Report# : [2000008\(pdf\)](#)



Significance: Apr 01, 2000

Identified By: Licensee

Item Type: NCV NonCited Violation

On September 10, 1999, the control room emergency ventilation system was inoperable

On September 10, 1999, the licensee identified that the control room emergency ventilation system was inoperable. Flow rates were out-of-specification due to repositioning of a ventilation damper 9 days previously. The action statement for Technical Specification 3.8.D allowed the system to be inoperable for 7 days. Failing to comply with the allowed outage time requirements was considered a non-cited violation of Technical Specification 3.8.D. This issue was screened as GREEN (very low risk significance) after a Phase 1 Significance Determination Process review (Section 40A3).

Inspection Report# : [2000003\(pdf\)](#)

Significance: N/A Feb 29, 2000

Identified By: NRC

Item Type: FIN Finding

Human Performance Problems

Inspectors found that errors in review, coordination, and implementation of maintenance activities during or near Unit 2 refueling outage number 16 (January and February 2000) led to inoperable safety systems. Operators were unaware that Technical Specification or administrative limiting condition for operation action statements were entered or exceeded. Required nuclear instruments and emergency diesel generators were not operable during some fuel moves (Sections 1R04 and 1R20.4), automatic depressurization system valves were taken out of service while required

(Section 1R20.2), the high pressure coolant injection system was inoperable due to incomplete maintenance (Section 1R19.1), and safe shutdown requirements were not properly addressed (Section 1R20.5). Other events included technician errors in which electrical jumpers were installed in incorrect locations for logic used by the reactor protective system and by the emergency core cooling system. While the risk of the individual events was very low, an increase in maintenance activity problems was evident.

Inspection Report# : [2000001\(pdf\)](#)

Significance: N/A Dec 03, 1999

Identified By: NRC

Item Type: FIN Finding

reactor coolant system leakage performance indicator

The inspectors completed verification inspection of the reactor coolant system leakage performance indicator and found very minor discrepancies which did not affect the validity of the reported performance indicator (Section 4OA2.2).

Inspection Report# : [1999023\(pdf\)](#)

Significance: N/A Dec 03, 1999

Identified By: NRC

Item Type: FIN Finding

the public radiation safety performance indicator

The inspectors verified that the licensee had properly evaluated and reported the public radiation safety performance indicator (Section 4OA2.7).

Inspection Report# : [1999023\(pdf\)](#)

Significance: N/A Dec 03, 1999

Identified By: NRC

Item Type: FIN Finding

verification inspection for the residual heat removal unavailability performance indicator.

The inspectors completed the verification inspection for the residual heat removal unavailability performance indicator. The inspectors identified that the licensee had not included 12.5 hours of residual heat removal system unavailability during system logic testing in January 1999. The licensee explained that the rules for system availability, at that time, did not require documenting the safety system unavailability. The licensee elected to report these hours in a future submittal. The extra hours would not cause the residual heat removal system unavailability to cross a color threshold (Section 4OA2.1).

Inspection Report# : [1999023\(pdf\)](#)

Significance: N/A Dec 03, 1999

Identified By: NRC

Item Type: FIN Finding

verification inspection of the licensee's performance indicators

The inspectors completed verification inspection of the licensee's performance indicators for scrams, scrams with loss of normal decay heat removal, reactor coolant specific activity, and primary containment leakage. No findings were identified (Section 4OA2).

Inspection Report# : [1999023\(pdf\)](#)

Significance: N/A Oct 20, 1999

Identified By: NRC

Item Type: FIN Finding

The licensee corrected discrepancies with the safety system functional failure indicator.

The licensee corrected discrepancies with the safety system functional failure indicator previously identified by the NRC in the September report of performance indicator data. The NRC exercised enforcement discretion and did not issue a Notice of Violation (Section 4OA3).

Inspection Report# : [1999020\(pdf\)](#)

Significance: N/A Oct 20, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Event Reporting Failure

The inspectors identified two violations of NRC reporting requirements. The licensee failed to notify the NRC within 1 hour of identifying a condition in which the control room emergency ventilation system was found outside the design basis. The licensee also failed to notify the NRC within 4 hours of an event in which the reactor core isolation cooling system was unable to perform a required safety function. The licensee made late notifications, submitted a licensee event report for the control room emergency ventilation system, and planned to submit a licensee event report for the reactor core isolation cooling system failure. These were considered two non-cited violations (Plant Status).

Inspection Report# : [1999020\(pdf\)](#)

Significance: N/A Oct 20, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Notification Failure Under 50.72

The inspectors identified two violations of NRC reporting requirements. The licensee failed to notify the NRC within 1 hour of identifying a condition in which the control room emergency ventilation system was found outside the design basis. The licensee also failed to notify the NRC within 4

hours of an event in which the reactor core isolation cooling system was unable to perform a required safety function. The licensee made late notifications, submitted a licensee event report for the control room emergency ventilation system, and planned to submit a licensee event report for the reactor core isolation cooling system failure. These were considered two non-cited violations (Plant Status).

Inspection Report# : [1999020\(pdf\)](#)



Significance: Oct 08, 1999

Identified By: Licensee

Item Type: FIN Finding

The licensee identified errors in the PI Occupational Radiation Safety Performance Indicator (PI)

Occupational Radiation Safety Performance Indicator (PI). The licensee identified errors in the PI reported to the NRC. Originally, the licensee reported six technical specification high radiation area incidents, which resulted in a white PI. After identifying a missed occurrence and a misinterpretation of the PI criteria, the licensee determined that only two incidents were applicable to the PI, which resulted in the PI indicating that performance was in the licensee response band (green).

Inspection Report# : [1999022\(pdf\)](#)



Significance: Jul 16, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

the repetitive problem of excessive use of overtime.

The root cause report and the corrective actions, approved by the Plant Operations Review Committee and the Corrective Action Review Board, did not fully address the repetitive problem of excessive use of overtime. There were 177 instances between February 1 and 28, 1999, where station procedures were not followed to control overtime of plant workers. Further corrective actions were being developed to ensure that overtime violations did not continue. There were no known incidents where the excessive use of overtime directly impacted or affected the safety of the plant; however, the repetitive failure to follow procedures to control overtime is a non-cited violation. (Reference Report Section 4OA1.4, page 8)

Inspection Report# : [1999012\(pdf\)](#)

Significance: SL-IV Aug 14, 2001

Identified By: NRC

Item Type: VIO Violation

FAILURE TO ACCURATELY REPORT PERFORMANCE INDICATOR INFORMATION

The inspectors identified that the licensee failed to report fault exposure hours for the failure of a fuel oil transfer solenoid valve to open during the Unit 2 emergency diesel generator (EDG) 18 month endurance test. The second quarter 2001 data reported to the NRC showed no fault exposure hours recorded for Unit 2 EDG. However, the inspectors found that fault exposure hours from a failed endurance run on May 1, 2001, should have been reported since only the time of the failure's discovery was known with certainty. Fault exposure hours going back to the last successful load test of the EDG on January 14, 2000, were not included in the licensee's July 2001 performance indicator data submittal for the Unit 2 Emergency Alternating Current (AC) - Safety System Unavailability performance indicator. Had the performance indicator data been properly reported, the performance indicator color would have been Red. Failure to properly report the performance indicator was considered a Severity Level IV violation of 10 CFR 50.9.

Inspection Report# : [2001012\(pdf\)](#)

Significance: N/A May 25, 2001

Identified By: NRC

Item Type: FIN Finding

Adverse performance trend.

The corrective actions to prevent recurrence for an event that resulted in an inadvertent steam release during a breach of the reactor pressure boundary proved to be ineffective to prevent a similar event that occurred six months later. Additionally, corrective actions for the second event were narrow in scope and did not address the aspects in common with the first event. Condition report Q2001-01976 was issued to address the potential common issues. The inspectors concluded that the issue was more than minor since the failure to fully identify and correct deficiencies could be reasonably viewed as a precursor to a significant event. The inspectors reviewed the applicability of the issue with respect to program cornerstones and determined that the issue did not impact a cornerstone. However, this issue contained extenuating circumstances in that the full extent of condition for the October event was not completely identified and corrected, allowing a similar event in April. The combination of these two events indicates an adverse performance trend.

Inspection Report# : [2001009\(pdf\)](#)

Significance: N/A May 25, 2001

Identified By: NRC

Item Type: FIN Finding

Corrective action program problems.

The inspectors concluded that in general the corrective action program was a complete program containing all the necessary attributes to successfully identify and correct issues at Quad Cities. However, over the past year there were several instances of difficulties with problem identification, evaluation and resolution. Most of these were documented in previous findings and violations in inspection reports. In general, these

issues have been recognized, and actions have been taken to address them. For most of the issues it is too soon to fully evaluate the effectiveness of these actions so effectiveness is still to be determined. During this inspection, three areas of corrective action program problems were identified. These were the failure to properly implement the M&TE program, several instances when condition reports should have been written and they were not, and, failure to address common causes for similar steam release events on the reactor vessel during the October refueling outage, and in the April maintenance outage.

Inspection Report# : [2001009\(pdf\)](#)

Significance: N/A May 25, 2001

Identified By: NRC

Item Type: FIN Finding

Test problems on condition reports not identified.

In May of 2001, an inspector observing a surveillance noted that instrument maintenance technicians had difficulty conducting calibrations of differential transmitters on the Unit 2 station blackout diesel air intake filter differential pressure detectors. The results were not repeatable and indicated some out-of-tolerance readings on both instruments. No condition reports were generated for either the difficulty with the tests or the apparent out-of-tolerance results until inspectors intervened. Condition Report Q2001-1549 was issued 12 days later and subsequently, Condition Reports Q2001-1474 and Q2001-1475 were written for the out-of-tolerance readings. The inspectors reviewed the significance of not identifying test problems on condition reports and concluded that the issue was more than a minor issue because if left uncorrected, the issue could become a more significant safety concern. The actual effect on the station blackout diesel was minimal since it did not directly impact operation of the equipment and another diesel was available. However, this corrective action finding is a cross-cutting issue for corrective action process performance and is assigned No Color.

Inspection Report# : [2001009\(pdf\)](#)

Significance: N/A May 25, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to assure that measuring and test equipment was properly calibrated.

In April of 2001, the station Nuclear Oversight staff identified that measurement and test equipment which was found to be out-of-calibration during post-use verifications was not evaluated as required by plant procedure. Also, condition reports on these out-of-tolerance conditions were not written when required by procedures. The licensee initiated a review which identified 159 items of out-of-tolerance equipment which had not been evaluated appropriately. The use of these items was evaluated and appropriate recovery actions taken. Failure to assure that measuring and test equipment used in 2000 and 2001 was properly calibrated was a Non-Cited Violation of 10 CFR 50, Appendix B. The inspectors reviewed the significance of not evaluating out-of-tolerance equipment and determined that the issue was more than a minor issue because if left uncorrected, the issue could become a more significant safety concern. However, since this is a corrective action concern, and no specific cornerstone was impacted, this item is assigned No Color.

Inspection Report# : [2001009\(pdf\)](#)

Significance: N/A May 16, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to report performance indicator data accurately.

Inspectors found that the licensee reported safety system functional failure data improperly. The improperly reported safety system functional failure involved failure of the Unit 2 intermediate range nuclear monitors. Had this been reported properly, it would have caused the safety system functional failure performance indicator for Unit 2 to cross the threshold from Green to White in the first quarter of 2000. The actual submittal showed performance indicator data in the licensee response or Green band. Because a performance indicator would have changed from Green to White, this was considered a Non-Cited Violation of 10 CFR 50.9.

Inspection Report# : [2001008\(pdf\)](#)

Significance: N/A Dec 15, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Technical Errors in Appendix R Safe Shutdown Procedures

The inspectors identified a number of technical errors in safe shutdown procedure QCARP 0050-02. The procedure errors were considered a Non-Cited Violation (NCV 50-254/00-16-03; NCV 50-265/00-16-03) of 10 CFR 50, Appendix R, Section III.L.5 (Section 40A4.1). The technical errors were determined to have no appreciable risk significance (No Color) because the errors would not have impacted safe shutdown. However, the errors were another example of a previously identified adverse trend in human performance.

Inspection Report# : [2000016\(pdf\)](#)

Significance: N/A Nov 20, 2000

Identified By: NRC

Item Type: FIN Finding

The inspectors found that a number of human performance errors during the Q1R16 refueling outage period resulted in undesirable consequences and constituted an adverse trend.

The inspectors found that a number of human performance errors during the Q1R16 refueling outage period, October 14 to November 3, resulted in undesirable consequences and constituted an adverse trend in human performance. These errors resulted from problems with procedure adherence, control of work activities, communications, and procedure quality. Resulting problems included venting the pressurized reactor to

containment near maintenance workers who were not adequately prepared for the subsequent release of steam and contamination, inadvertently draining from the reactor vessel bottom head area resulting in significant personnel contamination, and a number of wiring and second verification errors during electrical modifications and maintenance. Although most of these wiring errors were caught and corrected during testing, one error was not caught and resulted in the inoperability of one of two channels of the reactor protective system flow biased trips. While none of these events resulted in equipment performance outside the licensee response band (GREEN), the overall trend indicated problems with adhering to procedures, proper performance of second verification techniques, and the communication and coordination of activities (Section 4OA4).
Inspection Report# : [2000015\(pdf\)](#)

Last modified : April 01, 2002

Quad Cities 2

Initiating Events

G**Significance:** Aug 15, 2000

Identified By: NRC

Item Type: FIN Finding

Electrical ring bus caused electrical circuit breakers 1-3 and 3-4 to open.

On July 18 a fault on one of the offsite power feeds to the Quad Cities electrical ring bus caused electrical circuit breakers 1-3 and 3-4 to open. This action isolated the fault and resulted in a Unit 2 turbine generator and reactor trip. The response by the switchyard resulted in a loss of power on the Unit 1 reserve auxiliary transformer. The response to the reactor scram on Unit 2 was as designed. Operator performance during this event was determined to have been acceptable. The inspectors reviewed the risk significance of this initiating event for both units using the Significance Determination Process. All mitigating equipment was available for Unit 2 following the uncomplicated trip, and this event was screened as having very low risk significance (GREEN.) One of two auxiliary transformers for Unit 1 was de-energized during the event, but the unit did not trip and all mitigating equipment was available. Therefore, this event was also screened as GREEN for Unit 1.

Inspection Report# : [2000011\(pdf\)](#)G**Significance:** Jun 30, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

adjustments to the wrong instrument, causing a reactor trip on Unit 2

On May 5 an instrument technician performing a calibration of the main steam flow detectors made adjustments to the wrong instrument, causing a reactor trip on Unit 2. Failure to implement the calibration procedure for the proper channel instrument was considered an NCV of Technical Specification 6.8.A.1. The safety significance of this event was minimal due to the availability of mitigating equipment (Section 40A.3).

Inspection Report# : [2000007\(pdf\)](#)G**Significance:** Jun 30, 2000

Identified By: NRC

Item Type: FIN Finding

operators did not control reactor vessel inventory

During operator response to a reactor trip on May 22, operators did not control reactor vessel inventory prior to the operating reactor feedwater pump tripping on high reactor vessel water level. Additionally, operators had not started a reactor feedwater pump by the time a reactor low level condition existed. This resulted in a second engineered safety feature actuation. The inspectors reviewed this issue using the significance determination process for a transient with a loss of feedwater and determined this was of very low risk significance (Section 1R14).

Inspection Report# : [2000007\(pdf\)](#)G**Significance:** Jun 30, 2000

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

Maintenance work and emerging work - 2B reactor water cleanup pump seal line disconnect

On June 10, maintenance workers disconnected a seal line to the 2B reactor water cleanup pump that was not properly isolated by the out-of-service tagout and discovered that the line was pressurized to about 1000 psig. The resulting spray caused a spread of contamination in the room and a potential hazard to the workers. No personnel injuries occurred as a result of this event. Failure to hang the proper out-of-service for the maintenance activity was considered a Non-Cited Violation (NCV) of Technical Specifications. The inspectors considered this event of very low safety significance due to the ability to isolate the leak and the availability of mitigating equipment (Section 1R13).

Inspection Report# : [2000007\(pdf\)](#)G**Significance:** Feb 29, 2000

Identified By: NRC

Item Type: FIN Finding

Ice Melt Valve Failure

Failure of the ice melt valve on January 22, 2000, resulted in some ice formation in the intake area. Operator detection and compensatory measures prevented the ice from affecting the water level in the intake. The valve gate had become detached from the stem. The failure of the ice melt valve was of very low risk significance because it did not result in an increased initiating event frequency for loss of both normal and ultimate heat sinks. The inspectors compared an estimated valve failure rate to the licensee's evaluation. The licensee's evaluation excluded this initiating event from the probabilistic risk assessment because no precursor event had occurred in the history of the station.

Inspection Report# : [2000001\(pdf\)](#)

G

Significance: Dec 29, 2001

Identified By: NRC

Item Type: FIN Finding

DEGRADED AND INADEQUATELY TESTED TRANSFORMER AND PROTECTIVE RELAYING RESULTS IN INCREASE IN TRANSIENT AND LOSS OF OFFSITE POWER INITIATING EVENT FREQUENCIES

On August 2, 2001, Unit 2 experienced a transformer failure, reactor scram, and loss of offsite power. The inspectors determined that a lightning strike in conjunction with age related degradation and inadequate testing of the Unit 2 main power transformer and switchyard protective relaying contributed to the event and resulted in an increase in the initiating event frequency for plant transients and a loss of offsite power. The inspectors determined the risk significance of this issue to be very low since all remaining mitigating systems were available to mitigate the transformer rupture, reactor scram, and loss of offsite power.

Inspection Report# : [2001017\(pdf\)](#)

G

Significance: Mar 31, 2001

Identified By: Licensee

Item Type: NCV NonCited Violation

Operator-induced loss of feedwater heating transient

On March 23 the inspectors reviewed an operator-induced loss of feedwater heating transient that occurred on Unit 2. The inspectors found that the operators failed to immediately recognize a reduction in feedwater heating and take prompt action to effectively control the increasing reactor power. The transient resulted in a 33 degree decrease in feedwater inlet temperature adding sufficient positive reactivity to increase reactor thermal power from 2511 to 2578 megawatts, approximately 102.7 percent of maximum licensed power. Exceeding Quad Cities License DPR-30 maximum thermal power of 2511 megawatts thermal was considered a Non-Cited Violation. The risk significance of this event was determined to be very low (Green) due to the relatively small increase a 2.7 percent power change will have on overall core thermal limits (Section 1R14).

Inspection Report# : [2001005\(pdf\)](#)

G

Significance: Sep 08, 1999

Identified By: NRC

Item Type: FIN Finding

Maintenance rule functional failures

Problematic feedwater level control equipment on Unit 2 resulted in two reactor vessel water level transients in early 1999. The licensee initially evaluated these two events as not being maintenance rule functional failures, which was inappropriate. An NRC inspection and a subsequent licensee self-assessment identified the error. The licensee re-evaluated the two transients as being functional failures on July 28, 1999. This issue did not increase the frequency of initiating events and therefore was an issue of very low safety significance (Section 1R12).

Inspection Report# : [1999018\(pdf\)](#)

G

Significance: Jul 20, 1999

Identified By: NRC

Item Type: FIN Finding

a 3-inch increase in reactor water level

On Unit 2, a 3-inch increase in reactor water level occurred and required operators to take manual control of the system. Various failures in the level control systems have resulted in about ten similar events since January 1, 1999, in which operators were required to intervene to prevent level transients that could have resulted in a reactor trip. Since the plant effect of the failures is limited to an uncomplicated reactor trip, the failures were considered to be of low risk significance using the significance determination process (Section 1R03).

Inspection Report# : [1999011\(pdf\)](#)

Mitigating Systems

G

Significance: Sep 30, 2000

Identified By: NRC

Item Type: FIN Finding

Inadequate operability documentation forms for Problem Identification Form Q2000-2372, regarding a design deficiency for Units 1 and 2 high pressure coolant injection motor speed changers

The inspectors found that the July 3 and August 23, 2000 supporting operability documentation forms for Problem Identification Form Q2000-2372, regarding a design deficiency for Units 1 and 2 high pressure coolant injection motor speed changers, did not adequately support the operability of the system. Inspectors reviewed the risk significance of the motor speed changer being inoperable and found the risk to be very low (GREEN) since the change to core damage frequency was less than E-6/year. In addition, operators were briefed on the potential problems with the system, and the licensee installed design changes to correct the problem on both units (Section 1R15).

Inspection Report# : [2000014\(pdf\)](#)

G

Significance: Sep 30, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Degraded condition of fire door 128

On September 15, the inspectors determined that the bottom latch in the inactive leaf of door 128, a 3-hour rated fire door, was not properly latched. The fire protection engineer determined that the degraded door also resulted in the inoperability of the emergency diesel generator room carbon dioxide fire suppression system. This finding constituted a violation of Quad Cities Operating Licensee DPR-29. This violation is being treated as a Non-Cited Violation (50-265/00-14-01), consistent with Section VI.A.1 of the May 1, 2000, Enforcement Policy (Section 1R05). The inspectors evaluated the degraded condition of fire door 128 using the fire protection Significance Determination Process, and evaluation techniques discussed with Senior Risk Analysts and Fire Protection Engineers in Region III and NRR. Since the degradation of the fire door was minimal, and the area of the turbine building directly in front of the door (within 15 to 20 feet) was relatively free of combustibles and cables, the inspectors determined that the possibility of a fire in the Unit 2 emergency diesel generator room spreading to damage the shared emergency diesel generator was not credible. Therefore the significance of this finding was considered very low (GREEN).

Inspection Report# : [2000014\(pdf\)](#)

G

Significance: Sep 30, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to implement modifications to correct a previously identified design deficiency which could have made the motor speed changer inoperable in accident situations

Inspectors found that the licensee failed to implement modifications to correct a previously identified design deficiency which could have made the motor speed changer inoperable in accident situations. The failure to implement corrective actions for this condition was a violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action." This violation is being treated as a Non-Cited Violation (50-254/00-14-02; 50-265/00-14-02), consistent with Section VI.A.1 of the May 1, 2000, Enforcement Policy. The inspectors found that the risk significance for internal and external events was very low (GREEN) since unavailability of the high pressure coolant injection system resulted in a change to core damage frequency of less than E-6/year. The licensee implemented modifications on both units to correct the design deficiency (Section 1R15).

Inspection Report# : [2000014\(pdf\)](#)**Significance:** N/A Sep 15, 2000

Identified By: NRC

Item Type: FIN Finding

WHITE Performance Indicators for Units 1 and 2 Safety System Functional Failures

The licensee's August 14, 2000, root cause report for the high number of safety system functional failures on both units listed three root causes: inadequate knowledge of complex systems, a system vice functional focus, and inadequate integration of the new NRC inspection program into the station's processes. Corrective actions listed by the licensee included: Maintenance department clarification of expectations for troubleshooting, Engineering department revision of a troubleshooting procedure to require formal troubleshooting plans, Regulatory Affairs requirement for root cause evaluation of any performance indicator which is "threatened" (less than 50 percent margin to the WHITE threshold), Regulatory Affairs requirement for root cause evaluations to include a section on cumulative effects of the system failure on a "threatened" performance indicator, Regulatory Assurance modification of corrective action program to implement root cause requirements for a "threatened" performance indicator, Plant Health Committee requirement for monthly review of performance indicators, development or revision of process to address a cumulative focus on NRC Mitigating Systems Cornerstone and functional health, Engineering action to expand use of formal troubleshooting techniques and enhance troubleshooting skills and troubleshooting procedure. The inspectors found no current concerns with the individual root cause reports for these issues. Inspectors validated the licensee assertion that poor troubleshooting and poor root causes were an issue at Quad Cities. Two of the ten events from the individual root cause evaluations were repeats of earlier events, and the root cause efforts were not effective initially. Inspectors found weaknesses in the overall root cause report for the multiple safety system functional failures as follows: • The overall root cause evaluation failed to incorporate one of two February 2000 events. Human performance events did not get full coverage in the overall root cause, some events for the safety system functional failures involving human performance were not included. • The evaluation was focused on problems which would cause an NRC performance indicator change, and to a lesser amount on why such a large number of failures were occurring at Quad

Cities. The report listed actions to review another method for trending cumulative impact of failures, but another method was not ready for review at the end of the inspection. The inspectors determined that the licensee's search for similar failures focused on the recently instituted category of "performance indicator" and thereby eliminated a number of previous safety system functional failures that occurred in 1997 and 1998. • The corrective action for troubleshooting failed to incorporate the operations department, and only focused on maintenance and engineering. Although the licensee did not entirely agree with all of the weaknesses identified by the inspectors, nevertheless, the licensee revised several of the root cause evaluations to ensure appropriate actions were developed to address the inspector's concerns.

Inspection Report# : [2000013\(pdf\)](#)

G

Significance: Sep 15, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

One corrective action problem was found on August 16, 2000, and involved a previously identified design deficiency with the high pressure coolant injection system

One corrective action problem was found on August 16, 2000, and involved a previously identified design deficiency with the high pressure coolant injection system. Problem Identification Form Q1997-04485 documented that the auto initiation signal for high pressure coolant injection did not electrically seal in as described in the updated final safety analysis. However, the tracking item for correcting this problem was closed without corrective action being completed. Condition Report Q2000-02954 was written to again track corrective actions to this problem. This was considered a Non-Cited Violation (NCV) of Criterion XVI, "Corrective Action," of 10 CFR 50, Appendix B. Inspectors considered this problem to be of very low risk significance (GREEN) since it would not have prevented the system from starting automatically or being initiated manually.

Inspection Report# : [2000013\(pdf\)](#)

G

Significance: Aug 15, 2000

Identified By: NRC

Item Type: FIN Finding

Contribution of fire risk to core damage frequency associated with the safe shutdown makeup pump discharge valve being in a degraded condition.

On July 19 during a regulatory conference, the licensee discussed the contribution of fire risk to core damage frequency associated with the safe shutdown makeup pump discharge valve being in a degraded condition. Based on the information presented during the conference, the NRC concluded that this condition was of very low safety significance due to the short duration (2 days) the condition existed.

Inspection Report# : [2000011\(pdf\)](#)

Significance: N/A May 16, 2000

Identified By: NRC

Item Type: FIN Finding

Surveillance Testing

During logic testing on March 21, 2000, the Unit 1 high pressure coolant injection auxiliary oil pump failed to properly operate. This condition rendered the system inoperable for automatic initiation for approximately one year. The risk from internal events for this condition was determined to be very low (GREEN) in Inspection Report 50-254/2000003; 50-265/2000003. The effect on risk due to external events, specifically fires, was determined to be potentially significant during a preliminary Significance Determination Process review. However, this issue was also the substantial contributor to a YELLOW high pressure coolant injection unavailability performance indicator, which represents performance that minimally reduces safety margin and requires NRC oversight. Therefore, the NRC considers the inspection findings and the performance indicator to be a single issue and agency action will be determined based on application of the Action Matrix for the YELLOW performance indicator.

Inspection Report# : [2000005\(pdf\)](#)

G

Significance: Feb 29, 2000

Identified By: NRC

Item Type: FIN Finding

Safe Shutdown Makeup Pump Valve Failure

On January 19, 2000, during planned maintenance activities, maintenance workers determined that the safe shutdown makeup pump system was inoperable due to a Unit 2 safe shutdown makeup pump injection valve failure to operate. The valve failure was evaluated using the Significance Determination Process and was found to be of very low risk significance because all other mitigating systems were available.

Inspection Report# : [2000001\(pdf\)](#)

G

Significance: Feb 29, 2000

Identified By: NRC

Item Type: FIN Finding

Unit 2 Automatic Depressurization System Valves Taken Out-Of-Service in Mode 3

On January 22, 2000, operators did not recognize entry into a Technical Specification action statement when relief valves were removed from service with the reactor in Mode 3. Upon discovery, about 4-1/2 hours later, the valves were returned to service. The Technical Specification action statement was not exceeded. The unavailability of the relief valves was evaluated by the NRC's Senior Reactor Analyst as part of the Significance Determination Process for shutdown issues. This issue was determined to be of very low risk significance because the reactor was in hot shutdown with vessel pressure at approximately 50 psig.

Inspection Report# : [2000001\(pdf\)](#)



Significance: Feb 29, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Emergency Diesel Generator Ventilation Power Supply Switch Out of Position

On January 28, 2000, with Unit 1 operating at full power and with Unit 2 in Mode 5 (refuel), an operator identified that the Unit 2 emergency diesel generator room ventilation fan power select switch was selected to the Unit 1 power supply. The Unit 2 emergency diesel generator was inoperable, but remained available for service. Since the shared emergency diesel generator was already inoperable to Unit 2, this condition left no operable emergency diesel generators for Unit 2. This issue is considered a non-cited violation consistent with the Interim Enforcement Policy for pilot plants. This issue was considered to be of very low safety significance because the Unit 1 diesel generator would not have been overloaded by the Unit 2 emergency diesel generator room ventilation fan. The Unit 2 emergency diesel generator was also available.

Inspection Report# : [2000001\(pdf\)](#)



Significance: Feb 29, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Post Maintenance Testing

On February 10, 2000, with Unit 2 in startup mode, the high pressure coolant injection pump failed to start during testing due to incomplete maintenance. A maintenance foreman erroneously signed off the work package as being completed when it was not. This issue is considered a non-cited violation consistent with the Interim Enforcement Policy for pilot plants. This issue was of very low risk significance since the system pressure was low, decay heat was low, and redundant methods of inventory injection were either operating or available.

Inspection Report# : [2000001\(pdf\)](#)



Significance: Feb 29, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Too Few Intermediate Range Nuclear Instruments During Refueling

From February 1 through 5, 2000, Unit 2 had less than the number of operable intermediate range nuclear instruments per channel (three) for the reactor protective system required by Technical Specification 3.1.A. Only two of four instruments were operable on the "B" channel and three of four were operable on the "A" channel. During this time, the reactor was in Mode 5 (refuel) and operators performed core alterations by moving irradiated fuel in the vessel. This issue is considered a non-cited violation consistent with the Interim Enforcement Policy for pilot plants Unit 2 was in cold shutdown with all control rods inserted. This issue was determined to be of very low risk significance because shutdown margin calculations and refueling interlocks provided assurance of adequate shutdown margin. Source range nuclear instruments provided a rod block function during refueling. Intermediate range nuclear instrument indication would not have been available until after the point where a reactivity excursion had occurred because the neutron level during refueling operations was too low for the intermediate range nuclear instruments.

Inspection Report# : [2000001\(pdf\)](#)



Significance: Jan 19, 2000

Identified By: NRC

Item Type: FIN Finding

Corrective Action Deficiencies Related to Heaters in the Contaminated Condensate Storage Tanks Allowed Degradation of the Heaters

The inspectors found that corrective action deficiencies related to heaters in the contaminated condensate storage tanks allowed degradation of the heaters to the extent that high pressure injection systems could have been adversely affected. The risk significance for the loss of heaters in the contaminated condensate storage tanks was low, partially because both units were shut down during times when the high pressure injection sources could have been rendered inoperable due to lack of sufficient tank heating.

Inspection Report# : [1999025\(pdf\)](#)



Significance: Jan 19, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Contaminated Condensate Storage Tank Heaters Inoperable

The inspectors found that design control deficiencies related to heaters in the contaminated condensate storage tanks allowed degradation of the heaters to the extent that high pressure injection systems could have been adversely affected. Modifications to the system did not evaluate the facility change as required by 10 CFR 50.59. This was considered to be a non-cited violation of 10 CFR 50.59. This issue was first documented by the licensee in August 1999 and addressed in Inspection Report 50-254/99020; 50-265/99020. The risk significance for the loss of heaters in the contaminated condensate storage tanks was low, partially because both units were shut down during times when the high pressure injection sources could have been rendered inoperable due to lack of sufficient tank heating.

Inspection Report# : [1999025\(pdf\)](#)



Significance: Dec 03, 1999

Identified By: NRC

Item Type: FIN Finding

Corrective Actions for a Design Control Problem with Software Backups were not Timely or Complete

The inspectors found that two failures of a high pressure coolant injection valve to close in September and October 1999 were not properly classified in the maintenance rule program. Licensee engineers initially failed to consider the second failure of the 1-2301-5 valve to close on October 4, 1999, as a repetitive maintenance preventable functional failure, and failed to monitor the system under (a)(1) of the maintenance rule. This is considered an unresolved item. The valve failure was found to be of low risk significance because the inboard isolation valve was available.

Inspection Report# : [1999023\(pdf\)](#)



Significance: Nov 19, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Ensure ADS Valves Qualified for Minimum Possible Voltage

Four of the five Unit 1 automatic depressurization system relief valves were not initially qualified for the degraded voltage conditions that would be seen under accident conditions. The licensee had not originally accounted for the voltage drop that would occur between the station batteries and the valve solenoids when specifying the minimum voltage for which the valves needed to be qualified. The licensee subsequently identified a test report, done for another nuclear station, which qualified the valves to a lower voltage. The inspectors, in conjunction with the Office of Nuclear Reactor Regulations, reviewed the test and accepted it under condition that a ten volt penalty be applied to account for some test deficiencies. The licensee also performed calculations to show that the actual available voltage to the valves, under degraded conditions, was above the accepted minimum voltage. A non-cited violation was identified.

Inspection Report# : [1999021\(pdf\)](#)



Significance: Oct 20, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Promptly Correct Control Room Emergency Ventilation System Deficiency

The inspectors identified two examples of inadequate corrective action regarding the Units 1 and 2 safety-related control room emergency ventilation system. In 1995 the licensee identified emergency diesel generator overloading concerns and degraded voltage concerns. This degraded and nonconforming condition was not corrected, and the design basis for the emergency diesel generator system and control room emergency ventilation system were not changed to reflect the condition. Also, safety-related electrical drawing discrepancies with the control room emergency ventilation system were identified in 1997 and never corrected. A non-cited violation for 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action" with two examples was identified. In utilizing the Significance Determination Process, this issue was determined to have low risk significance because control room habitability was assumed to be maintained for the 1 hour to start control room cooling and, therefore, there was no impact on the ability of control room operators to operate the required mitigating systems. Also, the design basis event was estimated to have a very low initiating event frequency (Section 1R16).

Inspection Report# : [1999020\(pdf\)](#)



Significance: Feb 01, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to adequately address the erosion of the RHRSW room coolers' supply piping

Green. The inspectors identified a failure to promptly identify and correct conditions adverse to quality involving the erosion of safety-related residual heat removal service water piping. The licensee's corrective actions for the piping leak included replacing the affected piping and performing ultrasonic testing on similar piping for the other trains. During this inspection, NRC inspectors identified that the corrective actions were inadequate in that the ultrasonic testing was not able to examine the area of the piping affected by the erosion as evidenced by the subsequent failure. This finding was determined to be of very low safety significance because the equipment was still capable of performing its intended safety

function. A Non-Cited Violation of 10CFR 50 Appendix B, Criterion XVI was identified.

Inspection Report# : [2001015\(pdf\)](#)

Significance: N/A Nov 15, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO FOLLOW OPERATOR REQUALIFICATION PROGRAM PROCEDURAL REQUIREMENTS

No color. The inspectors identified a Non-Cited Violation wherein the facility licensee had failed to follow procedural requirements to evaluate a senior reactor operator (SRO) licensed individual in an SRO licensed position during the year 2001 annual licensed operator requalification examination (10 CFR 55.59). The finding was of very low safety significance because the SRO licensed individual held an "inactive" SRO license (i.e., would not be assigned to licensed duties unless his license was restored to an active status in accordance with 10 CFR 55.53).

Inspection Report# : [2001016\(pdf\)](#)

G

Significance: Nov 15, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO MEET 10 CFR 50.65 REQUIREMENTS

On October 24, 2001, the inspectors determined that the licensee failed to count Unit 1 and Unit 2 battery room ventilation system air handling unit drive belt failures as maintenance preventable functional failures and repeat maintenance preventable functional failures where appropriate. The licensee's incorrect assessment of these equipment failures resulted in a failure to develop and implement appropriate action plans for the battery room ventilation systems on Units 1 and 2, assess the Unit 2 battery room ventilation system for (a)(1)classification, and monitor the performance of the systems against licensee-established goals. The failure to properly implement maintenance rule requirements was considered a Non-Cited Violation of 10 CFR 50.65. The risk significance of the issue was determined to be of very low safety significance because the batteries supported by the battery room ventilation systems did not experience an actual loss of safety function.

Inspection Report# : [2001016\(pdf\)](#)

G

Significance: Sep 30, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO VERIFY ADEQUATE FILL OF THE HIGH PRESSURE COOLANT INJECTION SYSTEM AS REQUIRED BY TECHNICAL SPECIFICATIONS

On December 27, 2000, the licensee discovered that the high pressure coolant injection system was not filled with water from the pump discharge valve to the system isolation valve following maintenance activities. Technical Specification Surveillance Requirement 4.5.A.1.a.1 required the licensee to verify that the high pressure coolant injection system was filled with water every 31 days. The inspectors determined that greater than 31 days had elapsed since the licensee had verified that the high pressure coolant injection system was properly filled. The failure to perform the surveillance requirement within 31 days also resulted in the high pressure coolant injection system being inoperable for greater than the Technical Specification 3.5.A.3.a.3 allowed outage time of 14 days. The failure to meet the requirements of Technical Specification 3.5.A.3.a.3 and Surveillance Requirement 4.5.A.1.a.1 was considered a Non-Cited Violation. The risk significance of this event was determined to be very low since all remaining mitigation systems were available to provide water to the reactor during an event.

Inspection Report# : [2001014\(pdf\)](#)

G

Significance: May 16, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to meet requirement of 10 CFR 50.59.

On June 15, 2000, station personnel removed two of the three rainbow pumps from the site. Quad Cities Updated Final Safety Analysis Report, Section 9.2.5, specifies that portable pumps (called rainbow pumps) of sufficient capacity (5100 gallons per minute) are onsite to provide makeup water to the ultimate heat sink in the event of a Lock and Dam 14 failure on the Mississippi River. The inspectors determined that the licensee had made a change to the facility as described in the Quad Cities Updated Final Safety Analysis Report without first determining if the change required a license amendment, contrary to the requirements of 10 CFR 50.59. The failure to meet the requirements of 10 CFR 50.59 was considered a Non-Cited Violation. The risk significance of this event was determined to be very low due to the very small initiating event frequency of the lock and dam failure, the slow rate of event progression once the initiating event occurs, and the availability of other onsite sources of water not credited in the event analysis.

Inspection Report# : [2001008\(pdf\)](#)

G

Significance: Mar 31, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

Surveillance testing involving timing of the Unit 1 and Unit 2 emergency diesel generators shortly after the engines had been shut down from previous runs

Inspectors identified that on two occasions, March 9 and March 27, the licensee performed technical specification required surveillance testing involving timing of the Unit 1 and Unit 2 emergency diesel generators shortly after the engines had been shut down from previous runs. Station procedures were inadequate in prescribing the conditions for performance of the tests. Procedures did not prevent preconditioning of the air start systems, fuel systems, and other engine and electrical components. Inadequate procedures for testing was considered a Non-Cited Violation of 10 CFR Appendix B, Criterion V, "Instruction Procedures and Drawings." The risk significance was very low (Green) because inspectors determined that testing practices had not led to declining performance of the diesel generators (Section 1R22).

Inspection Report# : [2001005\(pdf\)](#)

G

Significance: Dec 31, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Place the "A" Train of the Reactor Protection System in the Tripped Condition

On November 6, 2000, the Number 2 turbine control valve fast closure trip failed to cause a half scram as expected during a Unit 2 surveillance test. The licensee then repeated the test three more times and the fast closure trip successfully caused the expected half scram each time. The licensee declared the trip function operable without taking the actions of Technical Specification 3.1.A, Action 1 for an inoperable channel. Generic Letter 91-18 states that repetitive testing to achieve acceptable results without first identifying and correcting the root cause of any problem is not an acceptable means for verifying operability. A subsequent autopsy of the pressure switch for the control valve fast closure trip found evidence of fretting which produced metallic particles believed to have caused the initial failure. The inspectors determined the Number 2 turbine control valve fast closure trip had been declared operable without adequate justification. The failure to implement the required actions of Technical Specification 3.1.A-1 for an inoperable channel of the turbine control valve fast closure trip was considered a Non-Cited Violation (50-265/00-20-01). The finding was determined to be of very low safety significance due to the level of redundancy and diversity of the reactor protection system. During the period of time that the Number 2 turbine control valve fast closure trip was inoperable, a sufficient number of turbine control valve fast closure channels remained operable to result in an automatic scram, if required. Additionally, the turbine control valve fast closure trip is considered an anticipatory trip and, if inoperable, the reactor scram could still have been initiated by the reactor vessel high pressure or the average power range monitor high flux trips.

Inspection Report# : [2000020\(pdf\)](#)

G

Significance: Dec 15, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Seal Tops of Electrical Cabinets

The team identified that electrical cabinets in the auxiliary electric equipment room were not sealed at the top to protect equipment from water damage. The failure to seal the top of the cabinets was considered a Non-Cited Violation (NCV 50-254/00-16-01; NCV 50-265/00-16-01) of Operating Licenses DPR-29 and DPR-30, Section h.3.F (Section 1R05.2.b.1). The failure to seal the cabinets, a fire protection feature, involved very low risk (Green) because a fire protection defense-in-depth element, as described by MC 0609, Appendix F, Fire Protection Significance Determination Process, was not affected.

Inspection Report# : [2000016\(pdf\)](#)

G

Significance: Dec 15, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Provide Fire Stops in Cable Trays

The team identified that fire stops were not installed in divisional cable trays for which specified separation had not been maintained. The failure to install fire stops was considered a Non-Cited Violation (NCV 50-254/00-16-02; NCV 50-265/00-16-02) of Operating Licenses DPR-29 and DPR-30, Section H.3.F (Section 1R05.2.b.2). The failure to install fire stops, a fire protection feature, involved very low risk (Green) because a fire protection defense-in-depth element, as described by MC 0609, Appendix F, Fire Protection Significance Determination Process, was not affected.

Inspection Report# : [2000016\(pdf\)](#)

G

Significance: Nov 20, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Surveillance testing for torus temperature instrumentation components required by Technical Specification 4.2.F.1 had not been performed since installation in 1990 and 1991.

On October 4, 2000, the licensee identified that surveillance testing for torus temperature instrumentation components required by Technical

Specification 4.2.F.1 had not been performed since installation in 1990 and 1991. Condition Report Q2000-03512 was written to address the issue. Failure to perform testing of the instrumentation was considered a Non-Cited Violation of Technical Specification 4.2.F.1 (Section 4OA3). Failure to check instrument accuracy by this 18-month surveillance for Unit 1 and Unit 2 involved very low risk because when the surveillance was subsequently performed, instrument accuracy of the temperature indication loop was within acceptable tolerance.
Inspection Report# : [2000015\(pdf\)](#)



Significance: Sep 08, 1999

Identified By: NRC

Item Type: FIN Finding

A grounded resistor in the governor circuit that caused a failure of the Unit 2 reactor core isolation cooling pump

On August 26, 1999, the licensee identified a grounded resistor in the governor circuit that caused a failure of the Unit 2 reactor core isolation cooling pump. The inspectors used the significance determination process to identify this event as having very low safety significance for the loss of offsite power initiating event due to the availability of other mitigating equipment (Section 1R22.2).

Inspection Report# : [1999018\(pdf\)](#)



Significance: Sep 08, 1999

Identified By: NRC

Item Type: FIN Finding

Motor-operated valve dynamic testing

During motor-operated valve dynamic testing on August 4, 1999, the Unit 1 residual heat removal cross-tie valve (19A) failed to fully close. However, approximately one month after the failure occurred, the licensee's corrective action program did not include a plan to determine the cause of the failure or to address any potential generic considerations for other valves (Section 1R22.1). No safety functions were affected and no risk increase resulted from this particular valve failure.

Inspection Report# : [1999018\(pdf\)](#)

Significance: N/A Sep 08, 1999

Identified By: NRC

Item Type: FIN Finding

Removal of a high pressure injection pump in parallel with testing on an emergency diesel generator

On two occasions, the licensee's work authorization process allowed removal of a high pressure injection pump in parallel with testing on an emergency diesel generator. The inspectors identified that on one occasion, planned conditional core damage probability was increased to greater than that allowed by licensee administrative procedures. The actual risk was lower because the licensee did not perform the work on both systems together. The significance of this finding was not assessed by the significance determination process due to the instantaneous risk involved and the fact that the work was not performed as planned following NRC discussions with plant management (Section 1R13).

Inspection Report# : [1999018\(pdf\)](#)



Significance: Sep 03, 1999

Identified By: NRC

Item Type: FIN Finding

Copy of post-modification test not retained

The inspectors identified that the Unit 1 post modification test for a design change package on the fuel transfer pump was not retained by the licensee. This item had very low risk significance. The licensee had retained the Unit 2 test and had signature evidence that the Unit 1 test was performed.

Inspection Report# : [1999017\(pdf\)](#)



Significance: Jul 20, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Corrective Action for Flooding Procedures.

Corrective actions were not implemented for an inadequate flood protection procedure originally identified by the licensee in 1997. The procedures did not provide adequate instructions to protect the plant structurally under the forces of severe flood waters. This issue was inappropriately closed in the corrective action program without resolution. This was a non-cited violation for inadequate corrective action. A qualitative risk assessment of the impact of the procedure deficiencies concluded that the issues were of low risk significance since adequate time would be available to make procedure changes and take action during a flooding event. (Section 1R06).

Inspection Report# : [1999011\(pdf\)](#)

G

Significance: Jul 16, 1999

Identified By: NRC

Item Type: FIN Finding

Corrective actions to address a Unit 1 emergency diesel generator failure

Corrective actions to address a January 1998 Unit 1 emergency diesel generator (EDG) failure to start were postponed in some cases and in others only partially completed. (Reference Report Section 4OA1.3, page 5) This item was categorized by the significance determination process as being of low risk significance based on occasional EDG start failures, redundant EDGs and available off site power.

Inspection Report# : [1999012\(pdf\)](#)

G

Significance: Jul 16, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Excessive thrust conditions, found during testing of motor operated valves

Excessive thrust conditions, found during testing of motor operated valves (MOVs) from March 1997 through July 2, 1999, were not identified to management and did not receive appropriate corrective action to preclude recurrence. As a result, the cause of the problem was not identified and appropriate corrective action was not taken. This is a non-cited violation. This item was categorized by the significance determination process as being of low risk significance. (Reference Report Section 4OA1.4) Since nine of the ten valves found outside the acceptable thrust windows functioned as required during testing, the issue was determined to be of low risk significance and was categorized as "Green."

Inspection Report# : [1999012\(pdf\)](#)

G

Significance: Jul 15, 1999

Identified By: NRC

Item Type: FIN Finding

The surveillance procedure for evaluating thermal performance of the residual heat removal heat exchangers

The surveillance procedure for evaluating thermal performance of the residual heat removal heat exchangers contained errors which resulted in the licensee overestimating the heat removal capability of the 1A heat exchanger. This item had very low risk significance, since the heat exchanger was still capable of removing its design heat load.

Inspection Report# : [1999014\(pdf\)](#)

G

Significance: Jul 15, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Three Examples of Design Control Relating to Original Plant Design

A non-cited design control violation with multiple examples was identified during close out of two unresolved items from the architect-engineer inspection (50-254/265-98201). The issues dealt with ensuring adequate net positive suction head for the emergency core cooling system pumps, ensuring the residual heat removal service water piping was analyzed for its design condition, and determining the adequacy of a thermal relief valve. All the examples in the Non-Cited Violation resulted from original design deficiencies. The licensee's analyses showed that the pumps were operable. Therefore, this issue screened out of the significance determination process as having very low risk significance

Inspection Report# : [1999014\(pdf\)](#)

Barrier Integrity

G

Significance: Jun 30, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Corrective Action for Delinquent ASME Code Work Packages

The inspectors identified a failure of the corrective action program where ASME Code Class 1, 2 and 3 Replacement and Repair program requirements for work package reviews were not met. On four occasions the licensee did not realize that the Code work packages were not meeting 10 CFR 50.55a ASME Code requirements. In each case, corrective actions were not taken to correct the situation. Failure to promptly identify and correct the failure to meet ASME code requirements for work packages was considered a Non-Cited Violation of 10 CFR 50, Appendix B, Criterion XVI. The safety significance of this issue was considered very low based on the absence of adverse consequences and the fact that no technical problems were identified.

Inspection Report# : [2000008\(pdf\)](#)



Significance: Jan 19, 2000

Identified By: NRC

Item Type: FIN Finding

Failure not classified as a functional failure under the Maintenance Rule

A failure of a Unit 2 containment spray system valve was not properly classified as a maintenance rule functional failure under the maintenance rule program. This individual classification failure was corrected and did not impact the licensee's ability to demonstrate maintenance effectiveness for the system. The valve failure was considered to be of low risk significance using the Significance Determination Process because the other train of containment spray was fully functional.(Section 1R12)

Inspection Report# : [1999025\(pdf\)](#)



Significance: Jan 19, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Overthrust of Motor-Operated Valve 2-1001-34A

During surveillance testing on December 12, 1999, residual heat removal torus spray/test return valve 2-1001-34A closed with 116,831 pounds of thrust which was almost double the previous as-left thrust setting of the valve. This value also exceeded the seismic thrust limit for the valve.

Corrective actions recommended to determine extent of condition after failure of a similar valve in 1998 were not taken. This was considered to be a non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI. The excessive thrust problem was considered to have low risk significance because the valve remained operable.

Inspection Report# : [1999025\(pdf\)](#)



Significance: Nov 20, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Three examples of failure to follow procedures.

On November 3, 2000, the 1B channel of the reactor protective system flow biased neutron flux trip was found to be inoperable during reactor startup from the Unit 1 refueling outage 16. The licensee determined that poor wiring practices, poor second verification practices, and inadequate post maintenance testing of nuclear instrumentation wiring led to the malfunction. Maintenance workers failed to follow the wiring requirements in the work request, did not use lift and land sheets when removing and re-terminating the wires, and failed to label the wires which were lifted during the maintenance activity. Failure to follow the procedure (work request) for wiring was considered an example of a Non-Cited Violation. The risk significance of this event was very low because of the short amount of time that the unit was in Mode 1, because the "A" channel of flow biased trip setpoints was still operable, and because the wiring error actually caused the flow biased neutron flux trip to be more conservative (Example A). On October 14, 2000, during disassembly of the Unit 1 reactor for refueling outage 16, reactor service technicians opened a flanged connection of the reactor head vent piping with approximately 5 to 8 psig steam pressure still in the reactor vessel and initiated a steam release to the refueling floor area which lasted for several hours. Numerous procedural, process, and communication problems contributed to the event. Personnel safety, procedure adherence, procedure adequacy, and lack of control of reactor vessel disassembly activities were all concerns brought out by this event. The failure to follow procedures during vessel disassembly was considered an example of a Non-Cited Violation. The risk significance was evaluated as very low because the amount of reactor vessel inventory released to secondary containment was very low, and secondary containment integrity requirements were met (Example B). On October 22, 2000, workers attempting to replace a local power range monitor inadvertently lifted the local power range monitor tube off its seat in the reactor vessel bottom head. This caused highly contaminated radioactive water from the bottom of the reactor vessel to drain directly onto the workers. The draining stopped immediately after the local power range monitor tube was released and resealed back into the vessel. One worker was contaminated such that a meter held to his body read 5 rem per hour on contact. Extraordinary actions by radiation protection workers resulted in the removal of the majority of the highly contaminated material quickly, such that the overall external shallow dose equivalent for the individual was estimated at 2.784 rem, and the internal dose received by the worker was estimated at 45 millirem. Problems involved in this event included workers not adhering to the instructions by radiation protection technicians, workers not having procedures with them and performing steps of two different procedures concurrently, and workers not informing operators or radiation protection technicians that they were taking actions that could allow water to be drained from the reactor vessel. In addition, the procedures were not adequate to control the work. The failure to follow procedures during local power range monitor replacement was considered an example of a Non-Cited Violation. The safety significance of this event was very low because sufficient makeup capacity to fill the vessel was available even if the local power range monitor failed to reseat, the local power range monitor tube was resealed quickly and the reactor vessel drainage stopped, and the contamination was mostly external and was removed quickly (Example C).

Inspection Report# : [2000015\(pdf\)](#)



Significance: Sep 08, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to promptly correct a design deficiency with the standby gas treatment system.

The licensee discovered during surveillance testing on August 23, 1999, that both standby gas treatment trains may not have functioned as designed during a postulated loss of Bus 19. The item had been previously identified in 1992 but not adequately corrected. No design change or design evaluation justifying the degraded condition had been performed. Failure to take corrective action for this design problem was a Non-cited Violation of Criterion XVI of 10 CFR Part 50, Appendix B. This problem resolution violation could not be classified with a risk significance due to its programmatic nature. However, since 1992 the inspectors were not aware of any failures of the administrative controls that would have jeopardized standby gas treatment operability. Therefore, from an equipment standpoint, this finding has a very low risk significance (Section 40A1).

Inspection Report# : [1999018\(pdf\)](#)



Significance: Jul 20, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Secondary Containment Penetration.

Secondary containment integrity did not exist from 1981 until May 1997 due to an unsealed 1 inch diameter penetration. This was a non-cited violation of Technical Specification 3.7 (Section 40A3). This issue had very low risk significance. Test results showed that the standby gas treatment system could still maintain negative pressure in secondary containment with leak pathways up to 4 inches in diameter.

Inspection Report# : [1999011\(pdf\)](#)

Emergency Preparedness

Occupational Radiation Safety

Significance: N/A Jul 13, 2001

Identified By: NRC

Item Type: FIN Finding

A supplemental inspection was performed by the NRC to assess the licensee's evaluation associated with the failure to provide adequate radiological planning to maintain radiological doses as-low-as

This supplemental inspection was performed by the NRC to assess the licensee's evaluation associated with the failure to provide adequate radiological planning to maintain radiological doses as-low-as-is-reasonably-achievable (ALARA) during the Fall 2000 Unit 1 outage. This performance issue was previously characterized as having low to moderate risk significance (White) in NRC Inspection Report No. 50-254/00-18 (DRS) and 50-265/00-18(DRS). During this supplemental inspection, performed in accordance with Inspection Procedure 95001, the inspector concluded that the licensee performed a comprehensive evaluation of the radiological planning weaknesses. The licensee's evaluation attributed the planning weaknesses to ineffective job management by the radiation protection and construction staffs (root cause). In determining the root cause, the licensee identified contributing factors which included ineffective management of work force changes and drywell temperature control, inadequate monitoring of job duration and identification of changes in duration, and inadequate consideration of work location dose rates and contamination levels when developing revised job dose estimates. The inspector reviewed the licensee's corrective actions, both completed and planned, and concluded that the corrective actions appeared to address the identified root cause and contributing causes. In particular, the licensee implemented an ALARA job standard to provide additional guidance to the staff for identifying and managing changes in radiological work. The purpose of the job standard was to fully identify the changes (both prior to the work and based on the as-found conditions) and to communicate the changes to the station ALARA committee so that the planning could be adequately evaluated to determine if replanning was necessary. Initial implementation of the standard during the Spring 2001 Unit 1 recirculation pump seal replacement was adequate; however, the inspector observed weaknesses in the understanding of staff concerning when the standard was to be applied. Due to the licensee's acceptable performance in assessing the radiological planning problems, the White finding associated with this issue will only be considered in assessing plant performance for a total of four quarters in accordance with the guidance in NRC Manual Chapter 0305, "Operating Reactor Assessment Program."

Implementation of the licensee's corrective actions will be reviewed during a future inspection.

Inspection Report# : [2001013\(pdf\)](#)



Significance: Nov 27, 2000

Identified By: NRC

Item Type: FIN Finding

Radiological dose for the Safety Relief Valve (SRV) replacement work results in a determination of a White Finding.

Planning problems caused the dose for the Safety Relief Valve (SRV) replacement work completed during refueling outage Q1R16 to exceed its projected dose by more than 50 percent. Elevated dose rates were encountered in the drywell as a result of cobalt 60 plate-out. The drywell cooling/ventilation system was out of service for maintenance and testing, significantly elevating temperatures in the drywell. Also, less experienced

workers performed the SRV job NRC Supplemental Inspection (Report 50-254/01-13, 50-265/01-13): During this supplemental inspection, performed in accordance with Inspection Procedure 95001, the inspector concluded that the licensee performed a comprehensive evaluation of the radiological planning weaknesses. The licensee's evaluation attributed the planning weaknesses to ineffective job management by the radiation protection and construction staffs (root cause). In determining the root cause, the licensee identified contributing factors which included ineffective management of work force changes and drywell temperature control, inadequate monitoring of job duration and identification of changes in duration, and inadequate consideration of work location dose rates and contamination levels when developing revised job dose estimates. The inspector reviewed the licensee's corrective actions, both completed and planned, and concluded that the corrective actions appeared to address the identified root cause and contributing causes. In particular, the licensee implemented an ALARA job standard to provide additional guidance to the staff for identifying and managing changes in radiological work. The purpose of the job standard was to fully identify the changes (both prior to the work and based on the as-found conditions) and to communicate the changes to the station ALARA committee so that the planning could be adequately evaluated to determine if replanning was necessary. Initial implementation of the standard during the Spring 2001 Unit 1 recirculation pump seal replacement was adequate; however, the inspector observed weaknesses in the understanding of staff concerning when the standard was to be applied. Due to the licensee's acceptable performance in assessing the radiological planning problems, the White finding associated with this issue will only be considered in assessing plant performance for a total of four quarters in accordance with the guidance in NRC Manual Chapter 0305, "Operating Reactor Assessment Program." Implementation of the licensee's corrective actions will be reviewed during a future inspection.

Inspection Report# : [2000018\(pdf\)](#)

Inspection Report# : [2001013\(pdf\)](#)

Public Radiation Safety



Significance: Jul 02, 1999

Identified By: NRC

Item Type: FIN Finding

Lack of Documentation for Offsite Dose Calculation Manual Revisions

The inspectors identified a lack of documentation for the licensee's review of changes to the Offsite Dose Calculation Manual. Although an independent technical review determined that the changes maintained a sufficient level of effluent control, the licensee did not maintain documentation to support this determination. (Section 2PS3.3) This item had very low risk significance based on the results of the independent technical review.

Inspection Report# : [1999013\(pdf\)](#)

Physical Protection



Significance: Jun 23, 2000

Identified By: NRC

Item Type: FIN Finding

Contingency Response Performance Deficiencies

Deficiencies were noted in the licensee's performance in the contingency response element of the Physical Protection Cornerstone. (The details of this finding are Safeguards Information and are required to be withheld from public disclosure.)

Inspection Report# : [2000201\(pdf\)](#)

Significance: N/A Jun 14, 2001

Identified By: NRC

Item Type: FIN Finding

A supplemental inspection was performed to assess the licensee's root cause evaluation related to exercise failures during two of four force-on-force contingency exercises.

This supplemental inspection was performed to assess the licensee's root cause evaluation related to exercise failures during two of four force-on-force contingency exercises. This performance issue was characterized as a White finding having a low to moderate risk significance in NRC Inspection Report No. 50-254; 265/00-201. This supplemental inspection determined that the licensee had performed a comprehensive evaluation which identified the root cause and contributing factors associated with the exercise failures noted above. The licensee's evaluation identified that the root cause of the exercise finding was a failure to effectively accomplish exercise control activities. Contributing factors were human performance errors by some security force response personnel and controllers, a lack of effective controller training, vulnerabilities in some defensive positions, and command and control activities. Licensee corrective actions were implemented to address the root cause and each contributing factor. Those actions appeared effective in correcting the identified deficiencies. Therefore, the White performance finding associated with the exercise failures was closed.

Inspection Report# : [2001011\(pdf\)](#)



Significance: Nov 17, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

An unattended security storage container containing Safeguards Information was found unlocked and open for approximately two hours.

An unattended security storage container containing Safeguards Information was found unlocked and open for approximately two hours (Section 40A3). The inspector reviewed the risk significance of this finding and determined the risk to be very low since no Safeguards Information was compromised and there have not been greater than two similar findings in four quarters.

Inspection Report# : [2000019\(pdf\)](#)

Miscellaneous

Significance: N/A Jun 30, 2000

Identified By: NRC

Item Type: FIN Finding

Cross-Cutting Issues: Human Performance

Inspectors found that several recent events which affected plant operations and/or had the potential to adversely affect personnel safety involved elements of human performance deficiencies. An apparent adverse trend in human performance during the period May 5, 2000 to June 30, 2000, was evidenced by the following incidents. A senior reactor operator failed to implement a Technical Specification surveillance requirement for removing an emergency diesel generator from service. Control room operators experienced problems controlling reactor vessel water level during post-scrum recovery efforts and failed to close a pair of drain valves during a pre-start of the Unit 1 high pressure coolant injection system.

Maintenance personnel errors were involved in a reactor trip on May 5, and spread of contamination in the 2B reactor water cleanup room when a fitting was disconnected under 1000 psig pressure on June 10 (Section 40A.4).

Inspection Report# : [2000007\(pdf\)](#)

Significance: N/A Jun 30, 2000

Identified By: NRC

Item Type: FIN Finding

Weakness in Corrective Action Program.

The corrective action program was fully functional and typically identified and corrected conditions adverse to quality. In general, station personnel effectively identified and entered problems into the corrective action program using problem identification forms (PIFs). The significance threshold for entering issues into the program appeared appropriate. However, over the past year issues were identified at Quad Cities where the corrective action process was not vigorously implemented to address the issues. In addition, the licensee's corrective action process had lost over two items a month since January 2000. Although none of these lost items were considered safety significant, and thousands of other action items were opened and closed in that time frame, this represented a weakness in the licensee's program.

Inspection Report# : [2000008\(pdf\)](#)



Significance: Apr 01, 2000

Identified By: Licensee

Item Type: NCV NonCited Violation

On September 10, 1999, the control room emergency ventilation system was inoperable

On September 10, 1999, the licensee identified that the control room emergency ventilation system was inoperable. Flow rates were out-of-specification due to repositioning of a ventilation damper 9 days previously. The action statement for Technical Specification 3.8.D allowed the system to be inoperable for 7 days. Failing to comply with the allowed outage time requirements was considered a non-cited violation of Technical Specification 3.8.D. This issue was screened as GREEN (very low risk significance) after a Phase 1 Significance Determination Process review (Section 40A3).

Inspection Report# : [2000003\(pdf\)](#)

Significance: N/A Feb 29, 2000

Identified By: NRC

Item Type: FIN Finding

Human Performance Problems

Inspectors found that errors in review, coordination, and implementation of maintenance activities during or near Unit 2 refueling outage number 16 (January and February 2000) led to inoperable safety systems. Operators were unaware that Technical Specification or administrative limiting condition for operation action statements were entered or exceeded. Required nuclear instruments and emergency diesel generators were not operable during some fuel moves (Sections 1R04 and 1R20.4), automatic depressurization system valves were taken out of service while required

(Section 1R20.2), the high pressure coolant injection system was inoperable due to incomplete maintenance (Section 1R19.1), and safe shutdown requirements were not properly addressed (Section 1R20.5). Other events included technician errors in which electrical jumpers were installed in incorrect locations for logic used by the reactor protective system and by the emergency core cooling system. While the risk of the individual events was very low, an increase in maintenance activity problems was evident.

Inspection Report# : [2000001\(pdf\)](#)

Significance: N/A Dec 03, 1999

Identified By: NRC

Item Type: FIN Finding

reactor coolant system leakage performance indicator

The inspectors completed verification inspection of the reactor coolant system leakage performance indicator and found very minor discrepancies which did not affect the validity of the reported performance indicator (Section 4OA2.2).

Inspection Report# : [1999023\(pdf\)](#)

Significance: N/A Dec 03, 1999

Identified By: NRC

Item Type: FIN Finding

the public radiation safety performance indicator

The inspectors verified that the licensee had properly evaluated and reported the public radiation safety performance indicator (Section 4OA2.7).

Inspection Report# : [1999023\(pdf\)](#)

Significance: N/A Dec 03, 1999

Identified By: NRC

Item Type: FIN Finding

verification inspection for the residual heat removal unavailability performance indicator.

The inspectors completed the verification inspection for the residual heat removal unavailability performance indicator. The inspectors identified that the licensee had not included 12.5 hours of residual heat removal system unavailability during system logic testing in January 1999. The licensee explained that the rules for system availability, at that time, did not require documenting the safety system unavailability. The licensee elected to report these hours in a future submittal. The extra hours would not cause the residual heat removal system unavailability to cross a color threshold (Section 4OA2.1).

Inspection Report# : [1999023\(pdf\)](#)

Significance: N/A Dec 03, 1999

Identified By: NRC

Item Type: FIN Finding

verification inspection of the licensee's performance indicators

The inspectors completed verification inspection of the licensee's performance indicators for scrams, scrams with loss of normal decay heat removal, reactor coolant specific activity, and primary containment leakage. No findings were identified (Section 4OA2).

Inspection Report# : [1999023\(pdf\)](#)

Significance: N/A Oct 20, 1999

Identified By: NRC

Item Type: FIN Finding

The licensee corrected discrepancies with the safety system functional failure indicator.

The licensee corrected discrepancies with the safety system functional failure indicator previously identified by the NRC in the September report of performance indicator data. The NRC exercised enforcement discretion and did not issue a Notice of Violation (Section 4OA3).

Inspection Report# : [1999020\(pdf\)](#)

Significance: N/A Oct 20, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Event Reporting Failure

The inspectors identified two violations of NRC reporting requirements. The licensee failed to notify the NRC within 1 hour of identifying a condition in which the control room emergency ventilation system was found outside the design basis. The licensee also failed to notify the NRC within 4 hours of an event in which the reactor core isolation cooling system was unable to perform a required safety function. The licensee made late notifications, submitted a licensee event report for the control room emergency ventilation system, and planned to submit a licensee event report for the reactor core isolation cooling system failure. These were considered two non-cited violations (Plant Status).

Inspection Report# : [1999020\(pdf\)](#)

Significance: N/A Oct 20, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Notification Failure Under 50.72

The inspectors identified two violations of NRC reporting requirements. The licensee failed to notify the NRC within 1 hour of identifying a condition in which the control room emergency ventilation system was found outside the design basis. The licensee also failed to notify the NRC within 4

hours of an event in which the reactor core isolation cooling system was unable to perform a required safety function. The licensee made late notifications, submitted a licensee event report for the control room emergency ventilation system, and planned to submit a licensee event report for the reactor core isolation cooling system failure. These were considered two non-cited violations (Plant Status).

Inspection Report# : [1999020\(pdf\)](#)



Significance: Oct 08, 1999

Identified By: Licensee

Item Type: FIN Finding

The licensee identified errors in the PI Occupational Radiation Safety Performance Indicator (PI)

Occupational Radiation Safety Performance Indicator (PI). The licensee identified errors in the PI reported to the NRC. Originally, the licensee reported six technical specification high radiation area incidents, which resulted in a white PI. After identifying a missed occurrence and a misinterpretation of the PI criteria, the licensee determined that only two incidents were applicable to the PI, which resulted in the PI indicating that performance was in the licensee response band (green).

Inspection Report# : [1999022\(pdf\)](#)

Significance: SL-IV Aug 14, 2001

Identified By: NRC

Item Type: VIO Violation

FAILURE TO ACCURATELY REPORT PERFORMANCE INDICATOR INFORMATION

The inspectors identified that the licensee failed to report fault exposure hours for the failure of a fuel oil transfer solenoid valve to open during the Unit 2 emergency diesel generator (EDG) 18 month endurance test. The second quarter 2001 data reported to the NRC showed no fault exposure hours recorded for Unit 2 EDG. However, the inspectors found that fault exposure hours from a failed endurance run on May 1, 2001, should have been reported since only the time of the failure's discovery was known with certainty. Fault exposure hours going back to the last successful load test of the EDG on January 14, 2000, were not included in the licensee's July 2001 performance indicator data submittal for the Unit 2 Emergency Alternating Current (AC) - Safety System Unavailability performance indicator. Had the performance indicator data been properly reported, the performance indicator color would have been Red. Failure to properly report the performance indicator was considered a Severity Level IV violation of 10 CFR 50.9.

Inspection Report# : [2001012\(pdf\)](#)

Significance: N/A May 25, 2001

Identified By: NRC

Item Type: FIN Finding

Adverse performance trend.

The corrective actions to prevent recurrence for an event that resulted in an inadvertent steam release during a breach of the reactor pressure boundary proved to be ineffective to prevent a similar event that occurred six months later. Additionally, corrective actions for the second event were narrow in scope and did not address the aspects in common with the first event. Condition report Q2001-01976 was issued to address the potential common issues. The inspectors concluded that the issue was more than minor since the failure to fully identify and correct deficiencies could be reasonably viewed as a precursor to a significant event. The inspectors reviewed the applicability of the issue with respect to program cornerstones and determined that the issue did not impact a cornerstone. However, this issue contained extenuating circumstances in that the full extent of condition for the October event was not completely identified and corrected, allowing a similar event in April. The combination of these two events indicates an adverse performance trend.

Inspection Report# : [2001009\(pdf\)](#)

Significance: N/A May 25, 2001

Identified By: NRC

Item Type: FIN Finding

Corrective action program problems.

The inspectors concluded that in general the corrective action program was a complete program containing all the necessary attributes to successfully identify and correct issues at Quad Cities. However, over the past year there were several instances of difficulties with problem identification, evaluation and resolution. Most of these were documented in previous findings and violations in inspection reports. In general, these issues have been recognized, and actions have been taken to address them. For most of the issues it is too soon to fully evaluate the effectiveness of these actions so effectiveness is still to be determined. During this inspection, three areas of corrective action program problems were identified. These were the failure to properly implement the M&TE program, several instances when condition reports should have been written and they were not, and, failure to address common causes for similar steam release events on the reactor vessel during the October refueling outage, and in the April maintenance outage.

Inspection Report# : [2001009\(pdf\)](#)

Significance: N/A May 25, 2001

Identified By: NRC

Item Type: FIN Finding

Test problems on condition reports not identified.

In May of 2001, an inspector observing a surveillance noted that instrument maintenance technicians had difficulty conducting calibrations of differential transmitters on the Unit 2 station blackout diesel air intake filter differential pressure detectors. The results were not repeatable and

indicated some out-of-tolerance readings on both instruments. No condition reports were generated for either the difficulty with the tests or the apparent out-of-tolerance results until inspectors intervened. Condition Report Q2001-1549 was issued 12 days later and subsequently, Condition Reports Q2001-1474 and Q2001-1475 were written for the out-of-tolerance readings. The inspectors reviewed the significance of not identifying test problems on condition reports and concluded that the issue was more than a minor issue because if left uncorrected, the issue could become a more significant safety concern. The actual effect on the station blackout diesel was minimal since it did not directly impact operation of the equipment and another diesel was available. However, this corrective action finding is a cross-cutting issue for corrective action process performance and is assigned No Color.

Inspection Report# : [2001009\(pdf\)](#)

Significance: N/A May 25, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to assure that measuring and test equipment was properly calibrated.

In April of 2001, the station Nuclear Oversight staff identified that measurement and test equipment which was found to be out-of-calibration during post-use verifications was not evaluated as required by plant procedure. Also, condition reports on these out-of-tolerance conditions were not written when required by procedures. The licensee initiated a review which identified 159 items of out-of-tolerance equipment which had not been evaluated appropriately. The use of these items was evaluated and appropriate recovery actions taken. Failure to assure that measuring and test equipment used in 2000 and 2001 was properly calibrated was a Non-Cited Violation of 10 CFR 50, Appendix B. The inspectors reviewed the significance of not evaluating out-of-tolerance equipment and determined that the issue was more than a minor issue because if left uncorrected, the issue could become a more significant safety concern. However, since this is a corrective action concern, and no specific cornerstone was impacted, this item is assigned No Color.

Inspection Report# : [2001009\(pdf\)](#)

Significance: N/A May 16, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to report performance indicator data accurately.

Inspectors found that the licensee reported safety system functional failure data improperly. The improperly reported safety system functional failure involved failure of the Unit 2 intermediate range nuclear monitors. Had this been reported properly, it would have caused the safety system functional failure performance indicator for Unit 2 to cross the threshold from Green to White in the first quarter of 2000. The actual submittal showed performance indicator data in the licensee response or Green band. Because a performance indicator would have changed from Green to White, this was considered a Non-Cited Violation of 10 CFR 50.9.

Inspection Report# : [2001008\(pdf\)](#)

Significance: N/A Dec 15, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Technical Errors in Appendix R Safe Shutdown Procedures

The inspectors identified a number of technical errors in safe shutdown procedure QCARP 0050-02. The procedure errors were considered a Non-Cited Violation (NCV 50-254/00-16-03; NCV 50-265/00-16-03) of 10 CFR 50, Appendix R, Section III.L.5 (Section 40A4.1). The technical errors were determined to have no appreciable risk significance (No Color) because the errors would not have impacted safe shutdown. However, the errors were another example of a previously identified adverse trend in human performance.

Inspection Report# : [2000016\(pdf\)](#)

Significance: N/A Nov 20, 2000

Identified By: NRC

Item Type: FIN Finding

The inspectors found that a number of human performance errors during the Q1R16 refueling outage period resulted in undesirable consequences and constituted an adverse trend.

The inspectors found that a number of human performance errors during the Q1R16 refueling outage period, October 14 to November 3, resulted in undesirable consequences and constituted an adverse trend in human performance. These errors resulted from problems with procedure adherence, control of work activities, communications, and procedure quality. Resulting problems included venting the pressurized reactor to containment near maintenance workers who were not adequately prepared for the subsequent release of steam and contamination, inadvertently draining from the reactor vessel bottom head area resulting in significant personnel contamination, and a number of wiring and second verification errors during electrical modifications and maintenance. Although most of these wiring errors were caught and corrected during testing, one error was not caught and resulted in the inoperability of one of two channels of the reactor protective system flow biased trips. While none of these events resulted in equipment performance outside the licensee response band (GREEN), the overall trend indicated problems with adhering to procedures, proper performance of second verification techniques, and the communication and coordination of activities (Section 40A4).

Inspection Report# : [2000015\(pdf\)](#)



Significance: Jul 16, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

the repetitive problem of excessive use of overtime.

The root cause report and the corrective actions, approved by the Plant Operations Review Committee and the Corrective Action Review Board, did not fully address the repetitive problem of excessive use of overtime. There were 177 instances between February 1 and 28, 1999, where station procedures were not followed to control overtime of plant workers. Further corrective actions were being developed to ensure that overtime violations did not continue. There were no known incidents where the excessive use of overtime directly impacted or affected the safety of the plant; however, the repetitive failure to follow procedures to control overtime is a non-cited violation. (Reference Report Section 4OA1.4, page 8)
Inspection Report# : [1999012\(pdf\)](#)

Last modified : March 29, 2002

Quad Cities 2

Initiating Events

G**Significance:** Aug 15, 2000

Identified By: NRC

Item Type: FIN Finding

Electrical ring bus caused electrical circuit breakers 1-3 and 3-4 to open.

On July 18 a fault on one of the offsite power feeds to the Quad Cities electrical ring bus caused electrical circuit breakers 1-3 and 3-4 to open. This action isolated the fault and resulted in a Unit 2 turbine generator and reactor trip. The response by the switchyard resulted in a loss of power on the Unit 1 reserve auxiliary transformer. The response to the reactor scram on Unit 2 was as designed. Operator performance during this event was determined to have been acceptable. The inspectors reviewed the risk significance of this initiating event for both units using the Significance Determination Process. All mitigating equipment was available for Unit 2 following the uncomplicated trip, and this event was screened as having very low risk significance (GREEN.) One of two auxiliary transformers for Unit 1 was de-energized during the event, but the unit did not trip and all mitigating equipment was available. Therefore, this event was also screened as GREEN for Unit 1.

Inspection Report# : [2000011\(pdf\)](#)G**Significance:** Jun 30, 2000

Identified By: NRC

Item Type: FIN Finding

operators did not control reactor vessel inventory

During operator response to a reactor trip on May 22, operators did not control reactor vessel inventory prior to the operating reactor feedwater pump tripping on high reactor vessel water level. Additionally, operators had not started a reactor feedwater pump by the time a reactor low level condition existed. This resulted in a second engineered safety feature actuation. The inspectors reviewed this issue using the significance determination process for a transient with a loss of feedwater and determined this was of very low risk significance (Section 1R14).

Inspection Report# : [2000007\(pdf\)](#)G**Significance:** Jun 30, 2000

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

Maintenance work and emerging work - 2B reactor water cleanup pump seal line disconnect

On June 10, maintenance workers disconnected a seal line to the 2B reactor water cleanup pump that was not properly isolated by the out-of-service tagout and discovered that the line was pressurized to about 1000 psig. The resulting spray caused a spread of contamination in the room and a potential hazard to the workers. No personnel injuries occurred as a result of this event. Failure to hang the proper out-of-service for the maintenance activity was considered a Non-Cited Violation (NCV) of Technical Specifications. The inspectors considered this event of very low safety significance due to the ability to isolate the leak and the availability of mitigating equipment (Section 1R13).

Inspection Report# : [2000007\(pdf\)](#)G**Significance:** Jun 30, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

adjustments to the wrong instrument, causing a reactor trip on Unit 2

On May 5 an instrument technician performing a calibration of the main steam line high steam flow detectors made adjustments to the wrong instrument, causing a reactor trip on Unit 2. Failure to implement the calibration procedure for the proper channel instrument was considered an NCV of Technical Specification 6.8.A.1. The safety significance of this event was minimal due to the availability of mitigating equipment (Section 4OA.3).

Inspection Report# : [2000007\(pdf\)](#)G**Significance:** Feb 29, 2000

Identified By: NRC

Item Type: FIN Finding

Ice Melt Valve Failure

Failure of the ice melt valve on January 22, 2000, resulted in some ice formation in the intake area. Operator detection and compensatory measures prevented the ice from affecting the water level in the intake. The valve gate had become detached from the stem. The failure of the ice melt valve was of very low risk significance because it did not result in an increased initiating event frequency for loss of both normal and ultimate heat sinks. The inspectors compared an estimated valve failure rate to the licensee's evaluation. The licensee's evaluation excluded this initiating event from the probabilistic risk assessment because no precursor event had occurred in the history of the station.

Inspection Report# : [2000001\(pdf\)](#)

G

Significance: Dec 29, 2001

Identified By: NRC

Item Type: FIN Finding

DEGRADED AND INADEQUATELY TESTED TRANSFORMER AND PROTECTIVE RELAYING RESULTS IN INCREASE IN TRANSIENT AND LOSS OF OFFSITE POWER INITIATING EVENT FREQUENCIES

On August 2, 2001, Unit 2 experienced a transformer failure, reactor scram, and loss of offsite power. The inspectors determined that a lightning strike in conjunction with age related degradation and inadequate testing of the Unit 2 main power transformer and switchyard protective relaying contributed to the event and resulted in an increase in the initiating event frequency for plant transients and a loss of offsite power. The inspectors determined the risk significance of this issue to be very low since all remaining mitigating systems were available to mitigate the transformer rupture, reactor scram, and loss of offsite power.

Inspection Report# : [2001017\(pdf\)](#)

G

Significance: Mar 31, 2001

Identified By: Licensee

Item Type: NCV NonCited Violation

Operator-induced loss of feedwater heating transient

On March 23 the inspectors reviewed an operator-induced loss of feedwater heating transient that occurred on Unit 2. The inspectors found that the operators failed to immediately recognize a reduction in feedwater heating and take prompt action to effectively control the increasing reactor power. The transient resulted in a 33 degree decrease in feedwater inlet temperature adding sufficient positive reactivity to increase reactor thermal power from 2511 to 2578 megawatts, approximately 102.7 percent of maximum licensed power. Exceeding Quad Cities License DPR-30 maximum thermal power of 2511 megawatts thermal was considered a Non-Cited Violation. The risk significance of this event was determined to be very low (Green) due to the relatively small increase a 2.7 percent power change will have on overall core thermal limits (Section 1R14).

Inspection Report# : [2001005\(pdf\)](#)

G

Significance: Sep 08, 1999

Identified By: NRC

Item Type: FIN Finding

Maintenance rule functional failures

Problematic feedwater level control equipment on Unit 2 resulted in two reactor vessel water level transients in early 1999. The licensee initially evaluated these two events as not being maintenance rule functional failures, which was inappropriate. An NRC inspection and a subsequent licensee self-assessment identified the error. The licensee re-evaluated the two transients as being functional failures on July 28, 1999. This issue did not increase the frequency of initiating events and therefore was an issue of very low safety significance (Section 1R12).

Inspection Report# : [1999018\(pdf\)](#)

G

Significance: Jul 20, 1999

Identified By: NRC

Item Type: FIN Finding

a 3-inch increase in reactor water level

On Unit 2, a 3-inch increase in reactor water level occurred and required operators to take manual control of the system. Various failures in the level control systems have resulted in about ten similar events since January 1, 1999, in which operators were required to intervene to prevent level transients that could have resulted in a reactor trip. Since the plant effect of the failures is limited to an uncomplicated reactor trip, the failures were considered to be of low risk significance using the significance determination process (Section 1R03).

Inspection Report# : [1999011\(pdf\)](#)

Mitigating Systems

G

Significance: Dec 31, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Place the "A" Train of the Reactor Protection System in the Tripped Condition

On November 6, 2000, the Number 2 turbine control valve fast closure trip failed to cause a half scram as expected during a Unit 2 surveillance test. The licensee then repeated the test three more times and the fast closure trip successfully caused the expected half scram each time. The licensee declared the trip function operable without taking the actions of Technical Specification 3.1.A, Action 1 for an inoperable channel. Generic Letter 91-18 states that repetitive testing to achieve acceptable results without first identifying and correcting the root cause of any problem is not an acceptable means for verifying operability. A subsequent autopsy of the pressure switch for the control valve fast closure trip found evidence of fretting which produced metallic particles believed to have caused the initial failure. The inspectors determined the Number 2 turbine control valve fast closure trip had been declared operable without adequate justification. The failure to implement the required actions of Technical Specification 3.1.A-1 for an inoperable channel of the turbine control valve fast closure trip was considered a Non-Cited Violation (50-265/00-20-01). The finding was determined to be of very low safety significance due to the level of redundancy and diversity of the reactor protection system. During the period of time that the Number 2 turbine control valve fast closure trip was inoperable, a sufficient number of turbine control valve fast closure channels remained operable to result in an automatic scram, if required. Additionally, the turbine control valve fast closure trip is considered an anticipatory trip and, if inoperable, the reactor scram could still have been initiated by the reactor vessel high pressure or the average power range monitor high flux trips.

Inspection Report# : [2000020\(pdf\)](#)

G

Significance: Dec 15, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Seal Tops of Electrical Cabinets

The team identified that electrical cabinets in the auxiliary electric equipment room were not sealed at the top to protect equipment from water damage. The failure to seal the top of the cabinets was considered a Non-Cited Violation (NCV 50-254/00-16-01; NCV 50-265/00-16-01) of Operating Licenses DPR-29 and DPR-30, Section h.3.F (Section 1R05.2.b.1). The failure to seal the cabinets, a fire protection feature, involved very low risk (Green) because a fire protection defense-in-depth element, as described by MC 0609, Appendix F, Fire Protection Significance Determination Process, was not affected.

Inspection Report# : [2000016\(pdf\)](#)

G

Significance: Dec 15, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Provide Fire Stops in Cable Trays

The team identified that fire stops were not installed in divisional cable trays for which specified separation had not been maintained. The failure to install fire stops was considered a Non-Cited Violation (NCV 50-254/00-16-02; NCV 50-265/00-16-02) of Operating Licenses DPR-29 and DPR-30, Section H.3.F (Section 1R05.2.b.2). The failure to install fire stops, a fire protection feature, involved very low risk (Green) because a fire protection defense-in-depth element, as described by MC 0609, Appendix F, Fire Protection Significance Determination Process, was not affected.

Inspection Report# : [2000016\(pdf\)](#)

G

Significance: Nov 20, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Surveillance testing for torus temperature instrumentation components required by Technical Specification 4.2.F.1 had not been performed since installation in 1990 and 1991.

On October 4, 2000, the licensee identified that surveillance testing for torus temperature instrumentation components required by Technical Specification 4.2.F.1 had not been performed since installation in 1990 and 1991. Condition Report Q2000-03512 was written to address the issue. Failure to perform testing of the instrumentation was considered a Non-Cited Violation of Technical Specification 4.2.F.1 (Section 4OA3). Failure to check instrument accuracy by this 18-month surveillance for Unit 1 and Unit 2 involved very low risk because when the surveillance was subsequently performed, instrument accuracy of the temperature indication loop was within acceptable tolerance.

Inspection Report# : [2000015\(pdf\)](#)

G

Significance: Sep 30, 2000

Identified By: NRC

Item Type: FIN Finding

Inadequate operability documentation forms for Problem Identification Form Q2000-2372, regarding a design deficiency for Units 1 and 2 high pressure coolant injection motor speed changers

The inspectors found that the July 3 and August 23, 2000 supporting operability documentation forms for Problem Identification Form Q2000-2372, regarding a design deficiency for Units 1 and 2 high pressure coolant injection motor speed changers, did not adequately support the operability of the system. Inspectors reviewed the risk significance of the motor speed changer being inoperable and found the risk to be very low (GREEN) since the change to core damage frequency was less than E-6/year. In addition, operators were briefed on the potential problems with the system, and the licensee installed design changes to correct the problem on both units (Section 1R15).

Inspection Report# : [2000014\(pdf\)](#)



Significance: Sep 30, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Degraded condition of fire door 128

On September 15, the inspectors determined that the bottom latch in the inactive leaf of door 128, a 3-hour rated fire door, was not properly latched. The fire protection engineer determined that the degraded door also resulted in the inoperability of the emergency diesel generator room carbon dioxide fire suppression system. This finding constituted a violation of Quad Cities Operating Licensee DPR-29. This violation is being treated as a Non-Cited Violation (50-265/00-14-01), consistent with Section VI.A.1 of the May 1, 2000, Enforcement Policy (Section 1R05). The inspectors evaluated the degraded condition of fire door 128 using the fire protection Significance Determination Process, and evaluation techniques discussed with Senior Risk Analysts and Fire Protection Engineers in Region III and NRR. Since the degradation of the fire door was minimal, and the area of the turbine building directly in front of the door (within 15 to 20 feet) was relatively free of combustibles and cables, the inspectors determined that the possibility of a fire in the Unit 2 emergency diesel generator room spreading to damage the shared emergency diesel generator was not credible. Therefore the significance of this finding was considered very low (GREEN).

Inspection Report# : [2000014\(pdf\)](#)



Significance: Sep 30, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to implement modifications to correct a previously identified design deficiency which could have made the motor speed changer inoperable in accident situations

Inspectors found that the licensee failed to implement modifications to correct a previously identified design deficiency which could have made the motor speed changer inoperable in accident situations. The failure to implement corrective actions for this condition was a violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action." This violation is being treated as a Non-Cited Violation (50-254/00-14-02; 50-265/00-14-02), consistent with Section VI.A.1 of the May 1, 2000, Enforcement Policy. The inspectors found that the risk significance for internal and external events was very low (GREEN) since unavailability of the high pressure coolant injection system resulted in a change to core damage frequency of less than E-6/year. The licensee implemented modifications on both units to correct the design deficiency (Section 1R15).

Inspection Report# : [2000014\(pdf\)](#)

Significance: N/A Sep 15, 2000

Identified By: NRC

Item Type: FIN Finding

WHITE Performance Indicators for Units 1 and 2 Safety System Functional Failures

The licensee's August 14, 2000, root cause report for the high number of safety system functional failures on both units listed three root causes: inadequate knowledge of complex systems, a system vice functional focus, and inadequate integration of the new NRC inspection program into the station's processes. Corrective actions listed by the licensee included: Maintenance department clarification of expectations for troubleshooting, Engineering department revision of a troubleshooting procedure to require formal troubleshooting plans, Regulatory Affairs requirement for root cause evaluation of any performance indicator which is "threatened" (less than 50 percent margin to the WHITE threshold), Regulatory Affairs requirement for root cause evaluations to include a section on cumulative effects of the system failure on a "threatened" performance indicator, Regulatory Assurance modification of corrective action program to implement root cause requirements for a "threatened" performance indicator, Plant Health Committee requirement for monthly review of performance indicators, development or revision of process to address a cumulative focus on NRC Mitigating Systems Cornerstone and functional health, Engineering action to expand use of formal troubleshooting techniques and enhance troubleshooting skills and troubleshooting procedure. The inspectors found no current concerns with the individual root cause reports for these issues. Inspectors validated the licensee assertion that poor troubleshooting and poor root causes were an issue at Quad Cities. Two of the ten events from the individual root cause evaluations were repeats of earlier events, and the root cause efforts were not effective initially. Inspectors found weaknesses in the overall root cause report for the multiple safety system functional failures as follows: • The overall root cause evaluation failed to incorporate one of two February 2000 events. Human performance events did not get full coverage in the overall root cause, some events for the safety system functional failures involving human performance were not included. • The evaluation was focused on problems which would cause an NRC performance indicator change, and to a lesser amount on why such a large number of failures were occurring at Quad Cities. The report listed actions to review another method for trending cumulative impact of failures, but another method was not ready for review at the end of the inspection. The inspectors determined that the licensee's search for similar failures focused on the recently instituted category of "performance indicator" and thereby eliminated a number of previous safety system functional failures that occurred in 1997 and 1998. • The corrective action for troubleshooting failed to incorporate the operations department, and only focused on maintenance and engineering. Although the licensee did not entirely agree with all of the weaknesses identified by the inspectors, nevertheless, the licensee revised several of the root

cause evaluations to ensure appropriate actions were developed to address the inspector's concerns.

Inspection Report# : [2000013\(pdf\)](#)



Significance: Sep 15, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

One corrective action problem was found on August 16, 2000, and involved a previously identified design deficiency with the high pressure coolant injection system

One corrective action problem was found on August 16, 2000, and involved a previously identified design deficiency with the high pressure coolant injection system. Problem Identification Form Q1997-04485 documented that the auto initiation signal for high pressure coolant injection did not electrically seal in as described in the updated final safety analysis. However, the tracking item for correcting this problem was closed without corrective action being completed. Condition Report Q2000-02954 was written to again track corrective actions to this problem. This was considered a Non-Cited Violation (NCV) of Criterion XVI, "Corrective Action," of 10 CFR 50, Appendix B. Inspectors considered this problem to be of very low risk significance (GREEN) since it would not have prevented the system from starting automatically or being initiated manually.

Inspection Report# : [2000013\(pdf\)](#)



Significance: Aug 15, 2000

Identified By: NRC

Item Type: FIN Finding

Contribution of fire risk to core damage frequency associated with the safe shutdown makeup pump discharge valve being in a degraded condition.

On July 19 during a regulatory conference, the licensee discussed the contribution of fire risk to core damage frequency associated with the safe shutdown makeup pump discharge valve being in a degraded condition. Based on the information presented during the conference, the NRC concluded that this condition was of very low safety significance due to the short duration (2 days) the condition existed.

Inspection Report# : [2000011\(pdf\)](#)

Significance: N/A May 16, 2000

Identified By: NRC

Item Type: FIN Finding

Surveillance Testing

During logic testing on March 21, 2000, the Unit 1 high pressure coolant injection auxiliary oil pump failed to properly operate. This condition rendered the system inoperable for automatic initiation for approximately one year. The risk from internal events for this condition was determined to be very low (GREEN) in Inspection Report 50-254/2000003; 50-265/2000003. The effect on risk due to external events, specifically fires, was determined to be potentially significant during a preliminary Significance Determination Process review. However, this issue was also the substantial contributor to a YELLOW high pressure coolant injection unavailability performance indicator, which represents performance that minimally reduces safety margin and requires NRC oversight. Therefore, the NRC considers the inspection findings and the performance indicator to be a single issue and agency action will be determined based on application of the Action Matrix for the YELLOW performance indicator.

Inspection Report# : [2000005\(pdf\)](#)



Significance: Feb 29, 2000

Identified By: NRC

Item Type: FIN Finding

Safe Shutdown Makeup Pump Valve Failure

On January 19, 2000, during planned maintenance activities, maintenance workers determined that the safe shutdown makeup pump system was inoperable due to a Unit 2 safe shutdown makeup pump injection valve failure to operate. The valve failure was evaluated using the Significance Determination Process and was found to be of very low risk significance because all other mitigating systems were available.

Inspection Report# : [2000001\(pdf\)](#)



Significance: Feb 29, 2000

Identified By: NRC

Item Type: FIN Finding

Unit 2 Automatic Depressurization System Valves Taken Out-Of-Service in Mode 3

On January 22, 2000, operators did not recognize entry into a Technical Specification action statement when relief valves were removed from service with the reactor in Mode 3. Upon discovery, about 4-1/2 hours later, the valves were returned to service. The Technical Specification action statement was not exceeded. The unavailability of the relief valves was evaluated by the NRC's Senior Reactor Analyst as part of the Significance Determination Process for shutdown issues. This issue was determined to be of very low risk significance because the reactor was in hot shutdown with vessel pressure at approximately 50 psig.

Inspection Report# : [2000001\(pdf\)](#)

G

Significance: Feb 29, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Emergency Diesel Generator Ventilation Power Supply Switch Out of Position

On January 28, 2000, with Unit 1 operating at full power and with Unit 2 in Mode 5 (refuel), an operator identified that the Unit 2 emergency diesel generator room ventilation fan power select switch was selected to the Unit 1 power supply. The Unit 2 emergency diesel generator was inoperable, but remained available for service. Since the shared emergency diesel generator was already inoperable to Unit 2, this condition left no operable emergency diesel generators for Unit 2. This issue is considered a non-cited violation consistent with the Interim Enforcement Policy for pilot plants. This issue was considered to be of very low safety significance because the Unit 1 diesel generator would not have been overloaded by the Unit 2 emergency diesel generator room ventilation fan. The Unit 2 emergency diesel generator was also available.

Inspection Report# : [2000001\(pdf\)](#)

G

Significance: Feb 29, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Too Few Intermediate Range Nuclear Instruments During Refueling

From February 1 through 5, 2000, Unit 2 had less than the number of operable intermediate range nuclear instruments per channel (three) for the reactor protective system required by Technical Specification 3.1.A. Only two of four instruments were operable on the "B" channel and three of four were operable on the "A" channel. During this time, the reactor was in Mode 5 (refuel) and operators performed core alterations by moving irradiated fuel in the vessel. This issue is considered a non-cited violation consistent with the Interim Enforcement Policy for pilot plants Unit 2 was in cold shutdown with all control rods inserted. This issue was determined to be of very low risk significance because shutdown margin calculations and refueling interlocks provided assurance of adequate shutdown margin. Source range nuclear instruments provided a rod block function during refueling. Intermediate range nuclear instrument indication would not have been available until after the point where a reactivity excursion had occurred because the neutron level during refueling operations was too low for the intermediate range nuclear instruments.

Inspection Report# : [2000001\(pdf\)](#)

G

Significance: Feb 29, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Post Maintenance Testing

On February 10, 2000, with Unit 2 in startup mode, the high pressure coolant injection pump failed to start during testing due to incomplete maintenance. A maintenance foreman erroneously signed off the work package as being completed when it was not. This issue is considered a non-cited violation consistent with the Interim Enforcement Policy for pilot plants. This issue was of very low risk significance since the system pressure was low, decay heat was low, and redundant methods of inventory injection were either operating or available.

Inspection Report# : [2000001\(pdf\)](#)

G

Significance: Jan 19, 2000

Identified By: NRC

Item Type: FIN Finding

Corrective Action Deficiencies Related to Heaters in the Contaminated Condensate Storage Tanks Allowed Degradation of the Heaters

The inspectors found that corrective action deficiencies related to heaters in the contaminated condensate storage tanks allowed degradation of the heaters to the extent that high pressure injection systems could have been adversely affected. The risk significance for the loss of heaters in the contaminated condensate storage tanks was low, partially because both units were shut down during times when the high pressure injection sources could have been rendered inoperable due to lack of sufficient tank heating.

Inspection Report# : [1999025\(pdf\)](#)

G

Significance: Jan 19, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Contaminated Condensate Storage Tank Heaters Inoperable

The inspectors found that design control deficiencies related to heaters in the contaminated condensate storage tanks allowed degradation of the heaters to the extent that high pressure injection systems could have been adversely affected. Modifications to the system did not evaluate the facility change as required by 10 CFR 50.59. This was considered to be a non-cited violation of 10 CFR 50.59. This issue was first documented by

the licensee in August 1999 and addressed in Inspection Report 50-254/99020; 50-265/99020. The risk significance for the loss of heaters in the contaminated condensate storage tanks was low, partially because both units were shut down during times when the high pressure injection sources could have been rendered inoperable due to lack of sufficient tank heating.

Inspection Report# : [1999025\(pdf\)](#)

G

Significance: Feb 01, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to adequately address the erosion of the RHRSW room coolers' supply piping

Green. The inspectors identified a failure to promptly identify and correct conditions adverse to quality involving the erosion of safety-related residual heat removal service water piping. The licensee's corrective actions for the piping leak included replacing the affected piping and performing ultrasonic testing on similar piping for the other trains. During this inspection, NRC inspectors identified that the corrective actions were inadequate in that the ultrasonic testing was not able to examine the area of the piping affected by the erosion as evidenced by the subsequent failure. This finding was determined to be of very low safety significance because the equipment was still capable of performing its intended safety function. A Non-Cited Violation of 10CFR 50 Appendix B, Criterion XVI was identified.

Inspection Report# : [2001015\(pdf\)](#)

Significance: N/A Nov 15, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO FOLLOW OPERATOR REQUALIFICATION PROGRAM PROCEDURAL REQUIREMENTS

No color. The inspectors identified a Non-Cited Violation wherein the facility licensee had failed to follow procedural requirements to evaluate a senior reactor operator (SRO) licensed individual in an SRO licensed position during the year 2001 annual licensed operator requalification examination (10 CFR 55.59). The finding was of very low safety significance because the SRO licensed individual held an "inactive" SRO license (i.e., would not be assigned to licensed duties unless his license was restored to an active status in accordance with 10 CFR 55.53).

Inspection Report# : [2001016\(pdf\)](#)

G

Significance: Nov 15, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO MEET 10 CFR 50.65 REQUIREMENTS

On October 24, 2001, the inspectors determined that the licensee failed to count Unit 1 and Unit 2 battery room ventilation system air handling unit drive belt failures as maintenance preventable functional failures and repeat maintenance preventable functional failures where appropriate. The licensee's incorrect assessment of these equipment failures resulted in a failure to develop and implement appropriate action plans for the battery room ventilation systems on Units 1 and 2, assess the Unit 2 battery room ventilation system for (a)(1)classification, and monitor the performance of the systems against licensee-established goals. The failure to properly implement maintenance rule requirements was considered a Non-Cited Violation of 10 CFR 50.65. The risk significance of the issue was determined to be of very low safety significance because the batteries supported by the battery room ventilation systems did not experience an actual loss of safety function.

Inspection Report# : [2001016\(pdf\)](#)

G

Significance: Sep 30, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO VERIFY ADEQUATE FILL OF THE HIGH PRESSURE COOLANT INJECTION SYSTEM AS REQUIRED BY TECHNICAL SPECIFICATIONS

On December 27, 2000, the licensee discovered that the high pressure coolant injection system was not filled with water from the pump discharge valve to the system isolation valve following maintenance activities. Technical Specification Surveillance Requirement 4.5.A.1.a.1 required the licensee to verify that the high pressure coolant injection system was filled with water every 31 days. The inspectors determined that greater than 31 days had elapsed since the licensee had verified that the high pressure coolant injection system was properly filled. The failure to perform the surveillance requirement within 31 days also resulted in the high pressure coolant injection system being inoperable for greater than the Technical Specification 3.5.A.3.a.3 allowed outage time of 14 days. The failure to meet the requirements of Technical Specification 3.5.A.3.a.3 and Surveillance Requirement 4.5.A.1.a.1 was considered a Non-Cited Violation. The risk significance of this event was determined to be very low since all remaining mitigation systems were available to provide water to the reactor during an event.

Inspection Report# : [2001014\(pdf\)](#)

G

Significance: May 16, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to meet requirement of 10 CFR 50.59.

On June 15, 2000, station personnel removed two of the three rainbow pumps from the site. Quad Cities Updated Final Safety Analysis Report, Section 9.2.5, specifies that portable pumps (called rainbow pumps) of sufficient capacity (5100 gallons per minute) are onsite to provide makeup water to the ultimate heat sink in the event of a Lock and Dam 14 failure on the Mississippi River. The inspectors determined that the licensee had made a change to the facility as described in the Quad Cities Updated Final Safety Analysis Report without first determining if the change required a license amendment, contrary to the requirements of 10 CFR 50.59. The failure to meet the requirements of 10 CFR 50.59 was considered a Non-Cited Violation. The risk significance of this event was determined to be very low due to the very small initiating event frequency of the lock and dam failure, the slow rate of event progression once the initiating event occurs, and the availability of other onsite sources of water not credited in the event analysis.

Inspection Report# : [2001008\(pdf\)](#)



Significance: Mar 31, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

Surveillance testing involving timing of the Unit 1 and Unit 2 emergency diesel generators shortly after the engines had been shut down from previous runs

Inspectors identified that on two occasions, March 9 and March 27, the licensee performed technical specification required surveillance testing involving timing of the Unit 1 and Unit 2 emergency diesel generators shortly after the engines had been shut down from previous runs. Station procedures were inadequate in prescribing the conditions for performance of the tests. Procedures did not prevent preconditioning of the air start systems, fuel systems, and other engine and electrical components. Inadequate procedures for testing was considered a Non-Cited Violation of 10 CFR Appendix B, Criterion V, "Instruction Procedures and Drawings." The risk significance was very low (Green) because inspectors determined that testing practices had not led to declining performance of the diesel generators (Section 1R22).

Inspection Report# : [2001005\(pdf\)](#)



Significance: Dec 03, 1999

Identified By: NRC

Item Type: FIN Finding

Corrective Actions for a Design Control Problem with Software Backups were not Timely or Complete

The inspectors found that two failures of a high pressure coolant injection valve to close in September and October 1999 were not properly classified in the maintenance rule program. Licensee engineers initially failed to consider the second failure of the 1-2301-5 valve to close on October 4, 1999, as a repetitive maintenance preventable functional failure, and failed to monitor the system under (a)(1) of the maintenance rule. This is considered an unresolved item. The valve failure was found to be of low risk significance because the inboard isolation valve was available.

Inspection Report# : [1999023\(pdf\)](#)



Significance: Nov 19, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Ensure ADS Valves Qualified for Minimum Possible Voltage

Four of the five Unit 1 automatic depressurization system relief valves were not initially qualified for the degraded voltage conditions that would be seen under accident conditions. The licensee had not originally accounted for the voltage drop that would occur between the station batteries and the valve solenoids when specifying the minimum voltage for which the valves needed to be qualified. The licensee subsequently identified a test report, done for another nuclear station, which qualified the valves to a lower voltage. The inspectors, in conjunction with the Office of Nuclear Reactor Regulations, reviewed the test and accepted it under condition that a ten volt penalty be applied to account for some test deficiencies. The licensee also performed calculations to show that the actual available voltage to the valves, under degraded conditions, was above the accepted minimum voltage. A non-cited violation was identified.

Inspection Report# : [1999021\(pdf\)](#)



Significance: Oct 20, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Promptly Correct Control Room Emergency Ventilation System Deficiency

The inspectors identified two examples of inadequate corrective action regarding the Units 1 and 2 safety-related control room emergency ventilation system. In 1995 the licensee identified emergency diesel generator overloading concerns and degraded voltage concerns. This degraded and nonconforming condition was not corrected, and the design basis for the emergency diesel generator system and control room emergency ventilation system were not changed to reflect the condition. Also, safety-related electrical drawing discrepancies with the control room emergency ventilation system were identified in 1997 and never corrected. A non-cited violation for 10 CFR Part 50, Appendix B, Criterion XVI,

"Corrective Action" with two examples was identified. In utilizing the Significance Determination Process, this issue was determined to have low risk significance because control room habitability was assumed to be maintained for the 1 hour to start control room cooling and, therefore, there was no impact on the ability of control room operators to operate the required mitigating systems. Also, the design basis event was estimated to have a very low initiating event frequency (Section 1R16).

Inspection Report# : [1999020\(pdf\)](#)



Significance: Sep 08, 1999

Identified By: NRC

Item Type: FIN Finding

A grounded resistor in the governor circuit that caused a failure of the Unit 2 reactor core isolation cooling pump

On August 26, 1999, the licensee identified a grounded resistor in the governor circuit that caused a failure of the Unit 2 reactor core isolation cooling pump. The inspectors used the significance determination process to identify this event as having very low safety significance for the loss of offsite power initiating event due to the availability of other mitigating equipment (Section 1R22.2).

Inspection Report# : [1999018\(pdf\)](#)



Significance: Sep 08, 1999

Identified By: NRC

Item Type: FIN Finding

Motor-operated valve dynamic testing

During motor-operated valve dynamic testing on August 4, 1999, the Unit 1 residual heat removal cross-tie valve (19A) failed to fully close. However, approximately one month after the failure occurred, the licensee's corrective action program did not include a plan to determine the cause of the failure or to address any potential generic considerations for other valves (Section 1R22.1). No safety functions were affected and no risk increase resulted from this particular valve failure.

Inspection Report# : [1999018\(pdf\)](#)

Significance: N/A Sep 08, 1999

Identified By: NRC

Item Type: FIN Finding

Removal of a high pressure injection pump in parallel with testing on an emergency diesel generator

On two occasions, the licensee's work authorization process allowed removal of a high pressure injection pump in parallel with testing on an emergency diesel generator. The inspectors identified that on one occasion, planned conditional core damage probability was increased to greater than that allowed by licensee administrative procedures. The actual risk was lower because the licensee did not perform the work on both systems together. The significance of this finding was not assessed by the significance determination process due to the instantaneous risk involved and the fact that the work was not performed as planned following NRC discussions with plant management (Section 1R13).

Inspection Report# : [1999018\(pdf\)](#)



Significance: Sep 03, 1999

Identified By: NRC

Item Type: FIN Finding

Copy of post-modification test not retained

The inspectors identified that the Unit 1 post modification test for a design change package on the fuel transfer pump was not retained by the licensee. This item had very low risk significance. The licensee had retained the Unit 2 test and had signature evidence that the Unit 1 test was performed.

Inspection Report# : [1999017\(pdf\)](#)



Significance: Jul 20, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Corrective Action for Flooding Procedures.

Corrective actions were not implemented for an inadequate flood protection procedure originally identified by the licensee in 1997. The procedures did not provide adequate instructions to protect the plant structurally under the forces of severe flood waters. This issue was inappropriately closed in the corrective action program without resolution. This was a non-cited violation for inadequate corrective action. A qualitative risk assessment of the impact of the procedure deficiencies concluded that the issues were of low risk significance since adequate time would be available to make procedure changes and take action during a flooding event. (Section 1R06).

Inspection Report# : [1999011\(pdf\)](#)

G

Significance: Jul 16, 1999

Identified By: NRC

Item Type: FIN Finding

Corrective actions to address a Unit 1 emergency diesel generator failure

Corrective actions to address a January 1998 Unit 1 emergency diesel generator (EDG) failure to start were postponed in some cases and in others only partially completed. (Reference Report Section 4OA1.3, page 5) This item was categorized by the significance determination process as being of low risk significance based on occasional EDG start failures, redundant EDGs and available off site power.

Inspection Report# : [1999012\(pdf\)](#)

G

Significance: Jul 16, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Excessive thrust conditions, found during testing of motor operated valves

Excessive thrust conditions, found during testing of motor operated valves (MOVs) from March 1997 through July 2, 1999, were not identified to management and did not receive appropriate corrective action to preclude recurrence. As a result, the cause of the problem was not identified and appropriate corrective action was not taken. This is a non-cited violation. This item was categorized by the significance determination process as being of low risk significance. (Reference Report Section 4OA1.4) Since nine of the ten valves found outside the acceptable thrust windows functioned as required during testing, the issue was determined to be of low risk significance and was categorized as "Green."

Inspection Report# : [1999012\(pdf\)](#)

G

Significance: Jul 15, 1999

Identified By: NRC

Item Type: FIN Finding

The surveillance procedure for evaluating thermal performance of the residual heat removal heat exchangers

The surveillance procedure for evaluating thermal performance of the residual heat removal heat exchangers contained errors which resulted in the licensee overestimating the heat removal capability of the 1A heat exchanger. This item had very low risk significance, since the heat exchanger was still capable of removing its design heat load.

Inspection Report# : [1999014\(pdf\)](#)

G

Significance: Jul 15, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Three Examples of Design Control Relating to Original Plant Design

A non-cited design control violation with multiple examples was identified during close out of two unresolved items from the architect-engineer inspection (50-254/265-98201). The issues dealt with ensuring adequate net positive suction head for the emergency core cooling system pumps, ensuring the residual heat removal service water piping was analyzed for its design condition, and determining the adequacy of a thermal relief valve. All the examples in the Non-Cited Violation resulted from original design deficiencies. The licensee's analyses showed that the pumps were operable. Therefore, this issue screened out of the significance determination process as having very low risk significance

Inspection Report# : [1999014\(pdf\)](#)

Barrier Integrity

G

Significance: Nov 20, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Three examples of failure to follow procedures.

On November 3, 2000, the 1B channel of the reactor protective system flow biased neutron flux trip was found to be inoperable during reactor startup from the Unit 1 refueling outage 16. The licensee determined that poor wiring practices, poor second verification practices, and inadequate post maintenance testing of nuclear instrumentation wiring led to the malfunction. Maintenance workers failed to follow the wiring requirements in the work request, did not use lift and land sheets when removing and re-terminating the wires, and failed to label the wires which were lifted during the maintenance activity. Failure to follow the procedure (work request) for wiring was considered an example of a Non-Cited Violation. The risk significance of this event was very low because of the short amount of time that the unit was in Mode 1, because the "A" channel of flow biased trip

setpoints was still operable, and because the wiring error actually caused the flow biased neutron flux trip to be more conservative (Example A). On October 14, 2000, during disassembly of the Unit 1 reactor for refueling outage 16, reactor service technicians opened a flanged connection of the reactor head vent piping with approximately 5 to 8 psig steam pressure still in the reactor vessel and initiated a steam release to the refueling floor area which lasted for several hours. Numerous procedural, process, and communication problems contributed to the event. Personnel safety, procedure adherence, procedure adequacy, and lack of control of reactor vessel disassembly activities were all concerns brought out by this event. The failure to follow procedures during vessel disassembly was considered an example of a Non-Cited Violation. The risk significance was evaluated as very low because the amount of reactor vessel inventory released to secondary containment was very low, and secondary containment integrity requirements were met (Example B). On October 22, 2000, workers attempting to replace a local power range monitor inadvertently lifted the local power range monitor tube off its seat in the reactor vessel bottom head. This caused highly contaminated radioactive water from the bottom of the reactor vessel to drain directly onto the workers. The draining stopped immediately after the local power range monitor tube was released and resealed back into the vessel. One worker was contaminated such that a meter held to his body read 5 rem per hour on contact. Extraordinary actions by radiation protection workers resulted in the removal of the majority of the highly contaminated material quickly, such that the overall external shallow dose equivalent for the individual was estimated at 2.784 rem, and the internal dose received by the worker was estimated at 45 millirem. Problems involved in this event included workers not adhering to the instructions by radiation protection technicians, workers not having procedures with them and performing steps of two different procedures concurrently, and workers not informing operators or radiation protection technicians that they were taking actions that could allow water to be drained from the reactor vessel. In addition, the procedures were not adequate to control the work. The failure to follow procedures during local power range monitor replacement was considered an example of a Non-Cited Violation. The safety significance of this event was very low because sufficient makeup capacity to fill the vessel was available even if the local power range monitor failed to reseat, the local power range monitor tube was resealed quickly and the reactor vessel drainage stopped, and the contamination was mostly external and was removed quickly (Example C).

Inspection Report# : [2000015\(pdf\)](#)



Significance: Jun 30, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Corrective Action for Delinquent ASME Code Work Packages

The inspectors identified a failure of the corrective action program where ASME Code Class 1, 2 and 3 Replacement and Repair program requirements for work package reviews were not met. On four occasions the licensee did not realize that the Code work packages were not meeting 10 CFR 50.55a ASME Code requirements. In each case, corrective actions were not taken to correct the situation. Failure to promptly identify and correct the failure to meet ASME code requirements for work packages was considered a Non-Cited Violation of 10 CFR 50, Appendix B, Criterion XVI. The safety significance of this issue was considered very low based on the absence of adverse consequences and the fact that no technical problems were identified.

Inspection Report# : [2000008\(pdf\)](#)



Significance: Jan 19, 2000

Identified By: NRC

Item Type: FIN Finding

Failure not classified as a functional failure under the Maintenance Rule

A failure of a Unit 2 containment spray system valve was not properly classified as a maintenance rule functional failure under the maintenance rule program. This individual classification failure was corrected and did not impact the licensee's ability to demonstrate maintenance effectiveness for the system. The valve failure was considered to be of low risk significance using the Significance Determination Process because the other train of containment spray was fully functional.(Section 1R12)

Inspection Report# : [1999025\(pdf\)](#)



Significance: Jan 19, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Overthrust of Motor-Operated Valve 2-1001-34A

During surveillance testing on December 12, 1999, residual heat removal torus spray/test return valve 2-1001-34A closed with 116,831 pounds of thrust which was almost double the previous as-left thrust setting of the valve. This value also exceeded the seismic thrust limit for the valve. Corrective actions recommended to determine extent of condition after failure of a similar valve in 1998 were not taken. This was considered to be a non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI. The excessive thrust problem was considered to have low risk significance because the valve remained operable.

Inspection Report# : [1999025\(pdf\)](#)



Significance: Sep 08, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to promptly correct a design deficiency with the standby gas treatment system.

The licensee discovered during surveillance testing on August 23, 1999, that both standby gas treatment trains may not have functioned as designed during a postulated loss of Bus 19. The item had been previously identified in 1992 but not adequately corrected. No design change or design evaluation justifying the degraded condition had been performed. Failure to take corrective action for this design problem was a Non-cited Violation of Criterion XVI of 10 CFR Part 50, Appendix B. This problem resolution violation could not be classified with a risk significance due to its programmatic nature. However, since 1992 the inspectors were not aware of any failures of the administrative controls that would have jeopardized standby gas treatment operability. Therefore, from an equipment standpoint, this finding has a very low risk significance (Section 40A1).

Inspection Report# : [1999018\(pdf\)](#)



Significance: Jul 20, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Secondary Containment Penetration.

Secondary containment integrity did not exist from 1981 until May 1997 due to an unsealed 1 inch diameter penetration. This was a non-cited violation of Technical Specification 3.7 (Section 40A3). This issue had very low risk significance. Test results showed that the standby gas treatment system could still maintain negative pressure in secondary containment with leak pathways up to 4 inches in diameter.

Inspection Report# : [1999011\(pdf\)](#)

Emergency Preparedness

Occupational Radiation Safety



Significance: Nov 27, 2000

Identified By: NRC

Item Type: FIN Finding

Radiological dose for the Safety Relief Valve (SRV) replacement work results in a determination of a White Finding.

Planning problems caused the dose for the Safety Relief Valve (SRV) replacement work completed during refueling outage Q1R16 to exceed its projected dose by more than 50 percent. Elevated dose rates were encountered in the drywell as a result of cobalt 60 plate-out. The drywell cooling/ventilation system was out of service for maintenance and testing, significantly elevating temperatures in the drywell. Also, less experienced workers performed the SRV job NRC Supplemental Inspection (Report 50-254/01-13, 50-265/01-13): During this supplemental inspection, performed in accordance with Inspection Procedure 95001, the inspector concluded that the licensee performed a comprehensive evaluation of the radiological planning weaknesses. The licensee's evaluation attributed the planning weaknesses to ineffective job management by the radiation protection and construction staffs (root cause). In determining the root cause, the licensee identified contributing factors which included ineffective management of work force changes and drywell temperature control, inadequate monitoring of job duration and identification of changes in duration, and inadequate consideration of work location dose rates and contamination levels when developing revised job dose estimates. The inspector reviewed the licensee's corrective actions, both completed and planned, and concluded that the corrective actions appeared to address the identified root cause and contributing causes. In particular, the licensee implemented an ALARA job standard to provide additional guidance to the staff for identifying and managing changes in radiological work. The purpose of the job standard was to fully identify the changes (both prior to the work and based on the as-found conditions) and to communicate the changes to the station ALARA committee so that the planning could be adequately evaluated to determine if replanning was necessary. Initial implementation of the standard during the Spring 2001 Unit 1 recirculation pump seal replacement was adequate; however, the inspector observed weaknesses in the understanding of staff concerning when the standard was to be applied. Due to the licensee's acceptable performance in assessing the radiological planning problems, the White finding associated with this issue will only be considered in assessing plant performance for a total of four quarters in accordance with the guidance in NRC Manual Chapter 0305, "Operating Reactor Assessment Program." Implementation of the licensee's corrective actions will be reviewed during a future inspection.

Inspection Report# : [2000018\(pdf\)](#)

Inspection Report# : [2001013\(pdf\)](#)

Significance: N/A Jul 13, 2001

Identified By: NRC

Item Type: FIN Finding

A supplemental inspection was performed by the NRC to assess the licensee's evaluation associated with the failure to provide adequate radiological planning to maintain radiological doses as-low-as

This supplemental inspection was performed by the NRC to assess the licensee's evaluation associated with the failure to provide adequate

radiological planning to maintain radiological doses as-low-as-is-reasonably-achievable (ALARA) during the Fall 2000 Unit 1 outage. This performance issue was previously characterized as having low to moderate risk significance (White) in NRC Inspection Report No. 50-254/00-18 (DRS) and 50-265/00-18(DRS). During this supplemental inspection, performed in accordance with Inspection Procedure 95001, the inspector concluded that the licensee performed a comprehensive evaluation of the radiological planning weaknesses. The licensee's evaluation attributed the planning weaknesses to ineffective job management by the radiation protection and construction staffs (root cause). In determining the root cause, the licensee identified contributing factors which included ineffective management of work force changes and drywell temperature control, inadequate monitoring of job duration and identification of changes in duration, and inadequate consideration of work location dose rates and contamination levels when developing revised job dose estimates. The inspector reviewed the licensee's corrective actions, both completed and planned, and concluded that the corrective actions appeared to address the identified root cause and contributing causes. In particular, the licensee implemented an ALARA job standard to provide additional guidance to the staff for identifying and managing changes in radiological work. The purpose of the job standard was to fully identify the changes (both prior to the work and based on the as-found conditions) and to communicate the changes to the station ALARA committee so that the planning could be adequately evaluated to determine if replanning was necessary. Initial implementation of the standard during the Spring 2001 Unit 1 recirculation pump seal replacement was adequate; however, the inspector observed weaknesses in the understanding of staff concerning when the standard was to be applied. Due to the licensee's acceptable performance in assessing the radiological planning problems, the White finding associated with this issue will only be considered in assessing plant performance for a total of four quarters in accordance with the guidance in NRC Manual Chapter 0305, "Operating Reactor Assessment Program." Implementation of the licensee's corrective actions will be reviewed during a future inspection.

Inspection Report# : [2001013\(pdf\)](#)

Public Radiation Safety



Significance: Jul 02, 1999

Identified By: NRC

Item Type: FIN Finding

Lack of Documentation for Offsite Dose Calculation Manual Revisions

The inspectors identified a lack of documentation for the licensee's review of changes to the Offsite Dose Calculation Manual. Although an independent technical review determined that the changes maintained a sufficient level of effluent control, the licensee did not maintain documentation to support this determination. (Section 2PS3.3) This item had very low risk significance based on the results of the independent technical review.

Inspection Report# : [1999013\(pdf\)](#)

Physical Protection



Significance: Nov 17, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

An unattended security storage container containing Safeguards Information was found unlocked and open for approximately two hours.

An unattended security storage container containing Safeguards Information was found unlocked and open for approximately two hours (Section 40A3). The inspector reviewed the risk significance of this finding and determined the risk to be very low since no Safeguards Information was compromised and there have not been greater than two similar findings in four quarters.

Inspection Report# : [2000019\(pdf\)](#)



Significance: Jun 23, 2000

Identified By: NRC

Item Type: FIN Finding

Contingency Response Performance Deficiencies

Deficiencies were noted in the licensee's performance in the contingency response element of the Physical Protection Cornerstone. (The details of this finding are Safeguards Information and are required to be withheld from public disclosure.)

Inspection Report# : [2000201\(pdf\)](#)

Significance: N/A Jun 14, 2001

Identified By: NRC

Item Type: FIN Finding

A supplemental inspection was performed to assess the licensee's root cause evaluation related to exercise failures during two of four force-on-force contingency exercises.

This supplemental inspection was performed to assess the licensee's root cause evaluation related to exercise failures during two of four force-on-force contingency exercises. This performance issue was characterized as a White finding having a low to moderate risk significance in NRC Inspection Report No. 50-254; 265/00-201. This supplemental inspection determined that the licensee had performed a comprehensive evaluation which identified the root cause and contributing factors associated with the exercise failures noted above. The licensee's evaluation identified that the root cause of the exercise finding was a failure to effectively accomplish exercise control activities. Contributing factors were human performance errors by some security force response personnel and controllers, a lack of effective controller training, vulnerabilities in some defensive positions, and command and control activities. Licensee corrective actions were implemented to address the root cause and each contributing factor. Those actions appeared effective in correcting the identified deficiencies. Therefore, the White performance finding associated with the exercise failures was closed.

Inspection Report# : [2001011\(pdf\)](#)

Miscellaneous

Significance: N/A Dec 15, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Technical Errors in Appendix R Safe Shutdown Procedures

The inspectors identified a number of technical errors in safe shutdown procedure QCARP 0050-02. The procedure errors were considered a Non-Cited Violation (NCV 50-254/00-16-03; NCV 50-265/00-16-03) of 10 CFR 50, Appendix R, Section III.L.5 (Section 40A4.1). The technical errors were determined to have no appreciable risk significance (No Color) because the errors would not have impacted safe shutdown. However, the errors were another example of a previously identified adverse trend in human performance.

Inspection Report# : [2000016\(pdf\)](#)

Significance: N/A Nov 20, 2000

Identified By: NRC

Item Type: FIN Finding

The inspectors found that a number of human performance errors during the Q1R16 refueling outage period resulted in undesirable consequences and constituted an adverse trend.

The inspectors found that a number of human performance errors during the Q1R16 refueling outage period, October 14 to November 3, resulted in undesirable consequences and constituted an adverse trend in human performance. These errors resulted from problems with procedure adherence, control of work activities, communications, and procedure quality. Resulting problems included venting the pressurized reactor to containment near maintenance workers who were not adequately prepared for the subsequent release of steam and contamination, inadvertently draining from the reactor vessel bottom head area resulting in significant personnel contamination, and a number of wiring and second verification errors during electrical modifications and maintenance. Although most of these wiring errors were caught and corrected during testing, one error was not caught and resulted in the inoperability of one of two channels of the reactor protective system flow biased trips. While none of these events resulted in equipment performance outside the licensee response band (GREEN), the overall trend indicated problems with adhering to procedures, proper performance of second verification techniques, and the communication and coordination of activities (Section 40A4).

Inspection Report# : [2000015\(pdf\)](#)

Significance: N/A Jun 30, 2000

Identified By: NRC

Item Type: FIN Finding

Cross-Cutting Issues: Human Performance

Inspectors found that several recent events which affected plant operations and/or had the potential to adversely affect personnel safety involved elements of human performance deficiencies. An apparent adverse trend in human performance during the period May 5, 2000 to June 30, 2000, was evidenced by the following incidents. A senior reactor operator failed to implement a Technical Specification surveillance requirement for removing an emergency diesel generator from service. Control room operators experienced problems controlling reactor vessel water level during post-scram recovery efforts and failed to close a pair of drain valves during a pre-start of the Unit 1 high pressure coolant injection system. Maintenance personnel errors were involved in a reactor trip on May 5, and spread of contamination in the 2B reactor water cleanup room when a fitting was disconnected under 1000 psig pressure on June 10 (Section 40A.4).

Inspection Report# : [2000007\(pdf\)](#)

Significance: N/A Jun 30, 2000

Identified By: NRC

Item Type: FIN Finding

Weakness in Corrective Action Program.

The corrective action program was fully functional and typically identified and corrected conditions adverse to quality. In general, station personnel effectively identified and entered problems into the corrective action program using problem identification forms (PIFs). The significance threshold for entering issues into the program appeared appropriate. However, over the past year issues were identified at Quad Cities where the corrective

action process was not vigorously implemented to address the issues. In addition, the licensee's corrective action process had lost over two items a month since January 2000. Although none of these lost items were considered safety significant, and thousands of other action items were opened and closed in that time frame, this represented a weakness in the licensee's program.

Inspection Report# : [2000008\(pdf\)](#)



Significance: Apr 01, 2000

Identified By: Licensee

Item Type: NCV NonCited Violation

On September 10, 1999, the control room emergency ventilation system was inoperable

On September 10, 1999, the licensee identified that the control room emergency ventilation system was inoperable. Flow rates were out-of-specification due to repositioning of a ventilation damper 9 days previously. The action statement for Technical Specification 3.8.D allowed the system to be inoperable for 7 days. Failing to comply with the allowed outage time requirements was considered a non-cited violation of Technical Specification 3.8.D. This issue was screened as GREEN (very low risk significance) after a Phase 1 Significance Determination Process review (Section 40A3).

Inspection Report# : [2000003\(pdf\)](#)

Significance: N/A Feb 29, 2000

Identified By: NRC

Item Type: FIN Finding

Human Performance Problems

Inspectors found that errors in review, coordination, and implementation of maintenance activities during or near Unit 2 refueling outage number 16 (January and February 2000) led to inoperable safety systems. Operators were unaware that Technical Specification or administrative limiting condition for operation action statements were entered or exceeded. Required nuclear instruments and emergency diesel generators were not operable during some fuel moves (Sections 1R04 and 1R20.4), automatic depressurization system valves were taken out of service while required (Section 1R20.2), the high pressure coolant injection system was inoperable due to incomplete maintenance (Section 1R19.1), and safe shutdown requirements were not properly addressed (Section 1R20.5). Other events included technician errors in which electrical jumpers were installed in incorrect locations for logic used by the reactor protective system and by the emergency core cooling system. While the risk of the individual events was very low, an increase in maintenance activity problems was evident.

Inspection Report# : [2000001\(pdf\)](#)

Significance: SL-IV Aug 14, 2001

Identified By: NRC

Item Type: VIO Violation

FAILURE TO ACCURATELY REPORT PERFORMANCE INDICATOR INFORMATION

The inspectors identified that the licensee failed to report fault exposure hours for the failure of a fuel oil transfer solenoid valve to open during the Unit 2 emergency diesel generator (EDG) 18 month endurance test. The second quarter 2001 data reported to the NRC showed no fault exposure hours recorded for Unit 2 EDG. However, the inspectors found that fault exposure hours from a failed endurance run on May 1, 2001, should have been reported since only the time of the failure's discovery was known with certainty. Fault exposure hours going back to the last successful load test of the EDG on January 14, 2000, were not included in the licensee's July 2001 performance indicator data submittal for the Unit 2 Emergency Alternating Current (AC) - Safety System Unavailability performance indicator. Had the performance indicator data been properly reported, the performance indicator color would have been Red. Failure to properly report the performance indicator was considered a Severity Level IV violation of 10 CFR 50.9.

Inspection Report# : [2001012\(pdf\)](#)

Significance: N/A May 25, 2001

Identified By: NRC

Item Type: FIN Finding

Adverse performance trend.

The corrective actions to prevent recurrence for an event that resulted in an inadvertent steam release during a breach of the reactor pressure boundary proved to be ineffective to prevent a similar event that occurred six months later. Additionally, corrective actions for the second event were narrow in scope and did not address the aspects in common with the first event. Condition report Q2001-01976 was issued to address the potential common issues. The inspectors concluded that the issue was more than minor since the failure to fully identify and correct deficiencies could be reasonably viewed as a precursor to a significant event. The inspectors reviewed the applicability of the issue with respect to program cornerstones and determined that the issue did not impact a cornerstone. However, this issue contained extenuating circumstances in that the full extent of condition for the October event was not completely identified and corrected, allowing a similar event in April. The combination of these two events indicates an adverse performance trend.

Inspection Report# : [2001009\(pdf\)](#)

Significance: N/A May 25, 2001

Identified By: NRC

Item Type: FIN Finding

Corrective action program problems.

The inspectors concluded that in general the corrective action program was a complete program containing all the necessary attributes to

successfully identify and correct issues at Quad Cities. However, over the past year there were several instances of difficulties with problem identification, evaluation and resolution. Most of these were documented in previous findings and violations in inspection reports. In general, these issues have been recognized, and actions have been taken to address them. For most of the issues it is too soon to fully evaluate the effectiveness of these actions so effectiveness is still to be determined. During this inspection, three areas of corrective action program problems were identified. These were the failure to properly implement the M&TE program, several instances when condition reports should have been written and they were not, and, failure to address common causes for similar steam release events on the reactor vessel during the October refueling outage, and in the April maintenance outage.

Inspection Report# : [2001009\(pdf\)](#)

Significance: N/A May 25, 2001

Identified By: NRC

Item Type: FIN Finding

Test problems on condition reports not identified.

In May of 2001, an inspector observing a surveillance noted that instrument maintenance technicians had difficulty conducting calibrations of differential transmitters on the Unit 2 station blackout diesel air intake filter differential pressure detectors. The results were not repeatable and indicated some out-of-tolerance readings on both instruments. No condition reports were generated for either the difficulty with the tests or the apparent out-of-tolerance results until inspectors intervened. Condition Report Q2001-1549 was issued 12 days later and subsequently, Condition Reports Q2001-1474 and Q2001-1475 were written for the out-of-tolerance readings. The inspectors reviewed the significance of not identifying test problems on condition reports and concluded that the issue was more than a minor issue because if left uncorrected, the issue could become a more significant safety concern. The actual effect on the station blackout diesel was minimal since it did not directly impact operation of the equipment and another diesel was available. However, this corrective action finding is a cross-cutting issue for corrective action process performance and is assigned No Color.

Inspection Report# : [2001009\(pdf\)](#)

Significance: N/A May 25, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to assure that measuring and test equipment was properly calibrated.

In April of 2001, the station Nuclear Oversight staff identified that measurement and test equipment which was found to be out-of-calibration during post-use verifications was not evaluated as required by plant procedure. Also, condition reports on these out-of-tolerance conditions were not written when required by procedures. The licensee initiated a review which identified 159 items of out-of-tolerance equipment which had not been evaluated appropriately. The use of these items was evaluated and appropriate recovery actions taken. Failure to assure that measuring and test equipment used in 2000 and 2001 was properly calibrated was a Non-Cited Violation of 10 CFR 50, Appendix B. The inspectors reviewed the significance of not evaluating out-of-tolerance equipment and determined that the issue was more than a minor issue because if left uncorrected, the issue could become a more significant safety concern. However, since this is a corrective action concern, and no specific cornerstone was impacted, this item is assigned No Color.

Inspection Report# : [2001009\(pdf\)](#)

Significance: N/A May 16, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to report performance indicator data accurately.

Inspectors found that the licensee reported safety system functional failure data improperly. The improperly reported safety system functional failure involved failure of the Unit 2 intermediate range nuclear monitors. Had this been reported properly, it would have caused the safety system functional failure performance indicator for Unit 2 to cross the threshold from Green to White in the first quarter of 2000. The actual submittal showed performance indicator data in the licensee response or Green band. Because a performance indicator would have changed from Green to White, this was considered a Non-Cited Violation of 10 CFR 50.9.

Inspection Report# : [2001008\(pdf\)](#)

Significance: N/A Dec 03, 1999

Identified By: NRC

Item Type: FIN Finding

reactor coolant system leakage performance indicator

The inspectors completed verification inspection of the reactor coolant system leakage performance indicator and found very minor discrepancies which did not affect the validity of the reported performance indicator (Section 4OA2.2).

Inspection Report# : [1999023\(pdf\)](#)

Significance: N/A Dec 03, 1999

Identified By: NRC

Item Type: FIN Finding

the public radiation safety performance indicator

The inspectors verified that the licensee had properly evaluated and reported the public radiation safety performance indicator (Section 4OA2.7).

Inspection Report# : [1999023\(pdf\)](#)

Significance: N/A Dec 03, 1999

Identified By: NRC

Item Type: FIN Finding

verification inspection for the residual heat removal unavailability performance indicator.

The inspectors completed the verification inspection for the residual heat removal unavailability performance indicator. The inspectors identified that the licensee had not included 12.5 hours of residual heat removal system unavailability during system logic testing in January 1999. The licensee explained that the rules for system availability, at that time, did not require documenting the safety system unavailability. The licensee elected to report these hours in a future submittal. The extra hours would not cause the residual heat removal system unavailability to cross a color threshold (Section 4OA2.1).

Inspection Report# : [1999023\(pdf\)](#)

Significance: N/A Dec 03, 1999

Identified By: NRC

Item Type: FIN Finding

verification inspection of the licensee's performance indicators

The inspectors completed verification inspection of the licensee's performance indicators for scrams, scrams with loss of normal decay heat removal, reactor coolant specific activity, and primary containment leakage. No findings were identified (Section 4OA2).

Inspection Report# : [1999023\(pdf\)](#)

Significance: N/A Oct 20, 1999

Identified By: NRC

Item Type: FIN Finding

The licensee corrected discrepancies with the safety system functional failure indicator.

The licensee corrected discrepancies with the safety system functional failure indicator previously identified by the NRC in the September report of performance indicator data. The NRC exercised enforcement discretion and did not issue a Notice of Violation (Section 4OA3).

Inspection Report# : [1999020\(pdf\)](#)

Significance: N/A Oct 20, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Event Reporting Failure

The inspectors identified two violations of NRC reporting requirements. The licensee failed to notify the NRC within 1 hour of identifying a condition in which the control room emergency ventilation system was found outside the design basis. The licensee also failed to notify the NRC within 4 hours of an event in which the reactor core isolation cooling system was unable to perform a required safety function. The licensee made late notifications, submitted a licensee event report for the control room emergency ventilation system, and planned to submit a licensee event report for the reactor core isolation cooling system failure. These were considered two non-cited violations (Plant Status).

Inspection Report# : [1999020\(pdf\)](#)

Significance: N/A Oct 20, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Notification Failure Under 50.72

The inspectors identified two violations of NRC reporting requirements. The licensee failed to notify the NRC within 1 hour of identifying a condition in which the control room emergency ventilation system was found outside the design basis. The licensee also failed to notify the NRC within 4 hours of an event in which the reactor core isolation cooling system was unable to perform a required safety function. The licensee made late notifications, submitted a licensee event report for the control room emergency ventilation system, and planned to submit a licensee event report for the reactor core isolation cooling system failure. These were considered two non-cited violations (Plant Status).

Inspection Report# : [1999020\(pdf\)](#)



Significance: Oct 08, 1999

Identified By: Licensee

Item Type: FIN Finding

The licensee identified errors in the PI Occupational Radiation Safety Performance Indicator (PI)

Occupational Radiation Safety Performance Indicator (PI). The licensee identified errors in the PI reported to the NRC. Originally, the licensee reported six technical specification high radiation area incidents, which resulted in a white PI. After identifying a missed occurrence and a misinterpretation of the PI criteria, the licensee determined that only two incidents were applicable to the PI, which resulted in the PI indicating that performance was in the licensee response band (green).

Inspection Report# : [1999022\(pdf\)](#)



Significance: Jul 16, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

the repetitive problem of excessive use of overtime.

The root cause report and the corrective actions, approved by the Plant Operations Review Committee and the Corrective Action Review Board, did not fully address the repetitive problem of excessive use of overtime. There were 177 instances between February 1 and 28, 1999, where station procedures were not followed to control overtime of plant workers. Further corrective actions were being developed to ensure that overtime violations did not continue. There were no known incidents where the excessive use of overtime directly impacted or affected the safety of the plant; however, the repetitive failure to follow procedures to control overtime is a non-cited violation. (Reference Report Section 4OA1.4, page 8)
Inspection Report# : [1999012\(pdf\)](#)

Last modified : March 28, 2002

Quad Cities 2

Initiating Events



Significance: Mar 31, 2001

Identified By: Licensee

Item Type: NCV NonCited Violation

Operator-induced loss of feedwater heating transient

On March 23 the inspectors reviewed an operator-induced loss of feedwater heating transient that occurred on Unit 2. The inspectors found that the operators failed to immediately recognize a reduction in feedwater heating and take prompt action to effectively control the increasing reactor power. The transient resulted in a 33 degree decrease in feedwater inlet temperature adding sufficient positive reactivity to increase reactor thermal power from 2511 to 2578 megawatts, approximately 102.7 percent of maximum licensed power. Exceeding Quad Cities License DPR-30 maximum thermal power of 2511 megawatts thermal was considered a Non-Cited Violation. The risk significance of this event was determined to be very low (Green) due to the relatively small increase a 2.7 percent power change will have on overall core thermal limits (Section 1R14).

Inspection Report# : [2001005\(pdf\)](#)



Significance: Aug 15, 2000

Identified By: NRC

Item Type: FIN Finding

Electrical ring bus caused electrical circuit breakers 1-3 and 3-4 to open.

On July 18 a fault on one of the offsite power feeds to the Quad Cities electrical ring bus caused electrical circuit breakers 1-3 and 3-4 to open. This action isolated the fault and resulted in a Unit 2 turbine generator and reactor trip. The response by the switchyard resulted in a loss of power on the Unit 1 reserve auxiliary transformer. The response to the reactor scram on Unit 2 was as designed. Operator performance during this event was determined to have been acceptable. The inspectors reviewed the risk significance of this initiating event for both units using the Significance Determination Process. All mitigating equipment was available for Unit 2 following the uncomplicated trip, and this event was screened as having very low risk significance (GREEN.) One of two auxiliary transformers for Unit 1 was de-energized during the event, but the unit did not trip and all mitigating equipment was available. Therefore, this event was also screened as GREEN for Unit 1.

Inspection Report# : [2000011\(pdf\)](#)



Significance: Jun 30, 2000

Identified By: NRC

Item Type: FIN Finding

operators did not control reactor vessel inventory

During operator response to a reactor trip on May 22, operators did not control reactor vessel inventory prior to the operating reactor feedwater pump tripping on high reactor vessel water level. Additionally, operators had not started a reactor feedwater pump by the time a reactor low level condition existed. This resulted in a second engineered safety feature actuation. The inspectors reviewed this issue using the significance determination process for a transient with a loss of feedwater and determined this was of very low risk significance (Section 1R14).

Inspection Report# : [2000007\(pdf\)](#)



Significance: Jun 30, 2000

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

Maintenance work and emerging work - 2B reactor water cleanup pump seal line disconnect

On June 10, maintenance workers disconnected a seal line to the 2B reactor water cleanup pump that was not properly isolated by the out-of-service tagout and discovered that the line was pressurized to about 1000 psig. The resulting spray caused a spread of contamination in the room and a potential hazard to the workers. No personnel injuries occurred as a result of this event. Failure to hang the proper out-of-service for the maintenance activity was considered a Non-Cited Violation (NCV) of Technical Specifications. The inspectors considered this event of very low safety significance due to the ability to isolate the leak and the availability of mitigating equipment (Section 1R13).

Inspection Report# : [2000007\(pdf\)](#)



Significance: Jun 30, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

adjustments to the wrong instrument, causing a reactor trip on Unit 2

On May 5 an instrument technician performing a calibration of the main steam line high steam flow detectors made adjustments to the wrong instrument, causing a reactor trip on Unit 2. Failure to implement the calibration procedure for the proper channel instrument was considered an NCV of Technical Specification 6.8.A.1. The safety significance of this event was minimal due to the availability of mitigating equipment (Section 40A.3).

Inspection Report# : [2000007\(pdf\)](#)



Significance: Dec 29, 2001

Identified By: NRC

Item Type: FIN Finding

DEGRADED AND INADEQUATELY TESTED TRANSFORMER AND PROTECTIVE RELAYING RESULTS IN INCREASE IN TRANSIENT AND LOSS OF OFFSITE POWER INITIATING EVENT FREQUENCIES

On August 2, 2001, Unit 2 experienced a transformer failure, reactor scram, and loss of offsite power. The inspectors determined that a lightning strike in conjunction with age related degradation and inadequate testing of the Unit 2 main power transformer and switchyard protective relaying contributed to the event and resulted in an increase in the initiating event frequency for plant transients and a loss of offsite power. The inspectors determined the risk significance of this issue to be very low since all remaining mitigating systems were available to mitigate the transformer rupture, reactor scram, and loss of offsite power.

Inspection Report# : [2001017\(pdf\)](#)



Significance: Feb 29, 2000

Identified By: NRC

Item Type: FIN Finding

Ice Melt Valve Failure

Failure of the ice melt valve on January 22, 2000, resulted in some ice formation in the intake area. Operator detection and compensatory measures prevented the ice from affecting the water level in the intake. The valve gate had become detached from the stem. The failure of the ice melt valve was of very low risk significance because it did not result in an increased initiating event frequency for loss of both normal and ultimate heat sinks. The inspectors compared an estimated valve failure rate to the licensee's evaluation. The licensee's evaluation excluded this initiating event from the probabilistic risk assessment because no precursor event had occurred in the history of the station.

Inspection Report# : [2000001\(pdf\)](#)



Significance: Sep 08, 1999

Identified By: NRC

Item Type: FIN Finding

Maintenance rule functional failures

Problematic feedwater level control equipment on Unit 2 resulted in two reactor vessel water level transients in early 1999. The licensee initially evaluated these two events as not being maintenance rule functional failures, which was inappropriate. An NRC inspection and a subsequent licensee self-assessment identified the error. The licensee re-evaluated the two transients as being functional failures on July 28, 1999. This issue did not increase the frequency of initiating events and therefore was an issue of very low safety significance (Section 1R12).

Inspection Report# : [1999018\(pdf\)](#)



Significance: Jul 20, 1999

Identified By: NRC

Item Type: FIN Finding

a 3-inch increase in reactor water level

On Unit 2, a 3-inch increase in reactor water level occurred and required operators to take manual control of the system. Various failures in the level control systems have resulted in about ten similar events since January 1, 1999, in which operators were required to intervene to prevent level transients that could have resulted in a reactor trip. Since the plant effect of the failures is limited to an uncomplicated reactor trip, the failures were considered to be of low risk significance using the significance determination process (Section 1R03).

Inspection Report# : [1999011\(pdf\)](#)

Mitigating Systems

G

Significance: Mar 31, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

Surveillance testing involving timing of the Unit 1 and Unit 2 emergency diesel generators shortly after the engines had been shut down from previous runs

Inspectors identified that on two occasions, March 9 and March 27, the licensee performed technical specification required surveillance testing involving timing of the Unit 1 and Unit 2 emergency diesel generators shortly after the engines had been shut down from previous runs. Station procedures were inadequate in prescribing the conditions for performance of the tests. Procedures did not prevent preconditioning of the air start systems, fuel systems, and other engine and electrical components. Inadequate procedures for testing was considered a Non-Cited Violation of 10 CFR Appendix B, Criterion V, "Instruction Procedures and Drawings." The risk significance was very low (Green) because inspectors determined that testing practices had not led to declining performance of the diesel generators (Section 1R22).

Inspection Report# : [2001005\(pdf\)](#)

G

Significance: Dec 31, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Place the "A" Train of the Reactor Protection System in the Tripped Condition

On November 6, 2000, the Number 2 turbine control valve fast closure trip failed to cause a half scram as expected during a Unit 2 surveillance test. The licensee then repeated the test three more times and the fast closure trip successfully caused the expected half scram each time. The licensee declared the trip function operable without taking the actions of Technical Specification 3.1.A, Action 1 for an inoperable channel. Generic Letter 91-18 states that repetitive testing to achieve acceptable results without first identifying and correcting the root cause of any problem is not an acceptable means for verifying operability. A subsequent autopsy of the pressure switch for the control valve fast closure trip found evidence of fretting which produced metallic particles believed to have caused the initial failure. The inspectors determined the Number 2 turbine control valve fast closure trip had been declared operable without adequate justification. The failure to implement the required actions of Technical Specification 3.1.A-1 for an inoperable channel of the turbine control valve fast closure trip was considered a Non-Cited Violation (50-265/00-20-01). The finding was determined to be of very low safety significance due to the level of redundancy and diversity of the reactor protection system. During the period of time that the Number 2 turbine control valve fast closure trip was inoperable, a sufficient number of turbine control valve fast closure channels remained operable to result in an automatic scram, if required. Additionally, the turbine control valve fast closure trip is considered an anticipatory trip and, if inoperable, the reactor scram could still have been initiated by the reactor vessel high pressure or the average power range monitor high flux trips.

Inspection Report# : [2000020\(pdf\)](#)

G

Significance: Dec 15, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Seal Tops of Electrical Cabinets

The team identified that electrical cabinets in the auxiliary electric equipment room were not sealed at the top to protect equipment from water damage. The failure to seal the top of the cabinets was considered a Non-Cited Violation (NCV 50-254/00-16-01; NCV 50-265/00-16-01) of Operating Licenses DPR-29 and DPR-30, Section h.3.F (Section 1R05.2.b.1). The failure to seal the cabinets, a fire protection feature, involved very low risk (Green) because a fire protection defense-in-depth element, as described by MC 0609, Appendix F, Fire Protection Significance Determination Process, was not affected.

Inspection Report# : [2000016\(pdf\)](#)

G

Significance: Dec 15, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Provide Fire Stops in Cable Trays

The team identified that fire stops were not installed in divisional cable trays for which specified separation had not been maintained. The failure to install fire stops was considered a Non-Cited Violation (NCV 50-254/00-16-02; NCV 50-265/00-16-02) of Operating Licenses DPR-29 and DPR-30, Section H.3.F (Section 1R05.2.b.2). The failure to install fire stops, a fire protection feature, involved very low risk (Green) because a fire protection defense-in-depth element, as described by MC 0609, Appendix F, Fire Protection Significance Determination Process, was not affected.

Inspection Report# : [2000016\(pdf\)](#)

G

Significance: Nov 20, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Surveillance testing for torus temperature instrumentation components required by Technical Specification 4.2.F.1 had not been performed since installation in 1990 and 1991.

On October 4, 2000, the licensee identified that surveillance testing for torus temperature instrumentation components required by Technical Specification 4.2.F.1 had not been performed since installation in 1990 and 1991. Condition Report Q2000-03512 was written to address the issue. Failure to perform testing of the instrumentation was considered a Non-Cited Violation of Technical Specification 4.2.F.1 (Section 4OA3). Failure to check instrument accuracy by this 18-month surveillance for Unit 1 and Unit 2 involved very low risk because when the surveillance was subsequently performed, instrument accuracy of the temperature indication loop was within acceptable tolerance.

Inspection Report# : [2000015\(pdf\)](#)



Significance: Sep 30, 2000

Identified By: NRC

Item Type: FIN Finding

Inadequate operability documentation forms for Problem Identification Form Q2000-2372, regarding a design deficiency for Units 1 and 2 high pressure coolant injection motor speed changers

The inspectors found that the July 3 and August 23, 2000 supporting operability documentation forms for Problem Identification Form Q2000-2372, regarding a design deficiency for Units 1 and 2 high pressure coolant injection motor speed changers, did not adequately support the operability of the system. Inspectors reviewed the risk significance of the motor speed changer being inoperable and found the risk to be very low (GREEN) since the change to core damage frequency was less than E-6/year. In addition, operators were briefed on the potential problems with the system, and the licensee installed design changes to correct the problem on both units (Section 1R15).

Inspection Report# : [2000014\(pdf\)](#)



Significance: Sep 30, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Degraded condition of fire door 128

On September 15, the inspectors determined that the bottom latch in the inactive leaf of door 128, a 3-hour rated fire door, was not properly latched. The fire protection engineer determined that the degraded door also resulted in the inoperability of the emergency diesel generator room carbon dioxide fire suppression system. This finding constituted a violation of Quad Cities Operating Licensee DPR-29. This violation is being treated as a Non-Cited Violation (50-265/00-14-01), consistent with Section VI.A.1 of the May 1, 2000, Enforcement Policy (Section 1R05). The inspectors evaluated the degraded condition of fire door 128 using the fire protection Significance Determination Process, and evaluation techniques discussed with Senior Risk Analysts and Fire Protection Engineers in Region III and NRR. Since the degradation of the fire door was minimal, and the area of the turbine building directly in front of the door (within 15 to 20 feet) was relatively free of combustibles and cables, the inspectors determined that the possibility of a fire in the Unit 2 emergency diesel generator room spreading to damage the shared emergency diesel generator was not credible. Therefore the significance of this finding was considered very low (GREEN).

Inspection Report# : [2000014\(pdf\)](#)



Significance: Sep 30, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to implement modifications to correct a previously identified design deficiency which could have made the motor speed changer inoperable in accident situations

Inspectors found that the licensee failed to implement modifications to correct a previously identified design deficiency which could have made the motor speed changer inoperable in accident situations. The failure to implement corrective actions for this condition was a violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action." This violation is being treated as a Non-Cited Violation (50-254/00-14-02; 50-265/00-14-02), consistent with Section VI.A.1 of the May 1, 2000, Enforcement Policy. The inspectors found that the risk significance for internal and external events was very low (GREEN) since unavailability of the high pressure coolant injection system resulted in a change to core damage frequency of less than E-6/year. The licensee implemented modifications on both units to correct the design deficiency (Section 1R15).

Inspection Report# : [2000014\(pdf\)](#)

Significance: N/A Sep 15, 2000

Identified By: NRC

Item Type: FIN Finding

WHITE Performance Indicators for Units 1 and 2 Safety System Functional Failures

The licensee's August 14, 2000, root cause report for the high number of safety system functional failures on both units listed three root causes: inadequate knowledge of complex systems, a system vice functional focus, and inadequate integration of the new NRC inspection program into the station's processes. Corrective actions listed by the licensee included: Maintenance department clarification of expectations for troubleshooting, Engineering department revision of a troubleshooting procedure to require formal troubleshooting plans, Regulatory Affairs requirement for root cause evaluation of any performance indicator which is "threatened" (less than 50 percent margin to the WHITE threshold), Regulatory Affairs requirement for root cause evaluations to include a section on cumulative effects of the system failure on a "threatened" performance indicator,

Regulatory Assurance modification of corrective action program to implement root cause requirements for a "threatened" performance indicator, Plant Health Committee requirement for monthly review of performance indicators, development or revision of process to address a cumulative focus on NRC Mitigating Systems Cornerstone and functional health, Engineering action to expand use of formal troubleshooting techniques and enhance troubleshooting skills and troubleshooting procedure. The inspectors found no current concerns with the individual root cause reports for these issues. Inspectors validated the licensee assertion that poor troubleshooting and poor root causes were an issue at Quad Cities. Two of the ten events from the individual root cause evaluations were repeats of earlier events, and the root cause efforts were not effective initially. Inspectors found weaknesses in the overall root cause report for the multiple safety system functional failures as follows: • The overall root cause evaluation failed to incorporate one of two February 2000 events. Human performance events did not get full coverage in the overall root cause, some events for the safety system functional failures involving human performance were not included. • The evaluation was focused on problems which would cause an NRC performance indicator change, and to a lesser amount on why such a large number of failures were occurring at Quad Cities. The report listed actions to review another method for trending cumulative impact of failures, but another method was not ready for review at the end of the inspection. The inspectors determined that the licensee's search for similar failures focused on the recently instituted category of "performance indicator" and thereby eliminated a number of previous safety system functional failures that occurred in 1997 and 1998. • The corrective action for troubleshooting failed to incorporate the operations department, and only focused on maintenance and engineering. Although the licensee did not entirely agree with all of the weaknesses identified by the inspectors, nevertheless, the licensee revised several of the root cause evaluations to ensure appropriate actions were developed to address the inspector's concerns.

Inspection Report# : [2000013\(pdf\)](#)



Significance: Sep 15, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

One corrective action problem was found on August 16, 2000, and involved a previously identified design deficiency with the high pressure coolant injection system

One corrective action problem was found on August 16, 2000, and involved a previously identified design deficiency with the high pressure coolant injection system. Problem Identification Form Q1997-04485 documented that the auto initiation signal for high pressure coolant injection did not electrically seal in as described in the updated final safety analysis. However, the tracking item for correcting this problem was closed without corrective action being completed. Condition Report Q2000-02954 was written to again track corrective actions to this problem. This was considered a Non-Cited Violation (NCV) of Criterion XVI, "Corrective Action," of 10 CFR 50, Appendix B. Inspectors considered this problem to be of very low risk significance (GREEN) since it would not have prevented the system from starting automatically or being initiated manually.

Inspection Report# : [2000013\(pdf\)](#)



Significance: Aug 15, 2000

Identified By: NRC

Item Type: FIN Finding

Contribution of fire risk to core damage frequency associated with the safe shutdown makeup pump discharge valve being in a degraded condition.

On July 19 during a regulatory conference, the licensee discussed the contribution of fire risk to core damage frequency associated with the safe shutdown makeup pump discharge valve being in a degraded condition. Based on the information presented during the conference, the NRC concluded that this condition was of very low safety significance due to the short duration (2 days) the condition existed.

Inspection Report# : [2000011\(pdf\)](#)

Significance: N/A May 16, 2000

Identified By: NRC

Item Type: FIN Finding

Surveillance Testing

During logic testing on March 21, 2000, the Unit 1 high pressure coolant injection auxiliary oil pump failed to properly operate. This condition rendered the system inoperable for automatic initiation for approximately one year. The risk from internal events for this condition was determined to be very low (GREEN) in Inspection Report 50-254/2000003; 50-265/2000003. The effect on risk due to external events, specifically fires, was determined to be potentially significant during a preliminary Significance Determination Process review. However, this issue was also the substantial contributor to a YELLOW high pressure coolant injection unavailability performance indicator, which represents performance that minimally reduces safety margin and requires NRC oversight. Therefore, the NRC considers the inspection findings and the performance indicator to be a single issue and agency action will be determined based on application of the Action Matrix for the YELLOW performance indicator.

Inspection Report# : [2000005\(pdf\)](#)



Significance: Feb 01, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to adequately address the erosion of the RHRSW room coolers' supply piping

Green. The inspectors identified a failure to promptly identify and correct conditions adverse to quality involving the erosion of safety-related residual heat removal service water piping. The licensee's corrective actions for the piping leak included replacing the affected piping and

performing ultrasonic testing on similar piping for the other trains. During this inspection, NRC inspectors identified that the corrective actions were inadequate in that the ultrasonic testing was not able to examine the area of the piping affected by the erosion as evidenced by the subsequent failure. This finding was determined to be of very low safety significance because the equipment was still capable of performing its intended safety function. A Non-Cited Violation of 10CFR 50 Appendix B, Criterion XVI was identified.

Inspection Report# : [2001015\(pdf\)](#)

Significance: N/A Nov 15, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO FOLLOW OPERATOR REQUALIFICATION PROGRAM PROCEDURAL REQUIREMENTS

No color. The inspectors identified a Non-Cited Violation wherein the facility licensee had failed to follow procedural requirements to evaluate a senior reactor operator (SRO) licensed individual in an SRO licensed position during the year 2001 annual licensed operator requalification examination (10 CFR 55.59). The finding was of very low safety significance because the SRO licensed individual held an "inactive" SRO license (i.e., would not be assigned to licensed duties unless his license was restored to an active status in accordance with 10 CFR 55.53).

Inspection Report# : [2001016\(pdf\)](#)



Significance: G Nov 15, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO MEET 10 CFR 50.65 REQUIREMENTS

On October 24, 2001, the inspectors determined that the licensee failed to count Unit 1 and Unit 2 battery room ventilation system air handling unit drive belt failures as maintenance preventable functional failures and repeat maintenance preventable functional failures where appropriate. The licensee's incorrect assessment of these equipment failures resulted in a failure to develop and implement appropriate action plans for the battery room ventilation systems on Units 1 and 2, assess the Unit 2 battery room ventilation system for (a)(1)classification, and monitor the performance of the systems against licensee-established goals. The failure to properly implement maintenance rule requirements was considered a Non-Cited Violation of 10 CFR 50.65. The risk significance of the issue was determined to be of very low safety significance because the batteries supported by the battery room ventilation systems did not experience an actual loss of safety function.

Inspection Report# : [2001016\(pdf\)](#)



Significance: G Sep 30, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO VERIFY ADEQUATE FILL OF THE HIGH PRESSURE COOLANT INJECTION SYSTEM AS REQUIRED BY TECHNICAL SPECIFICATIONS

On December 27, 2000, the licensee discovered that the high pressure coolant injection system was not filled with water from the pump discharge valve to the system isolation valve following maintenance activities. Technical Specification Surveillance Requirement 4.5.A.1.a.1 required the licensee to verify that the high pressure coolant injection system was filled with water every 31 days. The inspectors determined that greater than 31 days had elapsed since the licensee had verified that the high pressure coolant injection system was properly filled. The failure to perform the surveillance requirement within 31 days also resulted in the high pressure coolant injection system being inoperable for greater than the Technical Specification 3.5.A.3.a.3 allowed outage time of 14 days. The failure to meet the requirements of Technical Specification 3.5.A.3.a.3 and Surveillance Requirement 4.5.A.1.a.1 was considered a Non-Cited Violation. The risk significance of this event was determined to be very low since all remaining mitigation systems were available to provide water to the reactor during an event.

Inspection Report# : [2001014\(pdf\)](#)



Significance: G May 16, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to meet requirement of 10 CFR 50.59.

On June 15, 2000, station personnel removed two of the three rainbow pumps from the site. Quad Cities Updated Final Safety Analysis Report, Section 9.2.5, specifies that portable pumps (called rainbow pumps) of sufficient capacity (5100 gallons per minute) are onsite to provide makeup water to the ultimate heat sink in the event of a Lock and Dam 14 failure on the Mississippi River. The inspectors determined that the licensee had made a change to the facility as described in the Quad Cities Updated Final Safety Analysis Report without first determining if the change required a license amendment, contrary to the requirements of 10 CFR 50.59. The failure to meet the requirements of 10 CFR 50.59 was considered a Non-Cited Violation. The risk significance of this event was determined to be very low due to the very small initiating event frequency of the lock and dam failure, the slow rate of event progression once the initiating event occurs, and the availability of other onsite sources of water not credited in the event analysis.

Inspection Report# : [2001008\(pdf\)](#)

G

Significance: Feb 29, 2000

Identified By: NRC

Item Type: FIN Finding

Safe Shutdown Makeup Pump Valve Failure

On January 19, 2000, during planned maintenance activities, maintenance workers determined that the safe shutdown makeup pump system was inoperable due to a Unit 2 safe shutdown makeup pump injection valve failure to operate. The valve failure was evaluated using the Significance Determination Process and was found to be of very low risk significance because all other mitigating systems were available.

Inspection Report# : [2000001\(pdf\)](#)

G

Significance: Feb 29, 2000

Identified By: NRC

Item Type: FIN Finding

Unit 2 Automatic Depressurization System Valves Taken Out-Of-Service in Mode 3

On January 22, 2000, operators did not recognize entry into a Technical Specification action statement when relief valves were removed from service with the reactor in Mode 3. Upon discovery, about 4-1/2 hours later, the valves were returned to service. The Technical Specification action statement was not exceeded. The unavailability of the relief valves was evaluated by the NRC's Senior Reactor Analyst as part of the Significance Determination Process for shutdown issues. This issue was determined to be of very low risk significance because the reactor was in hot shutdown with vessel pressure at approximately 50 psig.

Inspection Report# : [2000001\(pdf\)](#)

G

Significance: Feb 29, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Emergency Diesel Generator Ventilation Power Supply Switch Out of Position

On January 28, 2000, with Unit 1 operating at full power and with Unit 2 in Mode 5 (refuel), an operator identified that the Unit 2 emergency diesel generator room ventilation fan power select switch was selected to the Unit 1 power supply. The Unit 2 emergency diesel generator was inoperable, but remained available for service. Since the shared emergency diesel generator was already inoperable to Unit 2, this condition left no operable emergency diesel generators for Unit 2. This issue is considered a non-cited violation consistent with the Interim Enforcement Policy for pilot plants. This issue was considered to be of very low safety significance because the Unit 1 diesel generator would not have been overloaded by the Unit 2 emergency diesel generator room ventilation fan. The Unit 2 emergency diesel generator was also available.

Inspection Report# : [2000001\(pdf\)](#)

G

Significance: Feb 29, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Post Maintenance Testing

On February 10, 2000, with Unit 2 in startup mode, the high pressure coolant injection pump failed to start during testing due to incomplete maintenance. A maintenance foreman erroneously signed off the work package as being completed when it was not. This issue is considered a non-cited violation consistent with the Interim Enforcement Policy for pilot plants. This issue was of very low risk significance since the system pressure was low, decay heat was low, and redundant methods of inventory injection were either operating or available.

Inspection Report# : [2000001\(pdf\)](#)

G

Significance: Feb 29, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Too Few Intermediate Range Nuclear Instruments During Refueling

From February 1 through 5, 2000, Unit 2 had less than the number of operable intermediate range nuclear instruments per channel (three) for the reactor protective system required by Technical Specification 3.1.A. Only two of four instruments were operable on the "B" channel and three of four were operable on the "A" channel. During this time, the reactor was in Mode 5 (refuel) and operators performed core alterations by moving irradiated fuel in the vessel. This issue is considered a non-cited violation consistent with the Interim Enforcement Policy for pilot plants. Unit 2 was in cold shutdown with all control rods inserted. This issue was determined to be of very low risk significance because shutdown margin calculations and refueling interlocks provided assurance of adequate shutdown margin. Source range nuclear instruments provided a rod block function during refueling. Intermediate range nuclear instrument indication would not have been available until after the point where a reactivity excursion had occurred because the neutron level during refueling operations was too low for the intermediate range nuclear instruments.

Inspection Report# : [2000001\(pdf\)](#)

G

Significance: Jan 19, 2000

Identified By: NRC

Item Type: FIN Finding

Corrective Action Deficiencies Related to Heaters in the Contaminated Condensate Storage Tanks Allowed Degradation of the Heaters

The inspectors found that corrective action deficiencies related to heaters in the contaminated condensate storage tanks allowed degradation of the heaters to the extent that high pressure injection systems could have been adversely affected. The risk significance for the loss of heaters in the contaminated condensate storage tanks was low, partially because both units were shut down during times when the high pressure injection sources could have been rendered inoperable due to lack of sufficient tank heating.

Inspection Report# : [1999025\(pdf\)](#)

G

Significance: Jan 19, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Contaminated Condensate Storage Tank Heaters Inoperable

The inspectors found that design control deficiencies related to heaters in the contaminated condensate storage tanks allowed degradation of the heaters to the extent that high pressure injection systems could have been adversely affected. Modifications to the system did not evaluate the facility change as required by 10 CFR 50.59. This was considered to be a non-cited violation of 10 CFR 50.59. This issue was first documented by the licensee in August 1999 and addressed in Inspection Report 50-254/99020; 50-265/99020. The risk significance for the loss of heaters in the contaminated condensate storage tanks was low, partially because both units were shut down during times when the high pressure injection sources could have been rendered inoperable due to lack of sufficient tank heating.

Inspection Report# : [1999025\(pdf\)](#)

G

Significance: Dec 03, 1999

Identified By: NRC

Item Type: FIN Finding

Corrective Actions for a Design Control Problem with Software Backups were not Timely or Complete

The inspectors found that two failures of a high pressure coolant injection valve to close in September and October 1999 were not properly classified in the maintenance rule program. Licensee engineers initially failed to consider the second failure of the 1-2301-5 valve to close on October 4, 1999, as a repetitive maintenance preventable functional failure, and failed to monitor the system under (a)(1) of the maintenance rule. This is considered an unresolved item. The valve failure was found to be of low risk significance because the inboard isolation valve was available.

Inspection Report# : [1999023\(pdf\)](#)

G

Significance: Nov 19, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Ensure ADS Valves Qualified for Minimum Possible Voltage

Four of the five Unit 1 automatic depressurization system relief valves were not initially qualified for the degraded voltage conditions that would be seen under accident conditions. The licensee had not originally accounted for the voltage drop that would occur between the station batteries and the valve solenoids when specifying the minimum voltage for which the valves needed to be qualified. The licensee subsequently identified a test report, done for another nuclear station, which qualified the valves to a lower voltage. The inspectors, in conjunction with the Office of Nuclear Reactor Regulations, reviewed the test and accepted it under condition that a ten volt penalty be applied to account for some test deficiencies. The licensee also performed calculations to show that the actual available voltage to the valves, under degraded conditions, was above the accepted minimum voltage. A non-cited violation was identified.

Inspection Report# : [1999021\(pdf\)](#)

G

Significance: Oct 20, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Promptly Correct Control Room Emergency Ventilation System Deficiency

The inspectors identified two examples of inadequate corrective action regarding the Units 1 and 2 safety-related control room emergency ventilation system. In 1995 the licensee identified emergency diesel generator overloading concerns and degraded voltage concerns. This degraded and nonconforming condition was not corrected, and the design basis for the emergency diesel generator system and control room emergency ventilation system were not changed to reflect the condition. Also, safety-related electrical drawing discrepancies with the control room emergency ventilation system were identified in 1997 and never corrected. A non-cited violation for 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action" with two examples was identified. In utilizing the Significance Determination Process, this issue was determined to have low risk

significance because control room habitability was assumed to be maintained for the 1 hour to start control room cooling and, therefore, there was no impact on the ability of control room operators to operate the required mitigating systems. Also, the design basis event was estimated to have a very low initiating event frequency (Section 1R16).

Inspection Report# : [1999020\(pdf\)](#)

Significance: N/A Sep 08, 1999

Identified By: NRC

Item Type: FIN Finding

Removal of a high pressure injection pump in parallel with testing on an emergency diesel generator

On two occasions, the licensee's work authorization process allowed removal of a high pressure injection pump in parallel with testing on an emergency diesel generator. The inspectors identified that on one occasion, planned conditional core damage probability was increased to greater than that allowed by licensee administrative procedures. The actual risk was lower because the licensee did not perform the work on both systems together. The significance of this finding was not assessed by the significance determination process due to the instantaneous risk involved and the fact that the work was not performed as planned following NRC discussions with plant management (Section 1R13).

Inspection Report# : [1999018\(pdf\)](#)



Significance: G Sep 08, 1999

Identified By: NRC

Item Type: FIN Finding

A grounded resistor in the governor circuit that caused a failure of the Unit 2 reactor core isolation cooling pump

On August 26, 1999, the licensee identified a grounded resistor in the governor circuit that caused a failure of the Unit 2 reactor core isolation cooling pump. The inspectors used the significance determination process to identify this event as having very low safety significance for the loss of offsite power initiating event due to the availability of other mitigating equipment (Section 1R22.2).

Inspection Report# : [1999018\(pdf\)](#)



Significance: G Sep 08, 1999

Identified By: NRC

Item Type: FIN Finding

Motor-operated valve dynamic testing

During motor-operated valve dynamic testing on August 4, 1999, the Unit 1 residual heat removal cross-tie valve (19A) failed to fully close. However, approximately one month after the failure occurred, the licensee's corrective action program did not include a plan to determine the cause of the failure or to address any potential generic considerations for other valves (Section 1R22.1). No safety functions were affected and no risk increase resulted from this particular valve failure.

Inspection Report# : [1999018\(pdf\)](#)



Significance: G Sep 03, 1999

Identified By: NRC

Item Type: FIN Finding

Copy of post-modification test not retained

The inspectors identified that the Unit 1 post modification test for a design change package on the fuel transfer pump was not retained by the licensee. This item had very low risk significance. The licensee had retained the Unit 2 test and had signature evidence that the Unit 1 test was performed.

Inspection Report# : [1999017\(pdf\)](#)



Significance: G Jul 20, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Corrective Action for Flooding Procedures.

Corrective actions were not implemented for an inadequate flood protection procedure originally identified by the licensee in 1997. The procedures did not provide adequate instructions to protect the plant structurally under the forces of severe flood waters. This issue was inappropriately closed in the corrective action program without resolution. This was a non-cited violation for inadequate corrective action. A qualitative risk assessment of the impact of the procedure deficiencies concluded that the issues were of low risk significance since adequate time would be available to make procedure changes and take action during a flooding event. (Section 1R06).

Inspection Report# : [1999011\(pdf\)](#)

G

Significance: Jul 16, 1999

Identified By: NRC

Item Type: FIN Finding

Corrective actions to address a Unit 1 emergency diesel generator failure

Corrective actions to address a January 1998 Unit 1 emergency diesel generator (EDG) failure to start were postponed in some cases and in others only partially completed. (Reference Report Section 4OA1.3, page 5) This item was categorized by the significance determination process as being of low risk significance based on occasional EDG start failures, redundant EDGs and available off site power.

Inspection Report# : [1999012\(pdf\)](#)

G

Significance: Jul 16, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Excessive thrust conditions, found during testing of motor operated valves

Excessive thrust conditions, found during testing of motor operated valves (MOVs) from March 1997 through July 2, 1999, were not identified to management and did not receive appropriate corrective action to preclude recurrence. As a result, the cause of the problem was not identified and appropriate corrective action was not taken. This is a non-cited violation. This item was categorized by the significance determination process as being of low risk significance. (Reference Report Section 4OA1.4) Since nine of the ten valves found outside the acceptable thrust windows functioned as required during testing, the issue was determined to be of low risk significance and was categorized as "Green."

Inspection Report# : [1999012\(pdf\)](#)

G

Significance: Jul 15, 1999

Identified By: NRC

Item Type: FIN Finding

The surveillance procedure for evaluating thermal performance of the residual heat removal heat exchangers

The surveillance procedure for evaluating thermal performance of the residual heat removal heat exchangers contained errors which resulted in the licensee overestimating the heat removal capability of the 1A heat exchanger. This item had very low risk significance, since the heat exchanger was still capable of removing its design heat load.

Inspection Report# : [1999014\(pdf\)](#)

G

Significance: Jul 15, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Three Examples of Design Control Relating to Original Plant Design

A non-cited design control violation with multiple examples was identified during close out of two unresolved items from the architect-engineer inspection (50-254/265-98201). The issues dealt with ensuring adequate net positive suction head for the emergency core cooling system pumps, ensuring the residual heat removal service water piping was analyzed for its design condition, and determining the adequacy of a thermal relief valve. All the examples in the Non-Cited Violation resulted from original design deficiencies. The licensee's analyses showed that the pumps were operable. Therefore, this issue screened out of the significance determination process as having very low risk significance

Inspection Report# : [1999014\(pdf\)](#)

Barrier Integrity

G

Significance: Nov 20, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Three examples of failure to follow procedures.

On November 3, 2000, the 1B channel of the reactor protective system flow biased neutron flux trip was found to be inoperable during reactor startup from the Unit 1 refueling outage 16. The licensee determined that poor wiring practices, poor second verification practices, and inadequate post maintenance testing of nuclear instrumentation wiring led to the malfunction. Maintenance workers failed to follow the wiring requirements in the work request, did not use lift and land sheets when removing and re-terminating the wires, and failed to label the wires which were lifted during the maintenance activity. Failure to follow the procedure (work request) for wiring was considered an example of a Non-Cited Violation. The risk significance of this event was very low because of the short amount of time that the unit was in Mode 1, because the "A" channel of flow biased trip

setpoints was still operable, and because the wiring error actually caused the flow biased neutron flux trip to be more conservative (Example A). On October 14, 2000, during disassembly of the Unit 1 reactor for refueling outage 16, reactor service technicians opened a flanged connection of the reactor head vent piping with approximately 5 to 8 psig steam pressure still in the reactor vessel and initiated a steam release to the refueling floor area which lasted for several hours. Numerous procedural, process, and communication problems contributed to the event. Personnel safety, procedure adherence, procedure adequacy, and lack of control of reactor vessel disassembly activities were all concerns brought out by this event. The failure to follow procedures during vessel disassembly was considered an example of a Non-Cited Violation. The risk significance was evaluated as very low because the amount of reactor vessel inventory released to secondary containment was very low, and secondary containment integrity requirements were met (Example B). On October 22, 2000, workers attempting to replace a local power range monitor inadvertently lifted the local power range monitor tube off its seat in the reactor vessel bottom head. This caused highly contaminated radioactive water from the bottom of the reactor vessel to drain directly onto the workers. The draining stopped immediately after the local power range monitor tube was released and resealed back into the vessel. One worker was contaminated such that a meter held to his body read 5 rem per hour on contact. Extraordinary actions by radiation protection workers resulted in the removal of the majority of the highly contaminated material quickly, such that the overall external shallow dose equivalent for the individual was estimated at 2.784 rem, and the internal dose received by the worker was estimated at 45 millirem. Problems involved in this event included workers not adhering to the instructions by radiation protection technicians, workers not having procedures with them and performing steps of two different procedures concurrently, and workers not informing operators or radiation protection technicians that they were taking actions that could allow water to be drained from the reactor vessel. In addition, the procedures were not adequate to control the work. The failure to follow procedures during local power range monitor replacement was considered an example of a Non-Cited Violation. The safety significance of this event was very low because sufficient makeup capacity to fill the vessel was available even if the local power range monitor failed to reseat, the local power range monitor tube was resealed quickly and the reactor vessel drainage stopped, and the contamination was mostly external and was removed quickly (Example C).

Inspection Report# : [2000015\(pdf\)](#)



Significance: Jun 30, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Corrective Action for Delinquent ASME Code Work Packages

The inspectors identified a failure of the corrective action program where ASME Code Class 1, 2 and 3 Replacement and Repair program requirements for work package reviews were not met. On four occasions the licensee did not realize that the Code work packages were not meeting 10 CFR 50.55a ASME Code requirements. In each case, corrective actions were not taken to correct the situation. Failure to promptly identify and correct the failure to meet ASME code requirements for work packages was considered a Non-Cited Violation of 10 CFR 50, Appendix B, Criterion XVI. The safety significance of this issue was considered very low based on the absence of adverse consequences and the fact that no technical problems were identified.

Inspection Report# : [2000008\(pdf\)](#)



Significance: Jan 19, 2000

Identified By: NRC

Item Type: FIN Finding

Failure not classified as a functional failure under the Maintenance Rule

A failure of a Unit 2 containment spray system valve was not properly classified as a maintenance rule functional failure under the maintenance rule program. This individual classification failure was corrected and did not impact the licensee's ability to demonstrate maintenance effectiveness for the system. The valve failure was considered to be of low risk significance using the Significance Determination Process because the other train of containment spray was fully functional.(Section 1R12)

Inspection Report# : [1999025\(pdf\)](#)



Significance: Jan 19, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Overthrust of Motor-Operated Valve 2-1001-34A

During surveillance testing on December 12, 1999, residual heat removal torus spray/test return valve 2-1001-34A closed with 116,831 pounds of thrust which was almost double the previous as-left thrust setting of the valve. This value also exceeded the seismic thrust limit for the valve. Corrective actions recommended to determine extent of condition after failure of a similar valve in 1998 were not taken. This was considered to be a non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI. The excessive thrust problem was considered to have low risk significance because the valve remained operable.

Inspection Report# : [1999025\(pdf\)](#)



Significance: Sep 08, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to promptly correct a design deficiency with the standby gas treatment system.

The licensee discovered during surveillance testing on August 23, 1999, that both standby gas treatment trains may not have functioned as designed during a postulated loss of Bus 19. The item had been previously identified in 1992 but not adequately corrected. No design change or design evaluation justifying the degraded condition had been performed. Failure to take corrective action for this design problem was a Non-cited Violation of Criterion XVI of 10 CFR Part 50, Appendix B. This problem resolution violation could not be classified with a risk significance due to its programmatic nature. However, since 1992 the inspectors were not aware of any failures of the administrative controls that would have jeopardized standby gas treatment operability. Therefore, from an equipment standpoint, this finding has a very low risk significance (Section 40A1).

Inspection Report# : [1999018\(pdf\)](#)



Significance: Jul 20, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Secondary Containment Penetration.

Secondary containment integrity did not exist from 1981 until May 1997 due to an unsealed 1 inch diameter penetration. This was a non-cited violation of Technical Specification 3.7 (Section 40A3). This issue had very low risk significance. Test results showed that the standby gas treatment system could still maintain negative pressure in secondary containment with leak pathways up to 4 inches in diameter.

Inspection Report# : [1999011\(pdf\)](#)

Emergency Preparedness

Occupational Radiation Safety



Significance: Nov 27, 2000

Identified By: NRC

Item Type: FIN Finding

Radiological dose for the Safety Relief Valve (SRV) replacement work results in a determination of a White Finding.

Planning problems caused the dose for the Safety Relief Valve (SRV) replacement work completed during refueling outage Q1R16 to exceed its projected dose by more than 50 percent. Elevated dose rates were encountered in the drywell as a result of cobalt 60 plate-out. The drywell cooling/ventilation system was out of service for maintenance and testing, significantly elevating temperatures in the drywell. Also, less experienced workers performed the SRV job NRC Supplemental Inspection (Report 50-254/01-13, 50-265/01-13): During this supplemental inspection, performed in accordance with Inspection Procedure 95001, the inspector concluded that the licensee performed a comprehensive evaluation of the radiological planning weaknesses. The licensee's evaluation attributed the planning weaknesses to ineffective job management by the radiation protection and construction staffs (root cause). In determining the root cause, the licensee identified contributing factors which included ineffective management of work force changes and drywell temperature control, inadequate monitoring of job duration and identification of changes in duration, and inadequate consideration of work location dose rates and contamination levels when developing revised job dose estimates. The inspector reviewed the licensee's corrective actions, both completed and planned, and concluded that the corrective actions appeared to address the identified root cause and contributing causes. In particular, the licensee implemented an ALARA job standard to provide additional guidance to the staff for identifying and managing changes in radiological work. The purpose of the job standard was to fully identify the changes (both prior to the work and based on the as-found conditions) and to communicate the changes to the station ALARA committee so that the planning could be adequately evaluated to determine if replanning was necessary. Initial implementation of the standard during the Spring 2001 Unit 1 recirculation pump seal replacement was adequate; however, the inspector observed weaknesses in the understanding of staff concerning when the standard was to be applied. Due to the licensee's acceptable performance in assessing the radiological planning problems, the White finding associated with this issue will only be considered in assessing plant performance for a total of four quarters in accordance with the guidance in NRC Manual Chapter 0305, "Operating Reactor Assessment Program." Implementation of the licensee's corrective actions will be reviewed during a future inspection.

Inspection Report# : [2000018\(pdf\)](#)

Inspection Report# : [2001013\(pdf\)](#)

Significance: N/A Jul 13, 2001

Identified By: NRC

Item Type: FIN Finding

A supplemental inspection was performed by the NRC to assess the licensee's evaluation associated with the failure to provide adequate radiological planning to maintain radiological doses as-low-as

This supplemental inspection was performed by the NRC to assess the licensee's evaluation associated with the failure to provide adequate

radiological planning to maintain radiological doses as-low-as-is-reasonably-achievable (ALARA) during the Fall 2000 Unit 1 outage. This performance issue was previously characterized as having low to moderate risk significance (White) in NRC Inspection Report No. 50-254/00-18 (DRS) and 50-265/00-18(DRS). During this supplemental inspection, performed in accordance with Inspection Procedure 95001, the inspector concluded that the licensee performed a comprehensive evaluation of the radiological planning weaknesses. The licensee's evaluation attributed the planning weaknesses to ineffective job management by the radiation protection and construction staffs (root cause). In determining the root cause, the licensee identified contributing factors which included ineffective management of work force changes and drywell temperature control, inadequate monitoring of job duration and identification of changes in duration, and inadequate consideration of work location dose rates and contamination levels when developing revised job dose estimates. The inspector reviewed the licensee's corrective actions, both completed and planned, and concluded that the corrective actions appeared to address the identified root cause and contributing causes. In particular, the licensee implemented an ALARA job standard to provide additional guidance to the staff for identifying and managing changes in radiological work. The purpose of the job standard was to fully identify the changes (both prior to the work and based on the as-found conditions) and to communicate the changes to the station ALARA committee so that the planning could be adequately evaluated to determine if replanning was necessary. Initial implementation of the standard during the Spring 2001 Unit 1 recirculation pump seal replacement was adequate; however, the inspector observed weaknesses in the understanding of staff concerning when the standard was to be applied. Due to the licensee's acceptable performance in assessing the radiological planning problems, the White finding associated with this issue will only be considered in assessing plant performance for a total of four quarters in accordance with the guidance in NRC Manual Chapter 0305, "Operating Reactor Assessment Program." Implementation of the licensee's corrective actions will be reviewed during a future inspection.

Inspection Report# : [2001013\(pdf\)](#)

Public Radiation Safety



Significance: Jul 02, 1999

Identified By: NRC

Item Type: FIN Finding

Lack of Documentation for Offsite Dose Calculation Manual Revisions

The inspectors identified a lack of documentation for the licensee's review of changes to the Offsite Dose Calculation Manual. Although an independent technical review determined that the changes maintained a sufficient level of effluent control, the licensee did not maintain documentation to support this determination. (Section 2PS3.3) This item had very low risk significance based on the results of the independent technical review.

Inspection Report# : [1999013\(pdf\)](#)

Physical Protection



Significance: Nov 17, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

An unattended security storage container containing Safeguards Information was found unlocked and open for approximately two hours.

An unattended security storage container containing Safeguards Information was found unlocked and open for approximately two hours (Section 40A3). The inspector reviewed the risk significance of this finding and determined the risk to be very low since no Safeguards Information was compromised and there have not been greater than two similar findings in four quarters.

Inspection Report# : [2000019\(pdf\)](#)



Significance: Jun 23, 2000

Identified By: NRC

Item Type: FIN Finding

Contingency Response Performance Deficiencies

Deficiencies were noted in the licensee's performance in the contingency response element of the Physical Protection Cornerstone. (The details of this finding are Safeguards Information and are required to be withheld from public disclosure.)

Inspection Report# : [2000201\(pdf\)](#)

Significance: N/A Jun 14, 2001

Identified By: NRC

Item Type: FIN Finding

A supplemental inspection was performed to assess the licensee's root cause evaluation related to exercise failures during two of four force-on-force contingency exercises.

This supplemental inspection was performed to assess the licensee's root cause evaluation related to exercise failures during two of four force-on-force contingency exercises. This performance issue was characterized as a White finding having a low to moderate risk significance in NRC Inspection Report No. 50-254; 265/00-201. This supplemental inspection determined that the licensee had performed a comprehensive evaluation which identified the root cause and contributing factors associated with the exercise failures noted above. The licensee's evaluation identified that the root cause of the exercise finding was a failure to effectively accomplish exercise control activities. Contributing factors were human performance errors by some security force response personnel and controllers, a lack of effective controller training, vulnerabilities in some defensive positions, and command and control activities. Licensee corrective actions were implemented to address the root cause and each contributing factor. Those actions appeared effective in correcting the identified deficiencies. Therefore, the White performance finding associated with the exercise failures was closed.

Inspection Report# : [2001011\(pdf\)](#)

Miscellaneous

Significance: N/A Dec 15, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Technical Errors in Appendix R Safe Shutdown Procedures

The inspectors identified a number of technical errors in safe shutdown procedure QCARP 0050-02. The procedure errors were considered a Non-Cited Violation (NCV 50-254/00-16-03; NCV 50-265/00-16-03) of 10 CFR 50, Appendix R, Section III.L.5 (Section 40A4.1). The technical errors were determined to have no appreciable risk significance (No Color) because the errors would not have impacted safe shutdown. However, the errors were another example of a previously identified adverse trend in human performance.

Inspection Report# : [2000016\(pdf\)](#)

Significance: N/A Nov 20, 2000

Identified By: NRC

Item Type: FIN Finding

The inspectors found that a number of human performance errors during the Q1R16 refueling outage period resulted in undesirable consequences and constituted an adverse trend.

The inspectors found that a number of human performance errors during the Q1R16 refueling outage period, October 14 to November 3, resulted in undesirable consequences and constituted an adverse trend in human performance. These errors resulted from problems with procedure adherence, control of work activities, communications, and procedure quality. Resulting problems included venting the pressurized reactor to containment near maintenance workers who were not adequately prepared for the subsequent release of steam and contamination, inadvertently draining from the reactor vessel bottom head area resulting in significant personnel contamination, and a number of wiring and second verification errors during electrical modifications and maintenance. Although most of these wiring errors were caught and corrected during testing, one error was not caught and resulted in the inoperability of one of two channels of the reactor protective system flow biased trips. While none of these events resulted in equipment performance outside the licensee response band (GREEN), the overall trend indicated problems with adhering to procedures, proper performance of second verification techniques, and the communication and coordination of activities (Section 40A4).

Inspection Report# : [2000015\(pdf\)](#)

Significance: N/A Jun 30, 2000

Identified By: NRC

Item Type: FIN Finding

Cross-Cutting Issues: Human Performance

Inspectors found that several recent events which affected plant operations and/or had the potential to adversely affect personnel safety involved elements of human performance deficiencies. An apparent adverse trend in human performance during the period May 5, 2000 to June 30, 2000, was evidenced by the following incidents. A senior reactor operator failed to implement a Technical Specification surveillance requirement for removing an emergency diesel generator from service. Control room operators experienced problems controlling reactor vessel water level during post-scram recovery efforts and failed to close a pair of drain valves during a pre-start of the Unit 1 high pressure coolant injection system. Maintenance personnel errors were involved in a reactor trip on May 5, and spread of contamination in the 2B reactor water cleanup room when a fitting was disconnected under 1000 psig pressure on June 10 (Section 40A.4).

Inspection Report# : [2000007\(pdf\)](#)

Significance: N/A Jun 30, 2000

Identified By: NRC

Item Type: FIN Finding

Weakness in Corrective Action Program.

The corrective action program was fully functional and typically identified and corrected conditions adverse to quality. In general, station personnel effectively identified and entered problems into the corrective action program using problem identification forms (PIFs). The significance threshold for entering issues into the program appeared appropriate. However, over the past year issues were identified at Quad Cities where the corrective

action process was not vigorously implemented to address the issues. In addition, the licensee's corrective action process had lost over two items a month since January 2000. Although none of these lost items were considered safety significant, and thousands of other action items were opened and closed in that time frame, this represented a weakness in the licensee's program.

Inspection Report# : [2000008\(pdf\)](#)



Significance: Apr 01, 2000

Identified By: Licensee

Item Type: NCV NonCited Violation

On September 10, 1999, the control room emergency ventilation system was inoperable

On September 10, 1999, the licensee identified that the control room emergency ventilation system was inoperable. Flow rates were out-of-specification due to repositioning of a ventilation damper 9 days previously. The action statement for Technical Specification 3.8.D allowed the system to be inoperable for 7 days. Failing to comply with the allowed outage time requirements was considered a non-cited violation of Technical Specification 3.8.D. This issue was screened as GREEN (very low risk significance) after a Phase 1 Significance Determination Process review (Section 40A3).

Inspection Report# : [2000003\(pdf\)](#)

Significance: SL-IV Aug 14, 2001

Identified By: NRC

Item Type: VIO Violation

FAILURE TO ACCURATELY REPORT PERFORMANCE INDICATOR INFORMATION

The inspectors identified that the licensee failed to report fault exposure hours for the failure of a fuel oil transfer solenoid valve to open during the Unit 2 emergency diesel generator (EDG) 18 month endurance test. The second quarter 2001 data reported to the NRC showed no fault exposure hours recorded for Unit 2 EDG. However, the inspectors found that fault exposure hours from a failed endurance run on May 1, 2001, should have been reported since only the time of the failure's discovery was known with certainty. Fault exposure hours going back to the last successful load test of the EDG on January 14, 2000, were not included in the licensee's July 2001 performance indicator data submittal for the Unit 2 Emergency Alternating Current (AC) - Safety System Unavailability performance indicator. Had the performance indicator data been properly reported, the performance indicator color would have been Red. Failure to properly report the performance indicator was considered a Severity Level IV violation of 10 CFR 50.9.

Inspection Report# : [2001012\(pdf\)](#)

Significance: N/A May 25, 2001

Identified By: NRC

Item Type: FIN Finding

Adverse performance trend.

The corrective actions to prevent recurrence for an event that resulted in an inadvertent steam release during a breach of the reactor pressure boundary proved to be ineffective to prevent a similar event that occurred six months later. Additionally, corrective actions for the second event were narrow in scope and did not address the aspects in common with the first event. Condition report Q2001-01976 was issued to address the potential common issues. The inspectors concluded that the issue was more than minor since the failure to fully identify and correct deficiencies could be reasonably viewed as a precursor to a significant event. The inspectors reviewed the applicability of the issue with respect to program cornerstones and determined that the issue did not impact a cornerstone. However, this issue contained extenuating circumstances in that the full extent of condition for the October event was not completely identified and corrected, allowing a similar event in April. The combination of these two events indicates an adverse performance trend.

Inspection Report# : [2001009\(pdf\)](#)

Significance: N/A May 25, 2001

Identified By: NRC

Item Type: FIN Finding

Corrective action program problems.

The inspectors concluded that in general the corrective action program was a complete program containing all the necessary attributes to successfully identify and correct issues at Quad Cities. However, over the past year there were several instances of difficulties with problem identification, evaluation and resolution. Most of these were documented in previous findings and violations in inspection reports. In general, these issues have been recognized, and actions have been taken to address them. For most of the issues it is too soon to fully evaluate the effectiveness of these actions so effectiveness is still to be determined. During this inspection, three areas of corrective action program problems were identified. These were the failure to properly implement the M&TE program, several instances when condition reports should have been written and they were not, and, failure to address common causes for similar steam release events on the reactor vessel during the October refueling outage, and in the April maintenance outage.

Inspection Report# : [2001009\(pdf\)](#)

Significance: N/A May 25, 2001

Identified By: NRC

Item Type: FIN Finding

Test problems on condition reports not identified.

In May of 2001, an inspector observing a surveillance noted that instrument maintenance technicians had difficulty conducting calibrations of

differential transmitters on the Unit 2 station blackout diesel air intake filter differential pressure detectors. The results were not repeatable and indicated some out-of-tolerance readings on both instruments. No condition reports were generated for either the difficulty with the tests or the apparent out-of-tolerance results until inspectors intervened. Condition Report Q2001-1549 was issued 12 days later and subsequently, Condition Reports Q2001-1474 and Q2001-1475 were written for the out-of-tolerance readings. The inspectors reviewed the significance of not identifying test problems on condition reports and concluded that the issue was more than a minor issue because if left uncorrected, the issue could become a more significant safety concern. The actual effect on the station blackout diesel was minimal since it did not directly impact operation of the equipment and another diesel was available. However, this corrective action finding is a cross-cutting issue for corrective action process performance and is assigned No Color.

Inspection Report# : [2001009\(pdf\)](#)

Significance: N/A May 25, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to assure that measuring and test equipment was properly calibrated.

In April of 2001, the station Nuclear Oversight staff identified that measurement and test equipment which was found to be out-of-calibration during post-use verifications was not evaluated as required by plant procedure. Also, condition reports on these out-of-tolerance conditions were not written when required by procedures. The licensee initiated a review which identified 159 items of out-of-tolerance equipment which had not been evaluated appropriately. The use of these items was evaluated and appropriate recovery actions taken. Failure to assure that measuring and test equipment used in 2000 and 2001 was properly calibrated was a Non-Cited Violation of 10 CFR 50, Appendix B. The inspectors reviewed the significance of not evaluating out-of-tolerance equipment and determined that the issue was more than a minor issue because if left uncorrected, the issue could become a more significant safety concern. However, since this is a corrective action concern, and no specific cornerstone was impacted, this item is assigned No Color.

Inspection Report# : [2001009\(pdf\)](#)

Significance: N/A May 16, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to report performance indicator data accurately.

Inspectors found that the licensee reported safety system functional failure data improperly. The improperly reported safety system functional failure involved failure of the Unit 2 intermediate range nuclear monitors. Had this been reported properly, it would have caused the safety system functional failure performance indicator for Unit 2 to cross the threshold from Green to White in the first quarter of 2000. The actual submittal showed performance indicator data in the licensee response or Green band. Because a performance indicator would have changed from Green to White, this was considered a Non-Cited Violation of 10 CFR 50.9.

Inspection Report# : [2001008\(pdf\)](#)

Significance: N/A Feb 29, 2000

Identified By: NRC

Item Type: FIN Finding

Human Performance Problems

Inspectors found that errors in review, coordination, and implementation of maintenance activities during or near Unit 2 refueling outage number 16 (January and February 2000) led to inoperable safety systems. Operators were unaware that Technical Specification or administrative limiting condition for operation action statements were entered or exceeded. Required nuclear instruments and emergency diesel generators were not operable during some fuel moves (Sections 1R04 and 1R20.4), automatic depressurization system valves were taken out of service while required (Section 1R20.2), the high pressure coolant injection system was inoperable due to incomplete maintenance (Section 1R19.1), and safe shutdown requirements were not properly addressed (Section 1R20.5). Other events included technician errors in which electrical jumpers were installed in incorrect locations for logic used by the reactor protective system and by the emergency core cooling system. While the risk of the individual events was very low, an increase in maintenance activity problems was evident.

Inspection Report# : [2000001\(pdf\)](#)

Significance: N/A Dec 03, 1999

Identified By: NRC

Item Type: FIN Finding

reactor coolant system leakage performance indicator

The inspectors completed verification inspection of the reactor coolant system leakage performance indicator and found very minor discrepancies which did not affect the validity of the reported performance indicator (Section 4OA2.2).

Inspection Report# : [1999023\(pdf\)](#)

Significance: N/A Dec 03, 1999

Identified By: NRC

Item Type: FIN Finding

the public radiation safety performance indicator

The inspectors verified that the licensee had properly evaluated and reported the public radiation safety performance indicator (Section 4OA2.7).

Inspection Report# : [1999023\(pdf\)](#)

Significance: N/A Dec 03, 1999

Identified By: NRC

Item Type: FIN Finding

verification inspection for the residual heat removal unavailability performance indicator.

The inspectors completed the verification inspection for the residual heat removal unavailability performance indicator. The inspectors identified that the licensee had not included 12.5 hours of residual heat removal system unavailability during system logic testing in January 1999. The licensee explained that the rules for system availability, at that time, did not require documenting the safety system unavailability. The licensee elected to report these hours in a future submittal. The extra hours would not cause the residual heat removal system unavailability to cross a color threshold (Section 4OA2.1).

Inspection Report# : [1999023\(pdf\)](#)

Significance: N/A Dec 03, 1999

Identified By: NRC

Item Type: FIN Finding

verification inspection of the licensee's performance indicators

The inspectors completed verification inspection of the licensee's performance indicators for scrams, scrams with loss of normal decay heat removal, reactor coolant specific activity, and primary containment leakage. No findings were identified (Section 4OA2).

Inspection Report# : [1999023\(pdf\)](#)

Significance: N/A Oct 20, 1999

Identified By: NRC

Item Type: FIN Finding

The licensee corrected discrepancies with the safety system functional failure indicator.

The licensee corrected discrepancies with the safety system functional failure indicator previously identified by the NRC in the September report of performance indicator data. The NRC exercised enforcement discretion and did not issue a Notice of Violation (Section 4OA3).

Inspection Report# : [1999020\(pdf\)](#)

Significance: N/A Oct 20, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Event Reporting Failure

The inspectors identified two violations of NRC reporting requirements. The licensee failed to notify the NRC within 1 hour of identifying a condition in which the control room emergency ventilation system was found outside the design basis. The licensee also failed to notify the NRC within 4 hours of an event in which the reactor core isolation cooling system was unable to perform a required safety function. The licensee made late notifications, submitted a licensee event report for the control room emergency ventilation system, and planned to submit a licensee event report for the reactor core isolation cooling system failure. These were considered two non-cited violations (Plant Status).

Inspection Report# : [1999020\(pdf\)](#)

Significance: N/A Oct 20, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Notification Failure Under 50.72

The inspectors identified two violations of NRC reporting requirements. The licensee failed to notify the NRC within 1 hour of identifying a condition in which the control room emergency ventilation system was found outside the design basis. The licensee also failed to notify the NRC within 4 hours of an event in which the reactor core isolation cooling system was unable to perform a required safety function. The licensee made late notifications, submitted a licensee event report for the control room emergency ventilation system, and planned to submit a licensee event report for the reactor core isolation cooling system failure. These were considered two non-cited violations (Plant Status).

Inspection Report# : [1999020\(pdf\)](#)



Significance: G Oct 08, 1999

Identified By: Licensee

Item Type: FIN Finding

The licensee identified errors in the PI Occupational Radiation Safety Performance Indicator (PI)

Occupational Radiation Safety Performance Indicator (PI). The licensee identified errors in the PI reported to the NRC. Originally, the licensee reported six technical specification high radiation area incidents, which resulted in a white PI. After identifying a missed occurrence and a misinterpretation of the PI criteria, the licensee determined that only two incidents were applicable to the PI, which resulted in the PI indicating that performance was in the licensee response band (green).

Inspection Report# : [1999022\(pdf\)](#)



Significance: G Jul 16, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

the repetitive problem of excessive use of overtime.

The root cause report and the corrective actions, approved by the Plant Operations Review Committee and the Corrective Action Review Board, did not fully address the repetitive problem of excessive use of overtime. There were 177 instances between February 1 and 28, 1999, where station procedures were not followed to control overtime of plant workers. Further corrective actions were being developed to ensure that overtime violations did not continue. There were no known incidents where the excessive use of overtime directly impacted or affected the safety of the plant; however, the repetitive failure to follow procedures to control overtime is a non-cited violation. (Reference Report Section 4OA1.4, page 8)
Inspection Report# : [1999012\(pdf\)](#)

Last modified : March 28, 2002

Quad Cities 2

Initiating Events

G**Significance:** Mar 31, 2001

Identified By: Licensee

Item Type: NCV NonCited Violation

Operator-induced loss of feedwater heating transient

On March 23 the inspectors reviewed an operator-induced loss of feedwater heating transient that occurred on Unit 2. The inspectors found that the operators failed to immediately recognize a reduction in feedwater heating and take prompt action to effectively control the increasing reactor power. The transient resulted in a 33 degree decrease in feedwater inlet temperature adding sufficient positive reactivity to increase reactor thermal power from 2511 to 2578 megawatts, approximately 102.7 percent of maximum licensed power. Exceeding Quad Cities License DPR-30 maximum thermal power of 2511 megawatts thermal was considered a Non-Cited Violation. The risk significance of this event was determined to be very low (Green) due to the relatively small increase a 2.7 percent power change will have on overall core thermal limits (Section 1R14).

Inspection Report# : [2001005\(pdf\)](#)G**Significance:** Aug 15, 2000

Identified By: NRC

Item Type: FIN Finding

Electrical ring bus caused electrical circuit breakers 1-3 and 3-4 to open.

On July 18 a fault on one of the offsite power feeds to the Quad Cities electrical ring bus caused electrical circuit breakers 1-3 and 3-4 to open. This action isolated the fault and resulted in a Unit 2 turbine generator and reactor trip. The response by the switchyard resulted in a loss of power on the Unit 1 reserve auxiliary transformer. The response to the reactor scram on Unit 2 was as designed. Operator performance during this event was determined to have been acceptable. The inspectors reviewed the risk significance of this initiating event for both units using the Significance Determination Process. All mitigating equipment was available for Unit 2 following the uncomplicated trip, and this event was screened as having very low risk significance (GREEN.) One of two auxiliary transformers for Unit 1 was de-energized during the event, but the unit did not trip and all mitigating equipment was available. Therefore, this event was also screened as GREEN for Unit 1.

Inspection Report# : [2000011\(pdf\)](#)G**Significance:** Dec 29, 2001

Identified By: NRC

Item Type: FIN Finding

DEGRADED AND INADEQUATELY TESTED TRANSFORMER AND PROTECTIVE RELAYING RESULTS IN INCREASE IN TRANSIENT AND LOSS OF OFFSITE POWER INITIATING EVENT FREQUENCIES

On August 2, 2001, Unit 2 experienced a transformer failure, reactor scram, and loss of offsite power. The inspectors determined that a lightning strike in conjunction with age related degradation and inadequate testing of the Unit 2 main power transformer and switchyard protective relaying contributed to the event and resulted in an increase in the initiating event frequency for plant transients and a loss of offsite power. The inspectors determined the risk significance of this issue to be very low since all remaining mitigating systems were available to mitigate the transformer rupture, reactor scram, and loss of offsite power.

Inspection Report# : [2001017\(pdf\)](#)G**Significance:** Jun 30, 2000

Identified By: NRC

Item Type: FIN Finding

operators did not control reactor vessel inventory

During operator response to a reactor trip on May 22, operators did not control reactor vessel inventory prior to the operating reactor feedwater pump tripping on high reactor vessel water level. Additionally, operators had not started a reactor feedwater pump by the time a reactor low level condition existed. This resulted in a second engineered safety feature actuation. The inspectors reviewed this issue using the significance determination process for a transient with a loss of feedwater and determined this was of very low risk significance (Section 1R14).

Inspection Report# : [2000007\(pdf\)](#)

G

Significance: Jun 30, 2000

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

Maintenance work and emerging work - 2B reactor water cleanup pump seal line disconnect

On June 10, maintenance workers disconnected a seal line to the 2B reactor water cleanup pump that was not properly isolated by the out-of-service tagout and discovered that the line was pressurized to about 1000 psig. The resulting spray caused a spread of contamination in the room and a potential hazard to the workers. No personnel injuries occurred as a result of this event. Failure to hang the proper out-of-service for the maintenance activity was considered a Non-Cited Violation (NCV) of Technical Specifications. The inspectors considered this event of very low safety significance due to the ability to isolate the leak and the availability of mitigating equipment (Section 1R13).

Inspection Report# : [2000007\(pdf\)](#)

G

Significance: Jun 30, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

adjustments to the wrong instrument, causing a reactor trip on Unit 2

On May 5 an instrument technician performing a calibration of the main steam line high steam flow detectors made adjustments to the wrong instrument, causing a reactor trip on Unit 2. Failure to implement the calibration procedure for the proper channel instrument was considered an NCV of Technical Specification 6.8.A.1. The safety significance of this event was minimal due to the availability of mitigating equipment (Section 4OA.3).

Inspection Report# : [2000007\(pdf\)](#)

G

Significance: Feb 29, 2000

Identified By: NRC

Item Type: FIN Finding

Ice Melt Valve Failure

Failure of the ice melt valve on January 22, 2000, resulted in some ice formation in the intake area. Operator detection and compensatory measures prevented the ice from affecting the water level in the intake. The valve gate had become detached from the stem. The failure of the ice melt valve was of very low risk significance because it did not result in an increased initiating event frequency for loss of both normal and ultimate heat sinks. The inspectors compared an estimated valve failure rate to the licensee's evaluation. The licensee's evaluation excluded this initiating event from the probabilistic risk assessment because no precursor event had occurred in the history of the station.

Inspection Report# : [2000001\(pdf\)](#)

G

Significance: Sep 08, 1999

Identified By: NRC

Item Type: FIN Finding

Maintenance rule functional failures

Problematic feedwater level control equipment on Unit 2 resulted in two reactor vessel water level transients in early 1999. The licensee initially evaluated these two events as not being maintenance rule functional failures, which was inappropriate. An NRC inspection and a subsequent licensee self-assessment identified the error. The licensee re-evaluated the two transients as being functional failures on July 28, 1999. This issue did not increase the frequency of initiating events and therefore was an issue of very low safety significance (Section 1R12).

Inspection Report# : [1999018\(pdf\)](#)

G

Significance: Jul 20, 1999

Identified By: NRC

Item Type: FIN Finding

a 3-inch increase in reactor water level

On Unit 2, a 3-inch increase in reactor water level occurred and required operators to take manual control of the system. Various failures in the level control systems have resulted in about ten similar events since January 1, 1999, in which operators were required to intervene to prevent level transients that could have resulted in a reactor trip. Since the plant effect of the failures is limited to an uncomplicated reactor trip, the failures were considered to be of low risk significance using the significance determination process (Section 1R03).

Inspection Report# : [1999011\(pdf\)](#)

Mitigating Systems



Significance: May 16, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to meet requirement of 10 CFR 50.59.

On June 15, 2000, station personnel removed two of the three rainbow pumps from the site. Quad Cities Updated Final Safety Analysis Report, Section 9.2.5, specifies that portable pumps (called rainbow pumps) of sufficient capacity (5100 gallons per minute) are onsite to provide makeup water to the ultimate heat sink in the event of a Lock and Dam 14 failure on the Mississippi River. The inspectors determined that the licensee had made a change to the facility as described in the Quad Cities Updated Final Safety Analysis Report without first determining if the change required a license amendment, contrary to the requirements of 10 CFR 50.59. The failure to meet the requirements of 10 CFR 50.59 was considered a Non-Cited Violation. The risk significance of this event was determined to be very low due to the very small initiating event frequency of the lock and dam failure, the slow rate of event progression once the initiating event occurs, and the availability of other onsite sources of water not credited in the event analysis.

Inspection Report# : [2001008\(pdf\)](#)



Significance: Mar 31, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

Surveillance testing involving timing of the Unit 1 and Unit 2 emergency diesel generators shortly after the engines had been shut down from previous runs

Inspectors identified that on two occasions, March 9 and March 27, the licensee performed technical specification required surveillance testing involving timing of the Unit 1 and Unit 2 emergency diesel generators shortly after the engines had been shut down from previous runs. Station procedures were inadequate in prescribing the conditions for performance of the tests. Procedures did not prevent preconditioning of the air start systems, fuel systems, and other engine and electrical components. Inadequate procedures for testing was considered a Non-Cited Violation of 10 CFR Appendix B, Criterion V, "Instruction Procedures and Drawings." The risk significance was very low (Green) because inspectors determined that testing practices had not led to declining performance of the diesel generators (Section 1R22).

Inspection Report# : [2001005\(pdf\)](#)



Significance: Dec 31, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Place the "A" Train of the Reactor Protection System in the Tripped Condition

On November 6, 2000, the Number 2 turbine control valve fast closure trip failed to cause a half scram as expected during a Unit 2 surveillance test. The licensee then repeated the test three more times and the fast closure trip successfully caused the expected half scram each time. The licensee declared the trip function operable without taking the actions of Technical Specification 3.1.A, Action 1 for an inoperable channel. Generic Letter 91-18 states that repetitive testing to achieve acceptable results without first identifying and correcting the root cause of any problem is not an acceptable means for verifying operability. A subsequent autopsy of the pressure switch for the control valve fast closure trip found evidence of fretting which produced metallic particles believed to have caused the initial failure. The inspectors determined the Number 2 turbine control valve fast closure trip had been declared operable without adequate justification. The failure to implement the required actions of Technical Specification 3.1.A-1 for an inoperable channel of the turbine control valve fast closure trip was considered a Non-Cited Violation (50-265/00-20-01). The finding was determined to be of very low safety significance due to the level of redundancy and diversity of the reactor protection system. During the period of time that the Number 2 turbine control valve fast closure trip was inoperable, a sufficient number of turbine control valve fast closure channels remained operable to result in an automatic scram, if required. Additionally, the turbine control valve fast closure trip is considered an anticipatory trip and, if inoperable, the reactor scram could still have been initiated by the reactor vessel high pressure or the average power range monitor high flux trips.

Inspection Report# : [2000020\(pdf\)](#)



Significance: Dec 15, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Seal Tops of Electrical Cabinets

The team identified that electrical cabinets in the auxiliary electric equipment room were not sealed at the top to protect equipment from water damage. The failure to seal the top of the cabinets was considered a Non-Cited Violation (NCV 50-254/00-16-01; NCV 50-265/00-16-01) of Operating Licenses DPR-29 and DPR-30, Section h.3.F (Section 1R05.2.b.1). The failure to seal the cabinets, a fire protection feature, involved very low risk (Green) because a fire protection defense-in-depth element, as described by MC 0609, Appendix F, Fire Protection Significance Determination Process, was not affected.

Inspection Report# : [2000016\(pdf\)](#)



Significance: Dec 15, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Provide Fire Stops in Cable Trays

The team identified that fire stops were not installed in divisional cable trays for which specified separation had not been maintained. The failure to install fire stops was considered a Non-Cited Violation (NCV 50-254/00-16-02; NCV 50-265/00-16-02) of Operating Licenses DPR-29 and DPR-30, Section H.3.F (Section 1R05.2.b.2). The failure to install fire stops, a fire protection feature, involved very low risk (Green) because a fire protection defense-in-depth element, as described by MC 0609, Appendix F, Fire Protection Significance Determination Process, was not affected.

Inspection Report# : [2000016\(pdf\)](#)



Significance: Nov 20, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Surveillance testing for torus temperature instrumentation components required by Technical Specification 4.2.F.1 had not been performed since installation in 1990 and 1991.

On October 4, 2000, the licensee identified that surveillance testing for torus temperature instrumentation components required by Technical Specification 4.2.F.1 had not been performed since installation in 1990 and 1991. Condition Report Q2000-03512 was written to address the issue. Failure to perform testing of the instrumentation was considered a Non-Cited Violation of Technical Specification 4.2.F.1 (Section 4OA3). Failure to check instrument accuracy by this 18-month surveillance for Unit 1 and Unit 2 involved very low risk because when the surveillance was subsequently performed, instrument accuracy of the temperature indication loop was within acceptable tolerance.

Inspection Report# : [2000015\(pdf\)](#)



Significance: Sep 30, 2000

Identified By: NRC

Item Type: FIN Finding

Inadequate operability documentation forms for Problem Identification Form Q2000-2372, regarding a design deficiency for Units 1 and 2 high pressure coolant injection motor speed changers

The inspectors found that the July 3 and August 23, 2000 supporting operability documentation forms for Problem Identification Form Q2000-2372, regarding a design deficiency for Units 1 and 2 high pressure coolant injection motor speed changers, did not adequately support the operability of the system. Inspectors reviewed the risk significance of the motor speed changer being inoperable and found the risk to be very low (GREEN) since the change to core damage frequency was less than E-6/year. In addition, operators were briefed on the potential problems with the system, and the licensee installed design changes to correct the problem on both units (Section 1R15).

Inspection Report# : [2000014\(pdf\)](#)



Significance: Sep 30, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Degraded condition of fire door 128

On September 15, the inspectors determined that the bottom latch in the inactive leaf of door 128, a 3-hour rated fire door, was not properly latched. The fire protection engineer determined that the degraded door also resulted in the inoperability of the emergency diesel generator room carbon dioxide fire suppression system. This finding constituted a violation of Quad Cities Operating Licensee DPR-29. This violation is being treated as a Non-Cited Violation (50-265/00-14-01), consistent with Section VI.A.1 of the May 1, 2000, Enforcement Policy (Section 1R05). The inspectors evaluated the degraded condition of fire door 128 using the fire protection Significance Determination Process, and evaluation techniques discussed with Senior Risk Analysts and Fire Protection Engineers in Region III and NRR. Since the degradation of the fire door was minimal, and the area of the turbine building directly in front of the door (within 15 to 20 feet) was relatively free of combustibles and cables, the inspectors determined that the possibility of a fire in the Unit 2 emergency diesel generator room spreading to damage the shared emergency diesel generator was not credible. Therefore the significance of this finding was considered very low (GREEN).

Inspection Report# : [2000014\(pdf\)](#)



Significance: Sep 30, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to implement modifications to correct a previously identified design deficiency which could have made the motor speed changer

inoperable in accident situations

Inspectors found that the licensee failed to implement modifications to correct a previously identified design deficiency which could have made the motor speed changer inoperable in accident situations. The failure to implement corrective actions for this condition was a violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action." This violation is being treated as a Non-Cited Violation (50-254/00-14-02; 50-265/00-14-02), consistent with Section VI.A.1 of the May 1, 2000, Enforcement Policy. The inspectors found that the risk significance for internal and external events was very low (GREEN) since unavailability of the high pressure coolant injection system resulted in a change to core damage frequency of less than E-6/year. The licensee implemented modifications on both units to correct the design deficiency (Section 1R15).

Inspection Report# : [2000014\(pdf\)](#)

Significance: N/A Sep 15, 2000

Identified By: NRC

Item Type: FIN Finding

WHITE Performance Indicators for Units 1 and 2 Safety System Functional Failures

The licensee's August 14, 2000, root cause report for the high number of safety system functional failures on both units listed three root causes: inadequate knowledge of complex systems, a system vice functional focus, and inadequate integration of the new NRC inspection program into the station's processes. Corrective actions listed by the licensee included: Maintenance department clarification of expectations for troubleshooting, Engineering department revision of a troubleshooting procedure to require formal troubleshooting plans, Regulatory Affairs requirement for root cause evaluation of any performance indicator which is "threatened" (less than 50 percent margin to the WHITE threshold), Regulatory Affairs requirement for root cause evaluations to include a section on cumulative effects of the system failure on a "threatened" performance indicator, Regulatory Assurance modification of corrective action program to implement root cause requirements for a "threatened" performance indicator, Plant Health Committee requirement for monthly review of performance indicators, development or revision of process to address a cumulative focus on NRC Mitigating Systems Cornerstone and functional health, Engineering action to expand use of formal troubleshooting techniques and enhance troubleshooting skills and troubleshooting procedure. The inspectors found no current concerns with the individual root cause reports for these issues. Inspectors validated the licensee assertion that poor troubleshooting and poor root causes were an issue at Quad Cities. Two of the ten events from the individual root cause evaluations were repeats of earlier events, and the root cause efforts were not effective initially.

Inspectors found weaknesses in the overall root cause report for the multiple safety system functional failures as follows: • The overall root cause evaluation failed to incorporate one of two February 2000 events. Human performance events did not get full coverage in the overall root cause, some events for the safety system functional failures involving human performance were not included. • The evaluation was focused on problems which would cause an NRC performance indicator change, and to a lesser amount on why such a large number of failures were occurring at Quad Cities. The report listed actions to review another method for trending cumulative impact of failures, but another method was not ready for review at the end of the inspection. The inspectors determined that the licensee's search for similar failures focused on the recently instituted category of "performance indicator" and thereby eliminated a number of previous safety system functional failures that occurred in 1997 and 1998. • The corrective action for troubleshooting failed to incorporate the operations department, and only focused on maintenance and engineering. Although the licensee did not entirely agree with all of the weaknesses identified by the inspectors, nevertheless, the licensee revised several of the root cause evaluations to ensure appropriate actions were developed to address the inspector's concerns.

Inspection Report# : [2000013\(pdf\)](#)



Significance: G Sep 15, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

One corrective action problem was found on August 16, 2000, and involved a previously identified design deficiency with the high pressure coolant injection system

One corrective action problem was found on August 16, 2000, and involved a previously identified design deficiency with the high pressure coolant injection system. Problem Identification Form Q1997-04485 documented that the auto initiation signal for high pressure coolant injection did not electrically seal in as described in the updated final safety analysis. However, the tracking item for correcting this problem was closed without corrective action being completed. Condition Report Q2000-02954 was written to again track corrective actions to this problem. This was considered a Non-Cited Violation (NCV) of Criterion XVI, "Corrective Action," of 10 CFR 50, Appendix B. Inspectors considered this problem to be of very low risk significance (GREEN) since it would not have prevented the system from starting automatically or being initiated manually.

Inspection Report# : [2000013\(pdf\)](#)



Significance: G Aug 15, 2000

Identified By: NRC

Item Type: FIN Finding

Contribution of fire risk to core damage frequency associated with the safe shutdown makeup pump discharge valve being in a degraded condition.

On July 19 during a regulatory conference, the licensee discussed the contribution of fire risk to core damage frequency associated with the safe shutdown makeup pump discharge valve being in a degraded condition. Based on the information presented during the conference, the NRC concluded that this condition was of very low safety significance due to the short duration (2 days) the condition existed.

Inspection Report# : [2000011\(pdf\)](#)

G

Significance: Feb 01, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to adequately address the erosion of the RHRSW room coolers' supply piping

Green. The inspectors identified a failure to promptly identify and correct conditions adverse to quality involving the erosion of safety-related residual heat removal service water piping. The licensee's corrective actions for the piping leak included replacing the affected piping and performing ultrasonic testing on similar piping for the other trains. During this inspection, NRC inspectors identified that the corrective actions were inadequate in that the ultrasonic testing was not able to examine the area of the piping affected by the erosion as evidenced by the subsequent failure. This finding was determined to be of very low safety significance because the equipment was still capable of performing its intended safety function. A Non-Cited Violation of 10CFR 50 Appendix B, Criterion XVI was identified.

Inspection Report# : [2001015\(pdf\)](#)**Significance:** N/A Nov 15, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO FOLLOW OPERATOR REQUALIFICATION PROGRAM PROCEDURAL REQUIREMENTS

No color. The inspectors identified a Non-Cited Violation wherein the facility licensee had failed to follow procedural requirements to evaluate a senior reactor operator (SRO) licensed individual in an SRO licensed position during the year 2001 annual licensed operator requalification examination (10 CFR 55.59). The finding was of very low safety significance because the SRO licensed individual held an "inactive" SRO license (i.e., would not be assigned to licensed duties unless his license was restored to an active status in accordance with 10 CFR 55.53).

Inspection Report# : [2001016\(pdf\)](#)

G

Significance: Nov 15, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO MEET 10 CFR 50.65 REQUIREMENTS

On October 24, 2001, the inspectors determined that the licensee failed to count Unit 1 and Unit 2 battery room ventilation system air handling unit drive belt failures as maintenance preventable functional failures and repeat maintenance preventable functional failures where appropriate. The licensee's incorrect assessment of these equipment failures resulted in a failure to develop and implement appropriate action plans for the battery room ventilation systems on Units 1 and 2, assess the Unit 2 battery room ventilation system for (a)(1)classification, and monitor the performance of the systems against licensee-established goals. The failure to properly implement maintenance rule requirements was considered a Non-Cited Violation of 10 CFR 50.65. The risk significance of the issue was determined to be of very low safety significance because the batteries supported by the battery room ventilation systems did not experience an actual loss of safety function.

Inspection Report# : [2001016\(pdf\)](#)

G

Significance: Sep 30, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO VERIFY ADEQUATE FILL OF THE HIGH PRESSURE COOLANT INJECTION SYSTEM AS REQUIRED BY TECHNICAL SPECIFICATIONS

On December 27, 2000, the licensee discovered that the high pressure coolant injection system was not filled with water from the pump discharge valve to the system isolation valve following maintenance activities. Technical Specification Surveillance Requirement 4.5.A.1.a.1 required the licensee to verify that the high pressure coolant injection system was filled with water every 31 days. The inspectors determined that greater than 31 days had elapsed since the licensee had verified that the high pressure coolant injection system was properly filled. The failure to perform the surveillance requirement within 31 days also resulted in the high pressure coolant injection system being inoperable for greater than the Technical Specification 3.5.A.3.a.3 allowed outage time of 14 days. The failure to meet the requirements of Technical Specification 3.5.A.3.a.3 and Surveillance Requirement 4.5.A.1.a.1 was considered a Non-Cited Violation. The risk significance of this event was determined to be very low since all remaining mitigation systems were available to provide water to the reactor during an event.

Inspection Report# : [2001014\(pdf\)](#)**Significance:** N/A May 16, 2000

Identified By: NRC

Item Type: FIN Finding

Surveillance Testing

During logic testing on March 21, 2000, the Unit 1 high pressure coolant injection auxiliary oil pump failed to properly operate. This condition rendered the system inoperable for automatic initiation for approximately one year. The risk from internal events for this condition was determined to be very low (GREEN) in Inspection Report 50-254/2000003; 50-265/2000003. The effect on risk due to external events, specifically fires, was determined to be potentially significant during a preliminary Significance Determination Process review. However, this issue was also the substantial contributor to a YELLOW high pressure coolant injection unavailability performance indicator, which represents performance that minimally reduces safety margin and requires NRC oversight. Therefore, the NRC considers the inspection findings and the performance indicator

to be a single issue and agency action will be determined based on application of the Action Matrix for the YELLOW performance indicator.

Inspection Report# : [2000005\(pdf\)](#)



Significance: Feb 29, 2000

Identified By: NRC

Item Type: FIN Finding

Safe Shutdown Makeup Pump Valve Failure

On January 19, 2000, during planned maintenance activities, maintenance workers determined that the safe shutdown makeup pump system was inoperable due to a Unit 2 safe shutdown makeup pump injection valve failure to operate. The valve failure was evaluated using the Significance Determination Process and was found to be of very low risk significance because all other mitigating systems were available.

Inspection Report# : [2000001\(pdf\)](#)



Significance: Feb 29, 2000

Identified By: NRC

Item Type: FIN Finding

Unit 2 Automatic Depressurization System Valves Taken Out-Of-Service in Mode 3

On January 22, 2000, operators did not recognize entry into a Technical Specification action statement when relief valves were removed from service with the reactor in Mode 3. Upon discovery, about 4-1/2 hours later, the valves were returned to service. The Technical Specification action statement was not exceeded. The unavailability of the relief valves was evaluated by the NRC's Senior Reactor Analyst as part of the Significance Determination Process for shutdown issues. This issue was determined to be of very low risk significance because the reactor was in hot shutdown with vessel pressure at approximately 50 psig.

Inspection Report# : [2000001\(pdf\)](#)



Significance: Feb 29, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Emergency Diesel Generator Ventilation Power Supply Switch Out of Position

On January 28, 2000, with Unit 1 operating at full power and with Unit 2 in Mode 5 (refuel), an operator identified that the Unit 2 emergency diesel generator room ventilation fan power select switch was selected to the Unit 1 power supply. The Unit 2 emergency diesel generator was inoperable, but remained available for service. Since the shared emergency diesel generator was already inoperable to Unit 2, this condition left no operable emergency diesel generators for Unit 2. This issue is considered a non-cited violation consistent with the Interim Enforcement Policy for pilot plants. This issue was considered to be of very low safety significance because the Unit 1 diesel generator would not have been overloaded by the Unit 2 emergency diesel generator room ventilation fan. The Unit 2 emergency diesel generator was also available.

Inspection Report# : [2000001\(pdf\)](#)



Significance: Feb 29, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Too Few Intermediate Range Nuclear Instruments During Refueling

From February 1 through 5, 2000, Unit 2 had less than the number of operable intermediate range nuclear instruments per channel (three) for the reactor protective system required by Technical Specification 3.1.A. Only two of four instruments were operable on the "B" channel and three of four were operable on the "A" channel. During this time, the reactor was in Mode 5 (refuel) and operators performed core alterations by moving irradiated fuel in the vessel. This issue is considered a non-cited violation consistent with the Interim Enforcement Policy for pilot plants Unit 2 was in cold shutdown with all control rods inserted. This issue was determined to be of very low risk significance because shutdown margin calculations and refueling interlocks provided assurance of adequate shutdown margin. Source range nuclear instruments provided a rod block function during refueling. Intermediate range nuclear instrument indication would not have been available until after the point where a reactivity excursion had occurred because the neutron level during refueling operations was too low for the intermediate range nuclear instruments.

Inspection Report# : [2000001\(pdf\)](#)



Significance: Feb 29, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Post Maintenance Testing

On February 10, 2000, with Unit 2 in startup mode, the high pressure coolant injection pump failed to start during testing due to incomplete maintenance. A maintenance foreman erroneously signed off the work package as being completed when it was not. This issue is considered a

non-cited violation consistent with the Interim Enforcement Policy for pilot plants. This issue was of very low risk significance since the system pressure was low, decay heat was low, and redundant methods of inventory injection were either operating or available.

Inspection Report# : [2000001\(pdf\)](#)

G

Significance: Jan 19, 2000

Identified By: NRC

Item Type: FIN Finding

Corrective Action Deficiencies Related to Heaters in the Contaminated Condensate Storage Tanks Allowed Degradation of the Heaters

The inspectors found that corrective action deficiencies related to heaters in the contaminated condensate storage tanks allowed degradation of the heaters to the extent that high pressure injection systems could have been adversely affected. The risk significance for the loss of heaters in the contaminated condensate storage tanks was low, partially because both units were shut down during times when the high pressure injection sources could have been rendered inoperable due to lack of sufficient tank heating.

Inspection Report# : [1999025\(pdf\)](#)

G

Significance: Jan 19, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Contaminated Condensate Storage Tank Heaters Inoperable

The inspectors found that design control deficiencies related to heaters in the contaminated condensate storage tanks allowed degradation of the heaters to the extent that high pressure injection systems could have been adversely affected. Modifications to the system did not evaluate the facility change as required by 10 CFR 50.59. This was considered to be a non-cited violation of 10 CFR 50.59. This issue was first documented by the licensee in August 1999 and addressed in Inspection Report 50-254/99020; 50-265/99020. The risk significance for the loss of heaters in the contaminated condensate storage tanks was low, partially because both units were shut down during times when the high pressure injection sources could have been rendered inoperable due to lack of sufficient tank heating.

Inspection Report# : [1999025\(pdf\)](#)

G

Significance: Dec 03, 1999

Identified By: NRC

Item Type: FIN Finding

Corrective Actions for a Design Control Problem with Software Backups were not Timely or Complete

The inspectors found that two failures of a high pressure coolant injection valve to close in September and October 1999 were not properly classified in the maintenance rule program. Licensee engineers initially failed to consider the second failure of the 1-2301-5 valve to close on October 4, 1999, as a repetitive maintenance preventable functional failure, and failed to monitor the system under (a)(1) of the maintenance rule. This is considered an unresolved item. The valve failure was found to be of low risk significance because the inboard isolation valve was available.

Inspection Report# : [1999023\(pdf\)](#)

G

Significance: Nov 19, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Ensure ADS Valves Qualified for Minimum Possible Voltage

Four of the five Unit 1 automatic depressurization system relief valves were not initially qualified for the degraded voltage conditions that would be seen under accident conditions. The licensee had not originally accounted for the voltage drop that would occur between the station batteries and the valve solenoids when specifying the minimum voltage for which the valves needed to be qualified. The licensee subsequently identified a test report, done for another nuclear station, which qualified the valves to a lower voltage. The inspectors, in conjunction with the Office of Nuclear Reactor Regulations, reviewed the test and accepted it under condition that a ten volt penalty be applied to account for some test deficiencies. The licensee also performed calculations to show that the actual available voltage to the valves, under degraded conditions, was above the accepted minimum voltage. A non-cited violation was identified.

Inspection Report# : [1999021\(pdf\)](#)

G

Significance: Oct 20, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Promptly Correct Control Room Emergency Ventilation System Deficiency

The inspectors identified two examples of inadequate corrective action regarding the Units 1 and 2 safety-related control room emergency ventilation system. In 1995 the licensee identified emergency diesel generator overloading concerns and degraded voltage concerns. This

degraded and nonconforming condition was not corrected, and the design basis for the emergency diesel generator system and control room emergency ventilation system were not changed to reflect the condition. Also, safety-related electrical drawing discrepancies with the control room emergency ventilation system were identified in 1997 and never corrected. A non-cited violation for 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action" with two examples was identified. In utilizing the Significance Determination Process, this issue was determined to have low risk significance because control room habitability was assumed to be maintained for the 1 hour to start control room cooling and, therefore, there was no impact on the ability of control room operators to operate the required mitigating systems. Also, the design basis event was estimated to have a very low initiating event frequency (Section 1R16).

Inspection Report# : [1999020\(pdf\)](#)



Significance: Sep 08, 1999

Identified By: NRC

Item Type: FIN Finding

A grounded resistor in the governor circuit that caused a failure of the Unit 2 reactor core isolation cooling pump

On August 26, 1999, the licensee identified a grounded resistor in the governor circuit that caused a failure of the Unit 2 reactor core isolation cooling pump. The inspectors used the significance determination process to identify this event as having very low safety significance for the loss of offsite power initiating event due to the availability of other mitigating equipment (Section 1R22.2).

Inspection Report# : [1999018\(pdf\)](#)



Significance: Sep 08, 1999

Identified By: NRC

Item Type: FIN Finding

Motor-operated valve dynamic testing

During motor-operated valve dynamic testing on August 4, 1999, the Unit 1 residual heat removal cross-tie valve (19A) failed to fully close. However, approximately one month after the failure occurred, the licensee's corrective action program did not include a plan to determine the cause of the failure or to address any potential generic considerations for other valves (Section 1R22.1). No safety functions were affected and no risk increase resulted from this particular valve failure.

Inspection Report# : [1999018\(pdf\)](#)

Significance: N/A Sep 08, 1999

Identified By: NRC

Item Type: FIN Finding

Removal of a high pressure injection pump in parallel with testing on an emergency diesel generator

On two occasions, the licensee's work authorization process allowed removal of a high pressure injection pump in parallel with testing on an emergency diesel generator. The inspectors identified that on one occasion, planned conditional core damage probability was increased to greater than that allowed by licensee administrative procedures. The actual risk was lower because the licensee did not perform the work on both systems together. The significance of this finding was not assessed by the significance determination process due to the instantaneous risk involved and the fact that the work was not performed as planned following NRC discussions with plant management (Section 1R13).

Inspection Report# : [1999018\(pdf\)](#)



Significance: Sep 03, 1999

Identified By: NRC

Item Type: FIN Finding

Copy of post-modification test not retained

The inspectors identified that the Unit 1 post modification test for a design change package on the fuel transfer pump was not retained by the licensee. This item had very low risk significance. The licensee had retained the Unit 2 test and had signature evidence that the Unit 1 test was performed.

Inspection Report# : [1999017\(pdf\)](#)



Significance: Jul 20, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Corrective Action for Flooding Procedures.

Corrective actions were not implemented for an inadequate flood protection procedure originally identified by the licensee in 1997. The procedures did not provide adequate instructions to protect the plant structurally under the forces of severe flood waters. This issue was inappropriately closed in the corrective action program without resolution. This was a non-cited violation for inadequate corrective action. A qualitative risk assessment of the impact of the procedure deficiencies concluded that the issues were of low risk significance since adequate time would be available to make procedure changes and take action during a flooding event. (Section 1R06).

Inspection Report# : [1999011\(pdf\)](#)



Significance: Jul 16, 1999

Identified By: NRC

Item Type: FIN Finding

Corrective actions to address a Unit 1 emergency diesel generator failure

Corrective actions to address a January 1998 Unit 1 emergency diesel generator (EDG) failure to start were postponed in some cases and in others only partially completed. (Reference Report Section 4OA1.3, page 5) This item was categorized by the significance determination process as being of low risk significance based on occasional EDG start failures, redundant EDGs and available off site power.

Inspection Report# : [1999012\(pdf\)](#)



Significance: Jul 16, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Excessive thrust conditions, found during testing of motor operated valves

Excessive thrust conditions, found during testing of motor operated valves (MOVs) from March 1997 through July 2, 1999, were not identified to management and did not receive appropriate corrective action to preclude recurrence. As a result, the cause of the problem was not identified and appropriate corrective action was not taken. This is a non-cited violation. This item was categorized by the significance determination process as being of low risk significance. (Reference Report Section 4OA1.4) Since nine of the ten valves found outside the acceptable thrust windows functioned as required during testing, the issue was determined to be of low risk significance and was categorized as "Green."

Inspection Report# : [1999012\(pdf\)](#)



Significance: Jul 15, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Three Examples of Design Control Relating to Original Plant Design

A non-cited design control violation with multiple examples was identified during close out of two unresolved items from the architect-engineer inspection (50-254/265-98201). The issues dealt with ensuring adequate net positive suction head for the emergency core cooling system pumps, ensuring the residual heat removal service water piping was analyzed for its design condition, and determining the adequacy of a thermal relief valve. All the examples in the Non-Cited Violation resulted from original design deficiencies. The licensee's analyses showed that the pumps were operable. Therefore, this issue screened out of the significance determination process as having very low risk significance

Inspection Report# : [1999014\(pdf\)](#)



Significance: Jul 15, 1999

Identified By: NRC

Item Type: FIN Finding

The surveillance procedure for evaluating thermal performance of the residual heat removal heat exchangers

The surveillance procedure for evaluating thermal performance of the residual heat removal heat exchangers contained errors which resulted in the licensee overestimating the heat removal capability of the 1A heat exchanger. This item had very low risk significance, since the heat exchanger was still capable of removing its design heat load.

Inspection Report# : [1999014\(pdf\)](#)

Barrier Integrity



Significance: Nov 20, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Three examples of failure to follow procedures.

On November 3, 2000, the 1B channel of the reactor protective system flow biased neutron flux trip was found to be inoperable during reactor startup from the Unit 1 refueling outage 16. The licensee determined that poor wiring practices, poor second verification practices, and inadequate post maintenance testing of nuclear instrumentation wiring led to the malfunction. Maintenance workers failed to follow the wiring requirements in the work request, did not use lift and land sheets when removing and re-terminating the wires, and failed to label the wires which were lifted during

the maintenance activity. Failure to follow the procedure (work request) for wiring was considered an example of a Non-Cited Violation. The risk significance of this event was very low because of the short amount of time that the unit was in Mode 1, because the "A" channel of flow biased trip setpoints was still operable, and because the wiring error actually caused the flow biased neutron flux trip to be more conservative (Example A). On October 14, 2000, during disassembly of the Unit 1 reactor for refueling outage 16, reactor service technicians opened a flanged connection of the reactor head vent piping with approximately 5 to 8 psig steam pressure still in the reactor vessel and initiated a steam release to the refueling floor area which lasted for several hours. Numerous procedural, process, and communication problems contributed to the event. Personnel safety, procedure adherence, procedure adequacy, and lack of control of reactor vessel disassembly activities were all concerns brought out by this event. The failure to follow procedures during vessel disassembly was considered an example of a Non-Cited Violation. The risk significance was evaluated as very low because the amount of reactor vessel inventory released to secondary containment was very low, and secondary containment integrity requirements were met (Example B). On October 22, 2000, workers attempting to replace a local power range monitor inadvertently lifted the local power range monitor tube off its seat in the reactor vessel bottom head. This caused highly contaminated radioactive water from the bottom of the reactor vessel to drain directly onto the workers. The draining stopped immediately after the local power range monitor tube was released and resealed back into the vessel. One worker was contaminated such that a meter held to his body read 5 rem per hour on contact. Extraordinary actions by radiation protection workers resulted in the removal of the majority of the highly contaminated material quickly, such that the overall external shallow dose equivalent for the individual was estimated at 2.784 rem, and the internal dose received by the worker was estimated at 45 millirem. Problems involved in this event included workers not adhering to the instructions by radiation protection technicians, workers not having procedures with them and performing steps of two different procedures concurrently, and workers not informing operators or radiation protection technicians that they were taking actions that could allow water to be drained from the reactor vessel. In addition, the procedures were not adequate to control the work. The failure to follow procedures during local power range monitor replacement was considered an example of a Non-Cited Violation. The safety significance of this event was very low because sufficient makeup capacity to fill the vessel was available even if the local power range monitor failed to reseat, the local power range monitor tube was resealed quickly and the reactor vessel drainage stopped, and the contamination was mostly external and was removed quickly (Example C).
Inspection Report# : [2000015\(pdf\)](#)

G

Significance: Jun 30, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Corrective Action for Delinquent ASME Code Work Packages

The inspectors identified a failure of the corrective action program where ASME Code Class 1, 2 and 3 Replacement and Repair program requirements for work package reviews were not met. On four occasions the licensee did not realize that the Code work packages were not meeting 10 CFR 50.55a ASME Code requirements. In each case, corrective actions were not taken to correct the situation. Failure to promptly identify and correct the failure to meet ASME code requirements for work packages was considered a Non-Cited Violation of 10 CFR 50, Appendix B, Criterion XVI. The safety significance of this issue was considered very low based on the absence of adverse consequences and the fact that no technical problems were identified.

Inspection Report# : [2000008\(pdf\)](#)

G

Significance: Jan 19, 2000

Identified By: NRC

Item Type: FIN Finding

Failure not classified as a functional failure under the Maintenance Rule

A failure of a Unit 2 containment spray system valve was not properly classified as a maintenance rule functional failure under the maintenance rule program. This individual classification failure was corrected and did not impact the licensee's ability to demonstrate maintenance effectiveness for the system. The valve failure was considered to be of low risk significance using the Significance Determination Process because the other train of containment spray was fully functional.(Section 1R12)

Inspection Report# : [1999025\(pdf\)](#)

G

Significance: Jan 19, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Overthrust of Motor-Operated Valve 2-1001-34A

During surveillance testing on December 12, 1999, residual heat removal torus spray/test return valve 2-1001-34A closed with 116,831 pounds of thrust which was almost double the previous as-left thrust setting of the valve. This value also exceeded the seismic thrust limit for the valve. Corrective actions recommended to determine extent of condition after failure of a similar valve in 1998 were not taken. This was considered to be a non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI. The excessive thrust problem was considered to have low risk significance because the valve remained operable.

Inspection Report# : [1999025\(pdf\)](#)

G

Significance: Sep 08, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to promptly correct a design deficiency with the standby gas treatment system.

The licensee discovered during surveillance testing on August 23, 1999, that both standby gas treatment trains may not have functioned as designed during a postulated loss of Bus 19. The item had been previously identified in 1992 but not adequately corrected. No design change or design evaluation justifying the degraded condition had been performed. Failure to take corrective action for this design problem was a Non-cited Violation of Criterion XVI of 10 CFR Part 50, Appendix B. This problem resolution violation could not be classified with a risk significance due to its programmatic nature. However, since 1992 the inspectors were not aware of any failures of the administrative controls that would have jeopardized standby gas treatment operability. Therefore, from an equipment standpoint, this finding has a very low risk significance (Section 40A1).

Inspection Report# : [1999018\(pdf\)](#)

G

Significance: Jul 20, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Secondary Containment Penetration.

Secondary containment integrity did not exist from 1981 until May 1997 due to an unsealed 1 inch diameter penetration. This was a non-cited violation of Technical Specification 3.7 (Section 40A3). This issue had very low risk significance. Test results showed that the standby gas treatment system could still maintain negative pressure in secondary containment with leak pathways up to 4 inches in diameter.

Inspection Report# : [1999011\(pdf\)](#)

Emergency Preparedness

Occupational Radiation Safety

W

Significance: Nov 27, 2000

Identified By: NRC

Item Type: FIN Finding

Radiological dose for the Safety Relief Valve (SRV) replacement work results in a determination of a White Finding.

Planning problems caused the dose for the Safety Relief Valve (SRV) replacement work completed during refueling outage Q1R16 to exceed its projected dose by more than 50 percent. Elevated dose rates were encountered in the drywell as a result of cobalt 60 plate-out. The drywell cooling/ventilation system was out of service for maintenance and testing, significantly elevating temperatures in the drywell. Also, less experienced workers performed the SRV job NRC Supplemental Inspection (Report 50-254/01-13, 50-265/01-13): During this supplemental inspection, performed in accordance with Inspection Procedure 95001, the inspector concluded that the licensee performed a comprehensive evaluation of the radiological planning weaknesses. The licensee's evaluation attributed the planning weaknesses to ineffective job management by the radiation protection and construction staffs (root cause). In determining the root cause, the licensee identified contributing factors which included ineffective management of work force changes and drywell temperature control, inadequate monitoring of job duration and identification of changes in duration, and inadequate consideration of work location dose rates and contamination levels when developing revised job dose estimates. The inspector reviewed the licensee's corrective actions, both completed and planned, and concluded that the corrective actions appeared to address the identified root cause and contributing causes. In particular, the licensee implemented an ALARA job standard to provide additional guidance to the staff for identifying and managing changes in radiological work. The purpose of the job standard was to fully identify the changes (both prior to the work and based on the as-found conditions) and to communicate the changes to the station ALARA committee so that the planning could be adequately evaluated to determine if replanning was necessary. Initial implementation of the standard during the Spring 2001 Unit 1 recirculation pump seal replacement was adequate; however, the inspector observed weaknesses in the understanding of staff concerning when the standard was to be applied. Due to the licensee's acceptable performance in assessing the radiological planning problems, the White finding associated with this issue will only be considered in assessing plant performance for a total of four quarters in accordance with the guidance in NRC Manual Chapter 0305, "Operating Reactor Assessment Program." Implementation of the licensee's corrective actions will be reviewed during a future inspection.

Inspection Report# : [2000018\(pdf\)](#)Inspection Report# : [2001013\(pdf\)](#)**Significance:** N/A Jul 13, 2001

Identified By: NRC

Item Type: FIN Finding

A supplemental inspection was performed by the NRC to assess the licensee's evaluation associated with the failure to provide adequate radiological planning to maintain radiological doses as-low-as

This supplemental inspection was performed by the NRC to assess the licensee's evaluation associated with the failure to provide adequate radiological planning to maintain radiological doses as-low-as-is-reasonably-achievable (ALARA) during the Fall 2000 Unit 1 outage. This performance issue was previously characterized as having low to moderate risk significance (White) in NRC Inspection Report No. 50-254/00-18 (DRS) and 50-265/00-18(DRS). During this supplemental inspection, performed in accordance with Inspection Procedure 95001, the inspector concluded that the licensee performed a comprehensive evaluation of the radiological planning weaknesses. The licensee's evaluation attributed the planning weaknesses to ineffective job management by the radiation protection and construction staffs (root cause). In determining the root cause, the licensee identified contributing factors which included ineffective management of work force changes and drywell temperature control, inadequate monitoring of job duration and identification of changes in duration, and inadequate consideration of work location dose rates and contamination levels when developing revised job dose estimates. The inspector reviewed the licensee's corrective actions, both completed and planned, and concluded that the corrective actions appeared to address the identified root cause and contributing causes. In particular, the licensee implemented an ALARA job standard to provide additional guidance to the staff for identifying and managing changes in radiological work. The purpose of the job standard was to fully identify the changes (both prior to the work and based on the as-found conditions) and to communicate the changes to the station ALARA committee so that the planning could be adequately evaluated to determine if replanning was necessary. Initial implementation of the standard during the Spring 2001 Unit 1 recirculation pump seal replacement was adequate; however, the inspector observed weaknesses in the understanding of staff concerning when the standard was to be applied. Due to the licensee's acceptable performance in assessing the radiological planning problems, the White finding associated with this issue will only be considered in assessing plant performance for a total of four quarters in accordance with the guidance in NRC Manual Chapter 0305, "Operating Reactor Assessment Program."

Implementation of the licensee's corrective actions will be reviewed during a future inspection.

Inspection Report# : [2001013\(pdf\)](#)

Public Radiation Safety



Significance: Jul 02, 1999

Identified By: NRC

Item Type: FIN Finding

Lack of Documentation for Offsite Dose Calculation Manual Revisions

The inspectors identified a lack of documentation for the licensee's review of changes to the Offsite Dose Calculation Manual. Although an independent technical review determined that the changes maintained a sufficient level of effluent control, the licensee did not maintain documentation to support this determination. (Section 2PS3.3) This item had very low risk significance based on the results of the independent technical review.

Inspection Report# : [1999013\(pdf\)](#)

Physical Protection

Significance: N/A Jun 14, 2001

Identified By: NRC

Item Type: FIN Finding

A supplemental inspection was performed to assess the licensee's root cause evaluation related to exercise failures during two of four force-on-force contingency exercises.

This supplemental inspection was performed to assess the licensee's root cause evaluation related to exercise failures during two of four force-on-force contingency exercises. This performance issue was characterized as a White finding having a low to moderate risk significance in NRC Inspection Report No. 50-254; 265/00-201. This supplemental inspection determined that the licensee had performed a comprehensive evaluation which identified the root cause and contributing factors associated with the exercise failures noted above. The licensee's evaluation identified that the root cause of the exercise finding was a failure to effectively accomplish exercise control activities. Contributing factors were human performance errors by some security force response personnel and controllers, a lack of effective controller training, vulnerabilities in some defensive positions, and command and control activities. Licensee corrective actions were implemented to address the root cause and each contributing factor. Those actions appeared effective in correcting the identified deficiencies. Therefore, the White performance finding associated with the exercise failures was closed.

Inspection Report# : [2001011\(pdf\)](#)



Significance: Nov 17, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

An unattended security storage container containing Safeguards Information was found unlocked and open for approximately two hours.

An unattended security storage container containing Safeguards Information was found unlocked and open for approximately two hours (Section 40A3). The inspector reviewed the risk significance of this finding and determined the risk to be very low since no Safeguards Information was compromised and there have not been greater than two similar findings in four quarters.

Inspection Report# : [2000019\(pdf\)](#)



Significance: Jun 23, 2000

Identified By: NRC

Item Type: FIN Finding

Contingency Response Performance Deficiencies

Deficiencies were noted in the licensee's performance in the contingency response element of the Physical Protection Cornerstone. (The details of this finding are Safeguards Information and are required to be withheld from public disclosure.)

Inspection Report# : [2000201\(pdf\)](#)

Miscellaneous

Significance: N/A May 25, 2001

Identified By: NRC

Item Type: FIN Finding

Adverse performance trend.

The corrective actions to prevent recurrence for an event that resulted in an inadvertent steam release during a breach of the reactor pressure boundary proved to be ineffective to prevent a similar event that occurred six months later. Additionally, corrective actions for the second event were narrow in scope and did not address the aspects in common with the first event. Condition report Q2001-01976 was issued to address the potential common issues. The inspectors concluded that the issue was more than minor since the failure to fully identify and correct deficiencies could be reasonably viewed as a precursor to a significant event. The inspectors reviewed the applicability of the issue with respect to program cornerstones and determined that the issue did not impact a cornerstone. However, this issue contained extenuating circumstances in that the full extent of condition for the October event was not completely identified and corrected, allowing a similar event in April. The combination of these two events indicates an adverse performance trend.

Inspection Report# : [2001009\(pdf\)](#)

Significance: N/A May 25, 2001

Identified By: NRC

Item Type: FIN Finding

Corrective action program problems.

The inspectors concluded that in general the corrective action program was a complete program containing all the necessary attributes to successfully identify and correct issues at Quad Cities. However, over the past year there were several instances of difficulties with problem identification, evaluation and resolution. Most of these were documented in previous findings and violations in inspection reports. In general, these issues have been recognized, and actions have been taken to address them. For most of the issues it is too soon to fully evaluate the effectiveness of these actions so effectiveness is still to be determined. During this inspection, three areas of corrective action program problems were identified. These were the failure to properly implement the M&TE program, several instances when condition reports should have been written and they were not, and, failure to address common causes for similar steam release events on the reactor vessel during the October refueling outage, and in the April maintenance outage.

Inspection Report# : [2001009\(pdf\)](#)

Significance: N/A May 25, 2001

Identified By: NRC

Item Type: FIN Finding

Test problems on condition reports not identified.

In May of 2001, an inspector observing a surveillance noted that instrument maintenance technicians had difficulty conducting calibrations of differential transmitters on the Unit 2 station blackout diesel air intake filter differential pressure detectors. The results were not repeatable and indicated some out-of-tolerance readings on both instruments. No condition reports were generated for either the difficulty with the tests or the apparent out-of-tolerance results until inspectors intervened. Condition Report Q2001-1549 was issued 12 days later and subsequently, Condition Reports Q2001-1474 and Q2001-1475 were written for the out-of-tolerance readings. The inspectors reviewed the significance of not identifying test problems on condition reports and concluded that the issue was more than a minor issue because if left uncorrected, the issue could become a more significant safety concern. The actual effect on the station blackout diesel was minimal since it did not directly impact operation of the equipment and another diesel was available. However, this corrective action finding is a cross-cutting issue for corrective action process performance and is assigned No Color.

Inspection Report# : [2001009\(pdf\)](#)

Significance: N/A May 25, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to assure that measuring and test equipment was properly calibrated.

In April of 2001, the station Nuclear Oversight staff identified that measurement and test equipment which was found to be out-of-calibration during post-use verifications was not evaluated as required by plant procedure. Also, condition reports on these out-of-tolerance conditions were not written when required by procedures. The licensee initiated a review which identified 159 items of out-of-tolerance equipment which had not been evaluated appropriately. The use of these items was evaluated and appropriate recovery actions taken. Failure to assure that measuring and test equipment used in 2000 and 2001 was properly calibrated was a Non-Cited Violation of 10 CFR 50, Appendix B. The inspectors reviewed the significance of not evaluating out-of-tolerance equipment and determined that the issue was more than a minor issue because if left uncorrected, the issue could become a more significant safety concern. However, since this is a corrective action concern, and no specific cornerstone was impacted, this item is assigned No Color.

Inspection Report# : [2001009\(pdf\)](#)

Significance: N/A May 16, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to report performance indicator data accurately.

Inspectors found that the licensee reported safety system functional failure data improperly. The improperly reported safety system functional failure involved failure of the Unit 2 intermediate range nuclear monitors. Had this been reported properly, it would have caused the safety system functional failure performance indicator for Unit 2 to cross the threshold from Green to White in the first quarter of 2000. The actual submittal showed performance indicator data in the licensee response or Green band. Because a performance indicator would have changed from Green to White, this was considered a Non-Cited Violation of 10 CFR 50.9.

Inspection Report# : [2001008\(pdf\)](#)

Significance: N/A Dec 15, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Technical Errors in Appendix R Safe Shutdown Procedures

The inspectors identified a number of technical errors in safe shutdown procedure QCARP 0050-02. The procedure errors were considered a Non-Cited Violation (NCV 50-254/00-16-03; NCV 50-265/00-16-03) of 10 CFR 50, Appendix R, Section III.L.5 (Section 40A4.1). The technical errors were determined to have no appreciable risk significance (No Color) because the errors would not have impacted safe shutdown. However, the errors were another example of a previously identified adverse trend in human performance.

Inspection Report# : [2000016\(pdf\)](#)

Significance: N/A Nov 20, 2000

Identified By: NRC

Item Type: FIN Finding

The inspectors found that a number of human performance errors during the Q1R16 refueling outage period resulted in undesirable consequences and constituted an adverse trend.

The inspectors found that a number of human performance errors during the Q1R16 refueling outage period, October 14 to November 3, resulted in undesirable consequences and constituted an adverse trend in human performance. These errors resulted from problems with procedure adherence, control of work activities, communications, and procedure quality. Resulting problems included venting the pressurized reactor to containment near maintenance workers who were not adequately prepared for the subsequent release of steam and contamination, inadvertently draining from the reactor vessel bottom head area resulting in significant personnel contamination, and a number of wiring and second verification errors during electrical modifications and maintenance. Although most of these wiring errors were caught and corrected during testing, one error was not caught and resulted in the inoperability of one of two channels of the reactor protective system flow biased trips. While none of these events resulted in equipment performance outside the licensee response band (GREEN), the overall trend indicated problems with adhering to procedures, proper performance of second verification techniques, and the communication and coordination of activities (Section 40A4).

Inspection Report# : [2000015\(pdf\)](#)

Significance: SL-IV Aug 14, 2001

Identified By: NRC

Item Type: VIO Violation

FAILURE TO ACCURATELY REPORT PERFORMANCE INDICATOR INFORMATION

The inspectors identified that the licensee failed to report fault exposure hours for the failure of a fuel oil transfer solenoid valve to open during the Unit 2 emergency diesel generator (EDG) 18 month endurance test. The second quarter 2001 data reported to the NRC showed no fault exposure hours recorded for Unit 2 EDG. However, the inspectors found that fault exposure hours from a failed endurance run on May 1, 2001, should have been reported since only the time of the failure's discovery was known with certainty. Fault exposure hours going back to the last successful load test of the EDG on January 14, 2000, were not included in the licensee's July 2001 performance indicator data submittal for the Unit 2 Emergency Alternating Current (AC) - Safety System Unavailability performance indicator. Had the performance indicator data been properly reported, the performance indicator color would have been Red. Failure to properly report the performance indicator was considered a Severity Level IV violation of 10 CFR 50.9.

Inspection Report# : [2001012\(pdf\)](#)

Significance: N/A Jun 30, 2000

Identified By: NRC

Item Type: FIN Finding

Cross-Cutting Issues: Human Performance

Inspectors found that several recent events which affected plant operations and/or had the potential to adversely affect personnel safety involved elements of human performance deficiencies. An apparent adverse trend in human performance during the period May 5, 2000 to June 30, 2000, was evidenced by the following incidents. A senior reactor operator failed to implement a Technical Specification surveillance requirement for removing an emergency diesel generator from service. Control room operators experienced problems controlling reactor vessel water level during post-scrum recovery efforts and failed to close a pair of drain valves during a pre-start of the Unit 1 high pressure coolant injection system. Maintenance personnel errors were involved in a reactor trip on May 5, and spread of contamination in the 2B reactor water cleanup room when a fitting was disconnected under 1000 psig pressure on June 10 (Section 40A.4).

Inspection Report# : [2000007\(pdf\)](#)

Significance: N/A Jun 30, 2000

Identified By: NRC

Item Type: FIN Finding

Weakness in Corrective Action Program.

The corrective action program was fully functional and typically identified and corrected conditions adverse to quality. In general, station personnel effectively identified and entered problems into the corrective action program using problem identification forms (PIFs). The significance threshold for entering issues into the program appeared appropriate. However, over the past year issues were identified at Quad Cities where the corrective action process was not vigorously implemented to address the issues. In addition, the licensee's corrective action process had lost over two items a month since January 2000. Although none of these lost items were considered safety significant, and thousands of other action items were opened and closed in that time frame, this represented a weakness in the licensee's program.

Inspection Report# : [2000008\(pdf\)](#)



Significance: Apr 01, 2000

Identified By: Licensee

Item Type: NCV NonCited Violation

On September 10, 1999, the control room emergency ventilation system was inoperable

On September 10, 1999, the licensee identified that the control room emergency ventilation system was inoperable. Flow rates were out-of-specification due to repositioning of a ventilation damper 9 days previously. The action statement for Technical Specification 3.8.D allowed the system to be inoperable for 7 days. Failing to comply with the allowed outage time requirements was considered a non-cited violation of Technical Specification 3.8.D. This issue was screened as GREEN (very low risk significance) after a Phase 1 Significance Determination Process review (Section 40A3).

Inspection Report# : [2000003\(pdf\)](#)

Significance: N/A Feb 29, 2000

Identified By: NRC

Item Type: FIN Finding

Human Performance Problems

Inspectors found that errors in review, coordination, and implementation of maintenance activities during or near Unit 2 refueling outage number 16 (January and February 2000) led to inoperable safety systems. Operators were unaware that Technical Specification or administrative limiting condition for operation action statements were entered or exceeded. Required nuclear instruments and emergency diesel generators were not operable during some fuel moves (Sections 1R04 and 1R20.4), automatic depressurization system valves were taken out of service while required (Section 1R20.2), the high pressure coolant injection system was inoperable due to incomplete maintenance (Section 1R19.1), and safe shutdown requirements were not properly addressed (Section 1R20.5). Other events included technician errors in which electrical jumpers were installed in incorrect locations for logic used by the reactor protective system and by the emergency core cooling system. While the risk of the individual events was very low, an increase in maintenance activity problems was evident.

Inspection Report# : [2000001\(pdf\)](#)

Significance: N/A Dec 03, 1999

Identified By: NRC

Item Type: FIN Finding

reactor coolant system leakage performance indicator

The inspectors completed verification inspection of the reactor coolant system leakage performance indicator and found very minor discrepancies which did not affect the validity of the reported performance indicator (Section 40A2.2).

Inspection Report# : [1999023\(pdf\)](#)

Significance: N/A Dec 03, 1999

Identified By: NRC

Item Type: FIN Finding

the public radiation safety performance indicator

The inspectors verified that the licensee had properly evaluated and reported the public radiation safety performance indicator (Section 40A2.7).

Inspection Report# : [1999023\(pdf\)](#)

Significance: N/A Dec 03, 1999

Identified By: NRC

Item Type: FIN Finding

verification inspection for the residual heat removal unavailability performance indicator.

The inspectors completed the verification inspection for the residual heat removal unavailability performance indicator. The inspectors identified that the licensee had not included 12.5 hours of residual heat removal system unavailability during system logic testing in January 1999. The licensee explained that the rules for system availability, at that time, did not require documenting the safety system unavailability. The licensee elected to report these hours in a future submittal. The extra hours would not cause the residual heat removal system unavailability to cross a color threshold (Section 4OA2.1).

Inspection Report# : [1999023\(pdf\)](#)

Significance: N/A Dec 03, 1999

Identified By: NRC

Item Type: FIN Finding

verification inspection of the licensee's performance indicators

The inspectors completed verification inspection of the licensee's performance indicators for scrams, scrams with loss of normal decay heat removal, reactor coolant specific activity, and primary containment leakage. No findings were identified (Section 4OA2).

Inspection Report# : [1999023\(pdf\)](#)

Significance: N/A Oct 20, 1999

Identified By: NRC

Item Type: FIN Finding

The licensee corrected discrepancies with the safety system functional failure indicator.

The licensee corrected discrepancies with the safety system functional failure indicator previously identified by the NRC in the September report of performance indicator data. The NRC exercised enforcement discretion and did not issue a Notice of Violation (Section 4OA3).

Inspection Report# : [1999020\(pdf\)](#)

Significance: N/A Oct 20, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Event Reporting Failure

The inspectors identified two violations of NRC reporting requirements. The licensee failed to notify the NRC within 1 hour of identifying a condition in which the control room emergency ventilation system was found outside the design basis. The licensee also failed to notify the NRC within 4 hours of an event in which the reactor core isolation cooling system was unable to perform a required safety function. The licensee made late notifications, submitted a licensee event report for the control room emergency ventilation system, and planned to submit a licensee event report for the reactor core isolation cooling system failure. These were considered two non-cited violations (Plant Status).

Inspection Report# : [1999020\(pdf\)](#)

Significance: N/A Oct 20, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Notification Failure Under 50.72

The inspectors identified two violations of NRC reporting requirements. The licensee failed to notify the NRC within 1 hour of identifying a condition in which the control room emergency ventilation system was found outside the design basis. The licensee also failed to notify the NRC within 4 hours of an event in which the reactor core isolation cooling system was unable to perform a required safety function. The licensee made late notifications, submitted a licensee event report for the control room emergency ventilation system, and planned to submit a licensee event report for the reactor core isolation cooling system failure. These were considered two non-cited violations (Plant Status).

Inspection Report# : [1999020\(pdf\)](#)



Significance: Oct 08, 1999

Identified By: Licensee

Item Type: FIN Finding

The licensee identified errors in the PI Occupational Radiation Safety Performance Indicator (PI)

Occupational Radiation Safety Performance Indicator (PI). The licensee identified errors in the PI reported to the NRC. Originally, the licensee reported six technical specification high radiation area incidents, which resulted in a white PI. After identifying a missed occurrence and a misinterpretation of the PI criteria, the licensee determined that only two incidents were applicable to the PI, which resulted in the PI indicating that performance was in the licensee response band (green).

Inspection Report# : [1999022\(pdf\)](#)



Significance: Jul 16, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

the repetitive problem of excessive use of overtime.

The root cause report and the corrective actions, approved by the Plant Operations Review Committee and the Corrective Action Review Board, did not fully address the repetitive problem of excessive use of overtime. There were 177 instances between February 1 and 28, 1999, where station procedures were not followed to control overtime of plant workers. Further corrective actions were being developed to ensure that overtime violations did not continue. There were no known incidents where the excessive use of overtime directly impacted or affected the safety of the plant; however, the repetitive failure to follow procedures to control overtime is a non-cited violation. (Reference Report Section 4OA1.4, page 8)
Inspection Report# : [1999012\(pdf\)](#)

Last modified : March 27, 2002

Quad Cities 2

Initiating Events

G**Significance:** Mar 31, 2001

Identified By: Licensee

Item Type: NCV NonCited Violation

Operator-induced loss of feedwater heating transient

On March 23 the inspectors reviewed an operator-induced loss of feedwater heating transient that occurred on Unit 2. The inspectors found that the operators failed to immediately recognize a reduction in feedwater heating and take prompt action to effectively control the increasing reactor power. The transient resulted in a 33 degree decrease in feedwater inlet temperature adding sufficient positive reactivity to increase reactor thermal power from 2511 to 2578 megawatts, approximately 102.7 percent of maximum licensed power. Exceeding Quad Cities License DPR-30 maximum thermal power of 2511 megawatts thermal was considered a Non-Cited Violation. The risk significance of this event was determined to be very low (Green) due to the relatively small increase a 2.7 percent power change will have on overall core thermal limits (Section 1R14).

Inspection Report# : [2001005\(pdf\)](#)G**Significance:** Dec 29, 2001

Identified By: NRC

Item Type: FIN Finding

DEGRADED AND INADEQUATELY TESTED TRANSFORMER AND PROTECTIVE RELAYING RESULTS IN INCREASE IN TRANSIENT AND LOSS OF OFFSITE POWER INITIATING EVENT FREQUENCIES

On August 2, 2001, Unit 2 experienced a transformer failure, reactor scram, and loss of offsite power. The inspectors determined that a lightning strike in conjunction with age related degradation and inadequate testing of the Unit 2 main power transformer and switchyard protective relaying contributed to the event and resulted in an increase in the initiating event frequency for plant transients and a loss of offsite power. The inspectors determined the risk significance of this issue to be very low since all remaining mitigating systems were available to mitigate the transformer rupture, reactor scram, and loss of offsite power.

Inspection Report# : [2001017\(pdf\)](#)G**Significance:** Aug 15, 2000

Identified By: NRC

Item Type: FIN Finding

Electrical ring bus caused electrical circuit breakers 1-3 and 3-4 to open.

On July 18 a fault on one of the offsite power feeds to the Quad Cities electrical ring bus caused electrical circuit breakers 1-3 and 3-4 to open. This action isolated the fault and resulted in a Unit 2 turbine generator and reactor trip. The response by the switchyard resulted in a loss of power on the Unit 1 reserve auxiliary transformer. The response to the reactor scram on Unit 2 was as designed. Operator performance during this event was determined to have been acceptable. The inspectors reviewed the risk significance of this initiating event for both units using the Significance Determination Process. All mitigating equipment was available for Unit 2 following the uncomplicated trip, and this event was screened as having very low risk significance (GREEN.) One of two auxiliary transformers for Unit 1 was de-energized during the event, but the unit did not trip and all mitigating equipment was available. Therefore, this event was also screened as GREEN for Unit 1.

Inspection Report# : [2000011\(pdf\)](#)G**Significance:** Jun 30, 2000

Identified By: NRC

Item Type: FIN Finding

operators did not control reactor vessel inventory

During operator response to a reactor trip on May 22, operators did not control reactor vessel inventory prior to the operating reactor feedwater pump tripping on high reactor vessel water level. Additionally, operators had not started a reactor feedwater pump by the time a reactor low level condition existed. This resulted in a second engineered safety feature actuation. The inspectors reviewed this issue using the significance determination process for a transient with a loss of feedwater and determined this was of very low risk significance (Section 1R14).

Inspection Report# : [2000007\(pdf\)](#)

G**Significance:** Jun 30, 2000

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

Maintenance work and emerging work - 2B reactor water cleanup pump seal line disconnect

On June 10, maintenance workers disconnected a seal line to the 2B reactor water cleanup pump that was not properly isolated by the out-of-service tagout and discovered that the line was pressurized to about 1000 psig. The resulting spray caused a spread of contamination in the room and a potential hazard to the workers. No personnel injuries occurred as a result of this event. Failure to hang the proper out-of-service for the maintenance activity was considered a Non-Cited Violation (NCV) of Technical Specifications. The inspectors considered this event of very low safety significance due to the ability to isolate the leak and the availability of mitigating equipment (Section 1R13).

Inspection Report# : [2000007\(pdf\)](#)G**Significance:** Jun 30, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

adjustments to the wrong instrument, causing a reactor trip on Unit 2

On May 5 an instrument technician performing a calibration of the main steam line high steam flow detectors made adjustments to the wrong instrument, causing a reactor trip on Unit 2. Failure to implement the calibration procedure for the proper channel instrument was considered an NCV of Technical Specification 6.8.A.1. The safety significance of this event was minimal due to the availability of mitigating equipment (Section 4OA.3).

Inspection Report# : [2000007\(pdf\)](#)G**Significance:** Feb 29, 2000

Identified By: NRC

Item Type: FIN Finding

Ice Melt Valve Failure

Failure of the ice melt valve on January 22, 2000, resulted in some ice formation in the intake area. Operator detection and compensatory measures prevented the ice from affecting the water level in the intake. The valve gate had become detached from the stem. The failure of the ice melt valve was of very low risk significance because it did not result in an increased initiating event frequency for loss of both normal and ultimate heat sinks. The inspectors compared an estimated valve failure rate to the licensee's evaluation. The licensee's evaluation excluded this initiating event from the probabilistic risk assessment because no precursor event had occurred in the history of the station.

Inspection Report# : [2000001\(pdf\)](#)G**Significance:** Sep 08, 1999

Identified By: NRC

Item Type: FIN Finding

Maintenance rule functional failures

Problematic feedwater level control equipment on Unit 2 resulted in two reactor vessel water level transients in early 1999. The licensee initially evaluated these two events as not being maintenance rule functional failures, which was inappropriate. An NRC inspection and a subsequent licensee self-assessment identified the error. The licensee re-evaluated the two transients as being functional failures on July 28, 1999. This issue did not increase the frequency of initiating events and therefore was an issue of very low safety significance (Section 1R12).

Inspection Report# : [1999018\(pdf\)](#)G**Significance:** Jul 20, 1999

Identified By: NRC

Item Type: FIN Finding

a 3-inch increase in reactor water level

On Unit 2, a 3-inch increase in reactor water level occurred and required operators to take manual control of the system. Various failures in the level control systems have resulted in about ten similar events since January 1, 1999, in which operators were required to intervene to prevent level transients that could have resulted in a reactor trip. Since the plant effect of the failures is limited to an uncomplicated reactor trip, the failures were considered to be of low risk significance using the significance determination process (Section 1R03).

Inspection Report# : [1999011\(pdf\)](#)

Mitigating Systems

G

Significance: Sep 30, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO VERIFY ADEQUATE FILL OF THE HIGH PRESSURE COOLANT INJECTION SYSTEM AS REQUIRED BY TECHNICAL SPECIFICATIONS

On December 27, 2000, the licensee discovered that the high pressure coolant injection system was not filled with water from the pump discharge valve to the system isolation valve following maintenance activities. Technical Specification Surveillance Requirement 4.5.A.1.a.1 required the licensee to verify that the high pressure coolant injection system was filled with water every 31 days. The inspectors determined that greater than 31 days had elapsed since the licensee had verified that the high pressure coolant injection system was properly filled. The failure to perform the surveillance requirement within 31 days also resulted in the high pressure coolant injection system being inoperable for greater than the Technical Specification 3.5.A.3.a.3 allowed outage time of 14 days. The failure to meet the requirements of Technical Specification 3.5.A.3.a.3 and Surveillance Requirement 4.5.A.1.a.1 was considered a Non-Cited Violation. The risk significance of this event was determined to be very low since all remaining mitigation systems were available to provide water to the reactor during an event.

Inspection Report# : [2001014\(pdf\)](#)

G

Significance: May 16, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to meet requirement of 10 CFR 50.59.

On June 15, 2000, station personnel removed two of the three rainbow pumps from the site. Quad Cities Updated Final Safety Analysis Report, Section 9.2.5, specifies that portable pumps (called rainbow pumps) of sufficient capacity (5100 gallons per minute) are onsite to provide makeup water to the ultimate heat sink in the event of a Lock and Dam 14 failure on the Mississippi River. The inspectors determined that the licensee had made a change to the facility as described in the Quad Cities Updated Final Safety Analysis Report without first determining if the change required a license amendment, contrary to the requirements of 10 CFR 50.59. The failure to meet the requirements of 10 CFR 50.59 was considered a Non-Cited Violation. The risk significance of this event was determined to be very low due to the very small initiating event frequency of the lock and dam failure, the slow rate of event progression once the initiating event occurs, and the availability of other onsite sources of water not credited in the event analysis.

Inspection Report# : [2001008\(pdf\)](#)

G

Significance: Mar 31, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

Surveillance testing involving timing of the Unit 1 and Unit 2 emergency diesel generators shortly after the engines had been shut down from previous runs

Inspectors identified that on two occasions, March 9 and March 27, the licensee performed technical specification required surveillance testing involving timing of the Unit 1 and Unit 2 emergency diesel generators shortly after the engines had been shut down from previous runs. Station procedures were inadequate in prescribing the conditions for performance of the tests. Procedures did not prevent preconditioning of the air start systems, fuel systems, and other engine and electrical components. Inadequate procedures for testing was considered a Non-Cited Violation of 10 CFR Appendix B, Criterion V, "Instruction Procedures and Drawings." The risk significance was very low (Green) because inspectors determined that testing practices had not led to declining performance of the diesel generators (Section 1R22).

Inspection Report# : [2001005\(pdf\)](#)

G

Significance: Dec 31, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Place the "A" Train of the Reactor Protection System in the Tripped Condition

On November 6, 2000, the Number 2 turbine control valve fast closure trip failed to cause a half scram as expected during a Unit 2 surveillance test. The licensee then repeated the test three more times and the fast closure trip successfully caused the expected half scram each time. The licensee declared the trip function operable without taking the actions of Technical Specification 3.1.A, Action 1 for an inoperable channel. Generic Letter 91-18 states that repetitive testing to achieve acceptable results without first identifying and correcting the root cause of any problem is not an acceptable means for verifying operability. A subsequent autopsy of the pressure switch for the control valve fast closure trip found evidence of fretting which produced metallic particles believed to have caused the initial failure. The inspectors determined the Number 2 turbine control valve fast closure trip had been declared operable without adequate justification. The failure to implement the required actions of Technical Specification 3.1.A-1 for an inoperable channel of the turbine control valve fast closure trip was considered a Non-Cited Violation (50-265/00-20-01). The finding was determined to be of very low safety significance due to the level of redundancy and diversity of the reactor protection system. During the period

of time that the Number 2 turbine control valve fast closure trip was inoperable, a sufficient number of turbine control valve fast closure channels remained operable to result in an automatic scram, if required. Additionally, the turbine control valve fast closure trip is considered an anticipatory trip and, if inoperable, the reactor scram could still have been initiated by the reactor vessel high pressure or the average power range monitor high flux trips.

Inspection Report# : [2000020\(pdf\)](#)



Significance: Dec 15, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Seal Tops of Electrical Cabinets

The team identified that electrical cabinets in the auxiliary electric equipment room were not sealed at the top to protect equipment from water damage. The failure to seal the top of the cabinets was considered a Non-Cited Violation (NCV 50-254/00-16-01; NCV 50-265/00-16-01) of Operating Licenses DPR-29 and DPR-30, Section h.3.F (Section 1R05.2.b.1). The failure to seal the cabinets, a fire protection feature, involved very low risk (Green) because a fire protection defense-in-depth element, as described by MC 0609, Appendix F, Fire Protection Significance Determination Process, was not affected.

Inspection Report# : [2000016\(pdf\)](#)



Significance: Dec 15, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Provide Fire Stops in Cable Trays

The team identified that fire stops were not installed in divisional cable trays for which specified separation had not been maintained. The failure to install fire stops was considered a Non-Cited Violation (NCV 50-254/00-16-02; NCV 50-265/00-16-02) of Operating Licenses DPR-29 and DPR-30, Section H.3.F (Section 1R05.2.b.2). The failure to install fire stops, a fire protection feature, involved very low risk (Green) because a fire protection defense-in-depth element, as described by MC 0609, Appendix F, Fire Protection Significance Determination Process, was not affected.

Inspection Report# : [2000016\(pdf\)](#)



Significance: Nov 20, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Surveillance testing for torus temperature instrumentation components required by Technical Specification 4.2.F.1 had not been performed since installation in 1990 and 1991.

On October 4, 2000, the licensee identified that surveillance testing for torus temperature instrumentation components required by Technical Specification 4.2.F.1 had not been performed since installation in 1990 and 1991. Condition Report Q2000-03512 was written to address the issue. Failure to perform testing of the instrumentation was considered a Non-Cited Violation of Technical Specification 4.2.F.1 (Section 4OA3). Failure to check instrument accuracy by this 18-month surveillance for Unit 1 and Unit 2 involved very low risk because when the surveillance was subsequently performed, instrument accuracy of the temperature indication loop was within acceptable tolerance.

Inspection Report# : [2000015\(pdf\)](#)



Significance: Feb 01, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to adequately address the erosion of the RHRSW room coolers' supply piping

Green. The inspectors identified a failure to promptly identify and correct conditions adverse to quality involving the erosion of safety-related residual heat removal service water piping. The licensee's corrective actions for the piping leak included replacing the affected piping and performing ultrasonic testing on similar piping for the other trains. During this inspection, NRC inspectors identified that the corrective actions were inadequate in that the ultrasonic testing was not able to examine the area of the piping affected by the erosion as evidenced by the subsequent failure. This finding was determined to be of very low safety significance because the equipment was still capable of performing its intended safety function. A Non-Cited Violation of 10CFR 50 Appendix B, Criterion XVI was identified.

Inspection Report# : [2001015\(pdf\)](#)

Significance: N/A Nov 15, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO FOLLOW OPERATOR REQUALIFICATION PROGRAM PROCEDURAL REQUIREMENTS

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

examination (10 CFR 55.59). The finding was of very low safety significance because the SRO licensed individual held an "inactive" SRO license (i.e., would not be assigned to licensed duties unless his license was restored to an active status in accordance with 10 CFR 55.53).

Inspection Report# : [2001016\(pdf\)](#)

G

Significance: Nov 15, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO MEET 10 CFR 50.65 REQUIREMENTS

On October 24, 2001, the inspectors determined that the licensee failed to count Unit 1 and Unit 2 battery room ventilation system air handling unit drive belt failures as maintenance preventable functional failures and repeat maintenance preventable functional failures where appropriate. The licensee's incorrect assessment of these equipment failures resulted in a failure to develop and implement appropriate action plans for the battery room ventilation systems on Units 1 and 2, assess the Unit 2 battery room ventilation system for (a)(1)classification, and monitor the performance of the systems against licensee-established goals. The failure to properly implement maintenance rule requirements was considered a Non-Cited Violation of 10 CFR 50.65. The risk significance of the issue was determined to be of very low safety significance because the batteries supported by the battery room ventilation systems did not experience an actual loss of safety function.

Inspection Report# : [2001016\(pdf\)](#)

G

Significance: Sep 30, 2000

Identified By: NRC

Item Type: FIN Finding

Inadequate operability documentation forms for Problem Identification Form Q2000-2372, regarding a design deficiency for Units 1 and 2 high pressure coolant injection motor speed changers

The inspectors found that the July 3 and August 23, 2000 supporting operability documentation forms for Problem Identification Form Q2000-2372, regarding a design deficiency for Units 1 and 2 high pressure coolant injection motor speed changers, did not adequately support the operability of the system. Inspectors reviewed the risk significance of the motor speed changer being inoperable and found the risk to be very low (GREEN) since the change to core damage frequency was less than E-6/year. In addition, operators were briefed on the potential problems with the system, and the licensee installed design changes to correct the problem on both units (Section 1R15).

Inspection Report# : [2000014\(pdf\)](#)

G

Significance: Sep 30, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Degraded condition of fire door 128

On September 15, the inspectors determined that the bottom latch in the inactive leaf of door 128, a 3-hour rated fire door, was not properly latched. The fire protection engineer determined that the degraded door also resulted in the inoperability of the emergency diesel generator room carbon dioxide fire suppression system. This finding constituted a violation of Quad Cities Operating Licensee DPR-29. This violation is being treated as a Non-Cited Violation (50-265/00-14-01), consistent with Section VI.A.1 of the May 1, 2000, Enforcement Policy (Section 1R05). The inspectors evaluated the degraded condition of fire door 128 using the fire protection Significance Determination Process, and evaluation techniques discussed with Senior Risk Analysts and Fire Protection Engineers in Region III and NRR. Since the degradation of the fire door was minimal, and the area of the turbine building directly in front of the door (within 15 to 20 feet) was relatively free of combustibles and cables, the inspectors determined that the possibility of a fire in the Unit 2 emergency diesel generator room spreading to damage the shared emergency diesel generator was not credible. Therefore the significance of this finding was considered very low (GREEN).

Inspection Report# : [2000014\(pdf\)](#)

G

Significance: Sep 30, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to implement modifications to correct a previously identified design deficiency which could have made the motor speed changer inoperable in accident situations

Inspectors found that the licensee failed to implement modifications to correct a previously identified design deficiency which could have made the motor speed changer inoperable in accident situations. The failure to implement corrective actions for this condition was a violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action." This violation is being treated as a Non-Cited Violation (50-254/00-14-02; 50-265/00-14-02), consistent with Section VI.A.1 of the May 1, 2000, Enforcement Policy. The inspectors found that the risk significance for internal and external events was very low (GREEN) since unavailability of the high pressure coolant injection system resulted in a change to core damage frequency of less than E-6/year. The licensee implemented modifications on both units to correct the design deficiency (Section 1R15).

Inspection Report# : [2000014\(pdf\)](#)

Significance: N/A Sep 15, 2000

Identified By: NRC

Item Type: FIN Finding

WHITE Performance Indicators for Units 1 and 2 Safety System Functional Failures

The licensee's August 14, 2000, root cause report for the high number of safety system functional failures on both units listed three root causes: inadequate knowledge of complex systems, a system vice functional focus, and inadequate integration of the new NRC inspection program into the station's processes. Corrective actions listed by the licensee included: Maintenance department clarification of expectations for troubleshooting, Engineering department revision of a troubleshooting procedure to require formal troubleshooting plans, Regulatory Affairs requirement for root cause evaluation of any performance indicator which is "threatened" (less than 50 percent margin to the WHITE threshold), Regulatory Affairs requirement for root cause evaluations to include a section on cumulative effects of the system failure on a "threatened" performance indicator, Regulatory Assurance modification of corrective action program to implement root cause requirements for a "threatened" performance indicator, Plant Health Committee requirement for monthly review of performance indicators, development or revision of process to address a cumulative focus on NRC Mitigating Systems Cornerstone and functional health, Engineering action to expand use of formal troubleshooting techniques and enhance troubleshooting skills and troubleshooting procedure. The inspectors found no current concerns with the individual root cause reports for these issues. Inspectors validated the licensee assertion that poor troubleshooting and poor root causes were an issue at Quad Cities. Two of the ten events from the individual root cause evaluations were repeats of earlier events, and the root cause efforts were not effective initially.

Inspectors found weaknesses in the overall root cause report for the multiple safety system functional failures as follows: • The overall root cause evaluation failed to incorporate one of two February 2000 events. Human performance events did not get full coverage in the overall root cause, some events for the safety system functional failures involving human performance were not included. • The evaluation was focused on problems which would cause an NRC performance indicator change, and to a lesser amount on why such a large number of failures were occurring at Quad Cities. The report listed actions to review another method for trending cumulative impact of failures, but another method was not ready for review at the end of the inspection. The inspectors determined that the licensee's search for similar failures focused on the recently instituted category of "performance indicator" and thereby eliminated a number of previous safety system functional failures that occurred in 1997 and 1998. • The corrective action for troubleshooting failed to incorporate the operations department, and only focused on maintenance and engineering. Although the licensee did not entirely agree with all of the weaknesses identified by the inspectors, nevertheless, the licensee revised several of the root cause evaluations to ensure appropriate actions were developed to address the inspector's concerns.

Inspection Report# : [2000013\(pdf\)](#)



Significance: G Sep 15, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

One corrective action problem was found on August 16, 2000, and involved a previously identified design deficiency with the high pressure coolant injection system

One corrective action problem was found on August 16, 2000, and involved a previously identified design deficiency with the high pressure coolant injection system. Problem Identification Form Q1997-04485 documented that the auto initiation signal for high pressure coolant injection did not electrically seal in as described in the updated final safety analysis. However, the tracking item for correcting this problem was closed without corrective action being completed. Condition Report Q2000-02954 was written to again track corrective actions to this problem. This was considered a Non-Cited Violation (NCV) of Criterion XVI, "Corrective Action," of 10 CFR 50, Appendix B. Inspectors considered this problem to be of very low risk significance (GREEN) since it would not have prevented the system from starting automatically or being initiated manually.

Inspection Report# : [2000013\(pdf\)](#)



Significance: G Aug 15, 2000

Identified By: NRC

Item Type: FIN Finding

Contribution of fire risk to core damage frequency associated with the safe shutdown makeup pump discharge valve being in a degraded condition.

On July 19 during a regulatory conference, the licensee discussed the contribution of fire risk to core damage frequency associated with the safe shutdown makeup pump discharge valve being in a degraded condition. Based on the information presented during the conference, the NRC concluded that this condition was of very low safety significance due to the short duration (2 days) the condition existed.

Inspection Report# : [2000011\(pdf\)](#)

Significance: N/A May 16, 2000

Identified By: NRC

Item Type: FIN Finding

Surveillance Testing

During logic testing on March 21, 2000, the Unit 1 high pressure coolant injection auxiliary oil pump failed to properly operate. This condition rendered the system inoperable for automatic initiation for approximately one year. The risk from internal events for this condition was determined to be very low (GREEN) in Inspection Report 50-254/2000003; 50-265/2000003. The effect on risk due to external events, specifically fires, was determined to be potentially significant during a preliminary Significance Determination Process review. However, this issue was also the substantial contributor to a YELLOW high pressure coolant injection unavailability performance indicator, which represents performance that minimally reduces safety margin and requires NRC oversight. Therefore, the NRC considers the inspection findings and the performance indicator to be a single issue and agency action will be determined based on application of the Action Matrix for the YELLOW performance indicator.

Inspection Report# : [2000005\(pdf\)](#)

G

Significance: Feb 29, 2000

Identified By: NRC

Item Type: FIN Finding

Safe Shutdown Makeup Pump Valve Failure

On January 19, 2000, during planned maintenance activities, maintenance workers determined that the safe shutdown makeup pump system was inoperable due to a Unit 2 safe shutdown makeup pump injection valve failure to operate. The valve failure was evaluated using the Significance Determination Process and was found to be of very low risk significance because all other mitigating systems were available.

Inspection Report# : [2000001\(pdf\)](#)

G

Significance: Feb 29, 2000

Identified By: NRC

Item Type: FIN Finding

Unit 2 Automatic Depressurization System Valves Taken Out-Of-Service in Mode 3

On January 22, 2000, operators did not recognize entry into a Technical Specification action statement when relief valves were removed from service with the reactor in Mode 3. Upon discovery, about 4-1/2 hours later, the valves were returned to service. The Technical Specification action statement was not exceeded. The unavailability of the relief valves was evaluated by the NRC's Senior Reactor Analyst as part of the Significance Determination Process for shutdown issues. This issue was determined to be of very low risk significance because the reactor was in hot shutdown with vessel pressure at approximately 50 psig.

Inspection Report# : [2000001\(pdf\)](#)

G

Significance: Feb 29, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Emergency Diesel Generator Ventilation Power Supply Switch Out of Position

On January 28, 2000, with Unit 1 operating at full power and with Unit 2 in Mode 5 (refuel), an operator identified that the Unit 2 emergency diesel generator room ventilation fan power select switch was selected to the Unit 1 power supply. The Unit 2 emergency diesel generator was inoperable, but remained available for service. Since the shared emergency diesel generator was already inoperable to Unit 2, this condition left no operable emergency diesel generators for Unit 2. This issue is considered a non-cited violation consistent with the Interim Enforcement Policy for pilot plants. This issue was considered to be of very low safety significance because the Unit 1 diesel generator would not have been overloaded by the Unit 2 emergency diesel generator room ventilation fan. The Unit 2 emergency diesel generator was also available.

Inspection Report# : [2000001\(pdf\)](#)

G

Significance: Feb 29, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Post Maintenance Testing

On February 10, 2000, with Unit 2 in startup mode, the high pressure coolant injection pump failed to start during testing due to incomplete maintenance. A maintenance foreman erroneously signed off the work package as being completed when it was not. This issue is considered a non-cited violation consistent with the Interim Enforcement Policy for pilot plants. This issue was of very low risk significance since the system pressure was low, decay heat was low, and redundant methods of inventory injection were either operating or available.

Inspection Report# : [2000001\(pdf\)](#)

G

Significance: Feb 29, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Too Few Intermediate Range Nuclear Instruments During Refueling

From February 1 through 5, 2000, Unit 2 had less than the number of operable intermediate range nuclear instruments per channel (three) for the reactor protective system required by Technical Specification 3.1.A. Only two of four instruments were operable on the "B" channel and three of four were operable on the "A" channel. During this time, the reactor was in Mode 5 (refuel) and operators performed core alterations by moving irradiated fuel in the vessel. This issue is considered a non-cited violation consistent with the Interim Enforcement Policy for pilot plants Unit 2 was in cold shutdown with all control rods inserted. This issue was determined to be of very low risk significance because shutdown margin calculations and refueling interlocks provided assurance of adequate shutdown margin. Source range nuclear instruments provided a rod block function during refueling. Intermediate range nuclear instrument indication would not have been available until after the point where a reactivity excursion had

occurred because the neutron level during refueling operations was too low for the intermediate range nuclear instruments.

Inspection Report# : [2000001\(pdf\)](#)



Significance: Jan 19, 2000

Identified By: NRC

Item Type: FIN Finding

Corrective Action Deficiencies Related to Heaters in the Contaminated Condensate Storage Tanks Allowed Degradation of the Heaters

The inspectors found that corrective action deficiencies related to heaters in the contaminated condensate storage tanks allowed degradation of the heaters to the extent that high pressure injection systems could have been adversely affected. The risk significance for the loss of heaters in the contaminated condensate storage tanks was low, partially because both units were shut down during times when the high pressure injection sources could have been rendered inoperable due to lack of sufficient tank heating.

Inspection Report# : [1999025\(pdf\)](#)



Significance: Jan 19, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Contaminated Condensate Storage Tank Heaters Inoperable

The inspectors found that design control deficiencies related to heaters in the contaminated condensate storage tanks allowed degradation of the heaters to the extent that high pressure injection systems could have been adversely affected. Modifications to the system did not evaluate the facility change as required by 10 CFR 50.59. This was considered to be a non-cited violation of 10 CFR 50.59. This issue was first documented by the licensee in August 1999 and addressed in Inspection Report 50-254/99020; 50-265/99020. The risk significance for the loss of heaters in the contaminated condensate storage tanks was low, partially because both units were shut down during times when the high pressure injection sources could have been rendered inoperable due to lack of sufficient tank heating.

Inspection Report# : [1999025\(pdf\)](#)



Significance: Dec 03, 1999

Identified By: NRC

Item Type: FIN Finding

Corrective Actions for a Design Control Problem with Software Backups were not Timely or Complete

The inspectors found that two failures of a high pressure coolant injection valve to close in September and October 1999 were not properly classified in the maintenance rule program. Licensee engineers initially failed to consider the second failure of the 1-2301-5 valve to close on October 4, 1999, as a repetitive maintenance preventable functional failure, and failed to monitor the system under (a)(1) of the maintenance rule. This is considered an unresolved item. The valve failure was found to be of low risk significance because the inboard isolation valve was available.

Inspection Report# : [1999023\(pdf\)](#)



Significance: Nov 19, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Ensure ADS Valves Qualified for Minimum Possible Voltage

Four of the five Unit 1 automatic depressurization system relief valves were not initially qualified for the degraded voltage conditions that would be seen under accident conditions. The licensee had not originally accounted for the voltage drop that would occur between the station batteries and the valve solenoids when specifying the minimum voltage for which the valves needed to be qualified. The licensee subsequently identified a test report, done for another nuclear station, which qualified the valves to a lower voltage. The inspectors, in conjunction with the Office of Nuclear Reactor Regulations, reviewed the test and accepted it under condition that a ten volt penalty be applied to account for some test deficiencies. The licensee also performed calculations to show that the actual available voltage to the valves, under degraded conditions, was above the accepted minimum voltage. A non-cited violation was identified.

Inspection Report# : [1999021\(pdf\)](#)



Significance: Oct 20, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Promptly Correct Control Room Emergency Ventilation System Deficiency

The inspectors identified two examples of inadequate corrective action regarding the Units 1 and 2 safety-related control room emergency ventilation system. In 1995 the licensee identified emergency diesel generator overloading concerns and degraded voltage concerns. This degraded and nonconforming condition was not corrected, and the design basis for the emergency diesel generator system and control room

emergency ventilation system were not changed to reflect the condition. Also, safety-related electrical drawing discrepancies with the control room emergency ventilation system were identified in 1997 and never corrected. A non-cited violation for 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action" with two examples was identified. In utilizing the Significance Determination Process, this issue was determined to have low risk significance because control room habitability was assumed to be maintained for the 1 hour to start control room cooling and, therefore, there was no impact on the ability of control room operators to operate the required mitigating systems. Also, the design basis event was estimated to have a very low initiating event frequency (Section 1R16).

Inspection Report# : [1999020\(pdf\)](#)

G

Significance: Sep 08, 1999

Identified By: NRC

Item Type: FIN Finding

A grounded resistor in the governor circuit that caused a failure of the Unit 2 reactor core isolation cooling pump

On August 26, 1999, the licensee identified a grounded resistor in the governor circuit that caused a failure of the Unit 2 reactor core isolation cooling pump. The inspectors used the significance determination process to identify this event as having very low safety significance for the loss of offsite power initiating event due to the availability of other mitigating equipment (Section 1R22.2).

Inspection Report# : [1999018\(pdf\)](#)

G

Significance: Sep 08, 1999

Identified By: NRC

Item Type: FIN Finding

Motor-operated valve dynamic testing

During motor-operated valve dynamic testing on August 4, 1999, the Unit 1 residual heat removal cross-tie valve (19A) failed to fully close. However, approximately one month after the failure occurred, the licensee's corrective action program did not include a plan to determine the cause of the failure or to address any potential generic considerations for other valves (Section 1R22.1). No safety functions were affected and no risk increase resulted from this particular valve failure.

Inspection Report# : [1999018\(pdf\)](#)

Significance: N/A Sep 08, 1999

Identified By: NRC

Item Type: FIN Finding

Removal of a high pressure injection pump in parallel with testing on an emergency diesel generator

On two occasions, the licensee's work authorization process allowed removal of a high pressure injection pump in parallel with testing on an emergency diesel generator. The inspectors identified that on one occasion, planned conditional core damage probability was increased to greater than that allowed by licensee administrative procedures. The actual risk was lower because the licensee did not perform the work on both systems together. The significance of this finding was not assessed by the significance determination process due to the instantaneous risk involved and the fact that the work was not performed as planned following NRC discussions with plant management (Section 1R13).

Inspection Report# : [1999018\(pdf\)](#)

G

Significance: Sep 03, 1999

Identified By: NRC

Item Type: FIN Finding

Copy of post-modification test not retained

The inspectors identified that the Unit 1 post modification test for a design change package on the fuel transfer pump was not retained by the licensee. This item had very low risk significance. The licensee had retained the Unit 2 test and had signature evidence that the Unit 1 test was performed.

Inspection Report# : [1999017\(pdf\)](#)

G

Significance: Jul 20, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Corrective Action for Flooding Procedures.

Corrective actions were not implemented for an inadequate flood protection procedure originally identified by the licensee in 1997. The procedures did not provide adequate instructions to protect the plant structurally under the forces of severe flood waters. This issue was inappropriately closed in the corrective action program without resolution. This was a non-cited violation for inadequate corrective action. A qualitative risk assessment of the impact of the procedure deficiencies concluded that the issues were of low risk significance since adequate time would be available to make procedure changes and take action during a flooding event. (Section 1R06).

Inspection Report# : [1999011\(pdf\)](#)

G

Significance: Jul 16, 1999

Identified By: NRC

Item Type: FIN Finding

Corrective actions to address a Unit 1 emergency diesel generator failure

Corrective actions to address a January 1998 Unit 1 emergency diesel generator (EDG) failure to start were postponed in some cases and in others only partially completed. (Reference Report Section 4OA1.3, page 5) This item was categorized by the significance determination process as being of low risk significance based on occasional EDG start failures, redundant EDGs and available off site power.

Inspection Report# : [1999012\(pdf\)](#)

G

Significance: Jul 16, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Excessive thrust conditions, found during testing of motor operated valves

Excessive thrust conditions, found during testing of motor operated valves (MOVs) from March 1997 through July 2, 1999, were not identified to management and did not receive appropriate corrective action to preclude recurrence. As a result, the cause of the problem was not identified and appropriate corrective action was not taken. This is a non-cited violation. This item was categorized by the significance determination process as being of low risk significance. (Reference Report Section 4OA1.4) Since nine of the ten valves found outside the acceptable thrust windows functioned as required during testing, the issue was determined to be of low risk significance and was categorized as "Green."

Inspection Report# : [1999012\(pdf\)](#)

G

Significance: Jul 15, 1999

Identified By: NRC

Item Type: FIN Finding

The surveillance procedure for evaluating thermal performance of the residual heat removal heat exchangers

The surveillance procedure for evaluating thermal performance of the residual heat removal heat exchangers contained errors which resulted in the licensee overestimating the heat removal capability of the 1A heat exchanger. This item had very low risk significance, since the heat exchanger was still capable of removing its design heat load.

Inspection Report# : [1999014\(pdf\)](#)

G

Significance: Jul 15, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Three Examples of Design Control Relating to Original Plant Design

A non-cited design control violation with multiple examples was identified during close out of two unresolved items from the architect-engineer inspection (50-254/265-98201). The issues dealt with ensuring adequate net positive suction head for the emergency core cooling system pumps, ensuring the residual heat removal service water piping was analyzed for its design condition, and determining the adequacy of a thermal relief valve. All the examples in the Non-Cited Violation resulted from original design deficiencies. The licensee's analyses showed that the pumps were operable. Therefore, this issue screened out of the significance determination process as having very low risk significance

Inspection Report# : [1999014\(pdf\)](#)

Barrier Integrity

G

Significance: Nov 20, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Three examples of failure to follow procedures.

On November 3, 2000, the 1B channel of the reactor protective system flow biased neutron flux trip was found to be inoperable during reactor startup from the Unit 1 refueling outage 16. The licensee determined that poor wiring practices, poor second verification practices, and inadequate post maintenance testing of nuclear instrumentation wiring led to the malfunction. Maintenance workers failed to follow the wiring requirements in the work request, did not use lift and land sheets when removing and re-terminating the wires, and failed to label the wires which were lifted during the maintenance activity. Failure to follow the procedure (work request) for wiring was considered an example of a Non-Cited Violation. The risk significance of this event was very low because of the short amount of time that the unit was in Mode 1, because the "A" channel of flow biased trip

setpoints was still operable, and because the wiring error actually caused the flow biased neutron flux trip to be more conservative (Example A). On October 14, 2000, during disassembly of the Unit 1 reactor for refueling outage 16, reactor service technicians opened a flanged connection of the reactor head vent piping with approximately 5 to 8 psig steam pressure still in the reactor vessel and initiated a steam release to the refueling floor area which lasted for several hours. Numerous procedural, process, and communication problems contributed to the event. Personnel safety, procedure adherence, procedure adequacy, and lack of control of reactor vessel disassembly activities were all concerns brought out by this event. The failure to follow procedures during vessel disassembly was considered an example of a Non-Cited Violation. The risk significance was evaluated as very low because the amount of reactor vessel inventory released to secondary containment was very low, and secondary containment integrity requirements were met (Example B). On October 22, 2000, workers attempting to replace a local power range monitor inadvertently lifted the local power range monitor tube off its seat in the reactor vessel bottom head. This caused highly contaminated radioactive water from the bottom of the reactor vessel to drain directly onto the workers. The draining stopped immediately after the local power range monitor tube was released and resealed back into the vessel. One worker was contaminated such that a meter held to his body read 5 rem per hour on contact. Extraordinary actions by radiation protection workers resulted in the removal of the majority of the highly contaminated material quickly, such that the overall external shallow dose equivalent for the individual was estimated at 2.784 rem, and the internal dose received by the worker was estimated at 45 millirem. Problems involved in this event included workers not adhering to the instructions by radiation protection technicians, workers not having procedures with them and performing steps of two different procedures concurrently, and workers not informing operators or radiation protection technicians that they were taking actions that could allow water to be drained from the reactor vessel. In addition, the procedures were not adequate to control the work. The failure to follow procedures during local power range monitor replacement was considered an example of a Non-Cited Violation. The safety significance of this event was very low because sufficient makeup capacity to fill the vessel was available even if the local power range monitor failed to reseat, the local power range monitor tube was resealed quickly and the reactor vessel drainage stopped, and the contamination was mostly external and was removed quickly (Example C).

Inspection Report# : [2000015\(pdf\)](#)



Significance: Jun 30, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Corrective Action for Delinquent ASME Code Work Packages

The inspectors identified a failure of the corrective action program where ASME Code Class 1, 2 and 3 Replacement and Repair program requirements for work package reviews were not met. On four occasions the licensee did not realize that the Code work packages were not meeting 10 CFR 50.55a ASME Code requirements. In each case, corrective actions were not taken to correct the situation. Failure to promptly identify and correct the failure to meet ASME code requirements for work packages was considered a Non-Cited Violation of 10 CFR 50, Appendix B, Criterion XVI. The safety significance of this issue was considered very low based on the absence of adverse consequences and the fact that no technical problems were identified.

Inspection Report# : [2000008\(pdf\)](#)



Significance: Jan 19, 2000

Identified By: NRC

Item Type: FIN Finding

Failure not classified as a functional failure under the Maintenance Rule

A failure of a Unit 2 containment spray system valve was not properly classified as a maintenance rule functional failure under the maintenance rule program. This individual classification failure was corrected and did not impact the licensee's ability to demonstrate maintenance effectiveness for the system. The valve failure was considered to be of low risk significance using the Significance Determination Process because the other train of containment spray was fully functional.(Section 1R12)

Inspection Report# : [1999025\(pdf\)](#)



Significance: Jan 19, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Overthrust of Motor-Operated Valve 2-1001-34A

During surveillance testing on December 12, 1999, residual heat removal torus spray/test return valve 2-1001-34A closed with 116,831 pounds of thrust which was almost double the previous as-left thrust setting of the valve. This value also exceeded the seismic thrust limit for the valve. Corrective actions recommended to determine extent of condition after failure of a similar valve in 1998 were not taken. This was considered to be a non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI. The excessive thrust problem was considered to have low risk significance because the valve remained operable.

Inspection Report# : [1999025\(pdf\)](#)



Significance: Sep 08, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to promptly correct a design deficiency with the standby gas treatment system.

The licensee discovered during surveillance testing on August 23, 1999, that both standby gas treatment trains may not have functioned as designed during a postulated loss of Bus 19. The item had been previously identified in 1992 but not adequately corrected. No design change or design evaluation justifying the degraded condition had been performed. Failure to take corrective action for this design problem was a Non-cited Violation of Criterion XVI of 10 CFR Part 50, Appendix B. This problem resolution violation could not be classified with a risk significance due to its programmatic nature. However, since 1992 the inspectors were not aware of any failures of the administrative controls that would have jeopardized standby gas treatment operability. Therefore, from an equipment standpoint, this finding has a very low risk significance (Section 40A1).

Inspection Report# : [1999018\(pdf\)](#)



Significance: Jul 20, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Secondary Containment Penetration.

Secondary containment integrity did not exist from 1981 until May 1997 due to an unsealed 1 inch diameter penetration. This was a non-cited violation of Technical Specification 3.7 (Section 40A3). This issue had very low risk significance. Test results showed that the standby gas treatment system could still maintain negative pressure in secondary containment with leak pathways up to 4 inches in diameter.

Inspection Report# : [1999011\(pdf\)](#)

Emergency Preparedness

Occupational Radiation Safety

Significance: N/A Jul 13, 2001

Identified By: NRC

Item Type: FIN Finding

A supplemental inspection was performed by the NRC to assess the licensee's evaluation associated with the failure to provide adequate radiological planning to maintain radiological doses as-low-as

This supplemental inspection was performed by the NRC to assess the licensee's evaluation associated with the failure to provide adequate radiological planning to maintain radiological doses as-low-as-is-reasonably-achievable (ALARA) during the Fall 2000 Unit 1 outage. This performance issue was previously characterized as having low to moderate risk significance (White) in NRC Inspection Report No. 50-254/00-18 (DRS) and 50-265/00-18(DRS). During this supplemental inspection, performed in accordance with Inspection Procedure 95001, the inspector concluded that the licensee performed a comprehensive evaluation of the radiological planning weaknesses. The licensee's evaluation attributed the planning weaknesses to ineffective job management by the radiation protection and construction staffs (root cause). In determining the root cause, the licensee identified contributing factors which included ineffective management of work force changes and drywell temperature control, inadequate monitoring of job duration and identification of changes in duration, and inadequate consideration of work location dose rates and contamination levels when developing revised job dose estimates. The inspector reviewed the licensee's corrective actions, both completed and planned, and concluded that the corrective actions appeared to address the identified root cause and contributing causes. In particular, the licensee implemented an ALARA job standard to provide additional guidance to the staff for identifying and managing changes in radiological work. The purpose of the job standard was to fully identify the changes (both prior to the work and based on the as-found conditions) and to communicate the changes to the station ALARA committee so that the planning could be adequately evaluated to determine if replanning was necessary. Initial implementation of the standard during the Spring 2001 Unit 1 recirculation pump seal replacement was adequate; however, the inspector observed weaknesses in the understanding of staff concerning when the standard was to be applied. Due to the licensee's acceptable performance in assessing the radiological planning problems, the White finding associated with this issue will only be considered in assessing plant performance for a total of four quarters in accordance with the guidance in NRC Manual Chapter 0305, "Operating Reactor Assessment Program."

Implementation of the licensee's corrective actions will be reviewed during a future inspection.

Inspection Report# : [2001013\(pdf\)](#)



Significance: Nov 27, 2000

Identified By: NRC

Item Type: FIN Finding

Radiological dose for the Safety Relief Valve (SRV) replacement work results in a determination of a White Finding.

Planning problems caused the dose for the Safety Relief Valve (SRV) replacement work completed during refueling outage Q1R16 to exceed its projected dose by more than 50 percent. Elevated dose rates were encountered in the drywell as a result of cobalt 60 plate-out. The drywell cooling/ventilation system was out of service for maintenance and testing, significantly elevating temperatures in the drywell. Also, less experienced

workers performed the SRV job NRC Supplemental Inspection (Report 50-254/01-13, 50-265/01-13): During this supplemental inspection, performed in accordance with Inspection Procedure 95001, the inspector concluded that the licensee performed a comprehensive evaluation of the radiological planning weaknesses. The licensee's evaluation attributed the planning weaknesses to ineffective job management by the radiation protection and construction staffs (root cause). In determining the root cause, the licensee identified contributing factors which included ineffective management of work force changes and drywell temperature control, inadequate monitoring of job duration and identification of changes in duration, and inadequate consideration of work location dose rates and contamination levels when developing revised job dose estimates. The inspector reviewed the licensee's corrective actions, both completed and planned, and concluded that the corrective actions appeared to address the identified root cause and contributing causes. In particular, the licensee implemented an ALARA job standard to provide additional guidance to the staff for identifying and managing changes in radiological work. The purpose of the job standard was to fully identify the changes (both prior to the work and based on the as-found conditions) and to communicate the changes to the station ALARA committee so that the planning could be adequately evaluated to determine if replanning was necessary. Initial implementation of the standard during the Spring 2001 Unit 1 recirculation pump seal replacement was adequate; however, the inspector observed weaknesses in the understanding of staff concerning when the standard was to be applied. Due to the licensee's acceptable performance in assessing the radiological planning problems, the White finding associated with this issue will only be considered in assessing plant performance for a total of four quarters in accordance with the guidance in NRC Manual Chapter 0305, "Operating Reactor Assessment Program." Implementation of the licensee's corrective actions will be reviewed during a future inspection.

Inspection Report# : [2000018\(pdf\)](#)

Inspection Report# : [2001013\(pdf\)](#)

Public Radiation Safety



Significance: Jul 02, 1999

Identified By: NRC

Item Type: FIN Finding

Lack of Documentation for Offsite Dose Calculation Manual Revisions

The inspectors identified a lack of documentation for the licensee's review of changes to the Offsite Dose Calculation Manual. Although an independent technical review determined that the changes maintained a sufficient level of effluent control, the licensee did not maintain documentation to support this determination. (Section 2PS3.3) This item had very low risk significance based on the results of the independent technical review.

Inspection Report# : [1999013\(pdf\)](#)

Physical Protection

Significance: N/A Jun 14, 2001

Identified By: NRC

Item Type: FIN Finding

A supplemental inspection was performed to assess the licensee's root cause evaluation related to exercise failures during two of four force-on-force contingency exercises.

This supplemental inspection was performed to assess the licensee's root cause evaluation related to exercise failures during two of four force-on-force contingency exercises. This performance issue was characterized as a White finding having a low to moderate risk significance in NRC Inspection Report No. 50-254; 265/00-201. This supplemental inspection determined that the licensee had performed a comprehensive evaluation which identified the root cause and contributing factors associated with the exercise failures noted above. The licensee's evaluation identified that the root cause of the exercise finding was a failure to effectively accomplish exercise control activities. Contributing factors were human performance errors by some security force response personnel and controllers, a lack of effective controller training, vulnerabilities in some defensive positions, and command and control activities. Licensee corrective actions were implemented to address the root cause and each contributing factor. Those actions appeared effective in correcting the identified deficiencies. Therefore, the White performance finding associated with the exercise failures was closed.

Inspection Report# : [2001011\(pdf\)](#)



Significance: Nov 17, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

An unattended security storage container containing Safeguards Information was found unlocked and open for approximately two hours.

An unattended security storage container containing Safeguards Information was found unlocked and open for approximately two hours (Section

40A3). The inspector reviewed the risk significance of this finding and determined the risk to be very low since no Safeguards Information was compromised and there have not been greater than two similar findings in four quarters.

Inspection Report# : [2000019\(pdf\)](#)



Significance: Jun 23, 2000

Identified By: NRC

Item Type: FIN Finding

Contingency Response Performance Deficiencies

Deficiencies were noted in the licensee's performance in the contingency response element of the Physical Protection Cornerstone. (The details of this finding are Safeguards Information and are required to be withheld from public disclosure.)

Inspection Report# : [2000201\(pdf\)](#)

Miscellaneous

Significance: SL-IV Aug 14, 2001

Identified By: NRC

Item Type: VIO Violation

FAILURE TO ACCURATELY REPORT PERFORMANCE INDICATOR INFORMATION

The inspectors identified that the licensee failed to report fault exposure hours for the failure of a fuel oil transfer solenoid valve to open during the Unit 2 emergency diesel generator (EDG) 18 month endurance test. The second quarter 2001 data reported to the NRC showed no fault exposure hours recorded for Unit 2 EDG. However, the inspectors found that fault exposure hours from a failed endurance run on May 1, 2001, should have been reported since only the time of the failure's discovery was known with certainty. Fault exposure hours going back to the last successful load test of the EDG on January 14, 2000, were not included in the licensee's July 2001 performance indicator data submittal for the Unit 2 Emergency Alternating Current (AC) - Safety System Unavailability performance indicator. Had the performance indicator data been properly reported, the performance indicator color would have been Red. Failure to properly report the performance indicator was considered a Severity Level IV violation of 10 CFR 50.9.

Inspection Report# : [2001012\(pdf\)](#)

Significance: N/A May 25, 2001

Identified By: NRC

Item Type: FIN Finding

Adverse performance trend.

The corrective actions to prevent recurrence for an event that resulted in an inadvertent steam release during a breach of the reactor pressure boundary proved to be ineffective to prevent a similar event that occurred six months later. Additionally, corrective actions for the second event were narrow in scope and did not address the aspects in common with the first event. Condition report Q2001-01976 was issued to address the potential common issues. The inspectors concluded that the issue was more than minor since the failure to fully identify and correct deficiencies could be reasonably viewed as a precursor to a significant event. The inspectors reviewed the applicability of the issue with respect to program cornerstones and determined that the issue did not impact a cornerstone. However, this issue contained extenuating circumstances in that the full extent of condition for the October event was not completely identified and corrected, allowing a similar event in April. The combination of these two events indicates an adverse performance trend.

Inspection Report# : [2001009\(pdf\)](#)

Significance: N/A May 25, 2001

Identified By: NRC

Item Type: FIN Finding

Corrective action program problems.

The inspectors concluded that in general the corrective action program was a complete program containing all the necessary attributes to successfully identify and correct issues at Quad Cities. However, over the past year there were several instances of difficulties with problem identification, evaluation and resolution. Most of these were documented in previous findings and violations in inspection reports. In general, these issues have been recognized, and actions have been taken to address them. For most of the issues it is too soon to fully evaluate the effectiveness of these actions so effectiveness is still to be determined. During this inspection, three areas of corrective action program problems were identified. These were the failure to properly implement the M&TE program, several instances when condition reports should have been written and they were not, and, failure to address common causes for similar steam release events on the reactor vessel during the October refueling outage, and in the April maintenance outage.

Inspection Report# : [2001009\(pdf\)](#)

Significance: N/A May 25, 2001

Identified By: NRC

Item Type: FIN Finding

Test problems on condition reports not identified.

In May of 2001, an inspector observing a surveillance noted that instrument maintenance technicians had difficulty conducting calibrations of differential transmitters on the Unit 2 station blackout diesel air intake filter differential pressure detectors. The results were not repeatable and indicated some out-of-tolerance readings on both instruments. No condition reports were generated for either the difficulty with the tests or the apparent out-of-tolerance results until inspectors intervened. Condition Report Q2001-1549 was issued 12 days later and subsequently, Condition Reports Q2001-1474 and Q2001-1475 were written for the out-of-tolerance readings. The inspectors reviewed the significance of not identifying test problems on condition reports and concluded that the issue was more than a minor issue because if left uncorrected, the issue could become a more significant safety concern. The actual effect on the station blackout diesel was minimal since it did not directly impact operation of the equipment and another diesel was available. However, this corrective action finding is a cross-cutting issue for corrective action process performance and is assigned No Color.

Inspection Report# : [2001009\(pdf\)](#)

Significance: N/A May 25, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to assure that measuring and test equipment was properly calibrated.

In April of 2001, the station Nuclear Oversight staff identified that measurement and test equipment which was found to be out-of-calibration during post-use verifications was not evaluated as required by plant procedure. Also, condition reports on these out-of-tolerance conditions were not written when required by procedures. The licensee initiated a review which identified 159 items of out-of-tolerance equipment which had not been evaluated appropriately. The use of these items was evaluated and appropriate recovery actions taken. Failure to assure that measuring and test equipment used in 2000 and 2001 was properly calibrated was a Non-Cited Violation of 10 CFR 50, Appendix B. The inspectors reviewed the significance of not evaluating out-of-tolerance equipment and determined that the issue was more than a minor issue because if left uncorrected, the issue could become a more significant safety concern. However, since this is a corrective action concern, and no specific cornerstone was impacted, this item is assigned No Color.

Inspection Report# : [2001009\(pdf\)](#)

Significance: N/A May 16, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to report performance indicator data accurately.

Inspectors found that the licensee reported safety system functional failure data improperly. The improperly reported safety system functional failure involved failure of the Unit 2 intermediate range nuclear monitors. Had this been reported properly, it would have caused the safety system functional failure performance indicator for Unit 2 to cross the threshold from Green to White in the first quarter of 2000. The actual submittal showed performance indicator data in the licensee response or Green band. Because a performance indicator would have changed from Green to White, this was considered a Non-Cited Violation of 10 CFR 50.9.

Inspection Report# : [2001008\(pdf\)](#)

Significance: N/A Dec 15, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Technical Errors in Appendix R Safe Shutdown Procedures

The inspectors identified a number of technical errors in safe shutdown procedure QCARP 0050-02. The procedure errors were considered a Non-Cited Violation (NCV 50-254/00-16-03; NCV 50-265/00-16-03) of 10 CFR 50, Appendix R, Section III.L.5 (Section 40A4.1). The technical errors were determined to have no appreciable risk significance (No Color) because the errors would not have impacted safe shutdown. However, the errors were another example of a previously identified adverse trend in human performance.

Inspection Report# : [2000016\(pdf\)](#)

Significance: N/A Nov 20, 2000

Identified By: NRC

Item Type: FIN Finding

The inspectors found that a number of human performance errors during the Q1R16 refueling outage period resulted in undesirable consequences and constituted an adverse trend.

The inspectors found that a number of human performance errors during the Q1R16 refueling outage period, October 14 to November 3, resulted in undesirable consequences and constituted an adverse trend in human performance. These errors resulted from problems with procedure adherence, control of work activities, communications, and procedure quality. Resulting problems included venting the pressurized reactor to containment near maintenance workers who were not adequately prepared for the subsequent release of steam and contamination, inadvertently draining from the reactor vessel bottom head area resulting in significant personnel contamination, and a number of wiring and second verification errors during electrical modifications and maintenance. Although most of these wiring errors were caught and corrected during testing, one error was not caught and resulted in the inoperability of one of two channels of the reactor protective system flow biased trips. While none of these events resulted in equipment performance outside the licensee response band (GREEN), the overall trend indicated problems with adhering to procedures, proper performance of second verification techniques, and the communication and coordination of activities (Section 40A4).

Inspection Report# : [2000015\(pdf\)](#)

Significance: N/A Jun 30, 2000

Identified By: NRC

Item Type: FIN Finding

Cross-Cutting Issues: Human Performance

Inspectors found that several recent events which affected plant operations and/or had the potential to adversely affect personnel safety involved elements of human performance deficiencies. An apparent adverse trend in human performance during the period May 5, 2000 to June 30, 2000, was evidenced by the following incidents. A senior reactor operator failed to implement a Technical Specification surveillance requirement for removing an emergency diesel generator from service. Control room operators experienced problems controlling reactor vessel water level during post-scrum recovery efforts and failed to close a pair of drain valves during a pre-start of the Unit 1 high pressure coolant injection system. Maintenance personnel errors were involved in a reactor trip on May 5, and spread of contamination in the 2B reactor water cleanup room when a fitting was disconnected under 1000 psig pressure on June 10 (Section 40A.4).

Inspection Report# : [2000007\(pdf\)](#)

Significance: N/A Jun 30, 2000

Identified By: NRC

Item Type: FIN Finding

Weakness in Corrective Action Program.

The corrective action program was fully functional and typically identified and corrected conditions adverse to quality. In general, station personnel effectively identified and entered problems into the corrective action program using problem identification forms (PIFs). The significance threshold for entering issues into the program appeared appropriate. However, over the past year issues were identified at Quad Cities where the corrective action process was not vigorously implemented to address the issues. In addition, the licensee's corrective action process had lost over two items a month since January 2000. Although none of these lost items were considered safety significant, and thousands of other action items were opened and closed in that time frame, this represented a weakness in the licensee's program.

Inspection Report# : [2000008\(pdf\)](#)



Significance: Apr 01, 2000

Identified By: Licensee

Item Type: NCV NonCited Violation

On September 10, 1999, the control room emergency ventilation system was inoperable

On September 10, 1999, the licensee identified that the control room emergency ventilation system was inoperable. Flow rates were out-of-specification due to repositioning of a ventilation damper 9 days previously. The action statement for Technical Specification 3.8.D allowed the system to be inoperable for 7 days. Failing to comply with the allowed outage time requirements was considered a non-cited violation of Technical Specification 3.8.D. This issue was screened as GREEN (very low risk significance) after a Phase 1 Significance Determination Process review (Section 40A3).

Inspection Report# : [2000003\(pdf\)](#)

Significance: N/A Feb 29, 2000

Identified By: NRC

Item Type: FIN Finding

Human Performance Problems

Inspectors found that errors in review, coordination, and implementation of maintenance activities during or near Unit 2 refueling outage number 16 (January and February 2000) led to inoperable safety systems. Operators were unaware that Technical Specification or administrative limiting condition for operation action statements were entered or exceeded. Required nuclear instruments and emergency diesel generators were not operable during some fuel moves (Sections 1R04 and 1R20.4), automatic depressurization system valves were taken out of service while required (Section 1R20.2), the high pressure coolant injection system was inoperable due to incomplete maintenance (Section 1R19.1), and safe shutdown requirements were not properly addressed (Section 1R20.5). Other events included technician errors in which electrical jumpers were installed in incorrect locations for logic used by the reactor protective system and by the emergency core cooling system. While the risk of the individual events was very low, an increase in maintenance activity problems was evident.

Inspection Report# : [2000001\(pdf\)](#)

Significance: N/A Dec 03, 1999

Identified By: NRC

Item Type: FIN Finding

reactor coolant system leakage performance indicator

The inspectors completed verification inspection of the reactor coolant system leakage performance indicator and found very minor discrepancies which did not affect the validity of the reported performance indicator (Section 40A2.2).

Inspection Report# : [1999023\(pdf\)](#)

Significance: N/A Dec 03, 1999

Identified By: NRC

Item Type: FIN Finding

the public radiation safety performance indicator

The inspectors verified that the licensee had properly evaluated and reported the public radiation safety performance indicator (Section 40A2.7).

Inspection Report# : [1999023\(pdf\)](#)

Significance: N/A Dec 03, 1999

Identified By: NRC

Item Type: FIN Finding

verification inspection for the residual heat removal unavailability performance indicator.

The inspectors completed the verification inspection for the residual heat removal unavailability performance indicator. The inspectors identified that the licensee had not included 12.5 hours of residual heat removal system unavailability during system logic testing in January 1999. The licensee explained that the rules for system availability, at that time, did not require documenting the safety system unavailability. The licensee elected to report these hours in a future submittal. The extra hours would not cause the residual heat removal system unavailability to cross a color threshold (Section 4OA2.1).

Inspection Report# : [1999023\(pdf\)](#)

Significance: N/A Dec 03, 1999

Identified By: NRC

Item Type: FIN Finding

verification inspection of the licensee's performance indicators

The inspectors completed verification inspection of the licensee's performance indicators for scrams, scrams with loss of normal decay heat removal, reactor coolant specific activity, and primary containment leakage. No findings were identified (Section 4OA2).

Inspection Report# : [1999023\(pdf\)](#)

Significance: N/A Oct 20, 1999

Identified By: NRC

Item Type: FIN Finding

The licensee corrected discrepancies with the safety system functional failure indicator.

The licensee corrected discrepancies with the safety system functional failure indicator previously identified by the NRC in the September report of performance indicator data. The NRC exercised enforcement discretion and did not issue a Notice of Violation (Section 4OA3).

Inspection Report# : [1999020\(pdf\)](#)

Significance: N/A Oct 20, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Event Reporting Failure

The inspectors identified two violations of NRC reporting requirements. The licensee failed to notify the NRC within 1 hour of identifying a condition in which the control room emergency ventilation system was found outside the design basis. The licensee also failed to notify the NRC within 4 hours of an event in which the reactor core isolation cooling system was unable to perform a required safety function. The licensee made late notifications, submitted a licensee event report for the control room emergency ventilation system, and planned to submit a licensee event report for the reactor core isolation cooling system failure. These were considered two non-cited violations (Plant Status).

Inspection Report# : [1999020\(pdf\)](#)

Significance: N/A Oct 20, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Notification Failure Under 50.72

The inspectors identified two violations of NRC reporting requirements. The licensee failed to notify the NRC within 1 hour of identifying a condition in which the control room emergency ventilation system was found outside the design basis. The licensee also failed to notify the NRC within 4 hours of an event in which the reactor core isolation cooling system was unable to perform a required safety function. The licensee made late notifications, submitted a licensee event report for the control room emergency ventilation system, and planned to submit a licensee event report for the reactor core isolation cooling system failure. These were considered two non-cited violations (Plant Status).

Inspection Report# : [1999020\(pdf\)](#)



Significance: Oct 08, 1999

Identified By: Licensee

Item Type: FIN Finding

The licensee identified errors in the PI Occupational Radiation Safety Performance Indicator (PI)

Occupational Radiation Safety Performance Indicator (PI). The licensee identified errors in the PI reported to the NRC. Originally, the licensee reported six technical specification high radiation area incidents, which resulted in a white PI. After identifying a missed occurrence and a misinterpretation of the PI criteria, the licensee determined that only two incidents were applicable to the PI, which resulted in the PI indicating that performance was in the licensee response band (green).

Inspection Report# : [1999022\(pdf\)](#)



Significance: Jul 16, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

the repetitive problem of excessive use of overtime.

The root cause report and the corrective actions, approved by the Plant Operations Review Committee and the Corrective Action Review Board, did not fully address the repetitive problem of excessive use of overtime. There were 177 instances between February 1 and 28, 1999, where station procedures were not followed to control overtime of plant workers. Further corrective actions were being developed to ensure that overtime violations did not continue. There were no known incidents where the excessive use of overtime directly impacted or affected the safety of the plant; however, the repetitive failure to follow procedures to control overtime is a non-cited violation. (Reference Report Section 4OA1.4, page 8)
Inspection Report# : [1999012\(pdf\)](#)

Last modified : March 26, 2002

Quad Cities 2

Initiating Events



Significance: Dec 29, 2001

Identified By: NRC

Item Type: FIN Finding

DEGRADED AND INADEQUATELY TESTED TRANSFORMER AND PROTECTIVE RELAYING RESULTS IN INCREASE IN TRANSIENT AND LOSS OF OFFSITE POWER INITIATING EVENT FREQUENCIES

On August 2, 2001, Unit 2 experienced a transformer failure, reactor scram, and loss of offsite power. The inspectors determined that a lightning strike in conjunction with age related degradation and inadequate testing of the Unit 2 main power transformer and switchyard protective relaying contributed to the event and resulted in an increase in the initiating event frequency for plant transients and a loss of offsite power. The inspectors determined the risk significance of this issue to be very low since all remaining mitigating systems were available to mitigate the transformer rupture, reactor scram, and loss of offsite power.

Inspection Report# : [2001017\(pdf\)](#)



Significance: Mar 31, 2001

Identified By: Licensee

Item Type: NCV NonCited Violation

Operator-induced loss of feedwater heating transient

On March 23 the inspectors reviewed an operator-induced loss of feedwater heating transient that occurred on Unit 2. The inspectors found that the operators failed to immediately recognize a reduction in feedwater heating and take prompt action to effectively control the increasing reactor power. The transient resulted in a 33 degree decrease in feedwater inlet temperature adding sufficient positive reactivity to increase reactor thermal power from 2511 to 2578 megawatts, approximately 102.7 percent of maximum licensed power. Exceeding Quad Cities License DPR-30 maximum thermal power of 2511 megawatts thermal was considered a Non-Cited Violation. The risk significance of this event was determined to be very low (Green) due to the relatively small increase a 2.7 percent power change will have on overall core thermal limits (Section 1R14).

Inspection Report# : [2001005\(pdf\)](#)



Significance: Aug 15, 2000

Identified By: NRC

Item Type: FIN Finding

Electrical ring bus caused electrical circuit breakers 1-3 and 3-4 to open.

On July 18 a fault on one of the offsite power feeds to the Quad Cities electrical ring bus caused electrical circuit breakers 1-3 and 3-4 to open. This action isolated the fault and resulted in a Unit 2 turbine generator and reactor trip. The response by the switchyard resulted in a loss of power on the Unit 1 reserve auxiliary transformer. The response to the reactor scram on Unit 2 was as designed. Operator performance during this event was determined to have been acceptable. The inspectors reviewed the risk significance of this initiating event for both units using the Significance Determination Process. All mitigating equipment was available for Unit 2 following the uncomplicated trip, and this event was screened as having very low risk significance (GREEN.) One of two auxiliary transformers for Unit 1 was de-energized during the event, but the unit did not trip and all mitigating equipment was available. Therefore, this event was also screened as GREEN for Unit 1.

Inspection Report# : [2000011\(pdf\)](#)



Significance: Jun 30, 2000

Identified By: NRC

Item Type: FIN Finding

operators did not control reactor vessel inventory

During operator response to a reactor trip on May 22, operators did not control reactor vessel inventory prior to the operating reactor feedwater pump tripping on high reactor vessel water level. Additionally, operators had not started a reactor feedwater pump by the time a reactor low level condition existed. This resulted in a second engineered safety feature actuation. The inspectors reviewed this issue using the significance determination process for a transient with a loss of feedwater and determined this was of very low risk significance (Section 1R14).

Inspection Report# : [2000007\(pdf\)](#)



Significance: Jun 30, 2000

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

Maintenance work and emerging work - 2B reactor water cleanup pump seal line disconnect

On June 10, maintenance workers disconnected a seal line to the 2B reactor water cleanup pump that was not properly isolated by the out-of-service tagout and discovered that the line was pressurized to about 1000 psig. The resulting spray caused a spread of contamination in the room and a potential hazard to the workers. No personnel injuries occurred as a result of this event. Failure to hang the proper out-of-service for the maintenance activity was considered a Non-Cited Violation (NCV) of Technical Specifications. The inspectors considered this event of very low

safety significance due to the ability to isolate the leak and the availability of mitigating equipment (Section 1R13).

Inspection Report# : [2000007\(pdf\)](#)

G

Significance: Jun 30, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

adjustments to the wrong instrument, causing a reactor trip on Unit 2

On May 5 an instrument technician performing a calibration of the main steam line high steam flow detectors made adjustments to the wrong instrument, causing a reactor trip on Unit 2. Failure to implement the calibration procedure for the proper channel instrument was considered an NCV of Technical Specification 6.8.A.1. The safety significance of this event was minimal due to the availability of mitigating equipment (Section 4OA.3).

Inspection Report# : [2000007\(pdf\)](#)

G

Significance: Feb 29, 2000

Identified By: NRC

Item Type: FIN Finding

Ice Melt Valve Failure

Failure of the ice melt valve on January 22, 2000, resulted in some ice formation in the intake area. Operator detection and compensatory measures prevented the ice from affecting the water level in the intake. The valve gate had become detached from the stem. The failure of the ice melt valve was of very low risk significance because it did not result in an increased initiating event frequency for loss of both normal and ultimate heat sinks. The inspectors compared an estimated valve failure rate to the licensee's evaluation. The licensee's evaluation excluded this initiating event from the probabilistic risk assessment because no precursor event had occurred in the history of the station.

Inspection Report# : [2000001\(pdf\)](#)

G

Significance: Sep 08, 1999

Identified By: NRC

Item Type: FIN Finding

Maintenance rule functional failures

Problematic feedwater level control equipment on Unit 2 resulted in two reactor vessel water level transients in early 1999. The licensee initially evaluated these two events as not being maintenance rule functional failures, which was inappropriate. An NRC inspection and a subsequent licensee self-assessment identified the error. The licensee re-evaluated the two transients as being functional failures on July 28, 1999. This issue did not increase the frequency of initiating events and therefore was an issue of very low safety significance (Section 1R12).

Inspection Report# : [1999018\(pdf\)](#)

G

Significance: Jul 20, 1999

Identified By: NRC

Item Type: FIN Finding

a 3-inch increase in reactor water level

On Unit 2, a 3-inch increase in reactor water level occurred and required operators to take manual control of the system. Various failures in the level control systems have resulted in about ten similar events since January 1, 1999, in which operators were required to intervene to prevent level transients that could have resulted in a reactor trip. Since the plant effect of the failures is limited to an uncomplicated reactor trip, the failures were considered to be of low risk significance using the significance determination process (Section 1R03).

Inspection Report# : [1999011\(pdf\)](#)

Mitigating Systems

Significance: N/A Nov 15, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO FOLLOW OPERATOR REQUALIFICATION PROGRAM PROCEDURAL REQUIREMENTS

No color. The inspectors identified a Non-Cited Violation wherein the facility licensee had failed to follow procedural requirements to evaluate a senior reactor operator (SRO) licensed individual in an SRO licensed position during the year 2001 annual licensed operator requalification examination (10 CFR 55.59). The finding was of very low safety significance because the SRO licensed individual held an "inactive" SRO license (i.e., would not be assigned to licensed duties unless his license was restored to an active status in accordance with 10 CFR 55.53).

Inspection Report# : [2001016\(pdf\)](#)

G

Significance: Nov 15, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO MEET 10 CFR 50.65 REQUIREMENTS

On October 24, 2001, the inspectors determined that the licensee failed to count Unit 1 and Unit 2 battery room ventilation system air handling unit drive belt failures as maintenance preventable functional failures and repeat maintenance preventable functional failures where appropriate. The licensee's incorrect assessment of these equipment failures resulted in a failure to develop and implement appropriate action plans for the battery room ventilation systems on Units 1 and 2, assess the Unit 2 battery room ventilation system for (a)(1)classification, and monitor the performance of the systems against licensee-established goals. The failure to properly implement maintenance rule requirements was considered a Non-Cited Violation of 10 CFR 50.65. The risk significance of the issue was determined to be of very low safety significance because the batteries supported by the battery room ventilation systems did not experience an actual loss of safety function.

Inspection Report# : [2001016\(pdf\)](#)



Significance: Sep 30, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO VERIFY ADEQUATE FILL OF THE HIGH PRESSURE COOLANT INJECTION SYSTEM AS REQUIRED BY TECHNICAL SPECIFICATIONS

On December 27, 2000, the licensee discovered that the high pressure coolant injection system was not filled with water from the pump discharge valve to the system isolation valve following maintenance activities. Technical Specification Surveillance Requirement 4.5.A.1.a.1 required the licensee to verify that the high pressure coolant injection system was filled with water every 31 days. The inspectors determined that greater than 31 days had elapsed since the licensee had verified that the high pressure coolant injection system was properly filled. The failure to perform the surveillance requirement within 31 days also resulted in the high pressure coolant injection system being inoperable for greater than the Technical Specification 3.5.A.3.a.3 allowed outage time of 14 days. The failure to meet the requirements of Technical Specification 3.5.A.3.a.3 and Surveillance Requirement 4.5.A.1.a.1 was considered a Non-Cited Violation. The risk significance of this event was determined to be very low since all remaining mitigation systems were available to provide water to the reactor during an event.

Inspection Report# : [2001014\(pdf\)](#)



Significance: May 16, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to meet requirement of 10 CFR 50.59.

On June 15, 2000, station personnel removed two of the three rainbow pumps from the site. Quad Cities Updated Final Safety Analysis Report, Section 9.2.5, specifies that portable pumps (called rainbow pumps) of sufficient capacity (5100 gallons per minute) are onsite to provide makeup water to the ultimate heat sink in the event of a Lock and Dam 14 failure on the Mississippi River. The inspectors determined that the licensee had made a change to the facility as described in the Quad Cities Updated Final Safety Analysis Report without first determining if the change required a license amendment, contrary to the requirements of 10 CFR 50.59. The failure to meet the requirements of 10 CFR 50.59 was considered a Non-Cited Violation. The risk significance of this event was determined to be very low due to the very small initiating event frequency of the lock and dam failure, the slow rate of event progression once the initiating event occurs, and the availability of other onsite sources of water not credited in the event analysis.

Inspection Report# : [2001008\(pdf\)](#)



Significance: Mar 31, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

Surveillance testing involving timing of the Unit 1 and Unit 2 emergency diesel generators shortly after the engines had been shut down from previous runs

Inspectors identified that on two occasions, March 9 and March 27, the licensee performed technical specification required surveillance testing involving timing of the Unit 1 and Unit 2 emergency diesel generators shortly after the engines had been shut down from previous runs. Station procedures were inadequate in prescribing the conditions for performance of the tests. Procedures did not prevent preconditioning of the air start systems, fuel systems, and other engine and electrical components. Inadequate procedures for testing was considered a Non-Cited Violation of 10 CFR Appendix B, Criterion V, "Instruction Procedures and Drawings." The risk significance was very low (Green) because inspectors determined that testing practices had not led to declining performance of the diesel generators (Section 1R22).

Inspection Report# : [2001005\(pdf\)](#)



Significance: Dec 31, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Place the "A" Train of the Reactor Protection System in the Tripped Condition

On November 6, 2000, the Number 2 turbine control valve fast closure trip failed to cause a half scram as expected during a Unit 2 surveillance test. The licensee then repeated the test three more times and the fast closure trip successfully caused the expected half scram each time. The licensee declared the trip function operable without taking the actions of Technical Specification 3.1.A, Action 1 for an inoperable channel. Generic Letter 91-18 states that repetitive testing to achieve acceptable results without first identifying and correcting the root cause of any problem is not an acceptable means for verifying operability. A subsequent autopsy of the pressure switch for the control valve fast closure trip found evidence of fretting which produced metallic particles believed to have caused the initial failure. The inspectors determined the Number 2 turbine control valve fast closure trip had been declared operable without adequate justification. The failure to implement the required actions of Technical Specification 3.1.A-1 for an inoperable channel of the turbine control valve fast closure trip was considered a Non-Cited Violation (50-265/00-20-01). The finding was determined to be of very low safety significance due to the level of redundancy and diversity of the reactor protection system. During the period

of time that the Number 2 turbine control valve fast closure trip was inoperable, a sufficient number of turbine control valve fast closure channels remained operable to result in an automatic scram, if required. Additionally, the turbine control valve fast closure trip is considered an anticipatory trip and, if inoperable, the reactor scram could still have been initiated by the reactor vessel high pressure or the average power range monitor high flux trips.

Inspection Report# : [2000020\(pdf\)](#)

G

Significance: Dec 15, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Seal Tops of Electrical Cabinets

The team identified that electrical cabinets in the auxiliary electric equipment room were not sealed at the top to protect equipment from water damage. The failure to seal the top of the cabinets was considered a Non-Cited Violation (NCV 50-254/00-16-01; NCV 50-265/00-16-01) of Operating Licenses DPR-29 and DPR-30, Section h.3.F (Section 1R05.2.b.1). The failure to seal the cabinets, a fire protection feature, involved very low risk (Green) because a fire protection defense-in-depth element, as described by MC 0609, Appendix F, Fire Protection Significance Determination Process, was not affected.

Inspection Report# : [2000016\(pdf\)](#)

G

Significance: Dec 15, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Provide Fire Stops in Cable Trays

The team identified that fire stops were not installed in divisional cable trays for which specified separation had not been maintained. The failure to install fire stops was considered a Non-Cited Violation (NCV 50-254/00-16-02; NCV 50-265/00-16-02) of Operating Licenses DPR-29 and DPR-30, Section H.3.F (Section 1R05.2.b.2). The failure to install fire stops, a fire protection feature, involved very low risk (Green) because a fire protection defense-in-depth element, as described by MC 0609, Appendix F, Fire Protection Significance Determination Process, was not affected.

Inspection Report# : [2000016\(pdf\)](#)

G

Significance: Nov 20, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Surveillance testing for torus temperature instrumentation components required by Technical Specification 4.2.F.1 had not been performed since installation in 1990 and 1991.

On October 4, 2000, the licensee identified that surveillance testing for torus temperature instrumentation components required by Technical Specification 4.2.F.1 had not been performed since installation in 1990 and 1991. Condition Report Q2000-03512 was written to address the issue. Failure to perform testing of the instrumentation was considered a Non-Cited Violation of Technical Specification 4.2.F.1 (Section 4OA3). Failure to check instrument accuracy by this 18-month surveillance for Unit 1 and Unit 2 involved very low risk because when the surveillance was subsequently performed, instrument accuracy of the temperature indication loop was within acceptable tolerance.

Inspection Report# : [2000015\(pdf\)](#)

G

Significance: Sep 30, 2000

Identified By: NRC

Item Type: FIN Finding

Inadequate operability documentation forms for Problem Identification Form Q2000-2372, regarding a design deficiency for Units 1 and 2 high pressure coolant injection motor speed changers

The inspectors found that the July 3 and August 23, 2000 supporting operability documentation forms for Problem Identification Form Q2000-2372, regarding a design deficiency for Units 1 and 2 high pressure coolant injection motor speed changers, did not adequately support the operability of the system. Inspectors reviewed the risk significance of the motor speed changer being inoperable and found the risk to be very low (GREEN) since the change to core damage frequency was less than E-6/year. In addition, operators were briefed on the potential problems with the system, and the licensee installed design changes to correct the problem on both units (Section 1R15).

Inspection Report# : [2000014\(pdf\)](#)

G

Significance: Sep 30, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Degraded condition of fire door 128

On September 15, the inspectors determined that the bottom latch in the inactive leaf of door 128, a 3-hour rated fire door, was not properly latched. The fire protection engineer determined that the degraded door also resulted in the inoperability of the emergency diesel generator room carbon dioxide fire suppression system. This finding constituted a violation of Quad Cities Operating Licensee DPR-29. This violation is being treated as a Non-Cited Violation (50-265/00-14-01), consistent with Section VI.A.1 of the May 1, 2000, Enforcement Policy (Section 1R05). The inspectors evaluated the degraded condition of fire door 128 using the fire protection Significance Determination Process, and evaluation techniques discussed with Senior Risk Analysts and Fire Protection Engineers in Region III and NRR. Since the degradation of the fire door was minimal, and the area of the turbine building directly in front of the door (within 15 to 20 feet) was relatively free of combustibles and cables, the

inspectors determined that the possibility of a fire in the Unit 2 emergency diesel generator room spreading to damage the shared emergency diesel generator was not credible. Therefore the significance of this finding was considered very low (GREEN).

Inspection Report# : [2000014\(pdf\)](#)



Significance: G Sep 30, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to implement modifications to correct a previously identified design deficiency which could have made the motor speed changer inoperable in accident situations

Inspectors found that the licensee failed to implement modifications to correct a previously identified design deficiency which could have made the motor speed changer inoperable in accident situations. The failure to implement corrective actions for this condition was a violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action." This violation is being treated as a Non-Cited Violation (50-254/00-14-02; 50-265/00-14-02), consistent with Section VI.A.1 of the May 1, 2000, Enforcement Policy. The inspectors found that the risk significance for internal and external events was very low (GREEN) since unavailability of the high pressure coolant injection system resulted in a change to core damage frequency of less than E-6/year. The licensee implemented modifications on both units to correct the design deficiency (Section 1R15).

Inspection Report# : [2000014\(pdf\)](#)

Significance: N/A Sep 15, 2000

Identified By: NRC

Item Type: FIN Finding

WHITE Performance Indicators for Units 1 and 2 Safety System Functional Failures

The licensee's August 14, 2000, root cause report for the high number of safety system functional failures on both units listed three root causes: inadequate knowledge of complex systems, a system vice functional focus, and inadequate integration of the new NRC inspection program into the station's processes. Corrective actions listed by the licensee included: Maintenance department clarification of expectations for troubleshooting, Engineering department revision of a troubleshooting procedure to require formal troubleshooting plans, Regulatory Affairs requirement for root cause evaluation of any performance indicator which is "threatened" (less than 50 percent margin to the WHITE threshold), Regulatory Affairs requirement for root cause evaluations to include a section on cumulative effects of the system failure on a "threatened" performance indicator, Regulatory Assurance modification of corrective action program to implement root cause requirements for a "threatened" performance indicator, Plant Health Committee requirement for monthly review of performance indicators, development or revision of process to address a cumulative focus on NRC Mitigating Systems Cornerstone and functional health, Engineering action to expand use of formal troubleshooting techniques and enhance troubleshooting skills and troubleshooting procedure. The inspectors found no current concerns with the individual root cause reports for these issues. Inspectors validated the licensee assertion that poor troubleshooting and poor root causes were an issue at Quad Cities. Two of the ten events from the individual root cause evaluations were repeats of earlier events, and the root cause efforts were not effective initially.

Inspectors found weaknesses in the overall root cause report for the multiple safety system functional failures as follows: • The overall root cause evaluation failed to incorporate one of two February 2000 events. Human performance events did not get full coverage in the overall root cause, some events for the safety system functional failures involving human performance were not included. • The evaluation was focused on problems which would cause an NRC performance indicator change, and to a lesser amount on why such a large number of failures were occurring at Quad Cities. The report listed actions to review another method for trending cumulative impact of failures, but another method was not ready for review at the end of the inspection. The inspectors determined that the licensee's search for similar failures focused on the recently instituted category of "performance indicator" and thereby eliminated a number of previous safety system functional failures that occurred in 1997 and 1998. • The corrective action for troubleshooting failed to incorporate the operations department, and only focused on maintenance and engineering. Although the licensee did not entirely agree with all of the weaknesses identified by the inspectors, nevertheless, the licensee revised several of the root cause evaluations to ensure appropriate actions were developed to address the inspector's concerns.

Inspection Report# : [2000013\(pdf\)](#)



Significance: G Sep 15, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

One corrective action problem was found on August 16, 2000, and involved a previously identified design deficiency with the high pressure coolant injection system

One corrective action problem was found on August 16, 2000, and involved a previously identified design deficiency with the high pressure coolant injection system. Problem Identification Form Q1997-04485 documented that the auto initiation signal for high pressure coolant injection did not electrically seal in as described in the updated final safety analysis. However, the tracking item for correcting this problem was closed without corrective action being completed. Condition Report Q2000-02954 was written to again track corrective actions to this problem. This was considered a Non-Cited Violation (NCV) of Criterion XVI, "Corrective Action," of 10 CFR 50, Appendix B. Inspectors considered this problem to be of very low risk significance (GREEN) since it would not have prevented the system from starting automatically or being initiated manually.

Inspection Report# : [2000013\(pdf\)](#)



Significance: G Aug 15, 2000

Identified By: NRC

Item Type: FIN Finding

Contribution of fire risk to core damage frequency associated with the safe shutdown makeup pump discharge valve being in a degraded condition.

On July 19 during a regulatory conference, the licensee discussed the contribution of fire risk to core damage frequency associated with the safe shutdown makeup pump discharge valve being in a degraded condition. Based on the information presented during the conference, the NRC concluded that this condition was of very low safety significance due to the short duration (2 days) the condition existed.

Inspection Report# : [2000011\(pdf\)](#)

Significance: N/A May 16, 2000

Identified By: NRC

Item Type: FIN Finding

Surveillance Testing

During logic testing on March 21, 2000, the Unit 1 high pressure coolant injection auxiliary oil pump failed to properly operate. This condition rendered the system inoperable for automatic initiation for approximately one year. The risk from internal events for this condition was determined to be very low (GREEN) in Inspection Report 50-254/2000003; 50-265/2000003. The effect on risk due to external events, specifically fires, was determined to be potentially significant during a preliminary Significance Determination Process review. However, this issue was also the substantial contributor to a YELLOW high pressure coolant injection unavailability performance indicator, which represents performance that minimally reduces safety margin and requires NRC oversight. Therefore, the NRC considers the inspection findings and the performance indicator to be a single issue and agency action will be determined based on application of the Action Matrix for the YELLOW performance indicator.

Inspection Report# : [2000005\(pdf\)](#)



Significance: Feb 29, 2000

Identified By: NRC

Item Type: FIN Finding

Safe Shutdown Makeup Pump Valve Failure

On January 19, 2000, during planned maintenance activities, maintenance workers determined that the safe shutdown makeup pump system was inoperable due to a Unit 2 safe shutdown makeup pump injection valve failure to operate. The valve failure was evaluated using the Significance Determination Process and was found to be of very low risk significance because all other mitigating systems were available.

Inspection Report# : [2000001\(pdf\)](#)



Significance: Feb 29, 2000

Identified By: NRC

Item Type: FIN Finding

Unit 2 Automatic Depressurization System Valves Taken Out-Of-Service in Mode 3

On January 22, 2000, operators did not recognize entry into a Technical Specification action statement when relief valves were removed from service with the reactor in Mode 3. Upon discovery, about 4-1/2 hours later, the valves were returned to service. The Technical Specification action statement was not exceeded. The unavailability of the relief valves was evaluated by the NRC's Senior Reactor Analyst as part of the Significance Determination Process for shutdown issues. This issue was determined to be of very low risk significance because the reactor was in hot shutdown with vessel pressure at approximately 50 psig.

Inspection Report# : [2000001\(pdf\)](#)



Significance: Feb 29, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Emergency Diesel Generator Ventilation Power Supply Switch Out of Position

On January 28, 2000, with Unit 1 operating at full power and with Unit 2 in Mode 5 (refuel), an operator identified that the Unit 2 emergency diesel generator room ventilation fan power select switch was selected to the Unit 1 power supply. The Unit 2 emergency diesel generator was inoperable, but remained available for service. Since the shared emergency diesel generator was already inoperable to Unit 2, this condition left no operable emergency diesel generators for Unit 2. This issue is considered a non-cited violation consistent with the Interim Enforcement Policy for pilot plants. This issue was considered to be of very low safety significance because the Unit 1 diesel generator would not have been overloaded by the Unit 2 emergency diesel generator room ventilation fan. The Unit 2 emergency diesel generator was also available.

Inspection Report# : [2000001\(pdf\)](#)



Significance: Feb 29, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Post Maintenance Testing

On February 10, 2000, with Unit 2 in startup mode, the high pressure coolant injection pump failed to start during testing due to incomplete maintenance. A maintenance foreman erroneously signed off the work package as being completed when it was not. This issue is considered a non-cited violation consistent with the Interim Enforcement Policy for pilot plants. This issue was of very low risk significance since the system pressure was low, decay heat was low, and redundant methods of inventory injection were either operating or available.

Inspection Report# : [2000001\(pdf\)](#)



Significance: Feb 29, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Too Few Intermediate Range Nuclear Instruments During Refueling

From February 1 through 5, 2000, Unit 2 had less than the number of operable intermediate range nuclear instruments per channel (three) for the reactor protective system required by Technical Specification 3.1.A. Only two of four instruments were operable on the "B" channel and three of four were operable on the "A" channel. During this time, the reactor was in Mode 5 (refuel) and operators performed core alterations by moving

irradiated fuel in the vessel. This issue is considered a non-cited violation consistent with the Interim Enforcement Policy for pilot plants Unit 2 was in cold shutdown with all control rods inserted. This issue was determined to be of very low risk significance because shutdown margin calculations and refueling interlocks provided assurance of adequate shutdown margin. Source range nuclear instruments provided a rod block function during refueling. Intermediate range nuclear instrument indication would not have been available until after the point where a reactivity excursion had occurred because the neutron level during refueling operations was too low for the intermediate range nuclear instruments.

Inspection Report# : [2000001\(pdf\)](#)

G

Significance: Jan 19, 2000

Identified By: NRC

Item Type: FIN Finding

Corrective Action Deficiencies Related to Heaters in the Contaminated Condensate Storage Tanks Allowed Degradation of the Heaters

The inspectors found that corrective action deficiencies related to heaters in the contaminated condensate storage tanks allowed degradation of the heaters to the extent that high pressure injection systems could have been adversely affected. The risk significance for the loss of heaters in the contaminated condensate storage tanks was low, partially because both units were shut down during times when the high pressure injection sources could have been rendered inoperable due to lack of sufficient tank heating.

Inspection Report# : [1999025\(pdf\)](#)

G

Significance: Jan 19, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Contaminated Condensate Storage Tank Heaters Inoperable

The inspectors found that design control deficiencies related to heaters in the contaminated condensate storage tanks allowed degradation of the heaters to the extent that high pressure injection systems could have been adversely affected. Modifications to the system did not evaluate the facility change as required by 10 CFR 50.59. This was considered to be a non-cited violation of 10 CFR 50.59. This issue was first documented by the licensee in August 1999 and addressed in Inspection Report 50-254/99020; 50-265/99020. The risk significance for the loss of heaters in the contaminated condensate storage tanks was low, partially because both units were shut down during times when the high pressure injection sources could have been rendered inoperable due to lack of sufficient tank heating.

Inspection Report# : [1999025\(pdf\)](#)

G

Significance: Dec 03, 1999

Identified By: NRC

Item Type: FIN Finding

Corrective Actions for a Design Control Problem with Software Backups were not Timely or Complete

The inspectors found that two failures of a high pressure coolant injection valve to close in September and October 1999 were not properly classified in the maintenance rule program. Licensee engineers initially failed to consider the second failure of the 1-2301-5 valve to close on October 4, 1999, as a repetitive maintenance preventable functional failure, and failed to monitor the system under (a)(1) of the maintenance rule. This is considered an unresolved item. The valve failure was found to be of low risk significance because the inboard isolation valve was available.

Inspection Report# : [1999023\(pdf\)](#)

G

Significance: Nov 19, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Ensure ADS Valves Qualified for Minimum Possible Voltage

Four of the five Unit 1 automatic depressurization system relief valves were not initially qualified for the degraded voltage conditions that would be seen under accident conditions. The licensee had not originally accounted for the voltage drop that would occur between the station batteries and the valve solenoids when specifying the minimum voltage for which the valves needed to be qualified. The licensee subsequently identified a test report, done for another nuclear station, which qualified the valves to a lower voltage. The inspectors, in conjunction with the Office of Nuclear Reactor Regulations, reviewed the test and accepted it under condition that a ten volt penalty be applied to account for some test deficiencies. The licensee also performed calculations to show that the actual available voltage to the valves, under degraded conditions, was above the accepted minimum voltage. A non-cited violation was identified.

Inspection Report# : [1999021\(pdf\)](#)

G

Significance: Oct 20, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Promptly Correct Control Room Emergency Ventilation System Deficiency

The inspectors identified two examples of inadequate corrective action regarding the Units 1 and 2 safety-related control room emergency ventilation system. In 1995 the licensee identified emergency diesel generator overloading concerns and degraded voltage concerns. This degraded and nonconforming condition was not corrected, and the design basis for the emergency diesel generator system and control room emergency ventilation system were not changed to reflect the condition. Also, safety-related electrical drawing discrepancies with the control room emergency ventilation system were identified in 1997 and never corrected. A non-cited violation for 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action" with two examples was identified. In utilizing the Significance Determination Process, this issue was determined to have low risk

significance because control room habitability was assumed to be maintained for the 1 hour to start control room cooling and, therefore, there was no impact on the ability of control room operators to operate the required mitigating systems. Also, the design basis event was estimated to have a very low initiating event frequency (Section 1R16).

Inspection Report# : [1999020\(pdf\)](#)

G

Significance: Sep 08, 1999

Identified By: NRC

Item Type: FIN Finding

A grounded resistor in the governor circuit that caused a failure of the Unit 2 reactor core isolation cooling pump

On August 26, 1999, the licensee identified a grounded resistor in the governor circuit that caused a failure of the Unit 2 reactor core isolation cooling pump. The inspectors used the significance determination process to identify this event as having very low safety significance for the loss of offsite power initiating event due to the availability of other mitigating equipment (Section 1R22.2).

Inspection Report# : [1999018\(pdf\)](#)

G

Significance: Sep 08, 1999

Identified By: NRC

Item Type: FIN Finding

Motor-operated valve dynamic testing

During motor-operated valve dynamic testing on August 4, 1999, the Unit 1 residual heat removal cross-tie valve (19A) failed to fully close. However, approximately one month after the failure occurred, the licensee's corrective action program did not include a plan to determine the cause of the failure or to address any potential generic considerations for other valves (Section 1R22.1). No safety functions were affected and no risk increase resulted from this particular valve failure.

Inspection Report# : [1999018\(pdf\)](#)

Significance: N/A Sep 08, 1999

Identified By: NRC

Item Type: FIN Finding

Removal of a high pressure injection pump in parallel with testing on an emergency diesel generator

On two occasions, the licensee's work authorization process allowed removal of a high pressure injection pump in parallel with testing on an emergency diesel generator. The inspectors identified that on one occasion, planned conditional core damage probability was increased to greater than that allowed by licensee administrative procedures. The actual risk was lower because the licensee did not perform the work on both systems together. The significance of this finding was not assessed by the significance determination process due to the instantaneous risk involved and the fact that the work was not performed as planned following NRC discussions with plant management (Section 1R13).

Inspection Report# : [1999018\(pdf\)](#)

G

Significance: Sep 03, 1999

Identified By: NRC

Item Type: FIN Finding

Copy of post-modification test not retained

The inspectors identified that the Unit 1 post modification test for a design change package on the fuel transfer pump was not retained by the licensee. This item had very low risk significance. The licensee had retained the Unit 2 test and had signature evidence that the Unit 1 test was performed.

Inspection Report# : [1999017\(pdf\)](#)

G

Significance: Jul 20, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Corrective Action for Flooding Procedures.

Corrective actions were not implemented for an inadequate flood protection procedure originally identified by the licensee in 1997. The procedures did not provide adequate instructions to protect the plant structurally under the forces of severe flood waters. This issue was inappropriately closed in the corrective action program without resolution. This was a non-cited violation for inadequate corrective action. A qualitative risk assessment of the impact of the procedure deficiencies concluded that the issues were of low risk significance since adequate time would be available to make procedure changes and take action during a flooding event. (Section 1R06).

Inspection Report# : [1999011\(pdf\)](#)

G

Significance: Jul 16, 1999

Identified By: NRC

Item Type: FIN Finding

Corrective actions to address a Unit 1 emergency diesel generator failure

Corrective actions to address a January 1998 Unit 1 emergency diesel generator (EDG) failure to start were postponed in some cases and in others only partially completed. (Reference Report Section 4OA1.3, page 5) This item was categorized by the significance determination process as being of low risk significance based on occasional EDG start failures, redundant EDGs and available off site power.

Inspection Report# : [1999012\(pdf\)](#)**G****Significance:** Jul 16, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Excessive thrust conditions, found during testing of motor operated valves

Excessive thrust conditions, found during testing of motor operated valves (MOVs) from March 1997 through July 2, 1999, were not identified to management and did not receive appropriate corrective action to preclude recurrence. As a result, the cause of the problem was not identified and appropriate corrective action was not taken. This is a non-cited violation. This item was categorized by the significance determination process as being of low risk significance. (Reference Report Section 4OA1.4) Since nine of the ten valves found outside the acceptable thrust windows functioned as required during testing, the issue was determined to be of low risk significance and was categorized as "Green."

Inspection Report# : [1999012\(pdf\)](#)**G****Significance:** Jul 15, 1999

Identified By: NRC

Item Type: FIN Finding

The surveillance procedure for evaluating thermal performance of the residual heat removal heat exchangers

The surveillance procedure for evaluating thermal performance of the residual heat removal heat exchangers contained errors which resulted in the licensee overestimating the heat removal capability of the 1A heat exchanger. This item had very low risk significance, since the heat exchanger was still capable of removing its design heat load.

Inspection Report# : [1999014\(pdf\)](#)**G****Significance:** Jul 15, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Three Examples of Design Control Relating to Original Plant Design

A non-cited design control violation with multiple examples was identified during close out of two unresolved items from the architect-engineer inspection (50-254/265-98201). The issues dealt with ensuring adequate net positive suction head for the emergency core cooling system pumps, ensuring the residual heat removal service water piping was analyzed for its design condition, and determining the adequacy of a thermal relief valve. All the examples in the Non-Cited Violation resulted from original design deficiencies. The licensee's analyses showed that the pumps were operable. Therefore, this issue screened out of the significance determination process as having very low risk significance

Inspection Report# : [1999014\(pdf\)](#)

Barrier Integrity

G**Significance:** Nov 20, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Three examples of failure to follow procedures.

On November 3, 2000, the 1B channel of the reactor protective system flow biased neutron flux trip was found to be inoperable during reactor startup from the Unit 1 refueling outage 16. The licensee determined that poor wiring practices, poor second verification practices, and inadequate post maintenance testing of nuclear instrumentation wiring led to the malfunction. Maintenance workers failed to follow the wiring requirements in the work request, did not use lift and land sheets when removing and re-terminating the wires, and failed to label the wires which were lifted during the maintenance activity. Failure to follow the procedure (work request) for wiring was considered an example of a Non-Cited Violation. The risk significance of this event was very low because of the short amount of time that the unit was in Mode 1, because the "A" channel of flow biased trip setpoints was still operable, and because the wiring error actually caused the flow biased neutron flux trip to be more conservative (Example A). On October 14, 2000, during disassembly of the Unit 1 reactor for refueling outage 16, reactor service technicians opened a flanged connection of the reactor head vent piping with approximately 5 to 8 psig steam pressure still in the reactor vessel and initiated a steam release to the refueling floor area which lasted for several hours. Numerous procedural, process, and communication problems contributed to the event. Personnel safety, procedure adherence, procedure adequacy, and lack of control of reactor vessel disassembly activities were all concerns brought out by this event. The failure to follow procedures during vessel disassembly was considered an example of a Non-Cited Violation. The risk significance was evaluated as very low because the amount of reactor vessel inventory released to secondary containment was very low, and secondary containment integrity requirements were met (Example B). On October 22, 2000, workers attempting to replace a local power range monitor inadvertently lifted the local power range monitor tube off its seat in the reactor vessel bottom head. This caused highly contaminated radioactive water from the bottom of the reactor vessel to drain directly onto the workers. The draining stopped immediately after the local power range monitor tube was released and reseated back into the vessel. One worker was contaminated such that a meter held to his body read 5 rem per hour on contact. Extraordinary actions by radiation protection workers resulted in the removal of the majority of the highly contaminated material quickly, such that the overall external shallow dose equivalent for the individual was estimated at 2.784 rem, and the internal dose received by the worker was estimated at 45 millirem. Problems involved in this event included workers not adhering to the instructions by radiation protection technicians, workers not having procedures with them and performing steps of two different procedures concurrently, and workers not informing operators or radiation protection technicians that they were taking actions that could allow water to be drained from the reactor vessel. In addition, the procedures were not adequate to control the work. The failure to follow procedures during local power range monitor replacement was considered

an example of a Non-Cited Violation. The safety significance of this event was very low because sufficient makeup capacity to fill the vessel was available even if the local power range monitor failed to reseal, the local power range monitor tube was reseated quickly and the reactor vessel drainage stopped, and the contamination was mostly external and was removed quickly (Example C).

Inspection Report# : [2000015\(pdf\)](#)

G

Significance: Jun 30, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Corrective Action for Delinquent ASME Code Work Packages

The inspectors identified a failure of the corrective action program where ASME Code Class 1, 2 and 3 Replacement and Repair program requirements for work package reviews were not met. On four occasions the licensee did not realize that the Code work packages were not meeting 10 CFR 50.55a ASME Code requirements. In each case, corrective actions were not taken to correct the situation. Failure to promptly identify and correct the failure to meet ASME code requirements for work packages was considered a Non-Cited Violation of 10 CFR 50, Appendix B, Criterion XVI. The safety significance of this issue was considered very low based on the absence of adverse consequences and the fact that no technical problems were identified.

Inspection Report# : [2000008\(pdf\)](#)

G

Significance: Jan 19, 2000

Identified By: NRC

Item Type: FIN Finding

Failure not classified as a functional failure under the Maintenance Rule

A failure of a Unit 2 containment spray system valve was not properly classified as a maintenance rule functional failure under the maintenance rule program. This individual classification failure was corrected and did not impact the licensee's ability to demonstrate maintenance effectiveness for the system. The valve failure was considered to be of low risk significance using the Significance Determination Process because the other train of containment spray was fully functional.(Section 1R12)

Inspection Report# : [1999025\(pdf\)](#)

G

Significance: Jan 19, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Overthrust of Motor-Operated Valve 2-1001-34A

During surveillance testing on December 12, 1999, residual heat removal torus spray/test return valve 2-1001-34A closed with 116,831 pounds of thrust which was almost double the previous as-left thrust setting of the valve. This value also exceeded the seismic thrust limit for the valve. Corrective actions recommended to determine extent of condition after failure of a similar valve in 1998 were not taken. This was considered to be a non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI. The excessive thrust problem was considered to have low risk significance because the valve remained operable.

Inspection Report# : [1999025\(pdf\)](#)

G

Significance: Sep 08, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to promptly correct a design deficiency with the standby gas treatment system.

The licensee discovered during surveillance testing on August 23, 1999, that both standby gas treatment trains may not have functioned as designed during a postulated loss of Bus 19. The item had been previously identified in 1992 but not adequately corrected. No design change or design evaluation justifying the degraded condition had been performed. Failure to take corrective action for this design problem was a Non-cited Violation of Criterion XVI of 10 CFR Part 50, Appendix B. This problem resolution violation could not be classified with a risk significance due to its programmatic nature. However, since 1992 the inspectors were not aware of any failures of the administrative controls that would have jeopardized standby gas treatment operability. Therefore, from an equipment standpoint, this finding has a very low risk significance (Section 40A1).

Inspection Report# : [1999018\(pdf\)](#)

G

Significance: Jul 20, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Secondary Containment Penetration.

Secondary containment integrity did not exist from 1981 until May 1997 due to an unsealed 1 inch diameter penetration. This was a non-cited violation of Technical Specification 3.7 (Section 40A3). This issue had very low risk significance. Test results showed that the standby gas treatment system could still maintain negative pressure in secondary containment with leak pathways up to 4 inches in diameter.

Inspection Report# : [1999011\(pdf\)](#)

Emergency Preparedness

Occupational Radiation Safety

Significance: N/A Jul 13, 2001

Identified By: NRC

Item Type: FIN Finding

A supplemental inspection was performed by the NRC to assess the licensee's evaluation associated with the failure to provide adequate radiological planning to maintain radiological doses as-low-as

This supplemental inspection was performed by the NRC to assess the licensee's evaluation associated with the failure to provide adequate radiological planning to maintain radiological doses as-low-as-is-reasonably-achievable (ALARA) during the Fall 2000 Unit 1 outage. This performance issue was previously characterized as having low to moderate risk significance (White) in NRC Inspection Report No. 50-254/00-18 (DRS) and 50-265/00-18(DRS). During this supplemental inspection, performed in accordance with Inspection Procedure 95001, the inspector concluded that the licensee performed a comprehensive evaluation of the radiological planning weaknesses. The licensee's evaluation attributed the planning weaknesses to ineffective job management by the radiation protection and construction staffs (root cause). In determining the root cause, the licensee identified contributing factors which included ineffective management of work force changes and drywell temperature control, inadequate monitoring of job duration and identification of changes in duration, and inadequate consideration of work location dose rates and contamination levels when developing revised job dose estimates. The inspector reviewed the licensee's corrective actions, both completed and planned, and concluded that the corrective actions appeared to address the identified root cause and contributing causes. In particular, the licensee implemented an ALARA job standard to provide additional guidance to the staff for identifying and managing changes in radiological work. The purpose of the job standard was to fully identify the changes (both prior to the work and based on the as-found conditions) and to communicate the changes to the station ALARA committee so that the planning could be adequately evaluated to determine if replanning was necessary. Initial implementation of the standard during the Spring 2001 Unit 1 recirculation pump seal replacement was adequate; however, the inspector observed weaknesses in the understanding of staff concerning when the standard was to be applied. Due to the licensee's acceptable performance in assessing the radiological planning problems, the White finding associated with this issue will only be considered in assessing plant performance for a total of four quarters in accordance with the guidance in NRC Manual Chapter 0305, "Operating Reactor Assessment Program." Implementation of the licensee's corrective actions will be reviewed during a future inspection.

Inspection Report# : [2001013\(pdf\)](#)



Significance: W Nov 27, 2000

Identified By: NRC

Item Type: FIN Finding

Radiological dose for the Safety Relief Valve (SRV) replacement work results in a determination of a White Finding.

Planning problems caused the dose for the Safety Relief Valve (SRV) replacement work completed during refueling outage Q1R16 to exceed its projected dose by more than 50 percent. Elevated dose rates were encountered in the drywell as a result of cobalt 60 plate-out. The drywell cooling/ventilation system was out of service for maintenance and testing, significantly elevating temperatures in the drywell. Also, less experienced workers performed the SRV job NRC Supplemental Inspection (Report 50-254/01-13, 50-265/01-13): During this supplemental inspection, performed in accordance with Inspection Procedure 95001, the inspector concluded that the licensee performed a comprehensive evaluation of the radiological planning weaknesses. The licensee's evaluation attributed the planning weaknesses to ineffective job management by the radiation protection and construction staffs (root cause). In determining the root cause, the licensee identified contributing factors which included ineffective management of work force changes and drywell temperature control, inadequate monitoring of job duration and identification of changes in duration, and inadequate consideration of work location dose rates and contamination levels when developing revised job dose estimates. The inspector reviewed the licensee's corrective actions, both completed and planned, and concluded that the corrective actions appeared to address the identified root cause and contributing causes. In particular, the licensee implemented an ALARA job standard to provide additional guidance to the staff for identifying and managing changes in radiological work. The purpose of the job standard was to fully identify the changes (both prior to the work and based on the as-found conditions) and to communicate the changes to the station ALARA committee so that the planning could be adequately evaluated to determine if replanning was necessary. Initial implementation of the standard during the Spring 2001 Unit 1 recirculation pump seal replacement was adequate; however, the inspector observed weaknesses in the understanding of staff concerning when the standard was to be applied. Due to the licensee's acceptable performance in assessing the radiological planning problems, the White finding associated with this issue will only be considered in assessing plant performance for a total of four quarters in accordance with the guidance in NRC Manual Chapter 0305, "Operating Reactor Assessment Program." Implementation of the licensee's corrective actions will be reviewed during a future inspection.

Inspection Report# : [2000018\(pdf\)](#)

Inspection Report# : [2001013\(pdf\)](#)

Public Radiation Safety



Significance: G Jul 02, 1999

Identified By: NRC

Item Type: FIN Finding

Lack of Documentation for Offsite Dose Calculation Manual Revisions

The inspectors identified a lack of documentation for the licensee's review of changes to the Offsite Dose Calculation Manual. Although an independent technical review determined that the changes maintained a sufficient level of effluent control, the licensee did not maintain

documentation to support this determination. (Section 2PS3.3) This item had very low risk significance based on the results of the independent technical review.

Inspection Report# : [1999013\(pdf\)](#)

Physical Protection

Significance: N/A Jun 14, 2001

Identified By: NRC

Item Type: FIN Finding

A supplemental inspection was performed to assess the licensee's root cause evaluation related to exercise failures during two of four force-on-force contingency exercises.

This supplemental inspection was performed to assess the licensee's root cause evaluation related to exercise failures during two of four force-on-force contingency exercises. This performance issue was characterized as a White finding having a low to moderate risk significance in NRC Inspection Report No. 50-254; 265/00-201. This supplemental inspection determined that the licensee had performed a comprehensive evaluation which identified the root cause and contributing factors associated with the exercise failures noted above. The licensee's evaluation identified that the root cause of the exercise finding was a failure to effectively accomplish exercise control activities. Contributing factors were human performance errors by some security force response personnel and controllers, a lack of effective controller training, vulnerabilities in some defensive positions, and command and control activities. Licensee corrective actions were implemented to address the root cause and each contributing factor. Those actions appeared effective in correcting the identified deficiencies. Therefore, the White performance finding associated with the exercise failures was closed.

Inspection Report# : [2001011\(pdf\)](#)



Significance: Nov 17, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

An unattended security storage container containing Safeguards Information was found unlocked and open for approximately two hours.

An unattended security storage container containing Safeguards Information was found unlocked and open for approximately two hours (Section 40A3). The inspector reviewed the risk significance of this finding and determined the risk to be very low since no Safeguards Information was compromised and there have not been greater than two similar findings in four quarters.

Inspection Report# : [2000019\(pdf\)](#)



Significance: Jun 23, 2000

Identified By: NRC

Item Type: FIN Finding

Contingency Response Performance Deficiencies

Deficiencies were noted in the licensee's performance in the contingency response element of the Physical Protection Cornerstone. (The details of this finding are Safeguards Information and are required to be withheld from public disclosure.)

Inspection Report# : [2000201\(pdf\)](#)

Miscellaneous

Significance: SL-IV Aug 14, 2001

Identified By: NRC

Item Type: VIO Violation

FAILURE TO ACCURATELY REPORT PERFORMANCE INDICATOR INFORMATION

The inspectors identified that the licensee failed to report fault exposure hours for the failure of a fuel oil transfer solenoid valve to open during the Unit 2 emergency diesel generator (EDG) 18 month endurance test. The second quarter 2001 data reported to the NRC showed no fault exposure hours recorded for Unit 2 EDG. However, the inspectors found that fault exposure hours from a failed endurance run on May 1, 2001, should have been reported since only the time of the failure's discovery was known with certainty. Fault exposure hours going back to the last successful load test of the EDG on January 14, 2000, were not included in the licensee's July 2001 performance indicator data submittal for the Unit 2 Emergency Alternating Current (AC) - Safety System Unavailability performance indicator. Had the performance indicator data been properly reported, the performance indicator color would have been Red. Failure to properly report the performance indicator was considered a Severity Level IV violation of 10 CFR 50.9.

Inspection Report# : [2001012\(pdf\)](#)

Significance: N/A May 25, 2001

Identified By: NRC

Item Type: FIN Finding

Adverse performance trend.

The corrective actions to prevent recurrence for an event that resulted in an inadvertent steam release during a breach of the reactor pressure boundary proved to be ineffective to prevent a similar event that occurred six months later. Additionally, corrective actions for the second event

were narrow in scope and did not address the aspects in common with the first event. Condition report Q2001-01976 was issued to address the potential common issues. The inspectors concluded that the issue was more than minor since the failure to fully identify and correct deficiencies could be reasonably viewed as a precursor to a significant event. The inspectors reviewed the applicability of the issue with respect to program cornerstones and determined that the issue did not impact a cornerstone. However, this issue contained extenuating circumstances in that the full extent of condition for the October event was not completely identified and corrected, allowing a similar event in April. The combination of these two events indicates an adverse performance trend.

Inspection Report# : [2001009\(pdf\)](#)

Significance: N/A May 25, 2001

Identified By: NRC

Item Type: FIN Finding

Corrective action program problems.

The inspectors concluded that in general the corrective action program was a complete program containing all the necessary attributes to successfully identify and correct issues at Quad Cities. However, over the past year there were several instances of difficulties with problem identification, evaluation and resolution. Most of these were documented in previous findings and violations in inspection reports. In general, these issues have been recognized, and actions have been taken to address them. For most of the issues it is too soon to fully evaluate the effectiveness of these actions so effectiveness is still to be determined. During this inspection, three areas of corrective action program problems were identified. These were the failure to properly implement the M&TE program, several instances when condition reports should have been written and they were not, and, failure to address common causes for similar steam release events on the reactor vessel during the October refueling outage, and in the April maintenance outage.

Inspection Report# : [2001009\(pdf\)](#)

Significance: N/A May 25, 2001

Identified By: NRC

Item Type: FIN Finding

Test problems on condition reports not identified.

In May of 2001, an inspector observing a surveillance noted that instrument maintenance technicians had difficulty conducting calibrations of differential transmitters on the Unit 2 station blackout diesel air intake filter differential pressure detectors. The results were not repeatable and indicated some out-of-tolerance readings on both instruments. No condition reports were generated for either the difficulty with the tests or the apparent out-of-tolerance results until inspectors intervened. Condition Report Q2001-1549 was issued 12 days later and subsequently, Condition Reports Q2001-1474 and Q2001-1475 were written for the out-of-tolerance readings. The inspectors reviewed the significance of not identifying test problems on condition reports and concluded that the issue was more than a minor issue because if left uncorrected, the issue could become a more significant safety concern. The actual effect on the station blackout diesel was minimal since it did not directly impact operation of the equipment and another diesel was available. However, this corrective action finding is a cross-cutting issue for corrective action process performance and is assigned No Color.

Inspection Report# : [2001009\(pdf\)](#)

Significance: N/A May 25, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to assure that measuring and test equipment was properly calibrated.

In April of 2001, the station Nuclear Oversight staff identified that measurement and test equipment which was found to be out-of-calibration during post-use verifications was not evaluated as required by plant procedure. Also, condition reports on these out-of-tolerance conditions were not written when required by procedures. The licensee initiated a review which identified 159 items of out-of-tolerance equipment which had not been evaluated appropriately. The use of these items was evaluated and appropriate recovery actions taken. Failure to assure that measuring and test equipment used in 2000 and 2001 was properly calibrated was a Non-Cited Violation of 10 CFR 50, Appendix B. The inspectors reviewed the significance of not evaluating out-of-tolerance equipment and determined that the issue was more than a minor issue because if left uncorrected, the issue could become a more significant safety concern. However, since this is a corrective action concern, and no specific cornerstone was impacted, this item is assigned No Color.

Inspection Report# : [2001009\(pdf\)](#)

Significance: N/A May 16, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to report performance indicator data accurately.

Inspectors found that the licensee reported safety system functional failure data improperly. The improperly reported safety system functional failure involved failure of the Unit 2 intermediate range nuclear monitors. Had this been reported properly, it would have caused the safety system functional failure performance indicator for Unit 2 to cross the threshold from Green to White in the first quarter of 2000. The actual submittal showed performance indicator data in the licensee response or Green band. Because a performance indicator would have changed from Green to White, this was considered a Non-Cited Violation of 10 CFR 50.9.

Inspection Report# : [2001008\(pdf\)](#)

Significance: N/A Dec 15, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Technical Errors in Appendix R Safe Shutdown Procedures

The inspectors identified a number of technical errors in safe shutdown procedure QCARP 0050-02. The procedure errors were considered a Non-Cited Violation (NCV 50-254/00-16-03; NCV 50-265/00-16-03) of 10 CFR 50, Appendix R, Section III.L.5 (Section 40A4.1). The technical errors were determined to have no appreciable risk significance (No Color) because the errors would not have impacted safe shutdown. However, the errors were another example of a previously identified adverse trend in human performance.

Inspection Report# : [2000016\(pdf\)](#)

Significance: N/A Nov 20, 2000

Identified By: NRC

Item Type: FIN Finding

The inspectors found that a number of human performance errors during the Q1R16 refueling outage period resulted in undesirable consequences and constituted an adverse trend.

The inspectors found that a number of human performance errors during the Q1R16 refueling outage period, October 14 to November 3, resulted in undesirable consequences and constituted an adverse trend in human performance. These errors resulted from problems with procedure adherence, control of work activities, communications, and procedure quality. Resulting problems included venting the pressurized reactor to containment near maintenance workers who were not adequately prepared for the subsequent release of steam and contamination, inadvertently draining from the reactor vessel bottom head area resulting in significant personnel contamination, and a number of wiring and second verification errors during electrical modifications and maintenance. Although most of these wiring errors were caught and corrected during testing, one error was not caught and resulted in the inoperability of one of two channels of the reactor protective system flow biased trips. While none of these events resulted in equipment performance outside the licensee response band (GREEN), the overall trend indicated problems with adhering to procedures, proper performance of second verification techniques, and the communication and coordination of activities (Section 40A4).

Inspection Report# : [2000015\(pdf\)](#)**Significance: N/A** Jun 30, 2000

Identified By: NRC

Item Type: FIN Finding

Cross-Cutting Issues: Human Performance

Inspectors found that several recent events which affected plant operations and/or had the potential to adversely affect personnel safety involved elements of human performance deficiencies. An apparent adverse trend in human performance during the period May 5, 2000 to June 30, 2000, was evidenced by the following incidents. A senior reactor operator failed to implement a Technical Specification surveillance requirement for removing an emergency diesel generator from service. Control room operators experienced problems controlling reactor vessel water level during post-scrum recovery efforts and failed to close a pair of drain valves during a pre-start of the Unit 1 high pressure coolant injection system. Maintenance personnel errors were involved in a reactor trip on May 5, and spread of contamination in the 2B reactor water cleanup room when a fitting was disconnected under 1000 psig pressure on June 10 (Section 40A.4).

Inspection Report# : [2000007\(pdf\)](#)**Significance: N/A** Jun 30, 2000

Identified By: NRC

Item Type: FIN Finding

Weakness in Corrective Action Program.

The corrective action program was fully functional and typically identified and corrected conditions adverse to quality. In general, station personnel effectively identified and entered problems into the corrective action program using problem identification forms (PIFs). The significance threshold for entering issues into the program appeared appropriate. However, over the past year issues were identified at Quad Cities where the corrective action process was not vigorously implemented to address the issues. In addition, the licensee's corrective action process had lost over two items a month since January 2000. Although none of these lost items were considered safety significant, and thousands of other action items were opened and closed in that time frame, this represented a weakness in the licensee's program.

Inspection Report# : [2000008\(pdf\)](#)**Significance:** Apr 01, 2000

Identified By: Licensee

Item Type: NCV NonCited Violation

On September 10, 1999, the control room emergency ventilation system was inoperable

On September 10, 1999, the licensee identified that the control room emergency ventilation system was inoperable. Flow rates were out-of-specification due to repositioning of a ventilation damper 9 days previously. The action statement for Technical Specification 3.8.D allowed the system to be inoperable for 7 days. Failing to comply with the allowed outage time requirements was considered a non-cited violation of Technical Specification 3.8.D. This issue was screened as GREEN (very low risk significance) after a Phase 1 Significance Determination Process review (Section 40A3).

Inspection Report# : [2000003\(pdf\)](#)**Significance: N/A** Feb 29, 2000

Identified By: NRC

Item Type: FIN Finding

Human Performance Problems

Inspectors found that errors in review, coordination, and implementation of maintenance activities during or near Unit 2 refueling outage number 16 (January and February 2000) led to inoperable safety systems. Operators were unaware that Technical Specification or administrative limiting condition for operation action statements were entered or exceeded. Required nuclear instruments and emergency diesel generators were not operable during some fuel moves (Sections 1R04 and 1R20.4), automatic depressurization system valves were taken out of service while required (Section 1R20.2), the high pressure coolant injection system was inoperable due to incomplete maintenance (Section 1R19.1), and safe shutdown requirements were not properly addressed (Section 1R20.5). Other events included technician errors in which electrical jumpers were installed in incorrect locations for logic used by the reactor protective system and by the emergency core cooling system. While the risk of the individual events was very low, an increase in maintenance activity problems was evident.

Inspection Report# : [2000001\(pdf\)](#)**Significance: N/A** Dec 03, 1999

Identified By: NRC

Item Type: FIN Finding

reactor coolant system leakage performance indicator

The inspectors completed verification inspection of the reactor coolant system leakage performance indicator and found very minor discrepancies which did not affect the validity of the reported performance indicator (Section 40A2.2).

Inspection Report# : [1999023\(pdf\)](#)

Significance: N/A Dec 03, 1999

Identified By: NRC

Item Type: FIN Finding

the public radiation safety performance indicator

The inspectors verified that the licensee had properly evaluated and reported the public radiation safety performance indicator (Section 40A2.7).

Inspection Report# : [1999023\(pdf\)](#)

Significance: N/A Dec 03, 1999

Identified By: NRC

Item Type: FIN Finding

verification inspection for the residual heat removal unavailability performance indicator.

The inspectors completed the verification inspection for the residual heat removal unavailability performance indicator. The inspectors identified that the licensee had not included 12.5 hours of residual heat removal system unavailability during system logic testing in January 1999. The licensee explained that the rules for system availability, at that time, did not require documenting the safety system unavailability. The licensee elected to report these hours in a future submittal. The extra hours would not cause the residual heat removal system unavailability to cross a color threshold (Section 40A2.1).

Inspection Report# : [1999023\(pdf\)](#)

Significance: N/A Dec 03, 1999

Identified By: NRC

Item Type: FIN Finding

verification inspection of the licensee's performance indicators

The inspectors completed verification inspection of the licensee's performance indicators for scrams, scrams with loss of normal decay heat removal, reactor coolant specific activity, and primary containment leakage. No findings were identified (Section 40A2).

Inspection Report# : [1999023\(pdf\)](#)

Significance: N/A Oct 20, 1999

Identified By: NRC

Item Type: FIN Finding

The licensee corrected discrepancies with the safety system functional failure indicator.

The licensee corrected discrepancies with the safety system functional failure indicator previously identified by the NRC in the September report of performance indicator data. The NRC exercised enforcement discretion and did not issue a Notice of Violation (Section 40A3).

Inspection Report# : [1999020\(pdf\)](#)

Significance: N/A Oct 20, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Event Reporting Failure

The inspectors identified two violations of NRC reporting requirements. The licensee failed to notify the NRC within 1 hour of identifying a condition in which the control room emergency ventilation system was found outside the design basis. The licensee also failed to notify the NRC within 4 hours of an event in which the reactor core isolation cooling system was unable to perform a required safety function. The licensee made late notifications, submitted a licensee event report for the control room emergency ventilation system, and planned to submit a licensee event report for the reactor core isolation cooling system failure. These were considered two non-cited violations (Plant Status).

Inspection Report# : [1999020\(pdf\)](#)

Significance: N/A Oct 20, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Notification Failure Under 50.72

The inspectors identified two violations of NRC reporting requirements. The licensee failed to notify the NRC within 1 hour of identifying a condition in which the control room emergency ventilation system was found outside the design basis. The licensee also failed to notify the NRC within 4 hours of an event in which the reactor core isolation cooling system was unable to perform a required safety function. The licensee made late notifications, submitted a licensee event report for the control room emergency ventilation system, and planned to submit a licensee event report for the reactor core isolation cooling system failure. These were considered two non-cited violations (Plant Status).

Inspection Report# : [1999020\(pdf\)](#)



Significance: Oct 08, 1999

Identified By: Licensee

Item Type: FIN Finding

The licensee identified errors in the PI Occupational Radiation Safety Performance Indicator (PI)

Occupational Radiation Safety Performance Indicator (PI). The licensee identified errors in the PI reported to the NRC. Originally, the licensee reported six technical specification high radiation area incidents, which resulted in a white PI. After identifying a missed occurrence and a misinterpretation of the PI criteria, the licensee determined that only two incidents were applicable to the PI, which resulted in the PI indicating that performance was in the licensee response band (green).

Inspection Report# : [1999022\(pdf\)](#)

G

Jul 16, 1999

Significance:

Identified By: NRC

Item Type: NCV NonCited Violation

the repetitive problem of excessive use of overtime.

The root cause report and the corrective actions, approved by the Plant Operations Review Committee and the Corrective Action Review Board, did not fully address the repetitive problem of excessive use of overtime. There were 177 instances between February 1 and 28, 1999, where station procedures were not followed to control overtime of plant workers. Further corrective actions were being developed to ensure that overtime violations did not continue. There were no known incidents where the excessive use of overtime directly impacted or affected the safety of the plant; however, the repetitive failure to follow procedures to control overtime is a non-cited violation. (Reference Report Section 4OA1.4, page 8)
Inspection Report# : [1999012\(pdf\)](#)

Last modified : March 01, 2002

Quad Cities 2

Initiating Events



Significance: Dec 29, 2001

Identified By: NRC

Item Type: FIN Finding

DEGRADED AND INADEQUATELY TESTED TRANSFORMER AND PROTECTIVE RELAYING RESULTS IN INCREASE IN TRANSIENT AND LOSS OF OFFSITE POWER INITIATING EVENT FREQUENCIES

On August 2, 2001, Unit 2 experienced a transformer failure, reactor scram, and loss of offsite power. The inspectors determined that a lightning strike in conjunction with age related degradation and inadequate testing of the Unit 2 main power transformer and switchyard protective relaying contributed to the event and resulted in an increase in the initiating event frequency for plant transients and a loss of offsite power. The inspectors determined the risk significance of this issue to be very low since all remaining mitigating systems were available to mitigate the transformer rupture, reactor scram, and loss of offsite power.

Inspection Report# : [2001017\(pdf\)](#)



Significance: Mar 31, 2001

Identified By: Licensee

Item Type: NCV NonCited Violation

Operator-induced loss of feedwater heating transient

On March 23 the inspectors reviewed an operator-induced loss of feedwater heating transient that occurred on Unit 2. The inspectors found that the operators failed to immediately recognize a reduction in feedwater heating and take prompt action to effectively control the increasing reactor power. The transient resulted in a 33 degree decrease in feedwater inlet temperature adding sufficient positive reactivity to increase reactor thermal power from 2511 to 2578 megawatts, approximately 102.7 percent of maximum licensed power. Exceeding Quad Cities License DPR-30 maximum thermal power of 2511 megawatts thermal was considered a Non-Cited Violation. The risk significance of this event was determined to be very low (Green) due to the relatively small increase a 2.7 percent power change will have on overall core thermal limits (Section 1R14).

Inspection Report# : [2001005\(pdf\)](#)



Significance: Aug 15, 2000

Identified By: NRC

Item Type: FIN Finding

Electrical ring bus caused electrical circuit breakers 1-3 and 3-4 to open.

On July 18 a fault on one of the offsite power feeds to the Quad Cities electrical ring bus caused electrical circuit breakers 1-3 and 3-4 to open. This action isolated the fault and resulted in a Unit 2 turbine generator and reactor trip. The response by the switchyard resulted in a loss of power on the Unit 1 reserve auxiliary transformer. The response to the reactor scram on Unit 2 was as designed. Operator performance during this event was determined to have been acceptable. The inspectors reviewed the risk significance of this initiating event for both units using the Significance Determination Process. All mitigating equipment was available for Unit 2 following the uncomplicated trip, and this event was screened as having very low risk significance (GREEN.) One of two auxiliary transformers for Unit 1 was de-energized during the event, but the unit did not trip and all mitigating equipment was available. Therefore, this event was also screened as GREEN for Unit 1.

Inspection Report# : [2000011\(pdf\)](#)



Significance: Jun 30, 2000

Identified By: NRC

Item Type: FIN Finding

operators did not control reactor vessel inventory

During operator response to a reactor trip on May 22, operators did not control reactor vessel inventory prior to the operating reactor feedwater pump tripping on high reactor vessel water level. Additionally, operators had not started a reactor feedwater pump by the time a reactor low level condition existed. This resulted in a second engineered safety feature actuation. The inspectors reviewed this issue using the significance determination process for a transient with a loss of feedwater and determined this was of very low risk significance (Section 1R14).

Inspection Report# : [2000007\(pdf\)](#)

**Significance:** Jun 30, 2000

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

Maintenance work and emerging work - 2B reactor water cleanup pump seal line disconnect

On June 10, maintenance workers disconnected a seal line to the 2B reactor water cleanup pump that was not properly isolated by the out-of-service tagout and discovered that the line was pressurized to about 1000 psig. The resulting spray caused a spread of contamination in the room and a potential hazard to the workers. No personnel injuries occurred as a result of this event. Failure to hang the proper out-of-service for the maintenance activity was considered a Non-Cited Violation (NCV) of Technical Specifications. The inspectors considered this event of very low safety significance due to the ability to isolate the leak and the availability of mitigating equipment (Section 1R13).

Inspection Report# : [2000007\(pdf\)](#)**Significance:** Jun 30, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

adjustments to the wrong instrument, causing a reactor trip on Unit 2

On May 5 an instrument technician performing a calibration of the main steam line high steam flow detectors made adjustments to the wrong instrument, causing a reactor trip on Unit 2. Failure to implement the calibration procedure for the proper channel instrument was considered an NCV of Technical Specification 6.8.A.1. The safety significance of this event was minimal due to the availability of mitigating equipment (Section 4OA.3).

Inspection Report# : [2000007\(pdf\)](#)**Significance:** Feb 29, 2000

Identified By: NRC

Item Type: FIN Finding

Ice Melt Valve Failure

Failure of the ice melt valve on January 22, 2000, resulted in some ice formation in the intake area. Operator detection and compensatory measures prevented the ice from affecting the water level in the intake. The valve gate had become detached from the stem. The failure of the ice melt valve was of very low risk significance because it did not result in an increased initiating event frequency for loss of both normal and ultimate heat sinks. The inspectors compared an estimated valve failure rate to the licensee's evaluation. The licensee's evaluation excluded this initiating event from the probabilistic risk assessment because no precursor event had occurred in the history of the station.

Inspection Report# : [2000001\(pdf\)](#)**Significance:** Sep 08, 1999

Identified By: NRC

Item Type: FIN Finding

Maintenance rule functional failures

Problematic feedwater level control equipment on Unit 2 resulted in two reactor vessel water level transients in early 1999. The licensee initially evaluated these two events as not being maintenance rule functional failures, which was inappropriate. An NRC inspection and a subsequent licensee self-assessment identified the error. The licensee re-evaluated the two transients as being functional failures on July 28, 1999. This issue did not increase the frequency of initiating events and therefore was an issue of very low safety significance (Section 1R12).

Inspection Report# : [1999018\(pdf\)](#)**Significance:** Jul 20, 1999

Identified By: NRC

Item Type: FIN Finding

a 3-inch increase in reactor water level

On Unit 2, a 3-inch increase in reactor water level occurred and required operators to take manual control of the system. Various failures in the level control systems have resulted in about ten similar events since January 1, 1999, in which operators were required to intervene to prevent level transients that could have resulted in a reactor trip. Since the plant effect of the failures is limited to an uncomplicated reactor trip, the failures were considered to be of low risk significance using the significance determination process (Section 1R03).

Inspection Report# : [1999011\(pdf\)](#)

Mitigating Systems



Significance: Mar 31, 2002

Identified By: NRC

Item Type: FIN Finding

CATASTROPHIC FAILURE OF 2B CONTROL ROD DRIVE PUMP

On January 24, 2002, a catastrophic failure of the 2B control rod drive pump occurred approximately 4 days after conducting maintenance. The pump failure was caused by the inadequate lubrication of the inboard pump bearing due to the inappropriate setting of a constant level oiler. The root cause was that the constant level oiler was set approximately 15/64 of an inch lower than the specified setting due to maintenance personnel using a previously painted oil level reference line on the pump casing rather than a more exact installation method. No violations of NRC requirements were identified as a result of this event due to the control rod drive system being non-safety related. The finding was of very low safety significance. Although the finding represented an actual loss of safety function of one train of non-Technical Specification equipment designated as risk significant by the maintenance rule for greater than 24 hours, all remaining mitigating equipment remained available to respond to potential transients.

Inspection Report# : [2002004\(pdf\)](#)



Significance: Mar 31, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO ADEQUATELY DETERMINE CAUSE OF SBLC PUMP TRIP AND TAKE CORRECTIVE ACTION

The inspectors identified a Non-Cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, for the failure to determine the cause of a 1995 2A standby liquid control pump trip and take corrective actions to preclude repetition. On February 15, 2002, during surveillance test actuations of the standby liquid control system explosive valves, the continuity of the firing circuit remained intact. Fragments contacted the standby liquid control system piping creating a circuit path to ground. The existence of a previously unidentified independent ground at a different point in the control circuitry created a condition where the voltage was not adequate to support continued system operation and the 2A standby liquid control pump tripped. The 2A standby liquid control pump tripped during the performance of the same surveillance procedure in 1995. Following the February 2002 pump failure, the licensee determined that troubleshooting performed in 1995 was inadequate in that it failed to identify the actual cause of the pump trip. The finding was of very low safety significance because the 2B train of the standby liquid control system was unaffected by this issue and all remaining mitigating equipment was available to respond to an anticipated transient without scram event.

Inspection Report# : [2002004\(pdf\)](#)



Significance: Mar 31, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO ESTABLISH MEASURES TO ASSURE THAT ITEMS WERE CORRECTLY TRANSLATED INTO SPECIFICATIONS

The inspectors identified a Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion III for failure to establish measures to assure that items such as thermal effects and the compatibility of materials were correctly translated into specifications for the Unit 2 emergency diesel generator fuel oil transfer system. On May 1, 2001, and May 3, 2001, a solenoid valve in the Unit 2 emergency diesel generator fuel oil transfer system failed to open approximately 12 hours after the start of the emergency diesel generator 24-hour endurance test. The solenoid valve failure was due to thermal pressurization of an isolated section of fuel oil transfer system discharge piping. The finding was of very low safety significance because the Unit 2 station blackout diesel generator was not impacted by this design issue, actions to manually fill the fuel oil day tank were proceduralized such that recovery of the emergency diesel generator should be successful, and alternative mitigating equipment was available to respond to a potential loss of offsite power.

Inspection Report# : [2002004\(pdf\)](#)



Significance: Feb 01, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to adequately address the erosion of the RHRSW room coolers' supply piping

Green. The inspectors identified a failure to promptly identify and correct conditions adverse to quality involving the erosion of safety-related residual heat removal service water piping. The licensee's corrective actions for the piping leak included replacing the affected piping and performing ultrasonic testing on similar piping for the other trains. During this inspection, NRC inspectors identified that the corrective actions were inadequate in that the ultrasonic testing was not able to examine the area of the piping affected by the erosion as evidenced by the subsequent failure. This finding was determined to be of very low safety significance because the equipment was still capable of performing its intended safety function. A Non-Cited Violation of 10CFR 50 Appendix B, Criterion XVI was identified.

Inspection Report# : [2001015\(pdf\)](#)

Significance: N/A Nov 15, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO FOLLOW OPERATOR REQUALIFICATION PROGRAM PROCEDURAL REQUIREMENTS

No color. The inspectors identified a Non-Cited Violation wherein the facility licensee had failed to follow procedural requirements to evaluate a senior reactor operator (SRO) licensed individual in an SRO licensed position during the year 2001 annual licensed operator requalification examination (10 CFR 55.59). The finding was of very low safety significance because the SRO licensed individual held an "inactive" SRO license (i.e., would not be assigned to licensed duties unless his license was restored to an active status in accordance with 10 CFR 55.53).

Inspection Report# : [2001016\(pdf\)](#)**Significance:** G Nov 15, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO MEET 10 CFR 50.65 REQUIREMENTS

On October 24, 2001, the inspectors determined that the licensee failed to count Unit 1 and Unit 2 battery room ventilation system air handling unit drive belt failures as maintenance preventable functional failures and repeat maintenance preventable functional failures where appropriate. The licensee's incorrect assessment of these equipment failures resulted in a failure to develop and implement appropriate action plans for the battery room ventilation systems on Units 1 and 2, assess the Unit 2 battery room ventilation system for (a)(1) classification, and monitor the performance of the systems against licensee-established goals. The failure to properly implement maintenance rule requirements was considered a Non-Cited Violation of 10 CFR 50.65. The risk significance of the issue was determined to be of very low safety significance because the batteries supported by the battery room ventilation systems did not experience an actual loss of safety function.

Inspection Report# : [2001016\(pdf\)](#)**Significance:** G Sep 30, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO VERIFY ADEQUATE FILL OF THE HIGH PRESSURE COOLANT INJECTION SYSTEM AS REQUIRED BY TECHNICAL SPECIFICATIONS

On December 27, 2000, the licensee discovered that the high pressure coolant injection system was not filled with water from the pump discharge valve to the system isolation valve following maintenance activities. Technical Specification Surveillance Requirement 4.5.A.1.a.1 required the licensee to verify that the high pressure coolant injection system was filled with water every 31 days. The inspectors determined that greater than 31 days had elapsed since the licensee had verified that the high pressure coolant injection system was properly filled. The failure to perform the surveillance requirement within 31 days also resulted in the high pressure coolant injection system being inoperable for greater than the Technical Specification 3.5.A.3.a.3 allowed outage time of 14 days. The failure to meet the requirements of Technical Specification 3.5.A.3.a.3 and Surveillance Requirement 4.5.A.1.a.1 was considered a Non-Cited Violation. The risk significance of this event was determined to be very low since all remaining mitigation systems were available to provide water to the reactor during an event.

Inspection Report# : [2001014\(pdf\)](#)**Significance:** G May 16, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to meet requirement of 10 CFR 50.59.

On June 15, 2000, station personnel removed two of the three rainbow pumps from the site. Quad Cities Updated Final Safety Analysis Report, Section 9.2.5, specifies that portable pumps (called rainbow pumps) of sufficient capacity (5100 gallons per minute) are onsite to provide makeup water to the ultimate heat sink in the event of a Lock and Dam 14 failure on the Mississippi River. The inspectors determined that the licensee had made a change to the facility as described in the Quad Cities Updated Final Safety Analysis Report without first determining if the change required a license amendment, contrary to the requirements of 10 CFR 50.59. The failure to meet the requirements of 10 CFR 50.59 was considered a Non-Cited Violation. The risk significance of this event was determined to be very low due to the very small initiating event frequency of the lock and dam failure, the slow rate of event progression once the initiating event occurs, and the availability of other onsite sources of water not credited in the event analysis.

Inspection Report# : [2001008\(pdf\)](#)**Significance:** G Mar 31, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

Surveillance testing involving timing of the Unit 1 and Unit 2 emergency diesel generators shortly after the engines had

been shut down from previous runs

Inspectors identified that on two occasions, March 9 and March 27, the licensee performed technical specification required surveillance testing involving timing of the Unit 1 and Unit 2 emergency diesel generators shortly after the engines had been shut down from previous runs. Station procedures were inadequate in prescribing the conditions for performance of the tests. Procedures did not prevent preconditioning of the air start systems, fuel systems, and other engine and electrical components. Inadequate procedures for testing was considered a Non-Cited Violation of 10 CFR Appendix B, Criterion V, "Instruction Procedures and Drawings." The risk significance was very low (Green) because inspectors determined that testing practices had not led to declining performance of the diesel generators (Section 1R22).

Inspection Report# : [2001005\(pdf\)](#)



Significance: Dec 31, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Place the "A" Train of the Reactor Protection System in the Tripped Condition

On November 6, 2000, the Number 2 turbine control valve fast closure trip failed to cause a half scram as expected during a Unit 2 surveillance test. The licensee then repeated the test three more times and the fast closure trip successfully caused the expected half scram each time. The licensee declared the trip function operable without taking the actions of Technical Specification 3.1.A, Action 1 for an inoperable channel. Generic Letter 91-18 states that repetitive testing to achieve acceptable results without first identifying and correcting the root cause of any problem is not an acceptable means for verifying operability. A subsequent autopsy of the pressure switch for the control valve fast closure trip found evidence of fretting which produced metallic particles believed to have caused the initial failure. The inspectors determined the Number 2 turbine control valve fast closure trip had been declared operable without adequate justification. The failure to implement the required actions of Technical Specification 3.1.A-1 for an inoperable channel of the turbine control valve fast closure trip was considered a Non-Cited Violation (50-265/00-20-01). The finding was determined to be of very low safety significance due to the level of redundancy and diversity of the reactor protection system. During the period of time that the Number 2 turbine control valve fast closure trip was inoperable, a sufficient number of turbine control valve fast closure channels remained operable to result in an automatic scram, if required. Additionally, the turbine control valve fast closure trip is considered an anticipatory trip and, if inoperable, the reactor scram could still have been initiated by the reactor vessel high pressure or the average power range monitor high flux trips.

Inspection Report# : [2000020\(pdf\)](#)



Significance: Dec 15, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Seal Tops of Electrical Cabinets

The team identified that electrical cabinets in the auxiliary electric equipment room were not sealed at the top to protect equipment from water damage. The failure to seal the top of the cabinets was considered a Non-Cited Violation (NCV 50-254/00-16-01; NCV 50-265/00-16-01) of Operating Licenses DPR-29 and DPR-30, Section h.3.F (Section 1R05.2.b.1). The failure to seal the cabinets, a fire protection feature, involved very low risk (Green) because a fire protection defense-in-depth element, as described by MC 0609, Appendix F, Fire Protection Significance Determination Process, was not affected.

Inspection Report# : [2000016\(pdf\)](#)



Significance: Dec 15, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Provide Fire Stops in Cable Trays

The team identified that fire stops were not installed in divisional cable trays for which specified separation had not been maintained. The failure to install fire stops was considered a Non-Cited Violation (NCV 50-254/00-16-02; NCV 50-265/00-16-02) of Operating Licenses DPR-29 and DPR-30, Section H.3.F (Section 1R05.2.b.2). The failure to install fire stops, a fire protection feature, involved very low risk (Green) because a fire protection defense-in-depth element, as described by MC 0609, Appendix F, Fire Protection Significance Determination Process, was not affected.

Inspection Report# : [2000016\(pdf\)](#)



Significance: Nov 20, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Surveillance testing for torus temperature instrumentation components required by Technical Specification 4.2.F.1 had not been performed since installation in 1990 and 1991.

On October 4, 2000, the licensee identified that surveillance testing for torus temperature instrumentation components required by Technical Specification 4.2.F.1 had not been performed since installation in 1990 and 1991. Condition Report Q2000-03512 was

written to address the issue. Failure to perform testing of the instrumentation was considered a Non-Cited Violation of Technical Specification 4.2.F.1 (Section 4OA3). Failure to check instrument accuracy by this 18-month surveillance for Unit 1 and Unit 2 involved very low risk because when the surveillance was subsequently performed, instrument accuracy of the temperature indication loop was within acceptable tolerance.

Inspection Report# : [2000015\(pdf\)](#)



Significance: Sep 30, 2000

Identified By: NRC

Item Type: FIN Finding

Inadequate operability documentation forms for Problem Identification Form Q2000-2372, regarding a design deficiency for Units 1 and 2 high pressure coolant injection motor speed changers

The inspectors found that the July 3 and August 23, 2000 supporting operability documentation forms for Problem Identification Form Q2000-2372, regarding a design deficiency for Units 1 and 2 high pressure coolant injection motor speed changers, did not adequately support the operability of the system. Inspectors reviewed the risk significance of the motor speed changer being inoperable and found the risk to be very low (GREEN) since the change to core damage frequency was less than E-6/year. In addition, operators were briefed on the potential problems with the system, and the licensee installed design changes to correct the problem on both units (Section 1R15).

Inspection Report# : [2000014\(pdf\)](#)



Significance: Sep 30, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Degraded condition of fire door 128

On September 15, the inspectors determined that the bottom latch in the inactive leaf of door 128, a 3-hour rated fire door, was not properly latched. The fire protection engineer determined that the degraded door also resulted in the inoperability of the emergency diesel generator room carbon dioxide fire suppression system. This finding constituted a violation of Quad Cities Operating Licensee DPR-29. This violation is being treated as a Non-Cited Violation (50-265/00-14-01), consistent with Section VI.A.1 of the May 1, 2000, Enforcement Policy (Section 1R05). The inspectors evaluated the degraded condition of fire door 128 using the fire protection Significance Determination Process, and evaluation techniques discussed with Senior Risk Analysts and Fire Protection Engineers in Region III and NRR. Since the degradation of the fire door was minimal, and the area of the turbine building directly in front of the door (within 15 to 20 feet) was relatively free of combustibles and cables, the inspectors determined that the possibility of a fire in the Unit 2 emergency diesel generator room spreading to damage the shared emergency diesel generator was not credible. Therefore the significance of this finding was considered very low (GREEN).

Inspection Report# : [2000014\(pdf\)](#)



Significance: Sep 30, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to implement modifications to correct a previously identified design deficiency which could have made the motor speed changer inoperable in accident situations

Inspectors found that the licensee failed to implement modifications to correct a previously identified design deficiency which could have made the motor speed changer inoperable in accident situations. The failure to implement corrective actions for this condition was a violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action." This violation is being treated as a Non-Cited Violation (50-254/00-14-02; 50-265/00-14-02), consistent with Section VI.A.1 of the May 1, 2000, Enforcement Policy. The inspectors found that the risk significance for internal and external events was very low (GREEN) since unavailability of the high pressure coolant injection system resulted in a change to core damage frequency of less than E-6/year. The licensee implemented modifications on both units to correct the design deficiency (Section 1R15).

Inspection Report# : [2000014\(pdf\)](#)

Significance: N/A Sep 15, 2000

Identified By: NRC

Item Type: FIN Finding

WHITE Performance Indicators for Units 1 and 2 Safety System Functional Failures

The licensee's August 14, 2000, root cause report for the high number of safety system functional failures on both units listed three root causes: inadequate knowledge of complex systems, a system vice functional focus, and inadequate integration of the new NRC inspection program into the station's processes. Corrective actions listed by the licensee included: Maintenance department clarification of expectations for troubleshooting, Engineering department revision of a troubleshooting procedure to require formal troubleshooting plans, Regulatory Affairs requirement for root cause evaluation of any performance indicator which is "threatened" (less than 50 percent margin to the WHITE threshold), Regulatory Affairs requirement for root cause evaluations to include a section on cumulative effects of the system failure on a "threatened" performance indicator, Regulatory Assurance modification of corrective action program to implement root cause requirements for a "threatened" performance indicator, Plant

Health Committee requirement for monthly review of performance indicators, development or revision of process to address a cumulative focus on NRC Mitigating Systems Cornerstone and functional health, Engineering action to expand use of formal troubleshooting techniques and enhance troubleshooting skills and troubleshooting procedure. The inspectors found no current concerns with the individual root cause reports for these issues. Inspectors validated the licensee assertion that poor troubleshooting and poor root causes were an issue at Quad Cities. Two of the ten events from the individual root cause evaluations were repeats of earlier events, and the root cause efforts were not effective initially. Inspectors found weaknesses in the overall root cause report for the multiple safety system functional failures as follows:

- The overall root cause evaluation failed to incorporate one of two February 2000 events. Human performance events did not get full coverage in the overall root cause, some events for the safety system functional failures involving human performance were not included.
- The evaluation was focused on problems which would cause an NRC performance indicator change, and to a lesser amount on why such a large number of failures were occurring at Quad Cities. The report listed actions to review another method for trending cumulative impact of failures, but another method was not ready for review at the end of the inspection. The inspectors determined that the licensee's search for similar failures focused on the recently instituted category of "performance indicator" and thereby eliminated a number of previous safety system functional failures that occurred in 1997 and 1998.
- The corrective action for troubleshooting failed to incorporate the operations department, and only focused on maintenance and engineering. Although the licensee did not entirely agree with all of the weaknesses identified by the inspectors, nevertheless, the licensee revised several of the root cause evaluations to ensure appropriate actions were developed to address the inspector's concerns.

Inspection Report# : [2000013\(pdf\)](#)



Significance: Sep 15, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

One corrective action problem was found on August 16, 2000, and involved a previously identified design deficiency with the high pressure coolant injection system

One corrective action problem was found on August 16, 2000, and involved a previously identified design deficiency with the high pressure coolant injection system. Problem Identification Form Q1997-04485 documented that the auto initiation signal for high pressure coolant injection did not electrically seal in as described in the updated final safety analysis. However, the tracking item for correcting this problem was closed without corrective action being completed. Condition Report Q2000-02954 was written to again track corrective actions to this problem. This was considered a Non-Cited Violation (NCV) of Criterion XVI, "Corrective Action," of 10 CFR 50, Appendix B. Inspectors considered this problem to be of very low risk significance (GREEN) since it would not have prevented the system from starting automatically or being initiated manually.

Inspection Report# : [2000013\(pdf\)](#)



Significance: Aug 15, 2000

Identified By: NRC

Item Type: FIN Finding

Contribution of fire risk to core damage frequency associated with the safe shutdown makeup pump discharge valve being in a degraded condition.

On July 19 during a regulatory conference, the licensee discussed the contribution of fire risk to core damage frequency associated with the safe shutdown makeup pump discharge valve being in a degraded condition. Based on the information presented during the conference, the NRC concluded that this condition was of very low safety significance due to the short duration (2 days) the condition existed.

Inspection Report# : [2000011\(pdf\)](#)

Significance: N/A May 16, 2000

Identified By: NRC

Item Type: FIN Finding

Surveillance Testing

During logic testing on March 21, 2000, the Unit 1 high pressure coolant injection auxiliary oil pump failed to properly operate. This condition rendered the system inoperable for automatic initiation for approximately one year. The risk from internal events for this condition was determined to be very low (GREEN) in Inspection Report 50-254/2000003; 50-265/2000003. The effect on risk due to external events, specifically fires, was determined to be potentially significant during a preliminary Significance Determination Process review. However, this issue was also the substantial contributor to a YELLOW high pressure coolant injection unavailability performance indicator, which represents performance that minimally reduces safety margin and requires NRC oversight. Therefore, the NRC considers the inspection findings and the performance indicator to be a single issue and agency action will be determined based on application of the Action Matrix for the YELLOW performance indicator.

Inspection Report# : [2000005\(pdf\)](#)



Significance: Feb 29, 2000

Identified By: NRC

Item Type: FIN Finding

Safe Shutdown Makeup Pump Valve Failure

On January 19, 2000, during planned maintenance activities, maintenance workers determined that the safe shutdown makeup pump system was inoperable due to a Unit 2 safe shutdown makeup pump injection valve failure to operate. The valve failure was evaluated using the Significance Determination Process and was found to be of very low risk significance because all other mitigating systems were available.

Inspection Report# : [2000001\(pdf\)](#)



Significance: Feb 29, 2000

Identified By: NRC

Item Type: FIN Finding

Unit 2 Automatic Depressurization System Valves Taken Out-Of-Service in Mode 3

On January 22, 2000, operators did not recognize entry into a Technical Specification action statement when relief valves were removed from service with the reactor in Mode 3. Upon discovery, about 4-1/2 hours later, the valves were returned to service. The Technical Specification action statement was not exceeded. The unavailability of the relief valves was evaluated by the NRC's Senior Reactor Analyst as part of the Significance Determination Process for shutdown issues. This issue was determined to be of very low risk significance because the reactor was in hot shutdown with vessel pressure at approximately 50 psig.

Inspection Report# : [2000001\(pdf\)](#)



Significance: Feb 29, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Emergency Diesel Generator Ventilation Power Supply Switch Out of Position

On January 28, 2000, with Unit 1 operating at full power and with Unit 2 in Mode 5 (refuel), an operator identified that the Unit 2 emergency diesel generator room ventilation fan power select switch was selected to the Unit 1 power supply. The Unit 2 emergency diesel generator was inoperable, but remained available for service. Since the shared emergency diesel generator was already inoperable to Unit 2, this condition left no operable emergency diesel generators for Unit 2. This issue is considered a non-cited violation consistent with the Interim Enforcement Policy for pilot plants. This issue was considered to be of very low safety significance because the Unit 1 diesel generator would not have been overloaded by the Unit 2 emergency diesel generator room ventilation fan. The Unit 2 emergency diesel generator was also available.

Inspection Report# : [2000001\(pdf\)](#)



Significance: Feb 29, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Post Maintenance Testing

On February 10, 2000, with Unit 2 in startup mode, the high pressure coolant injection pump failed to start during testing due to incomplete maintenance. A maintenance foreman erroneously signed off the work package as being completed when it was not. This issue is considered a non-cited violation consistent with the Interim Enforcement Policy for pilot plants. This issue was of very low risk significance since the system pressure was low, decay heat was low, and redundant methods of inventory injection were either operating or available.

Inspection Report# : [2000001\(pdf\)](#)



Significance: Feb 29, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Too Few Intermediate Range Nuclear Instruments During Refueling

From February 1 through 5, 2000, Unit 2 had less than the number of operable intermediate range nuclear instruments per channel (three) for the reactor protective system required by Technical Specification 3.1.A. Only two of four instruments were operable on the "B" channel and three of four were operable on the "A" channel. During this time, the reactor was in Mode 5 (refuel) and operators performed core alterations by moving irradiated fuel in the vessel. This issue is considered a non-cited violation consistent with the Interim Enforcement Policy for pilot plants Unit 2 was in cold shutdown with all control rods inserted. This issue was determined to be of very low risk significance because shutdown margin calculations and refueling interlocks provided assurance of adequate shutdown margin. Source range nuclear instruments provided a rod block function during refueling. Intermediate range nuclear instrument indication would not have been available until after the point where a reactivity excursion had occurred because the neutron level during refueling operations was too low for the intermediate range nuclear instruments.

Inspection Report# : [2000001\(pdf\)](#)

**Significance:** Jan 19, 2000

Identified By: NRC

Item Type: FIN Finding

Corrective Action Deficiencies Related to Heaters in the Contaminated Condensate Storage Tanks Allowed Degradation of the Heaters

The inspectors found that corrective action deficiencies related to heaters in the contaminated condensate storage tanks allowed degradation of the heaters to the extent that high pressure injection systems could have been adversely affected. The risk significance for the loss of heaters in the contaminated condensate storage tanks was low, partially because both units were shut down during times when the high pressure injection sources could have been rendered inoperable due to lack of sufficient tank heating.

Inspection Report# : [1999025\(pdf\)](#)**Significance:** Jan 19, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Contaminated Condensate Storage Tank Heaters Inoperable

The inspectors found that design control deficiencies related to heaters in the contaminated condensate storage tanks allowed degradation of the heaters to the extent that high pressure injection systems could have been adversely affected. Modifications to the system did not evaluate the facility change as required by 10 CFR 50.59. This was considered to be a non-cited violation of 10 CFR 50.59. This issue was first documented by the licensee in August 1999 and addressed in Inspection Report 50-254/99020; 50-265/99020. The risk significance for the loss of heaters in the contaminated condensate storage tanks was low, partially because both units were shut down during times when the high pressure injection sources could have been rendered inoperable due to lack of sufficient tank heating.

Inspection Report# : [1999025\(pdf\)](#)**Significance:** Dec 03, 1999

Identified By: NRC

Item Type: FIN Finding

Corrective Actions for a Design Control Problem with Software Backups were not Timely or Complete

The inspectors found that two failures of a high pressure coolant injection valve to close in September and October 1999 were not properly classified in the maintenance rule program. Licensee engineers initially failed to consider the second failure of the 1-2301-5 valve to close on October 4, 1999, as a repetitive maintenance preventable functional failure, and failed to monitor the system under (a)(1) of the maintenance rule. This is considered an unresolved item. The valve failure was found to be of low risk significance because the inboard isolation valve was available.

Inspection Report# : [1999023\(pdf\)](#)**Significance:** Nov 19, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Ensure ADS Valves Qualified for Minimum Possible Voltage

Four of the five Unit 1 automatic depressurization system relief valves were not initially qualified for the degraded voltage conditions that would be seen under accident conditions. The licensee had not originally accounted for the voltage drop that would occur between the station batteries and the valve solenoids when specifying the minimum voltage for which the valves needed to be qualified. The licensee subsequently identified a test report, done for another nuclear station, which qualified the valves to a lower voltage. The inspectors, in conjunction with the Office of Nuclear Reactor Regulations, reviewed the test and accepted it under condition that a ten volt penalty be applied to account for some test deficiencies. The licensee also performed calculations to show that the actual available voltage to the valves, under degraded conditions, was above the accepted minimum voltage. A non-cited violation was identified.

Inspection Report# : [1999021\(pdf\)](#)**Significance:** Oct 20, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Promptly Correct Control Room Emergency Ventilation System Deficiency

The inspectors identified two examples of inadequate corrective action regarding the Units 1 and 2 safety-related control room emergency ventilation system. In 1995 the licensee identified emergency diesel generator overloading concerns and degraded voltage concerns. This degraded and nonconforming condition was not corrected, and the design basis for the emergency diesel

generator system and control room emergency ventilation system were not changed to reflect the condition. Also, safety-related electrical drawing discrepancies with the control room emergency ventilation system were identified in 1997 and never corrected. A non-cited violation for 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action" with two examples was identified. In utilizing the Significance Determination Process, this issue was determined to have low risk significance because control room habitability was assumed to be maintained for the 1 hour to start control room cooling and, therefore, there was no impact on the ability of control room operators to operate the required mitigating systems. Also, the design basis event was estimated to have a very low initiating event frequency (Section 1R16).

Inspection Report# : [1999020\(pdf\)](#)



Significance: Sep 08, 1999

Identified By: NRC

Item Type: FIN Finding

A grounded resistor in the governor circuit that caused a failure of the Unit 2 reactor core isolation cooling pump

On August 26, 1999, the licensee identified a grounded resistor in the governor circuit that caused a failure of the Unit 2 reactor core isolation cooling pump. The inspectors used the significance determination process to identify this event as having very low safety significance for the loss of offsite power initiating event due to the availability of other mitigating equipment (Section 1R22.2).

Inspection Report# : [1999018\(pdf\)](#)



Significance: Sep 08, 1999

Identified By: NRC

Item Type: FIN Finding

Motor-operated valve dynamic testing

During motor-operated valve dynamic testing on August 4, 1999, the Unit 1 residual heat removal cross-tie valve (19A) failed to fully close. However, approximately one month after the failure occurred, the licensee's corrective action program did not include a plan to determine the cause of the failure or to address any potential generic considerations for other valves (Section 1R22.1). No safety functions were affected and no risk increase resulted from this particular valve failure.

Inspection Report# : [1999018\(pdf\)](#)

Significance: N/A Sep 08, 1999

Identified By: NRC

Item Type: FIN Finding

Removal of a high pressure injection pump in parallel with testing on an emergency diesel generator

On two occasions, the licensee's work authorization process allowed removal of a high pressure injection pump in parallel with testing on an emergency diesel generator. The inspectors identified that on one occasion, planned conditional core damage probability was increased to greater than that allowed by licensee administrative procedures. The actual risk was lower because the licensee did not perform the work on both systems together. The significance of this finding was not assessed by the significance determination process due to the instantaneous risk involved and the fact that the work was not performed as planned following NRC discussions with plant management (Section 1R13).

Inspection Report# : [1999018\(pdf\)](#)



Significance: Sep 03, 1999

Identified By: NRC

Item Type: FIN Finding

Copy of post-modification test not retained

The inspectors identified that the Unit 1 post modification test for a design change package on the fuel transfer pump was not retained by the licensee. This item had very low risk significance. The licensee had retained the Unit 2 test and had signature evidence that the Unit 1 test was performed.

Inspection Report# : [1999017\(pdf\)](#)



Significance: Jul 20, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Corrective Action for Flooding Procedures.

Corrective actions were not implemented for an inadequate flood protection procedure originally identified by the licensee in 1997. The procedures did not provide adequate instructions to protect the plant structurally under the forces of severe flood waters. This issue was inappropriately closed in the corrective action program without resolution. This was a non-cited violation for inadequate corrective action. A qualitative risk assessment of the impact of the procedure deficiencies concluded that the issues were of low risk significance since adequate time would be available to make procedure changes and take action during a flooding event. (Section 1R06).

Inspection Report# : [1999011\(pdf\)](#)



Significance: Jul 16, 1999

Identified By: NRC

Item Type: FIN Finding

Corrective actions to address a Unit 1 emergency diesel generator failure

Corrective actions to address a January 1998 Unit 1 emergency diesel generator (EDG) failure to start were postponed in some cases and in others only partially completed. (Reference Report Section 4OA1.3, page 5) This item was categorized by the significance determination process as being of low risk significance based on occasional EDG start failures, redundant EDGs and available off site power.

Inspection Report# : [1999012\(pdf\)](#)



Significance: Jul 16, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Excessive thrust conditions, found during testing of motor operated valves

Excessive thrust conditions, found during testing of motor operated valves (MOVs) from March 1997 through July 2, 1999, were not identified to management and did not receive appropriate corrective action to preclude recurrence. As a result, the cause of the problem was not identified and appropriate corrective action was not taken. This is a non-cited violation. This item was categorized by the significance determination process as being of low risk significance. (Reference Report Section 4OA1.4) Since nine of the ten valves found outside the acceptable thrust windows functioned as required during testing, the issue was determined to be of low risk significance and was categorized as "Green."

Inspection Report# : [1999012\(pdf\)](#)



Significance: Jul 15, 1999

Identified By: NRC

Item Type: FIN Finding

The surveillance procedure for evaluating thermal performance of the residual heat removal heat exchangers

The surveillance procedure for evaluating thermal performance of the residual heat removal heat exchangers contained errors which resulted in the licensee overestimating the heat removal capability of the 1A heat exchanger. This item had very low risk significance, since the heat exchanger was still capable of removing its design heat load.

Inspection Report# : [1999014\(pdf\)](#)



Significance: Jul 15, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Three Examples of Design Control Relating to Original Plant Design

A non-cited design control violation with multiple examples was identified during close out of two unresolved items from the architect-engineer inspection (50-254/265-98201). The issues dealt with ensuring adequate net positive suction head for the emergency core cooling system pumps, ensuring the residual heat removal service water piping was analyzed for its design condition, and determining the adequacy of a thermal relief valve. All the examples in the Non-Cited Violation resulted from original design deficiencies. The licensee's analyses showed that the pumps were operable. Therefore, this issue screened out of the significance determination process as having very low risk significance

Inspection Report# : [1999014\(pdf\)](#)

Barrier Integrity



Significance: Nov 20, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Three examples of failure to follow procedures.

On November 3, 2000, the 1B channel of the reactor protective system flow biased neutron flux trip was found to be inoperable during reactor startup from the Unit 1 refueling outage 16. The licensee determined that poor wiring practices, poor second verification practices, and inadequate post maintenance testing of nuclear instrumentation wiring led to the malfunction.

Maintenance workers failed to follow the wiring requirements in the work request, did not use lift and land sheets when removing and re-terminating the wires, and failed to label the wires which were lifted during the maintenance activity. Failure to follow the procedure (work request) for wiring was considered an example of a Non-Cited Violation. The risk significance of this event was very low because of the short amount of time that the unit was in Mode 1, because the "A" channel of flow biased trip setpoints was still operable, and because the wiring error actually caused the flow biased neutron flux trip to be more conservative (Example A). On October 14, 2000, during disassembly of the Unit 1 reactor for refueling outage 16, reactor service technicians opened a flanged connection of the reactor head vent piping with approximately 5 to 8 psig steam pressure still in the reactor vessel and initiated a steam release to the refueling floor area which lasted for several hours. Numerous procedural, process, and communication problems contributed to the event. Personnel safety, procedure adherence, procedure adequacy, and lack of control of reactor vessel disassembly activities were all concerns brought out by this event. The failure to follow procedures during vessel disassembly was considered an example of a Non-Cited Violation. The risk significance was evaluated as very low because the amount of reactor vessel inventory released to secondary containment was very low, and secondary containment integrity requirements were met (Example B). On October 22, 2000, workers attempting to replace a local power range monitor inadvertently lifted the local power range monitor tube off its seat in the reactor vessel bottom head. This caused highly contaminated radioactive water from the bottom of the reactor vessel to drain directly onto the workers. The draining stopped immediately after the local power range monitor tube was released and reseated back into the vessel. One worker was contaminated such that a meter held to his body read 5 rem per hour on contact. Extraordinary actions by radiation protection workers resulted in the removal of the majority of the highly contaminated material quickly, such that the overall external shallow dose equivalent for the individual was estimated at 2.784 rem, and the internal dose received by the worker was estimated at 45 millirem. Problems involved in this event included workers not adhering to the instructions by radiation protection technicians, workers not having procedures with them and performing steps of two different procedures concurrently, and workers not informing operators or radiation protection technicians that they were taking actions that could allow water to be drained from the reactor vessel. In addition, the procedures were not adequate to control the work. The failure to follow procedures during local power range monitor replacement was considered an example of a Non-Cited Violation. The safety significance of this event was very low because sufficient makeup capacity to fill the vessel was available even if the local power range monitor failed to reseal, the local power range monitor tube was reseated quickly and the reactor vessel drainage stopped, and the contamination was mostly external and was removed quickly (Example C).

Inspection Report# : [2000015\(pdf\)](#)



Significance: Jun 30, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Corrective Action for Delinquent ASME Code Work Packages

The inspectors identified a failure of the corrective action program where ASME Code Class 1, 2 and 3 Replacement and Repair program requirements for work package reviews were not met. On four occasions the licensee did not realize that the Code work packages were not meeting 10 CFR 50.55a ASME Code requirements. In each case, corrective actions were not taken to correct the situation. Failure to promptly identify and correct the failure to meet ASME code requirements for work packages was considered a Non-Cited Violation of 10 CFR 50, Appendix B, Criterion XVI. The safety significance of this issue was considered very low based on the absence of adverse consequences and the fact that no technical problems were identified.

Inspection Report# : [2000008\(pdf\)](#)



Significance: Jan 19, 2000

Identified By: NRC

Item Type: FIN Finding

Failure not classified as a functional failure under the Maintenance Rule

A failure of a Unit 2 containment spray system valve was not properly classified as a maintenance rule functional failure under the maintenance rule program. This individual classification failure was corrected and did not impact the licensee's ability to demonstrate maintenance effectiveness for the system. The valve failure was considered to be of low risk significance using the Significance Determination Process because the other train of containment spray was fully functional.(Section 1R12)

Inspection Report# : [1999025\(pdf\)](#)



Significance: Jan 19, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Overthrust of Motor-Operated Valve 2-1001-34A

During surveillance testing on December 12, 1999, residual heat removal torus spray/test return valve 2-1001-34A closed with 116,831 pounds of thrust which was almost double the previous as-left thrust setting of the valve. This value also exceeded the seismic thrust limit for the valve. Corrective actions recommended to determine extent of condition after failure of a similar valve in 1998 were not taken. This was considered to be a non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI. The excessive thrust problem was considered to have low risk significance because the valve remained operable.

Inspection Report# : [1999025\(pdf\)](#)



Significance: Sep 08, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to promptly correct a design deficiency with the standby gas treatment system.

The licensee discovered during surveillance testing on August 23, 1999, that both standby gas treatment trains may not have functioned as designed during a postulated loss of Bus 19. The item had been previously identified in 1992 but not adequately corrected. No design change or design evaluation justifying the degraded condition had been performed. Failure to take corrective action for this design problem was a Non-cited Violation of Criterion XVI of 10 CFR Part 50, Appendix B. This problem resolution violation could not be classified with a risk significance due to its programmatic nature. However, since 1992 the inspectors were not aware of any failures of the administrative controls that would have jeopardized standby gas treatment operability. Therefore, from an equipment standpoint, this finding has a very low risk significance (Section 40A1).

Inspection Report# : [1999018\(pdf\)](#)



Significance: Jul 20, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Secondary Containment Penetration.

Secondary containment integrity did not exist from 1981 until May 1997 due to an unsealed 1 inch diameter penetration. This was a non-cited violation of Technical Specification 3.7 (Section 40A3). This issue had very low risk significance. Test results showed that the standby gas treatment system could still maintain negative pressure in secondary containment with leak pathways up to 4 inches in diameter.

Inspection Report# : [1999011\(pdf\)](#)

Emergency Preparedness

Occupational Radiation Safety

Significance: N/A Jul 13, 2001

Identified By: NRC

Item Type: FIN Finding

A supplemental inspection was performed by the NRC to assess the licensee's evaluation associated with the failure to provide adequate radiological planning to maintain radiological doses as-low-as

is-reasonably-achievable (ALARA) during the Fall 2000 Unit 1 outage. This performance issue was previously characterized as having low to moderate risk significance (White) in NRC Inspection Report No. 50-254/00-18(DRS) and 50-265/00-18(DRS). During this supplemental inspection, performed in accordance with Inspection Procedure 95001, the inspector concluded that the licensee performed a comprehensive evaluation of the radiological planning weaknesses. The licensee's evaluation attributed the planning weaknesses to ineffective job management by the radiation protection and construction staffs (root cause). In determining the root cause, the licensee identified contributing factors which included ineffective management of work force changes and drywell temperature control, inadequate monitoring of job duration and identification of changes in duration, and inadequate consideration of work location dose rates and contamination levels when developing revised job dose estimates. The inspector reviewed the licensee's corrective actions, both completed and planned, and concluded that the corrective actions appeared to address the identified root cause and contributing causes. In particular, the licensee implemented an ALARA job standard to provide additional guidance to the staff for identifying and managing changes in radiological work. The purpose of the job standard was to fully identify the changes (both prior to the work and based on the as-found conditions) and to communicate the changes to the station ALARA committee so that the planning could be adequately evaluated to determine if replanning was necessary. Initial implementation of the standard during the Spring 2001 Unit 1 recirculation pump seal replacement was adequate; however, the inspector observed weaknesses in the understanding of staff concerning when the standard was to be applied. Due to the licensee's acceptable performance in assessing the radiological planning problems, the White finding associated with this issue will only be considered in assessing plant performance for a total of four quarters in accordance with the guidance in NRC Manual Chapter 0305, "Operating Reactor Assessment Program." Implementation of the licensee's corrective actions will be reviewed during a future inspection.

Inspection Report# : [2001013\(pdf\)](#)



Significance: Nov 27, 2000

Identified By: NRC

Item Type: FIN Finding

Radiological dose for the Safety Relief Valve (SRV) replacement work results in a determination of a White Finding.

Planning problems caused the dose for the Safety Relief Valve (SRV) replacement work completed during refueling outage Q1R16 to exceed its projected dose by more than 50 percent. Elevated dose rates were encountered in the drywell as a result of cobalt 60 plate-out. The drywell cooling/ventilation system was out of service for maintenance and testing, significantly elevating temperatures in the drywell. Also, less experienced workers performed the SRV job NRC Supplemental Inspection (Report 50-254/01-13, 50-265/01-13): During this supplemental inspection, performed in accordance with Inspection Procedure 95001, the inspector concluded that the licensee performed a comprehensive evaluation of the radiological planning weaknesses. The licensee's evaluation attributed the planning weaknesses to ineffective job management by the radiation protection and construction staffs (root cause). In determining the root cause, the licensee identified contributing factors which included ineffective management of work force changes and drywell temperature control, inadequate monitoring of job duration and identification of changes in duration, and inadequate consideration of work location dose rates and contamination levels when developing revised job dose estimates. The inspector reviewed the licensee's corrective actions, both completed and planned, and concluded that the corrective actions appeared to address the identified root cause and contributing causes. In particular, the licensee implemented an ALARA job standard to provide additional guidance to the staff for identifying and managing changes in radiological work. The purpose of the job standard was to fully identify the changes (both prior to the work and based on the as-found conditions) and to communicate the changes to the station ALARA committee so that the planning could be adequately evaluated to determine if replanning was necessary. Initial implementation of the standard during the Spring 2001 Unit 1 recirculation pump seal replacement was adequate; however, the inspector observed weaknesses in the understanding of staff concerning when the standard was to be applied. Due to the licensee's acceptable performance in assessing the radiological planning problems, the White finding associated with this issue will only be considered in assessing plant performance for a total of four quarters in accordance with the guidance in NRC Manual Chapter 0305, "Operating Reactor Assessment Program." Implementation of the licensee's corrective actions will be reviewed during a future inspection.

Inspection Report# : [2000018\(pdf\)](#)Inspection Report# : [2001013\(pdf\)](#)

Public Radiation Safety

**Significance:** Jul 02, 1999

Identified By: NRC

Item Type: FIN Finding

Lack of Documentation for Offsite Dose Calculation Manual Revisions

The inspectors identified a lack of documentation for the licensee's review of changes to the Offsite Dose Calculation Manual. Although an independent technical review determined that the changes maintained a sufficient level of effluent control, the licensee did not maintain documentation to support this determination. (Section 2PS3.3) This item had very low risk significance based on the results of the independent technical review.

Inspection Report# : [1999013\(pdf\)](#)

Physical Protection

Significance: N/A Jun 14, 2001

Identified By: NRC

Item Type: FIN Finding

A supplemental inspection was performed to assess the licensee's root cause evaluation related to exercise failures during two of four force-on-force contingency exercises.

This supplemental inspection was performed to assess the licensee's root cause evaluation related to exercise failures during two of four force-on-force contingency exercises. This performance issue was characterized as a White finding having a low to moderate risk significance in NRC Inspection Report No. 50-254; 265/00-201. This supplemental inspection determined that the licensee had performed a comprehensive evaluation which identified the root cause and contributing factors associated with the exercise failures noted above. The licensee's evaluation identified that the root cause of the exercise finding was a failure to effectively accomplish exercise control activities. Contributing factors were human performance errors by some security force response personnel and controllers, a lack of effective controller training, vulnerabilities in some defensive positions, and command and control activities. Licensee corrective actions were implemented to address the root cause and each contributing factor. Those actions appeared effective in correcting the identified deficiencies. Therefore, the White performance finding associated with the exercise failures was closed.

Inspection Report# : [2001011\(pdf\)](#)

**Significance:** Nov 17, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

An unattended security storage container containing Safeguards Information was found unlocked and open for approximately two hours.

An unattended security storage container containing Safeguards Information was found unlocked and open for approximately two hours (Section 40A3). The inspector reviewed the risk significance of this finding and determined the risk to be very low since no Safeguards Information was compromised and there have not been greater than two similar findings in four quarters.

Inspection Report# : [2000019\(pdf\)](#)**Significance:** Jun 23, 2000

Identified By: NRC

Item Type: FIN Finding

Contingency Response Performance Deficiencies

Deficiencies were noted in the licensee's performance in the contingency response element of the Physical Protection Cornerstone. (The details of this finding are Safeguards Information and are required to be withheld from public disclosure.)

Inspection Report# : [2000201\(pdf\)](#)

Miscellaneous

Significance: SL-IV Aug 14, 2001

Identified By: NRC

Item Type: VIO Violation

FAILURE TO ACCURATELY REPORT PERFORMANCE INDICATOR INFORMATION

The inspectors identified that the licensee failed to report fault exposure hours for the failure of a fuel oil transfer solenoid valve to open during the Unit 2 emergency diesel generator (EDG) 18 month endurance test. The second quarter 2001 data reported to the NRC showed no fault exposure hours recorded for Unit 2 EDG. However, the inspectors found that fault exposure hours from a failed endurance run on May 1, 2001, should have been reported since only the time of the failure's discovery was known with certainty. Fault exposure hours going back to the last successful load test of the EDG on January 14, 2000, were not included in the licensee's July 2001 performance indicator data submittal for the Unit 2 Emergency Alternating Current (AC) - Safety System Unavailability performance indicator. Had the performance indicator data been properly reported, the performance indicator color would have been Red. Failure to properly report the performance indicator was considered a Severity Level IV violation of 10 CFR 50.9.

Inspection Report# : [2001012\(pdf\)](#)**Significance: N/A** May 25, 2001

Identified By: NRC

Item Type: FIN Finding

Adverse performance trend.

The corrective actions to prevent recurrence for an event that resulted in an inadvertent steam release during a breach of the reactor pressure boundary proved to be ineffective to prevent a similar event that occurred six months later. Additionally, corrective actions for the second event were narrow in scope and did not address the aspects in common with the first event. Condition report Q2001-01976 was issued to address the potential common issues. The inspectors concluded that the issue was more than minor since the failure to fully identify and correct deficiencies could be reasonably viewed as a precursor to a significant event. The inspectors reviewed the applicability of the issue with respect to program cornerstones and determined that the issue did not impact a cornerstone. However, this issue contained extenuating circumstances in that the full extent of condition for the October event was not completely identified and corrected, allowing a similar event in April. The combination of these two events indicates an adverse performance trend.

Inspection Report# : [2001009\(pdf\)](#)**Significance: N/A** May 25, 2001

Identified By: NRC

Item Type: FIN Finding

Corrective action program problems.

The inspectors concluded that in general the corrective action program was a complete program containing all the necessary attributes to successfully identify and correct issues at Quad Cities. However, over the past year there were several instances of difficulties with problem identification, evaluation and resolution. Most of these were documented in previous findings and violations in inspection reports. In general, these issues have been recognized, and actions have been taken to address them. For most of the issues it is too soon to fully evaluate the effectiveness of these actions so effectiveness is still to be determined. During this inspection, three areas of corrective action program problems were identified. These were the failure to properly implement the

M&TE program, several instances when condition reports should have been written and they were not, and, failure to address common causes for similar steam release events on the reactor vessel during the October refueling outage, and in the April maintenance outage.

Inspection Report# : [2001009\(pdf\)](#)

Significance: N/A May 25, 2001

Identified By: NRC

Item Type: FIN Finding

Test problems on condition reports not identified.

In May of 2001, an inspector observing a surveillance noted that instrument maintenance technicians had difficulty conducting calibrations of differential transmitters on the Unit 2 station blackout diesel air intake filter differential pressure detectors. The results were not repeatable and indicated some out-of-tolerance readings on both instruments. No condition reports were generated for either the difficulty with the tests or the apparent out-of-tolerance results until inspectors intervened. Condition Report Q2001-1549 was issued 12 days later and subsequently, Condition Reports Q2001-1474 and Q2001-1475 were written for the out-of-tolerance readings. The inspectors reviewed the significance of not identifying test problems on condition reports and concluded that the issue was more than a minor issue because if left uncorrected, the issue could become a more significant safety concern. The actual effect on the station blackout diesel was minimal since it did not directly impact operation of the equipment and another diesel was available. However, this corrective action finding is a cross-cutting issue for corrective action process performance and is assigned No Color.

Inspection Report# : [2001009\(pdf\)](#)

Significance: N/A May 25, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to assure that measuring and test equipment was properly calibrated.

In April of 2001, the station Nuclear Oversight staff identified that measurement and test equipment which was found to be out-of-calibration during post-use verifications was not evaluated as required by plant procedure. Also, condition reports on these out-of-tolerance conditions were not written when required by procedures. The licensee initiated a review which identified 159 items of out-of-tolerance equipment which had not been evaluated appropriately. The use of these items was evaluated and appropriate recovery actions taken. Failure to assure that measuring and test equipment used in 2000 and 2001 was properly calibrated was a Non-Cited Violation of 10 CFR 50, Appendix B. The inspectors reviewed the significance of not evaluating out-of-tolerance equipment and determined that the issue was more than a minor issue because if left uncorrected, the issue could become a more significant safety concern. However, since this is a corrective action concern, and no specific cornerstone was impacted, this item is assigned No Color.

Inspection Report# : [2001009\(pdf\)](#)

Significance: N/A May 16, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to report performance indicator data accurately.

Inspectors found that the licensee reported safety system functional failure data improperly. The improperly reported safety system functional failure involved failure of the Unit 2 intermediate range nuclear monitors. Had this been reported properly, it would have caused the safety system functional failure performance indicator for Unit 2 to cross the threshold from Green to White in the first quarter of 2000. The actual submittal showed performance indicator data in the licensee response or Green band. Because a performance indicator would have changed from Green to White, this was considered a Non-Cited Violation of 10 CFR 50.9.

Inspection Report# : [2001008\(pdf\)](#)

Significance: N/A Dec 15, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Technical Errors in Appendix R Safe Shutdown Procedures

The inspectors identified a number of technical errors in safe shutdown procedure QCARP 0050-02. The procedure errors were considered a Non-Cited Violation (NCV 50-254/00-16-03; NCV 50-265/00-16-03) of 10 CFR 50, Appendix R, Section III.L.5 (Section 40A4.1). The technical errors were determined to have no appreciable risk significance (No Color) because the errors would not have impacted safe shutdown. However, the errors were another example of a previously identified adverse trend in human performance.

Inspection Report# : [2000016\(pdf\)](#)

Significance: N/A Nov 20, 2000

Identified By: NRC

Item Type: FIN Finding

The inspectors found that a number of human performance errors during the Q1R16 refueling outage period resulted in undesirable consequences and constituted an adverse trend.

The inspectors found that a number of human performance errors during the Q1R16 refueling outage period, October 14 to November 3, resulted in undesirable consequences and constituted an adverse trend in human performance. These errors resulted from problems with procedure adherence, control of work activities, communications, and procedure quality. Resulting problems

included venting the pressurized reactor to containment near maintenance workers who were not adequately prepared for the subsequent release of steam and contamination, inadvertently draining from the reactor vessel bottom head area resulting in significant personnel contamination, and a number of wiring and second verification errors during electrical modifications and maintenance. Although most of these wiring errors were caught and corrected during testing, one error was not caught and resulted in the inoperability of one of two channels of the reactor protective system flow biased trips. While none of these events resulted in equipment performance outside the licensee response band (GREEN), the overall trend indicated problems with adhering to procedures, proper performance of second verification techniques, and the communication and coordination of activities (Section 4OA4).

Inspection Report# : [2000015\(pdf\)](#)

Significance: N/A Jun 30, 2000

Identified By: NRC

Item Type: FIN Finding

Cross-Cutting Issues: Human Performance

Inspectors found that several recent events which affected plant operations and/or had the potential to adversely affect personnel safety involved elements of human performance deficiencies. An apparent adverse trend in human performance during the period May 5, 2000 to June 30, 2000, was evidenced by the following incidents. A senior reactor operator failed to implement a Technical Specification surveillance requirement for removing an emergency diesel generator from service. Control room operators experienced problems controlling reactor vessel water level during post-scrum recovery efforts and failed to close a pair of drain valves during a pre-start of the Unit 1 high pressure coolant injection system. Maintenance personnel errors were involved in a reactor trip on May 5, and spread of contamination in the 2B reactor water cleanup room when a fitting was disconnected under 1000 psig pressure on June 10 (Section 4OA.4).

Inspection Report# : [2000007\(pdf\)](#)

Significance: N/A Jun 30, 2000

Identified By: NRC

Item Type: FIN Finding

Weakness in Corrective Action Program.

The corrective action program was fully functional and typically identified and corrected conditions adverse to quality. In general, station personnel effectively identified and entered problems into the corrective action program using problem identification forms (PIFs). The significance threshold for entering issues into the program appeared appropriate. However, over the past year issues were identified at Quad Cities where the corrective action process was not vigorously implemented to address the issues. In addition, the licensee's corrective action process had lost over two items a month since January 2000. Although none of these lost items were considered safety significant, and thousands of other action items were opened and closed in that time frame, this represented a weakness in the licensee's program.

Inspection Report# : [2000008\(pdf\)](#)



Significance: Apr 01, 2000

Identified By: Licensee

Item Type: NCV NonCited Violation

On September 10, 1999, the control room emergency ventilation system was inoperable

On September 10, 1999, the licensee identified that the control room emergency ventilation system was inoperable. Flow rates were out-of-specification due to repositioning of a ventilation damper 9 days previously. The action statement for Technical Specification 3.8.D allowed the system to be inoperable for 7 days. Failing to comply with the allowed outage time requirements was considered a non-cited violation of Technical Specification 3.8.D. This issue was screened as GREEN (very low risk significance) after a Phase 1 Significance Determination Process review (Section 4OA3).

Inspection Report# : [2000003\(pdf\)](#)

Significance: N/A Feb 29, 2000

Identified By: NRC

Item Type: FIN Finding

Human Performance Problems

Inspectors found that errors in review, coordination, and implementation of maintenance activities during or near Unit 2 refueling outage number 16 (January and February 2000) led to inoperable safety systems. Operators were unaware that Technical Specification or administrative limiting condition for operation action statements were entered or exceeded. Required nuclear instruments and emergency diesel generators were not operable during some fuel moves (Sections 1R04 and 1R20.4), automatic depressurization system valves were taken out of service while required (Section 1R20.2), the high pressure coolant injection system was inoperable due to incomplete maintenance (Section 1R19.1), and safe shutdown requirements were not properly addressed (Section 1R20.5). Other events included technician errors in which electrical jumpers were installed in incorrect locations for logic used by the reactor protective system and by the emergency core cooling system. While the risk of the individual events was very low, an increase in maintenance activity problems was evident.

Inspection Report# : [2000001\(pdf\)](#)

Significance: N/A Dec 03, 1999

Identified By: NRC

Item Type: FIN Finding

reactor coolant system leakage performance indicator

The inspectors completed verification inspection of the reactor coolant system leakage performance indicator and found very minor discrepancies which did not affect the validity of the reported performance indicator (Section 40A2.2).

Inspection Report# : [1999023\(pdf\)](#)

Significance: N/A Dec 03, 1999

Identified By: NRC

Item Type: FIN Finding

the public radiation safety performance indicator

The inspectors verified that the licensee had properly evaluated and reported the public radiation safety performance indicator (Section 40A2.7).

Inspection Report# : [1999023\(pdf\)](#)

Significance: N/A Dec 03, 1999

Identified By: NRC

Item Type: FIN Finding

verification inspection for the residual heat removal unavailability performance indicator.

The inspectors completed the verification inspection for the residual heat removal unavailability performance indicator. The inspectors identified that the licensee had not included 12.5 hours of residual heat removal system unavailability during system logic testing in January 1999. The licensee explained that the rules for system availability, at that time, did not require documenting the safety system unavailability. The licensee elected to report these hours in a future submittal. The extra hours would not cause the residual heat removal system unavailability to cross a color threshold (Section 40A2.1).

Inspection Report# : [1999023\(pdf\)](#)

Significance: N/A Dec 03, 1999

Identified By: NRC

Item Type: FIN Finding

verification inspection of the licensee's performance indicators

The inspectors completed verification inspection of the licensee's performance indicators for scrams, scrams with loss of normal decay heat removal, reactor coolant specific activity, and primary containment leakage. No findings were identified (Section 40A2).

Inspection Report# : [1999023\(pdf\)](#)

Significance: N/A Oct 20, 1999

Identified By: NRC

Item Type: FIN Finding

The licensee corrected discrepancies with the safety system functional failure indicator.

The licensee corrected discrepancies with the safety system functional failure indicator previously identified by the NRC in the September report of performance indicator data. The NRC exercised enforcement discretion and did not issue a Notice of Violation (Section 40A3).

Inspection Report# : [1999020\(pdf\)](#)

Significance: N/A Oct 20, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Event Reporting Failure

The inspectors identified two violations of NRC reporting requirements. The licensee failed to notify the NRC within 1 hour of identifying a condition in which the control room emergency ventilation system was found outside the design basis. The licensee also failed to notify the NRC within 4 hours of an event in which the reactor core isolation cooling system was unable to perform a required safety function. The licensee made late notifications, submitted a licensee event report for the control room emergency ventilation system, and planned to submit a licensee event report for the reactor core isolation cooling system failure. These were considered two non-cited violations (Plant Status).

Inspection Report# : [1999020\(pdf\)](#)

Significance: N/A Oct 20, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Notification Failure Under 50.72

The inspectors identified two violations of NRC reporting requirements. The licensee failed to notify the NRC within 1 hour of identifying a condition in which the control room emergency ventilation system was found outside the design basis. The licensee also failed to notify the NRC within 4 hours of an event in which the reactor core isolation cooling system was unable to perform a required safety function. The licensee made late notifications, submitted a licensee event report for the control room emergency ventilation system, and planned to submit a licensee event report for the reactor core isolation cooling system failure. These were considered two non-cited violations (Plant Status).

Inspection Report# : [1999020\(pdf\)](#)



Significance: Oct 08, 1999

Identified By: Licensee

Item Type: FIN Finding

The licensee identified errors in the PI Occupational Radiation Safety Performance Indicator (PI)

Occupational Radiation Safety Performance Indicator (PI). The licensee identified errors in the PI reported to the NRC. Originally, the licensee reported six technical specification high radiation area incidents, which resulted in a white PI. After identifying a missed occurrence and a misinterpretation of the PI criteria, the licensee determined that only two incidents were applicable to the PI, which resulted in the PI indicating that performance was in the licensee response band (green).

Inspection Report# : [1999022\(pdf\)](#)



Significance: Jul 16, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

the repetitive problem of excessive use of overtime.

The root cause report and the corrective actions, approved by the Plant Operations Review Committee and the Corrective Action Review Board, did not fully address the repetitive problem of excessive use of overtime. There were 177 instances between February 1 and 28, 1999, where station procedures were not followed to control overtime of plant workers. Further corrective actions were being developed to ensure that overtime violations did not continue. There were no known incidents where the excessive use of overtime directly impacted or affected the safety of the plant; however, the repetitive failure to follow procedures to control overtime is a non-cited violation. (Reference Report Section 4OA1.4, page 8)

Inspection Report# : [1999012\(pdf\)](#)

Last modified : July 22, 2002

Quad Cities 2

Initiating Events

Significance:  Jun 30, 2002

Identified By: NRC

Item Type: FIN Finding

INADEQUATE DIGITAL FEEDWATER SYSTEM DESIGN AND INADVERTENT GROUNDING OF PLANT EQUIPMENT RESULTS IN REACTOR SCRAM

A digital feedwater control system design weakness, in conjunction with the inadvertent grounding of a pressure transmitter during an instrument maintenance surveillance, resulted in a manual reactor scram due to increasing reactor vessel water level. The inspectors determined that this issue was of very low safety significance because the feedwater system would have been recoverable following a Level 8 isolation signal, and adequate mitigating systems equipment remained available to place and maintain the plant in a stable condition.

Inspection Report# : [2002005\(pdf\)](#)

Significance:  Jun 30, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO PARTICIPATE IN TURNOVER CONTRIBUTES TO MANUAL REACTOR HEAD VENT ISOLATION VALVES BEING LEFT OPEN DURING UNIT STARTUP

A lack of communications between operations personnel and an administrative senior reactor operator's failure to participate in a formal shift turnover resulted in operations personnel commencing a Unit 2 reactor startup with the manual reactor head vent isolation valves in the open position. The failure to participate in a turnover was considered a Non-Cited Violation of Technical Specification 5.4.1. The inspectors determined that this issue was of very low safety significance because the leak created by the open manual reactor head vent isolation valves was small, and adequate mitigating equipment was available to respond to a potential transient condition.

Inspection Report# : [2002005\(pdf\)](#)

Significance:  Dec 29, 2001

Identified By: NRC

Item Type: FIN Finding

DEGRADED AND INADEQUATELY TESTED TRANSFORMER AND PROTECTIVE RELAYING RESULTS IN INCREASE IN TRANSIENT AND LOSS OF OFFSITE POWER INITIATING EVENT FREQUENCIES

On August 2, 2001, Unit 2 experienced a transformer failure, reactor scram, and loss of offsite power. The inspectors determined that a lightning strike in conjunction with age related degradation and inadequate testing of the Unit 2 main power transformer and switchyard protective relaying contributed to the event and resulted in an increase in the initiating event frequency for plant transients and a loss of offsite power. The inspectors determined the risk significance of this issue to be very low since all remaining mitigating systems were available to mitigate the transformer rupture, reactor scram, and loss of offsite power.

Inspection Report# : [2001017\(pdf\)](#)

Significance:  Mar 31, 2001

Identified By: Licensee

Item Type: NCV NonCited Violation

Operator-induced loss of feedwater heating transient

On March 23 the inspectors reviewed an operator-induced loss of feedwater heating transient that occurred on Unit 2. The inspectors found that the operators failed to immediately recognize a reduction in feedwater heating and take prompt action to effectively control the increasing reactor power. The transient resulted in a 33 degree decrease in feedwater inlet temperature adding sufficient positive reactivity to increase reactor thermal power from 2511 to 2578 megawatts, approximately 102.7 percent of maximum licensed power. Exceeding Quad Cities License DPR-30 maximum thermal power of 2511 megawatts thermal was considered a Non-Cited Violation. The risk significance of this event was determined to be very low (Green) due to the relatively small increase a 2.7 percent power change will have on overall core thermal limits (Section 1R14).

Inspection Report# : [2001005\(pdf\)](#)

Significance:  Aug 15, 2000

Identified By: NRC

Item Type: FIN Finding

Electrical ring bus caused electrical circuit breakers 1-3 and 3-4 to open.

On July 18 a fault on one of the offsite power feeds to the Quad Cities electrical ring bus caused electrical circuit breakers 1-3 and 3-4 to open. This action isolated the fault and resulted in a Unit 2 turbine generator and reactor trip. The response by the switchyard resulted in a loss of power on the Unit 1 reserve auxiliary transformer. The response to the reactor scram on Unit 2 was as designed. Operator performance during this event was determined to have been acceptable. The inspectors reviewed the risk significance of this initiating event for both units using the Significance Determination Process. All mitigating equipment was available for Unit 2 following the uncomplicated trip, and this event was screened as having very low risk significance (GREEN.) One of two auxiliary transformers for Unit 1 was de-energized during the event, but the unit did not trip and all mitigating equipment was available. Therefore, this event was also screened as GREEN for Unit 1.

Inspection Report# : [2000011\(pdf\)](#)

Significance:  Jun 30, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

adjustments to the wrong instrument, causing a reactor trip on Unit 2

On May 5 an instrument technician performing a calibration of the main steam line high steam flow detectors made adjustments to the wrong instrument, causing a reactor trip on Unit 2. Failure to implement the calibration procedure for the proper channel instrument was considered an NCV of Technical Specification 6.8.A.1. The safety significance of this event was minimal due to the availability of mitigating equipment (Section 4OA.3).

Inspection Report# : [2000007\(pdf\)](#)

Significance:  Jun 30, 2000

Identified By: NRC

Item Type: FIN Finding

operators did not control reactor vessel inventory

During operator response to a reactor trip on May 22, operators did not control reactor vessel inventory prior to the operating reactor feedwater pump tripping on high reactor vessel water level. Additionally, operators had not started a

reactor feedwater pump by the time a reactor low level condition existed. This resulted in a second engineered safety feature actuation. The inspectors reviewed this issue using the significance determination process for a transient with a loss of feedwater and determined this was of very low risk significance (Section 1R14).

Inspection Report# : [2000007\(pdf\)](#)

Significance:  Jun 30, 2000

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

Maintenance work and emerging work - 2B reactor water cleanup pump seal line disconnect

On June 10, maintenance workers disconnected a seal line to the 2B reactor water cleanup pump that was not properly isolated by the out-of-service tagout and discovered that the line was pressurized to about 1000 psig. The resulting spray caused a spread of contamination in the room and a potential hazard to the workers. No personnel injuries occurred as a result of this event. Failure to hang the proper out-of-service for the maintenance activity was considered a Non-Cited Violation (NCV) of Technical Specifications. The inspectors considered this event of very low safety significance due to the ability to isolate the leak and the availability of mitigating equipment (Section 1R13).

Inspection Report# : [2000007\(pdf\)](#)

Significance:  Feb 29, 2000

Identified By: NRC

Item Type: FIN Finding

Ice Melt Valve Failure

Failure of the ice melt valve on January 22, 2000, resulted in some ice formation in the intake area. Operator detection and compensatory measures prevented the ice from affecting the water level in the intake. The valve gate had become detached from the stem. The failure of the ice melt valve was of very low risk significance because it did not result in an increased initiating event frequency for loss of both normal and ultimate heat sinks. The inspectors compared an estimated valve failure rate to the licensee's evaluation. The licensee's evaluation excluded this initiating event from the probabilistic risk assessment because no precursor event had occurred in the history of the station.

Inspection Report# : [2000001\(pdf\)](#)

Significance:  Sep 08, 1999

Identified By: NRC

Item Type: FIN Finding

Maintenance rule functional failures

Problematic feedwater level control equipment on Unit 2 resulted in two reactor vessel water level transients in early 1999. The licensee initially evaluated these two events as not being maintenance rule functional failures, which was inappropriate. An NRC inspection and a subsequent licensee self-assessment identified the error. The licensee re-evaluated the two transients as being functional failures on July 28, 1999. This issue did not increase the frequency of initiating events and therefore was an issue of very low safety significance (Section 1R12).

Inspection Report# : [1999018\(pdf\)](#)

Significance:  Jul 20, 1999

Identified By: NRC

Item Type: FIN Finding

a 3-inch increase in reactor water level

On Unit 2, a 3-inch increase in reactor water level occurred and required operators to take manual control of the

system. Various failures in the level control systems have resulted in about ten similar events since January 1, 1999, in which operators were required to intervene to prevent level transients that could have resulted in a reactor trip. Since the plant effect of the failures is limited to an uncomplicated reactor trip, the failures were considered to be of low risk significance using the significance determination process (Section 1R03).

Inspection Report# : [1999011\(pdf\)](#)

Mitigating Systems

Significance:  Jun 30, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO PERFORM REQUIRED PARTS EVALUATION FOR CONTROL ROD DRIVE ACCUMULATOR CLAMPS

The inspectors identified a design deficiency and a Non-Cited Violation in that licensee personnel failed to perform a parts evaluation when installing hose clamps on the control rod drive system hydraulic accumulators instead of the seismically-qualified steel band clamps. This issue was of very low safety significance because the design deficiency did not result in a loss of function as described in Generic Letter 91-18, "Resolution of Degraded and Non-Conforming Conditions and on Operability."

Inspection Report# : [2002005\(pdf\)](#)

Significance:  Jun 30, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO MEET 10 CFR 50.62 DUE TO RELIEF VALVES LIFTING

The inspectors documented a Non-Cited Violation of 10 CFR 50.62, "Anticipated Transient Without Scram Rule," due to the potential to lift the standby liquid control system relief valves during an anticipated transient without scram. The inspectors determined that this finding was of very low safety significance because the standby liquid control system could be recovered during an anticipated transient without scram event, the cycling of the relief valves would allow a portion of the sodium pentaborate solution to be injected into the reactor vessel, and the plant remained within the acceptance criteria of the original anticipated transient without scram analyses during the relief valve lifts.

Inspection Report# : [2002005\(pdf\)](#)

Significance:  Mar 31, 2002

Identified By: NRC

Item Type: FIN Finding

CATASTROPHIC FAILURE OF 2B CONTROL ROD DRIVE PUMP

On January 24, 2002, a catastrophic failure of the 2B control rod drive pump occurred approximately 4 days after conducting maintenance. The pump failure was caused by the inadequate lubrication of the inboard pump bearing due to the inappropriate setting of a constant level oiler. The root cause was that the constant level oiler was set approximately 15/64 of an inch lower than the specified setting due to maintenance personnel using a previously painted oil level reference line on the pump casing rather than a more exact installation method. No violations of NRC requirements were identified as a result of this event due to the control rod drive system being non-safety related. The finding was of very low safety significance. Although the finding represented an actual loss of safety function of one train of non-Technical Specification equipment designated as risk significant by the maintenance rule for greater than

24 hours, all remaining mitigating equipment remained available to respond to potential transients.

Inspection Report# : [2002004\(pdf\)](#)

Significance:  Mar 31, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO ADEQUATELY DETERMINE CAUSE OF SBLC PUMP TRIP AND TAKE CORRECTIVE ACTION

The inspectors identified a Non-Cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, for the failure to determine the cause of a 1995 2A standby liquid control pump trip and take corrective actions to preclude repetition. On February 15, 2002, during surveillance test actuations of the standby liquid control system explosive valves, the continuity of the firing circuit remained intact. Fragments contacted the standby liquid control system piping creating a circuit path to ground. The existence of a previously unidentified independent ground at a different point in the control circuitry created a condition where the voltage was not adequate to support continued system operation and the 2A standby liquid control pump tripped. The 2A standby liquid control pump tripped during the performance of the same surveillance procedure in 1995. Following the February 2002 pump failure, the licensee determined that troubleshooting performed in 1995 was inadequate in that it failed to identify the actual cause of the pump trip. The finding was of very low safety significance because the 2B train of the standby liquid control system was unaffected by this issue and all remaining mitigating equipment was available to respond to an anticipated transient without scram event.

Inspection Report# : [2002004\(pdf\)](#)

Significance:  Mar 31, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO ESTABLISH MEASURES TO ASSURE THAT ITEMS WERE CORRECTLY TRANSLATED INTO SPECIFICATIONS

The inspectors identified a Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion III for failure to establish measures to assure that items such as thermal effects and the compatibility of materials were correctly translated into specifications for the Unit 2 emergency diesel generator fuel oil transfer system. On May 1, 2001, and May 3, 2001, a solenoid valve in the Unit 2 emergency diesel generator fuel oil transfer system failed to open approximately 12 hours after the start of the emergency diesel generator 24-hour endurance test. The solenoid valve failure was due to thermal pressurization of an isolated section of fuel oil transfer system discharge piping. The finding was of very low safety significance because the Unit 2 station blackout diesel generator was not impacted by this design issue, actions to manually fill the fuel oil day tank were proceduralized such that recovery of the emergency diesel generator should be successful, and alternative mitigating equipment was available to respond to a potential loss of offsite power.

Inspection Report# : [2002004\(pdf\)](#)

Significance:  Feb 01, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to adequately address the erosion of the RHRSW room coolers' supply piping

Green. The inspectors identified a failure to promptly identify and correct conditions adverse to quality involving the erosion of safety-related residual heat removal service water piping. The licensee's corrective actions for the piping leak included replacing the affected piping and performing ultrasonic testing on similar piping for the other trains. During this inspection, NRC inspectors identified that the corrective actions were inadequate in that the ultrasonic testing was not able to examine the area of the piping affected by the erosion as evidenced by the subsequent failure. This finding

was determined to be of very low safety significance because the equipment was still capable of performing its intended safety function. A Non-Cited Violation of 10CFR 50 Appendix B, Criterion XVI was identified.

Inspection Report# : [2001015\(pdf\)](#)

Significance: N/A Nov 15, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO FOLLOW OPERATOR REQUALIFICATION PROGRAM PROCEDURAL REQUIREMENTS

No color. The inspectors identified a Non-Cited Violation wherein the facility licensee had failed to follow procedural requirements to evaluate a senior reactor operator (SRO) licensed individual in an SRO licensed position during the year 2001 annual licensed operator requalification examination (10 CFR 55.59). The finding was of very low safety significance because the SRO licensed individual held an "inactive" SRO license (i.e., would not be assigned to licensed duties unless his license was restored to an active status in accordance with 10 CFR 55.53).

Inspection Report# : [2001016\(pdf\)](#)

Significance:  Nov 15, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO MEET 10 CFR 50.65 REQUIREMENTS

On October 24, 2001, the inspectors determined that the licensee failed to count Unit 1 and Unit 2 battery room ventilation system air handling unit drive belt failures as maintenance preventable functional failures and repeat maintenance preventable functional failures where appropriate. The licensee's incorrect assessment of these equipment failures resulted in a failure to develop and implement appropriate action plans for the battery room ventilation systems on Units 1 and 2, assess the Unit 2 battery room ventilation system for (a)(1)classification, and monitor the performance of the systems against licensee-established goals. The failure to properly implement maintenance rule requirements was considered a Non-Cited Violation of 10 CFR 50.65. The risk significance of the issue was determined to be of very low safety significance because the batteries supported by the battery room ventilation systems did not experience an actual loss of safety function.

Inspection Report# : [2001016\(pdf\)](#)

Significance:  Sep 30, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO VERIFY ADEQUATE FILL OF THE HIGH PRESSURE COOLANT INJECTION SYSTEM AS REQUIRED BY TECHNICAL SPECIFICATIONS

On December 27, 2000, the licensee discovered that the high pressure coolant injection system was not filled with water from the pump discharge valve to the system isolation valve following maintenance activities. Technical Specification Surveillance Requirement 4.5.A.1.a.1 required the licensee to verify that the high pressure coolant injection system was filled with water every 31 days. The inspectors determined that greater than 31 days had elapsed since the licensee had verified that the high pressure coolant injection system was properly filled. The failure to perform the surveillance requirement within 31 days also resulted in the high pressure coolant injection system being inoperable for greater than the Technical Specification 3.5.A.3.a.3 allowed outage time of 14 days. The failure to meet the requirements of Technical Specification 3.5.A.3.a.3 and Surveillance Requirement 4.5.A.1.a.1 was considered a Non-Cited Violation. The risk significance of this event was determined to be very low since all remaining mitigation systems were available to provide water to the reactor during an event.

Inspection Report# : [2001014\(pdf\)](#)

Significance:  May 16, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to meet requirement of 10 CFR 50.59.

On June 15, 2000, station personnel removed two of the three rainbow pumps from the site. Quad Cities Updated Final Safety Analysis Report, Section 9.2.5, specifies that portable pumps (called rainbow pumps) of sufficient capacity (5100 gallons per minute) are onsite to provide makeup water to the ultimate heat sink in the event of a Lock and Dam 14 failure on the Mississippi River. The inspectors determined that the licensee had made a change to the facility as described in the Quad Cities Updated Final Safety Analysis Report without first determining if the change required a license amendment, contrary to the requirements of 10 CFR 50.59. The failure to meet the requirements of 10 CFR 50.59 was considered a Non-Cited Violation. The risk significance of this event was determined to be very low due to the very small initiating event frequency of the lock and dam failure, the slow rate of event progression once the initiating event occurs, and the availability of other onsite sources of water not credited in the event analysis.

Inspection Report# : [2001008\(pdf\)](#)

Significance:  Mar 31, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

Surveillance testing involving timing of the Unit 1 and Unit 2 emergency diesel generators shortly after the engines had been shut down from previous runs

Inspectors identified that on two occasions, March 9 and March 27, the licensee performed technical specification required surveillance testing involving timing of the Unit 1 and Unit 2 emergency diesel generators shortly after the engines had been shut down from previous runs. Station procedures were inadequate in prescribing the conditions for performance of the tests. Procedures did not prevent preconditioning of the air start systems, fuel systems, and other engine and electrical components. Inadequate procedures for testing was considered a Non-Cited Violation of 10 CFR Appendix B, Criterion V, "Instruction Procedures and Drawings." The risk significance was very low (Green) because inspectors determined that testing practices had not led to declining performance of the diesel generators (Section 1R22).

Inspection Report# : [2001005\(pdf\)](#)

Significance:  Dec 31, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Place the "A" Train of the Reactor Protection System in the Tripped Condition

On November 6, 2000, the Number 2 turbine control valve fast closure trip failed to cause a half scram as expected during a Unit 2 surveillance test. The licensee then repeated the test three more times and the fast closure trip successfully caused the expected half scram each time. The licensee declared the trip function operable without taking the actions of Technical Specification 3.1.A, Action 1 for an inoperable channel. Generic Letter 91-18 states that repetitive testing to achieve acceptable results without first identifying and correcting the root cause of any problem is not an acceptable means for verifying operability. A subsequent autopsy of the pressure switch for the control valve fast closure trip found evidence of fretting which produced metallic particles believed to have caused the initial failure. The inspectors determined the Number 2 turbine control valve fast closure trip had been declared operable without adequate justification. The failure to implement the required actions of Technical Specification 3.1.A-1 for an inoperable channel of the turbine control valve fast closure trip was considered a Non-Cited Violation (50-265/00-20-01). The finding was determined to be of very low safety significance due to the level of redundancy and diversity of the reactor protection system. During the period of time that the Number 2 turbine control valve fast closure trip was inoperable, a sufficient number of turbine control valve fast closure channels remained operable to result in an

automatic scram, if required. Additionally, the turbine control valve fast closure trip is considered an anticipatory trip and, if inoperable, the reactor scram could still have been initiated by the reactor vessel high pressure or the average power range monitor high flux trips.

Inspection Report# : [2000020\(pdf\)](#)

G

Significance: Dec 15, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Seal Tops of Electrical Cabinets

The team identified that electrical cabinets in the auxiliary electric equipment room were not sealed at the top to protect equipment from water damage. The failure to seal the top of the cabinets was considered a Non-Cited Violation (NCV 50-254/00-16-01; NCV 50-265/00-16-01) of Operating Licenses DPR-29 and DPR-30, Section h.3.F (Section 1R05.2.b.1). The failure to seal the cabinets, a fire protection feature, involved very low risk (Green) because a fire protection defense-in-depth element, as described by MC 0609, Appendix F, Fire Protection Significance Determination Process, was not affected.

Inspection Report# : [2000016\(pdf\)](#)

G

Significance: Dec 15, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Provide Fire Stops in Cable Trays

The team identified that fire stops were not installed in divisional cable trays for which specified separation had not been maintained. The failure to install fire stops was considered a Non-Cited Violation (NCV 50-254/00-16-02; NCV 50-265/00-16-02) of Operating Licenses DPR-29 and DPR-30, Section H.3.F (Section 1R05.2.b.2). The failure to install fire stops, a fire protection feature, involved very low risk (Green) because a fire protection defense-in-depth element, as described by MC 0609, Appendix F, Fire Protection Significance Determination Process, was not affected.

Inspection Report# : [2000016\(pdf\)](#)

G

Significance: Nov 20, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Surveillance testing for torus temperature instrumentation components required by Technical Specification 4.2.F.1 had not been performed since installation in 1990 and 1991.

On October 4, 2000, the licensee identified that surveillance testing for torus temperature instrumentation components required by Technical Specification 4.2.F.1 had not been performed since installation in 1990 and 1991. Condition Report Q2000-03512 was written to address the issue. Failure to perform testing of the instrumentation was considered a Non-Cited Violation of Technical Specification 4.2.F.1 (Section 4OA3). Failure to check instrument accuracy by this 18-month surveillance for Unit 1 and Unit 2 involved very low risk because when the surveillance was subsequently performed, instrument accuracy of the temperature indication loop was within acceptable tolerance.

Inspection Report# : [2000015\(pdf\)](#)

G

Significance: Sep 30, 2000

Identified By: NRC

Item Type: FIN Finding

Inadequate operability documentation forms for Problem Identification Form Q2000-2372, regarding a design

deficiency for Units 1 and 2 high pressure coolant injection motor speed changers

The inspectors found that the July 3 and August 23, 2000 supporting operability documentation forms for Problem Identification Form Q2000-2372, regarding a design deficiency for Units 1 and 2 high pressure coolant injection motor speed changers, did not adequately support the operability of the system. Inspectors reviewed the risk significance of the motor speed changer being inoperable and found the risk to be very low (GREEN) since the change to core damage frequency was less than E-6/year. In addition, operators were briefed on the potential problems with the system, and the licensee installed design changes to correct the problem on both units (Section 1R15).

Inspection Report# : [2000014\(pdf\)](#)



Significance: G Sep 30, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Degraded condition of fire door 128

On September 15, the inspectors determined that the bottom latch in the inactive leaf of door 128, a 3-hour rated fire door, was not properly latched. The fire protection engineer determined that the degraded door also resulted in the inoperability of the emergency diesel generator room carbon dioxide fire suppression system. This finding constituted a violation of Quad Cities Operating Licensee DPR-29. This violation is being treated as a Non-Cited Violation (50-265/00-14-01), consistent with Section VI.A.1 of the May 1, 2000, Enforcement Policy (Section 1R05). The inspectors evaluated the degraded condition of fire door 128 using the fire protection Significance Determination Process, and evaluation techniques discussed with Senior Risk Analysts and Fire Protection Engineers in Region III and NRR. Since the degradation of the fire door was minimal, and the area of the turbine building directly in front of the door (within 15 to 20 feet) was relatively free of combustibles and cables, the inspectors determined that the possibility of a fire in the Unit 2 emergency diesel generator room spreading to damage the shared emergency diesel generator was not credible. Therefore the significance of this finding was considered very low (GREEN).

Inspection Report# : [2000014\(pdf\)](#)



Significance: G Sep 30, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to implement modifications to correct a previously identified design deficiency which could have made the motor speed changer inoperable in accident situations

Inspectors found that the licensee failed to implement modifications to correct a previously identified design deficiency which could have made the motor speed changer inoperable in accident situations. The failure to implement corrective actions for this condition was a violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action." This violation is being treated as a Non-Cited Violation (50-254/00-14-02; 50-265/00-14-02), consistent with Section VI.A.1 of the May 1, 2000, Enforcement Policy. The inspectors found that the risk significance for internal and external events was very low (GREEN) since unavailability of the high pressure coolant injection system resulted in a change to core damage frequency of less than E-6/year. The licensee implemented modifications on both units to correct the design deficiency (Section 1R15).

Inspection Report# : [2000014\(pdf\)](#)

Significance: N/A Sep 15, 2000

Identified By: NRC

Item Type: FIN Finding

WHITE Performance Indicators for Units 1 and 2 Safety System Functional Failures

The licensee's August 14, 2000, root cause report for the high number of safety system functional failures on both units listed three root causes: inadequate knowledge of complex systems, a system vice functional focus, and inadequate integration of the new NRC inspection program into the station's processes. Corrective actions listed by the licensee

included: Maintenance department clarification of expectations for troubleshooting, Engineering department revision of a troubleshooting procedure to require formal troubleshooting plans, Regulatory Affairs requirement for root cause evaluation of any performance indicator which is "threatened" (less than 50 percent margin to the WHITE threshold), Regulatory Affairs requirement for root cause evaluations to include a section on cumulative effects of the system failure on a "threatened" performance indicator, Regulatory Assurance modification of corrective action program to implement root cause requirements for a "threatened" performance indicator, Plant Health Committee requirement for monthly review of performance indicators, development or revision of process to address a cumulative focus on NRC Mitigating Systems Cornerstone and functional health, Engineering action to expand use of formal troubleshooting techniques and enhance troubleshooting skills and troubleshooting procedure. The inspectors found no current concerns with the individual root cause reports for these issues. Inspectors validated the licensee assertion that poor troubleshooting and poor root causes were an issue at Quad Cities. Two of the ten events from the individual root cause evaluations were repeats of earlier events, and the root cause efforts were not effective initially. Inspectors found weaknesses in the overall root cause report for the multiple safety system functional failures as follows: • The overall root cause evaluation failed to incorporate one of two February 2000 events. Human performance events did not get full coverage in the overall root cause, some events for the safety system functional failures involving human performance were not included. • The evaluation was focused on problems which would cause an NRC performance indicator change, and to a lesser amount on why such a large number of failures were occurring at Quad Cities. The report listed actions to review another method for trending cumulative impact of failures, but another method was not ready for review at the end of the inspection. The inspectors determined that the licensee's search for similar failures focused on the recently instituted category of "performance indicator" and thereby eliminated a number of previous safety system functional failures that occurred in 1997 and 1998. • The corrective action for troubleshooting failed to incorporate the operations department, and only focused on maintenance and engineering. Although the licensee did not entirely agree with all of the weaknesses identified by the inspectors, nevertheless, the licensee revised several of the root cause evaluations to ensure appropriate actions were developed to address the inspector's concerns.

Inspection Report# : [2000013\(pdf\)](#)



Significance: Sep 15, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

One corrective action problem was found on August 16, 2000, and involved a previously identified design deficiency with the high pressure coolant injection system

One corrective action problem was found on August 16, 2000, and involved a previously identified design deficiency with the high pressure coolant injection system. Problem Identification Form Q1997-04485 documented that the auto initiation signal for high pressure coolant injection did not electrically seal in as described in the updated final safety analysis. However, the tracking item for correcting this problem was closed without corrective action being completed. Condition Report Q2000-02954 was written to again track corrective actions to this problem. This was considered a Non-Cited Violation (NCV) of Criterion XVI, "Corrective Action," of 10 CFR 50, Appendix B. Inspectors considered this problem to be of very low risk significance (GREEN) since it would not have prevented the system from starting automatically or being initiated manually.

Inspection Report# : [2000013\(pdf\)](#)



Significance: Aug 15, 2000

Identified By: NRC

Item Type: FIN Finding

Contribution of fire risk to core damage frequency associated with the safe shutdown makeup pump discharge valve being in a degraded condition.

On July 19 during a regulatory conference, the licensee discussed the contribution of fire risk to core damage frequency associated with the safe shutdown makeup pump discharge valve being in a degraded condition. Based on the

information presented during the conference, the NRC concluded that this condition was of very low safety significance due to the short duration (2 days) the condition existed.

Inspection Report# : [2000011\(pdf\)](#)

Significance: N/A May 16, 2000

Identified By: NRC

Item Type: FIN Finding

Surveillance Testing

During logic testing on March 21, 2000, the Unit 1 high pressure coolant injection auxiliary oil pump failed to properly operate. This condition rendered the system inoperable for automatic initiation for approximately one year. The risk from internal events for this condition was determined to be very low (GREEN) in Inspection Report 50-254/2000003; 50-265/2000003. The effect on risk due to external events, specifically fires, was determined to be potentially significant during a preliminary Significance Determination Process review. However, this issue was also the substantial contributor to a YELLOW high pressure coolant injection unavailability performance indicator, which represents performance that minimally reduces safety margin and requires NRC oversight. Therefore, the NRC considers the inspection findings and the performance indicator to be a single issue and agency action will be determined based on application of the Action Matrix for the YELLOW performance indicator.

Inspection Report# : [2000005\(pdf\)](#)

Significance:  Feb 29, 2000

Identified By: NRC

Item Type: FIN Finding

Safe Shutdown Makeup Pump Valve Failure

On January 19, 2000, during planned maintenance activities, maintenance workers determined that the safe shutdown makeup pump system was inoperable due to a Unit 2 safe shutdown makeup pump injection valve failure to operate. The valve failure was evaluated using the Significance Determination Process and was found to be of very low risk significance because all other mitigating systems were available.

Inspection Report# : [2000001\(pdf\)](#)

Significance:  Feb 29, 2000

Identified By: NRC

Item Type: FIN Finding

Unit 2 Automatic Depressurization System Valves Taken Out-Of-Service in Mode 3

On January 22, 2000, operators did not recognize entry into a Technical Specification action statement when relief valves were removed from service with the reactor in Mode 3. Upon discovery, about 4-1/2 hours later, the valves were returned to service. The Technical Specification action statement was not exceeded. The unavailability of the relief valves was evaluated by the NRC's Senior Reactor Analyst as part of the Significance Determination Process for shutdown issues. This issue was determined to be of very low risk significance because the reactor was in hot shutdown with vessel pressure at approximately 50 psig.

Inspection Report# : [2000001\(pdf\)](#)

Significance:  Feb 29, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Emergency Diesel Generator Ventilation Power Supply Switch Out of Position

On January 28, 2000, with Unit 1 operating at full power and with Unit 2 in Mode 5 (refuel), an operator identified that

the Unit 2 emergency diesel generator room ventilation fan power select switch was selected to the Unit 1 power supply. The Unit 2 emergency diesel generator was inoperable, but remained available for service. Since the shared emergency diesel generator was already inoperable to Unit 2, this condition left no operable emergency diesel generators for Unit 2. This issue is considered a non-cited violation consistent with the Interim Enforcement Policy for pilot plants. This issue was considered to be of very low safety significance because the Unit 1 diesel generator would not have been overloaded by the Unit 2 emergency diesel generator room ventilation fan. The Unit 2 emergency diesel generator was also available.

Inspection Report# : [2000001\(pdf\)](#)



Significance: Feb 29, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Post Maintenance Testing

On February 10, 2000, with Unit 2 in startup mode, the high pressure coolant injection pump failed to start during testing due to incomplete maintenance. A maintenance foreman erroneously signed off the work package as being completed when it was not. This issue is considered a non-cited violation consistent with the Interim Enforcement Policy for pilot plants. This issue was of very low risk significance since the system pressure was low, decay heat was low, and redundant methods of inventory injection were either operating or available.

Inspection Report# : [2000001\(pdf\)](#)



Significance: Feb 29, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Too Few Intermediate Range Nuclear Instruments During Refueling

From February 1 through 5, 2000, Unit 2 had less than the number of operable intermediate range nuclear instruments per channel (three) for the reactor protective system required by Technical Specification 3.1.A. Only two of four instruments were operable on the "B" channel and three of four were operable on the "A" channel. During this time, the reactor was in Mode 5 (refuel) and operators performed core alterations by moving irradiated fuel in the vessel. This issue is considered a non-cited violation consistent with the Interim Enforcement Policy for pilot plants Unit 2 was in cold shutdown with all control rods inserted. This issue was determined to be of very low risk significance because shutdown margin calculations and refueling interlocks provided assurance of adequate shutdown margin. Source range nuclear instruments provided a rod block function during refueling. Intermediate range nuclear instrument indication would not have been available until after the point where a reactivity excursion had occurred because the neutron level during refueling operations was too low for the intermediate range nuclear instruments.

Inspection Report# : [2000001\(pdf\)](#)



Significance: Jan 19, 2000

Identified By: NRC

Item Type: FIN Finding

Corrective Action Deficiencies Related to Heaters in the Contaminated Condensate Storage Tanks Allowed Degradation of the Heaters

The inspectors found that corrective action deficiencies related to heaters in the contaminated condensate storage tanks allowed degradation of the heaters to the extent that high pressure injection systems could have been adversely affected. The risk significance for the loss of heaters in the contaminated condensate storage tanks was low, partially because both units were shut down during times when the high pressure injection sources could have been rendered inoperable due to lack of sufficient tank heating.

Inspection Report# : [1999025\(pdf\)](#)

Significance:  Jan 19, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Contaminated Condensate Storage Tank Heaters Inoperable

The inspectors found that design control deficiencies related to heaters in the contaminated condensate storage tanks allowed degradation of the heaters to the extent that high pressure injection systems could have been adversely affected. Modifications to the system did not evaluate the facility change as required by 10 CFR 50.59. This was considered to be a non-cited violation of 10 CFR 50.59. This issue was first documented by the licensee in August 1999 and addressed in Inspection Report 50-254/99020; 50-265/99020. The risk significance for the loss of heaters in the contaminated condensate storage tanks was low, partially because both units were shut down during times when the high pressure injection sources could have been rendered inoperable due to lack of sufficient tank heating.

Inspection Report# : [1999025\(pdf\)](#)

Significance:  Dec 03, 1999

Identified By: NRC

Item Type: FIN Finding

Corrective Actions for a Design Control Problem with Software Backups were not Timely or Complete

The inspectors found that two failures of a high pressure coolant injection valve to close in September and October 1999 were not properly classified in the maintenance rule program. Licensee engineers initially failed to consider the second failure of the 1-2301-5 valve to close on October 4, 1999, as a repetitive maintenance preventable functional failure, and failed to monitor the system under (a)(1) of the maintenance rule. This is considered an unresolved item. The valve failure was found to be of low risk significance because the inboard isolation valve was available.

Inspection Report# : [1999023\(pdf\)](#)

Significance:  Nov 19, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Ensure ADS Valves Qualified for Minimum Possible Voltage

Four of the five Unit 1 automatic depressurization system relief valves were not initially qualified for the degraded voltage conditions that would be seen under accident conditions. The licensee had not originally accounted for the voltage drop that would occur between the station batteries and the valve solenoids when specifying the minimum voltage for which the valves needed to be qualified. The licensee subsequently identified a test report, done for another nuclear station, which qualified the valves to a lower voltage. The inspectors, in conjunction with the Office of Nuclear Reactor Regulations, reviewed the test and accepted it under condition that a ten volt penalty be applied to account for some test deficiencies. The licensee also performed calculations to show that the actual available voltage to the valves, under degraded conditions, was above the accepted minimum voltage. A non-cited violation was identified.

Inspection Report# : [1999021\(pdf\)](#)

Significance:  Oct 20, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Promptly Correct Control Room Emergency Ventilation System Deficiency

The inspectors identified two examples of inadequate corrective action regarding the Units 1 and 2 safety-related control room emergency ventilation system. In 1995 the licensee identified emergency diesel generator overloading concerns and degraded voltage concerns. This degraded and nonconforming condition was not corrected, and the

design basis for the emergency diesel generator system and control room emergency ventilation system were not changed to reflect the condition. Also, safety-related electrical drawing discrepancies with the control room emergency ventilation system were identified in 1997 and never corrected. A non-cited violation for 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action" with two examples was identified. In utilizing the Significance Determination Process, this issue was determined to have low risk significance because control room habitability was assumed to be maintained for the 1 hour to start control room cooling and, therefore, there was no impact on the ability of control room operators to operate the required mitigating systems. Also, the design basis event was estimated to have a very low initiating event frequency (Section 1R16).

Inspection Report# : [1999020\(pdf\)](#)



Significance: Sep 08, 1999

Identified By: NRC

Item Type: FIN Finding

A grounded resistor in the governor circuit that caused a failure of the Unit 2 reactor core isolation cooling pump

On August 26, 1999, the licensee identified a grounded resistor in the governor circuit that caused a failure of the Unit 2 reactor core isolation cooling pump. The inspectors used the significance determination process to identify this event as having very low safety significance for the loss of offsite power initiating event due to the availability of other mitigating equipment (Section 1R22.2).

Inspection Report# : [1999018\(pdf\)](#)



Significance: Sep 08, 1999

Identified By: NRC

Item Type: FIN Finding

Motor-operated valve dynamic testing

During motor-operated valve dynamic testing on August 4, 1999, the Unit 1 residual heat removal cross-tie valve (19A) failed to fully close. However, approximately one month after the failure occurred, the licensee's corrective action program did not include a plan to determine the cause of the failure or to address any potential generic considerations for other valves (Section 1R22.1). No safety functions were affected and no risk increase resulted from this particular valve failure.

Inspection Report# : [1999018\(pdf\)](#)

Significance: N/A Sep 08, 1999

Identified By: NRC

Item Type: FIN Finding

Removal of a high pressure injection pump in parallel with testing on an emergency diesel generator

On two occasions, the licensee's work authorization process allowed removal of a high pressure injection pump in parallel with testing on an emergency diesel generator. The inspectors identified that on one occasion, planned conditional core damage probability was increased to greater than that allowed by licensee administrative procedures. The actual risk was lower because the licensee did not perform the work on both systems together. The significance of this finding was not assessed by the significance determination process due to the instantaneous risk involved and the fact that the work was not performed as planned following NRC discussions with plant management (Section 1R13).

Inspection Report# : [1999018\(pdf\)](#)



Significance: Sep 03, 1999

Identified By: NRC

Item Type: FIN Finding

Copy of post-modification test not retained

The inspectors identified that the Unit 1 post modification test for a design change package on the fuel transfer pump was not retained by the licensee. This item had very low risk significance. The licensee had retained the Unit 2 test and had signature evidence that the Unit 1 test was performed.

Inspection Report# : [1999017\(pdf\)](#)



Significance: Jul 20, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Corrective Action for Flooding Procedures.

Corrective actions were not implemented for an inadequate flood protection procedure originally identified by the licensee in 1997. The procedures did not provide adequate instructions to protect the plant structurally under the forces of severe flood waters. This issue was inappropriately closed in the corrective action program without resolution. This was a non-cited violation for inadequate corrective action. A qualitative risk assessment of the impact of the procedure deficiencies concluded that the issues were of low risk significance since adequate time would be available to make procedure changes and take action during a flooding event. (Section 1R06).

Inspection Report# : [1999011\(pdf\)](#)



Significance: Jul 16, 1999

Identified By: NRC

Item Type: FIN Finding

Corrective actions to address a Unit 1 emergency diesel generator failure

Corrective actions to address a January 1998 Unit 1 emergency diesel generator (EDG) failure to start were postponed in some cases and in others only partially completed. (Reference Report Section 4OA1.3, page 5) This item was categorized by the significance determination process as being of low risk significance based on occasional EDG start failures, redundant EDGs and available off site power.

Inspection Report# : [1999012\(pdf\)](#)



Significance: Jul 16, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Excessive thrust conditions, found during testing of motor operated valves

Excessive thrust conditions, found during testing of motor operated valves (MOV) from March 1997 through July 2, 1999, were not identified to management and did not receive appropriate corrective action to preclude recurrence. As a result, the cause of the problem was not identified and appropriate corrective action was not taken. This is a non-cited violation. This item was categorized by the significance determination process as being of low risk significance. (Reference Report Section 4OA1.4) Since nine of the ten valves found outside the acceptable thrust windows functioned as required during testing, the issue was determined to be of low risk significance and was categorized as "Green."

Inspection Report# : [1999012\(pdf\)](#)



Significance: Jul 15, 1999

Identified By: NRC

Item Type: FIN Finding

The surveillance procedure for evaluating thermal performance of the residual heat removal heat exchangers

The surveillance procedure for evaluating thermal performance of the residual heat removal heat exchangers contained errors which resulted in the licensee overestimating the heat removal capability of the 1A heat exchanger. This item had very low risk significance, since the heat exchanger was still capable of removing its design heat load.

Inspection Report# : [1999014\(pdf\)](#)

Significance:  Jul 15, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Three Examples of Design Control Relating to Original Plant Design

A non-cited design control violation with multiple examples was identified during close out of two unresolved items from the architect-engineer inspection (50-254/265-98201). The issues dealt with ensuring adequate net positive suction head for the emergency core cooling system pumps, ensuring the residual heat removal service water piping was analyzed for its design condition, and determining the adequacy of a thermal relief valve. All the examples in the Non-Cited Violation resulted from original design deficiencies. The licensee's analyses showed that the pumps were operable. Therefore, this issue screened out of the significance determination process as having very low risk significance

Inspection Report# : [1999014\(pdf\)](#)

Barrier Integrity

Significance:  Nov 20, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Three examples of failure to follow procedures.

On November 3, 2000, the 1B channel of the reactor protective system flow biased neutron flux trip was found to be inoperable during reactor startup from the Unit 1 refueling outage 16. The licensee determined that poor wiring practices, poor second verification practices, and inadequate post maintenance testing of nuclear instrumentation wiring led to the malfunction. Maintenance workers failed to follow the wiring requirements in the work request, did not use lift and land sheets when removing and re-terminating the wires, and failed to label the wires which were lifted during the maintenance activity. Failure to follow the procedure (work request) for wiring was considered an example of a Non-Cited Violation. The risk significance of this event was very low because of the short amount of time that the unit was in Mode 1, because the "A" channel of flow biased trip setpoints was still operable, and because the wiring error actually caused the flow biased neutron flux trip to be more conservative (Example A). On October 14, 2000, during disassembly of the Unit 1 reactor for refueling outage 16, reactor service technicians opened a flanged connection of the reactor head vent piping with approximately 5 to 8 psig steam pressure still in the reactor vessel and initiated a steam release to the refueling floor area which lasted for several hours. Numerous procedural, process, and communication problems contributed to the event. Personnel safety, procedure adherence, procedure adequacy, and lack of control of reactor vessel disassembly activities were all concerns brought out by this event. The failure to follow procedures during vessel disassembly was considered an example of a Non-Cited Violation. The risk significance was evaluated as very low because the amount of reactor vessel inventory released to secondary containment was very low, and secondary containment integrity requirements were met (Example B). On October 22, 2000, workers attempting to replace a local power range monitor inadvertently lifted the local power range monitor tube off its seat in the reactor vessel bottom head. This caused highly contaminated radioactive water from the bottom of the reactor vessel to drain directly onto the workers. The draining stopped immediately after the local power range monitor tube was released and

reseated back into the vessel. One worker was contaminated such that a meter held to his body read 5 rem per hour on contact. Extraordinary actions by radiation protection workers resulted in the removal of the majority of the highly contaminated material quickly, such that the overall external shallow dose equivalent for the individual was estimated at 2.784 rem, and the internal dose received by the worker was estimated at 45 millirem. Problems involved in this event included workers not adhering to the instructions by radiation protection technicians, workers not having procedures with them and performing steps of two different procedures concurrently, and workers not informing operators or radiation protection technicians that they were taking actions that could allow water to be drained from the reactor vessel. In addition, the procedures were not adequate to control the work. The failure to follow procedures during local power range monitor replacement was considered an example of a Non-Cited Violation. The safety significance of this event was very low because sufficient makeup capacity to fill the vessel was available even if the local power range monitor failed to reseal, the local power range monitor tube was reseated quickly and the reactor vessel drainage stopped, and the contamination was mostly external and was removed quickly (Example C).
Inspection Report# : [2000015\(pdf\)](#)

Significance:  Jun 30, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Corrective Action for Delinquent ASME Code Work Packages

The inspectors identified a failure of the corrective action program where ASME Code Class 1, 2 and 3 Replacement and Repair program requirements for work package reviews were not met. On four occasions the licensee did not realize that the Code work packages were not meeting 10 CFR 50.55a ASME Code requirements. In each case, corrective actions were not taken to correct the situation. Failure to promptly identify and correct the failure to meet ASME code requirements for work packages was considered a Non-Cited Violation of 10 CFR 50, Appendix B, Criterion XVI. The safety significance of this issue was considered very low based on the absence of adverse consequences and the fact that no technical problems were identified.

Inspection Report# : [2000008\(pdf\)](#)

Significance:  Jan 19, 2000

Identified By: NRC

Item Type: FIN Finding

Failure not classified as a functional failure under the Maintenance Rule

A failure of a Unit 2 containment spray system valve was not properly classified as a maintenance rule functional failure under the maintenance rule program. This individual classification failure was corrected and did not impact the licensee's ability to demonstrate maintenance effectiveness for the system. The valve failure was considered to be of low risk significance using the Significance Determination Process because the other train of containment spray was fully functional.(Section 1R12)

Inspection Report# : [1999025\(pdf\)](#)

Significance:  Jan 19, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Overthrust of Motor-Operated Valve 2-1001-34A

During surveillance testing on December 12, 1999, residual heat removal torus spray/test return valve 2-1001-34A closed with 116,831 pounds of thrust which was almost double the previous as-left thrust setting of the valve. This value also exceeded the seismic thrust limit for the valve. Corrective actions recommended to determine extent of condition after failure of a similar valve in 1998 were not taken. This was considered to be a non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI. The excessive thrust problem was considered to have low risk significance

because the valve remained operable.

Inspection Report# : [1999025\(pdf\)](#)

G

Significance: Sep 08, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to promptly correct a design deficiency with the standby gas treatment system.

The licensee discovered during surveillance testing on August 23, 1999, that both standby gas treatment trains may not have functioned as designed during a postulated loss of Bus 19. The item had been previously identified in 1992 but not adequately corrected. No design change or design evaluation justifying the degraded condition had been performed. Failure to take corrective action for this design problem was a Non-cited Violation of Criterion XVI of 10 CFR Part 50, Appendix B. This problem resolution violation could not be classified with a risk significance due to its programmatic nature. However, since 1992 the inspectors were not aware of any failures of the administrative controls that would have jeopardized standby gas treatment operability. Therefore, from an equipment standpoint, this finding has a very low risk significance (Section 40A1).

Inspection Report# : [1999018\(pdf\)](#)

G

Significance: Jul 20, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Secondary Containment Penetration.

Secondary containment integrity did not exist from 1981 until May 1997 due to an unsealed 1 inch diameter penetration. This was a non-cited violation of Technical Specification 3.7 (Section 40A3). This issue had very low risk significance. Test results showed that the standby gas treatment system could still maintain negative pressure in secondary containment with leak pathways up to 4 inches in diameter.

Inspection Report# : [1999011\(pdf\)](#)

Emergency Preparedness

Occupational Radiation Safety

Significance: N/A Jul 13, 2001

Identified By: NRC

Item Type: FIN Finding

A supplemental inspection was performed by the NRC to assess the licensee's evaluation associated with the failure to provide adequate radiological planning to maintain radiological doses as-low-as

is-reasonably-achievable (ALARA)
This supplemental inspection was performed by the NRC to assess the licensee's evaluation associated with the failure to provide adequate radiological planning to maintain radiological doses as-low-as-is-reasonably-achievable (ALARA) during the Fall 2000 Unit 1 outage. This performance issue was previously characterized as having low to moderate risk significance (White) in NRC Inspection Report No. 50-254/00-18(DRS) and 50-265/00-18(DRS). During this supplemental inspection, performed in accordance with Inspection Procedure 95001, the inspector concluded that the licensee performed a comprehensive evaluation of the radiological planning weaknesses. The licensee's evaluation attributed the planning weaknesses to ineffective job management by the radiation protection and construction staffs

(root cause). In determining the root cause, the licensee identified contributing factors which included ineffective management of work force changes and drywell temperature control, inadequate monitoring of job duration and identification of changes in duration, and inadequate consideration of work location dose rates and contamination levels when developing revised job dose estimates. The inspector reviewed the licensee's corrective actions, both completed and planned, and concluded that the corrective actions appeared to address the identified root cause and contributing causes. In particular, the licensee implemented an ALARA job standard to provide additional guidance to the staff for identifying and managing changes in radiological work. The purpose of the job standard was to fully identify the changes (both prior to the work and based on the as-found conditions) and to communicate the changes to the station ALARA committee so that the planning could be adequately evaluated to determine if replanning was necessary. Initial implementation of the standard during the Spring 2001 Unit 1 recirculation pump seal replacement was adequate; however, the inspector observed weaknesses in the understanding of staff concerning when the standard was to be applied. Due to the licensee's acceptable performance in assessing the radiological planning problems, the White finding associated with this issue will only be considered in assessing plant performance for a total of four quarters in accordance with the guidance in NRC Manual Chapter 0305, "Operating Reactor Assessment Program." Implementation of the licensee's corrective actions will be reviewed during a future inspection.

Inspection Report# : [2001013\(pdf\)](#)



Significance: Nov 27, 2000

Identified By: NRC

Item Type: FIN Finding

Radiological dose for the Safety Relief Valve (SRV) replacement work results in a determination of a White Finding.

Planning problems caused the dose for the Safety Relief Valve (SRV) replacement work completed during refueling outage Q1R16 to exceed its projected dose by more than 50 percent. Elevated dose rates were encountered in the drywell as a result of cobalt 60 plate-out. The drywell cooling/ventilation system was out of service for maintenance and testing, significantly elevating temperatures in the drywell. Also, less experienced workers performed the SRV job NRC Supplemental Inspection (Report 50-254/01-13, 50-265/01-13): During this supplemental inspection, performed in accordance with Inspection Procedure 95001, the inspector concluded that the licensee performed a comprehensive evaluation of the radiological planning weaknesses. The licensee's evaluation attributed the planning weaknesses to ineffective job management by the radiation protection and construction staffs (root cause). In determining the root cause, the licensee identified contributing factors which included ineffective management of work force changes and drywell temperature control, inadequate monitoring of job duration and identification of changes in duration, and inadequate consideration of work location dose rates and contamination levels when developing revised job dose estimates. The inspector reviewed the licensee's corrective actions, both completed and planned, and concluded that the corrective actions appeared to address the identified root cause and contributing causes. In particular, the licensee implemented an ALARA job standard to provide additional guidance to the staff for identifying and managing changes in radiological work. The purpose of the job standard was to fully identify the changes (both prior to the work and based on the as-found conditions) and to communicate the changes to the station ALARA committee so that the planning could be adequately evaluated to determine if replanning was necessary. Initial implementation of the standard during the Spring 2001 Unit 1 recirculation pump seal replacement was adequate; however, the inspector observed weaknesses in the understanding of staff concerning when the standard was to be applied. Due to the licensee's acceptable performance in assessing the radiological planning problems, the White finding associated with this issue will only be considered in assessing plant performance for a total of four quarters in accordance with the guidance in NRC Manual Chapter 0305, "Operating Reactor Assessment Program." Implementation of the licensee's corrective actions will be reviewed during a future inspection.

Inspection Report# : [2000018\(pdf\)](#)

Inspection Report# : [2001013\(pdf\)](#)

Public Radiation Safety

Significance:  Jul 02, 1999

Identified By: NRC

Item Type: FIN Finding

Lack of Documentation for Offsite Dose Calculation Manual Revisions

The inspectors identified a lack of documentation for the licensee's review of changes to the Offsite Dose Calculation Manual. Although an independent technical review determined that the changes maintained a sufficient level of effluent control, the licensee did not maintain documentation to support this determination. (Section 2PS3.3) This item had very low risk significance based on the results of the independent technical review.

Inspection Report# : [1999013\(pdf\)](#)

Physical Protection

Significance: N/A Jun 14, 2001

Identified By: NRC

Item Type: FIN Finding

A supplemental inspection was performed to assess the licensee's root cause evaluation related to exercise failures during two of four force-on-force contingency exercises.

This supplemental inspection was performed to assess the licensee's root cause evaluation related to exercise failures during two of four force-on-force contingency exercises. This performance issue was characterized as a White finding having a low to moderate risk significance in NRC Inspection Report No. 50-254; 265/00-201. This supplemental inspection determined that the licensee had performed a comprehensive evaluation which identified the root cause and contributing factors associated with the exercise failures noted above. The licensee's evaluation identified that the root cause of the exercise finding was a failure to effectively accomplish exercise control activities. Contributing factors were human performance errors by some security force response personnel and controllers, a lack of effective controller training, vulnerabilities in some defensive positions, and command and control activities. Licensee corrective actions were implemented to address the root cause and each contributing factor. Those actions appeared effective in correcting the identified deficiencies. Therefore, the White performance finding associated with the exercise failures was closed.

Inspection Report# : [2001011\(pdf\)](#)

Significance:  Nov 17, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

An unattended security storage container containing Safeguards Information was found unlocked and open for approximately two hours.

An unattended security storage container containing Safeguards Information was found unlocked and open for approximately two hours (Section 40A3). The inspector reviewed the risk significance of this finding and determined the risk to be very low since no Safeguards Information was compromised and there have not been greater than two similar findings in four quarters.

Inspection Report# : [2000019\(pdf\)](#)



Significance: Jun 23, 2000

Identified By: NRC

Item Type: FIN Finding

Contingency Response Performance Deficiencies

Deficiencies were noted in the licensee's performance in the contingency response element of the Physical Protection Cornerstone. (The details of this finding are Safeguards Information and are required to be withheld from public disclosure.)

Inspection Report# : [2000201\(pdf\)](#)

Miscellaneous

Significance: SL-IV Aug 14, 2001

Identified By: NRC

Item Type: VIO Violation

FAILURE TO ACCURATELY REPORT PERFORMANCE INDICATOR INFORMATION

The inspectors identified that the licensee failed to report fault exposure hours for the failure of a fuel oil transfer solenoid valve to open during the Unit 2 emergency diesel generator (EDG) 18 month endurance test. The second quarter 2001 data reported to the NRC showed no fault exposure hours recorded for Unit 2 EDG. However, the inspectors found that fault exposure hours from a failed endurance run on May 1, 2001, should have been reported since only the time of the failure's discovery was known with certainty. Fault exposure hours going back to the last successful load test of the EDG on January 14, 2000, were not included in the licensee's July 2001 performance indicator data submittal for the Unit 2 Emergency Alternating Current (AC) - Safety System Unavailability performance indicator. Had the performance indicator data been properly reported, the performance indicator color would have been Red. Failure to properly report the performance indicator was considered a Severity Level IV violation of 10 CFR 50.9.

Inspection Report# : [2001012\(pdf\)](#)

Significance: N/A May 25, 2001

Identified By: NRC

Item Type: FIN Finding

Adverse performance trend.

The corrective actions to prevent recurrence for an event that resulted in an inadvertent steam release during a breach of the reactor pressure boundary proved to be ineffective to prevent a similar event that occurred six months later. Additionally, corrective actions for the second event were narrow in scope and did not address the aspects in common with the first event. Condition report Q2001-01976 was issued to address the potential common issues. The inspectors concluded that the issue was more than minor since the failure to fully identify and correct deficiencies could be reasonably viewed as a precursor to a significant event. The inspectors reviewed the applicability of the issue with respect to program cornerstones and determined that the issue did not impact a cornerstone. However, this issue contained extenuating circumstances in that the full extent of condition for the October event was not completely identified and corrected, allowing a similar event in April. The combination of these two events indicates an adverse performance trend.

Inspection Report# : [2001009\(pdf\)](#)

Significance: N/A May 25, 2001

Identified By: NRC

Item Type: FIN Finding

Corrective action program problems.

The inspectors concluded that in general the corrective action program was a complete program containing all the necessary attributes to successfully identify and correct issues at Quad Cities. However, over the past year there were several instances of difficulties with problem identification, evaluation and resolution. Most of these were documented in previous findings and violations in inspection reports. In general, these issues have been recognized, and actions have been taken to address them. For most of the issues it is too soon to fully evaluate the effectiveness of these actions so effectiveness is still to be determined. During this inspection, three areas of corrective action program problems were identified. These were the failure to properly implement the M&TE program, several instances when condition reports should have been written and they were not, and, failure to address common causes for similar steam release events on the reactor vessel during the October refueling outage, and in the April maintenance outage.

Inspection Report# : [2001009\(pdf\)](#)

Significance: N/A May 25, 2001

Identified By: NRC

Item Type: FIN Finding

Test problems on condition reports not identified.

In May of 2001, an inspector observing a surveillance noted that instrument maintenance technicians had difficulty conducting calibrations of differential transmitters on the Unit 2 station blackout diesel air intake filter differential pressure detectors. The results were not repeatable and indicated some out-of-tolerance readings on both instruments. No condition reports were generated for either the difficulty with the tests or the apparent out-of-tolerance results until inspectors intervened. Condition Report Q2001-1549 was issued 12 days later and subsequently, Condition Reports Q2001-1474 and Q2001-1475 were written for the out-of-tolerance readings. The inspectors reviewed the significance of not identifying test problems on condition reports and concluded that the issue was more than a minor issue because if left uncorrected, the issue could become a more significant safety concern. The actual effect on the station blackout diesel was minimal since it did not directly impact operation of the equipment and another diesel was available. However, this corrective action finding is a cross-cutting issue for corrective action process performance and is assigned No Color.

Inspection Report# : [2001009\(pdf\)](#)

Significance: N/A May 25, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to assure that measuring and test equipment was properly calibrated.

In April of 2001, the station Nuclear Oversight staff identified that measurement and test equipment which was found to be out-of-calibration during post-use verifications was not evaluated as required by plant procedure. Also, condition reports on these out-of-tolerance conditions were not written when required by procedures. The licensee initiated a review which identified 159 items of out-of-tolerance equipment which had not been evaluated appropriately. The use of these items was evaluated and appropriate recovery actions taken. Failure to assure that measuring and test equipment used in 2000 and 2001 was properly calibrated was a Non-Cited Violation of 10 CFR 50, Appendix B. The inspectors reviewed the significance of not evaluating out-of-tolerance equipment and determined that the issue was more than a minor issue because if left uncorrected, the issue could become a more significant safety concern. However, since this is a corrective action concern, and no specific cornerstone was impacted, this item is assigned No Color.

Inspection Report# : [2001009\(pdf\)](#)

Significance: N/A May 16, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to report performance indicator data accurately.

Inspectors found that the licensee reported safety system functional failure data improperly. The improperly reported safety system functional failure involved failure of the Unit 2 intermediate range nuclear monitors. Had this been reported properly, it would have caused the safety system functional failure performance indicator for Unit 2 to cross

the threshold from Green to White in the first quarter of 2000. The actual submittal showed performance indicator data in the licensee response or Green band. Because a performance indicator would have changed from Green to White, this was considered a Non-Cited Violation of 10 CFR 50.9.

Inspection Report# : [2001008\(pdf\)](#)

Significance: N/A Dec 15, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Technical Errors in Appendix R Safe Shutdown Procedures

The inspectors identified a number of technical errors in safe shutdown procedure QCARP 0050-02. The procedure errors were considered a Non-Cited Violation (NCV 50-254/00-16-03; NCV 50-265/00-16-03) of 10 CFR 50, Appendix R, Section III.L.5 (Section 40A4.1). The technical errors were determined to have no appreciable risk significance (No Color) because the errors would not have impacted safe shutdown. However, the errors were another example of a previously identified adverse trend in human performance.

Inspection Report# : [2000016\(pdf\)](#)

Significance: N/A Nov 20, 2000

Identified By: NRC

Item Type: FIN Finding

The inspectors found that a number of human performance errors during the Q1R16 refueling outage period resulted in undesirable consequences and constituted an adverse trend.

The inspectors found that a number of human performance errors during the Q1R16 refueling outage period, October 14 to November 3, resulted in undesirable consequences and constituted an adverse trend in human performance. These errors resulted from problems with procedure adherence, control of work activities, communications, and procedure quality. Resulting problems included venting the pressurized reactor to containment near maintenance workers who were not adequately prepared for the subsequent release of steam and contamination, inadvertently draining from the reactor vessel bottom head area resulting in significant personnel contamination, and a number of wiring and second verification errors during electrical modifications and maintenance. Although most of these wiring errors were caught and corrected during testing, one error was not caught and resulted in the inoperability of one of two channels of the reactor protective system flow biased trips. While none of these events resulted in equipment performance outside the licensee response band (GREEN), the overall trend indicated problems with adhering to procedures, proper performance of second verification techniques, and the communication and coordination of activities (Section 40A4).

Inspection Report# : [2000015\(pdf\)](#)

Significance: N/A Jun 30, 2000

Identified By: NRC

Item Type: FIN Finding

Cross-Cutting Issues: Human Performance

Inspectors found that several recent events which affected plant operations and/or had the potential to adversely affect personnel safety involved elements of human performance deficiencies. An apparent adverse trend in human performance during the period May 5, 2000 to June 30, 2000, was evidenced by the following incidents. A senior reactor operator failed to implement a Technical Specification surveillance requirement for removing an emergency diesel generator from service. Control room operators experienced problems controlling reactor vessel water level during post-scrum recovery efforts and failed to close a pair of drain valves during a pre-start of the Unit 1 high pressure coolant injection system. Maintenance personnel errors were involved in a reactor trip on May 5, and spread of contamination in the 2B reactor water cleanup room when a fitting was disconnected under 1000 psig pressure on June 10 (Section 40A.4).

Inspection Report# : [2000007\(pdf\)](#)

Significance: N/A Jun 30, 2000

Identified By: NRC

Item Type: FIN Finding

Weakness in Corrective Action Program.

The corrective action program was fully functional and typically identified and corrected conditions adverse to quality. In general, station personnel effectively identified and entered problems into the corrective action program using problem identification forms (PIFs). The significance threshold for entering issues into the program appeared appropriate. However, over the past year issues were identified at Quad Cities where the corrective action process was not vigorously implemented to address the issues. In addition, the licensee's corrective action process had lost over two items a month since January 2000. Although none of these lost items were considered safety significant, and thousands of other action items were opened and closed in that time frame, this represented a weakness in the licensee's program.
Inspection Report# : [2000008\(pdf\)](#)



Significance: Apr 01, 2000

Identified By: Licensee

Item Type: NCV NonCited Violation

On September 10, 1999, the control room emergency ventilation system was inoperable

On September 10, 1999, the licensee identified that the control room emergency ventilation system was inoperable. Flow rates were out-of-specification due to repositioning of a ventilation damper 9 days previously. The action statement for Technical Specification 3.8.D allowed the system to be inoperable for 7 days. Failing to comply with the allowed outage time requirements was considered a non-cited violation of Technical Specification 3.8.D. This issue was screened as GREEN (very low risk significance) after a Phase 1 Significance Determination Process review (Section 40A3).

Inspection Report# : [2000003\(pdf\)](#)

Significance: N/A Feb 29, 2000

Identified By: NRC

Item Type: FIN Finding

Human Performance Problems

Inspectors found that errors in review, coordination, and implementation of maintenance activities during or near Unit 2 refueling outage number 16 (January and February 2000) led to inoperable safety systems. Operators were unaware that Technical Specification or administrative limiting condition for operation action statements were entered or exceeded. Required nuclear instruments and emergency diesel generators were not operable during some fuel moves (Sections 1R04 and 1R20.4), automatic depressurization system valves were taken out of service while required (Section 1R20.2), the high pressure coolant injection system was inoperable due to incomplete maintenance (Section 1R19.1), and safe shutdown requirements were not properly addressed (Section 1R20.5). Other events included technician errors in which electrical jumpers were installed in incorrect locations for logic used by the reactor protective system and by the emergency core cooling system. While the risk of the individual events was very low, an increase in maintenance activity problems was evident.

Inspection Report# : [2000001\(pdf\)](#)

Significance: N/A Dec 03, 1999

Identified By: NRC

Item Type: FIN Finding

reactor coolant system leakage performance indicator

The inspectors completed verification inspection of the reactor coolant system leakage performance indicator and found very minor discrepancies which did not affect the validity of the reported performance indicator (Section 40A2.2).

Inspection Report# : [1999023\(pdf\)](#)

Significance: N/A Dec 03, 1999

Identified By: NRC

Item Type: FIN Finding

the public radiation safety performance indicator

The inspectors verified that the licensee had properly evaluated and reported the public radiation safety performance indicator (Section 40A2.7).

Inspection Report# : [1999023\(pdf\)](#)

Significance: N/A Dec 03, 1999

Identified By: NRC

Item Type: FIN Finding

verification inspection for the residual heat removal unavailability performance indicator.

The inspectors completed the verification inspection for the residual heat removal unavailability performance indicator. The inspectors identified that the licensee had not included 12.5 hours of residual heat removal system unavailability during system logic testing in January 1999. The licensee explained that the rules for system availability, at that time, did not require documenting the safety system unavailability. The licensee elected to report these hours in a future submittal. The extra hours would not cause the residual heat removal system unavailability to cross a color threshold (Section 40A2.1).

Inspection Report# : [1999023\(pdf\)](#)

Significance: N/A Dec 03, 1999

Identified By: NRC

Item Type: FIN Finding

verification inspection of the licensee's performance indicators

The inspectors completed verification inspection of the licensee's performance indicators for scrams, scrams with loss of normal decay heat removal, reactor coolant specific activity, and primary containment leakage. No findings were identified (Section 40A2).

Inspection Report# : [1999023\(pdf\)](#)

Significance: N/A Oct 20, 1999

Identified By: NRC

Item Type: FIN Finding

The licensee corrected discrepancies with the safety system functional failure indicator.

The licensee corrected discrepancies with the safety system functional failure indicator previously identified by the NRC in the September report of performance indicator data. The NRC exercised enforcement discretion and did not issue a Notice of Violation (Section 40A3).

Inspection Report# : [1999020\(pdf\)](#)

Significance: N/A Oct 20, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Event Reporting Failure

The inspectors identified two violations of NRC reporting requirements. The licensee failed to notify the NRC within 1 hour of identifying a condition in which the control room emergency ventilation system was found outside the design basis. The licensee also failed to notify the NRC within 4 hours of an event in which the reactor core isolation cooling system was unable to perform a required safety function. The licensee made late notifications, submitted a licensee event report for the control room emergency ventilation system, and planned to submit a licensee event report for the reactor core isolation cooling system failure. These were considered two non-cited violations (Plant Status).

Inspection Report# : [1999020\(pdf\)](#)

Significance: N/A Oct 20, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Notification Failure Under 50.72

The inspectors identified two violations of NRC reporting requirements. The licensee failed to notify the NRC within 1 hour of identifying a condition in which the control room emergency ventilation system was found outside the design basis. The licensee also failed to notify the NRC within 4 hours of an event in which the reactor core isolation cooling system was unable to perform a required safety function. The licensee made late notifications, submitted a licensee event report for the control room emergency ventilation system, and planned to submit a licensee event report for the reactor core isolation cooling system failure. These were considered two non-cited violations (Plant Status).

Inspection Report# : [1999020\(pdf\)](#)



Significance: Oct 08, 1999

Identified By: Licensee

Item Type: FIN Finding

The licensee identified errors in the PI Occupational Radiation Safety Performance Indicator (PI)

Occupational Radiation Safety Performance Indicator (PI). The licensee identified errors in the PI reported to the NRC. Originally, the licensee reported six technical specification high radiation area incidents, which resulted in a white PI. After identifying a missed occurrence and a misinterpretation of the PI criteria, the licensee determined that only two incidents were applicable to the PI, which resulted in the PI indicating that performance was in the licensee response band (green).

Inspection Report# : [1999022\(pdf\)](#)



Significance: Jul 16, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

the repetitive problem of excessive use of overtime.

The root cause report and the corrective actions, approved by the Plant Operations Review Committee and the Corrective Action Review Board, did not fully address the repetitive problem of excessive use of overtime. There were 177 instances between February 1 and 28, 1999, where station procedures were not followed to control overtime of plant workers. Further corrective actions were being developed to ensure that overtime violations did not continue. There were no known incidents where the excessive use of overtime directly impacted or affected the safety of the plant; however, the repetitive failure to follow procedures to control overtime is a non-cited violation. (Reference Report Section 4OA1.4, page 8)

Inspection Report# : [1999012\(pdf\)](#)

Last modified : August 29, 2002

Quad Cities 2

Initiating Events

Significance:  Sep 30, 2002

Identified By: NRC

Item Type: FIN Finding

UNEXPECTED CHANGES IN UNIT 2 OPERATING PARAMETERS AND DRYER FAILURE DUE TO FLOW INDUCED VIBRATION.

The failure to consider the impact of new flow induced vibration failure mechanisms on the Unit 2 steam dryer as part of the extended power uprate analysis resulted in unexpected and unpredictable changes in reactor power, reactor vessel level, reactor pressure, and main steam line flow between June 7 and July 11, 2002. The licensee subsequently determined that the changes in Unit 2 operating parameters were caused by the failure of a Unit 2 steam dryer cover plate. This finding was more than minor because the changes in Unit 2 operating parameters caused by the degraded dryer created conditions which increased the likelihood of a plant transient. However, this finding was of very low risk significance because the changes in plant parameters and the dryer failure did not contribute to the likelihood of a primary or secondary loss of coolant accident initiator, did not contribute to the likelihood of a reactor trip with mitigating equipment not available, and did not increase the likelihood of a fire or an internal or external flood. There were no violations of NRC requirements due to the steam dryer being non-safety related.

Inspection Report# : [2002007\(pdf\)](#)

Significance:  Jun 30, 2002

Identified By: NRC

Item Type: FIN Finding

INADEQUATE DIGITAL FEEDWATER SYSTEM DESIGN AND INADVERTENT GROUNDING OF PLANT EQUIPMENT RESULTS IN REACTOR SCRAM

A digital feedwater control system design weakness, in conjunction with the inadvertent grounding of a pressure transmitter during an instrument maintenance surveillance, resulted in a manual reactor scram due to increasing reactor vessel water level. The inspectors determined that this issue was of very low safety significance because the feedwater system would have been recoverable following a Level 8 isolation signal, and adequate mitigating systems equipment remained available to place and maintain the plant in a stable condition.

Inspection Report# : [2002005\(pdf\)](#)

Significance:  Jun 30, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO PARTICIPATE IN TURNOVER CONTRIBUTES TO MANUAL REACTOR HEAD VENT ISOLATION VALVES BEING LEFT OPEN DURING UNIT STARTUP

A lack of communications between operations personnel and an administrative senior reactor operator's failure to participate in a formal shift turnover resulted in operations personnel commencing a Unit 2 reactor startup with the manual reactor head vent isolation valves in the open position. The failure to participate in a turnover was considered a Non-Cited Violation of Technical Specification 5.4.1. The inspectors determined that this issue was of very low safety significance because the leak created by the open manual reactor head vent isolation valves was small, and adequate mitigating equipment was available to respond to a potential transient condition.

Inspection Report# : [2002005\(pdf\)](#)

Significance:  Dec 29, 2001

Identified By: NRC

Item Type: FIN Finding

DEGRADED AND INADEQUATELY TESTED TRANSFORMER AND PROTECTIVE RELAYING RESULTS IN INCREASE IN TRANSIENT AND LOSS OF OFFSITE POWER INITIATING EVENT FREQUENCIES

On August 2, 2001, Unit 2 experienced a transformer failure, reactor scram, and loss of offsite power. The inspectors determined that a lightning strike in conjunction with age related degradation and inadequate testing of the Unit 2 main power transformer and switchyard protective relaying contributed to the event and resulted in an increase in the initiating event frequency for plant transients and a loss of offsite power. The inspectors determined the risk significance of this issue to be very low since all remaining mitigating systems were available to mitigate the transformer rupture, reactor scram, and loss of offsite power.

Inspection Report# : [2001017\(pdf\)](#)

Significance:  Mar 31, 2001

Identified By: Licensee

Item Type: NCV NonCited Violation

Operator-induced loss of feedwater heating transient

On March 23 the inspectors reviewed an operator-induced loss of feedwater heating transient that occurred on Unit 2. The inspectors found that the operators failed to immediately recognize a reduction in feedwater heating and take prompt action to effectively control the increasing reactor power. The transient resulted in a 33 degree decrease in feedwater inlet temperature adding sufficient positive reactivity to increase reactor thermal power from 2511 to 2578 megawatts, approximately 102.7 percent of maximum licensed power. Exceeding Quad Cities License DPR-30 maximum thermal power of 2511 megawatts thermal was considered a Non-Cited Violation. The risk significance of this event was determined to be very low (Green) due to the relatively small increase a 2.7 percent power change will have on overall core thermal limits (Section 1R14).

Inspection Report# : [2001005\(pdf\)](#)

Significance:  Aug 15, 2000

Identified By: NRC

Item Type: FIN Finding

Electrical ring bus caused electrical circuit breakers 1-3 and 3-4 to open.

On July 18 a fault on one of the offsite power feeds to the Quad Cities electrical ring bus caused electrical circuit breakers 1-3 and 3-4 to open. This action isolated the fault and resulted in a Unit 2 turbine generator and reactor trip. The response by the switchyard resulted in a loss of power on the Unit 1 reserve auxiliary transformer. The response to the reactor scram on Unit 2 was as designed. Operator performance during this event was determined to have been acceptable. The inspectors reviewed the risk significance of this initiating event for both units using the Significance Determination Process. All mitigating equipment was available for Unit 2 following the uncomplicated trip, and this event was screened as having very low risk significance (GREEN.) One of two auxiliary transformers for Unit 1 was de-energized during the event, but the unit did not trip and all mitigating equipment was available. Therefore, this event was also screened as GREEN for Unit 1.

Inspection Report# : [2000011\(pdf\)](#)

Significance:  Jun 30, 2000

Identified By: NRC

Item Type: FIN Finding

operators did not control reactor vessel inventory

During operator response to a reactor trip on May 22, operators did not control reactor vessel inventory prior to the operating reactor feedwater pump tripping on high reactor vessel water level. Additionally, operators had not started a

reactor feedwater pump by the time a reactor low level condition existed. This resulted in a second engineered safety feature actuation. The inspectors reviewed this issue using the significance determination process for a transient with a loss of feedwater and determined this was of very low risk significance (Section 1R14).

Inspection Report# : [2000007\(pdf\)](#)

Significance:  Jun 30, 2000

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

Maintenance work and emerging work - 2B reactor water cleanup pump seal line disconnect

On June 10, maintenance workers disconnected a seal line to the 2B reactor water cleanup pump that was not properly isolated by the out-of-service tagout and discovered that the line was pressurized to about 1000 psig. The resulting spray caused a spread of contamination in the room and a potential hazard to the workers. No personnel injuries occurred as a result of this event. Failure to hang the proper out-of-service for the maintenance activity was considered a Non-Cited Violation (NCV) of Technical Specifications. The inspectors considered this event of very low safety significance due to the ability to isolate the leak and the availability of mitigating equipment (Section 1R13).

Inspection Report# : [2000007\(pdf\)](#)

Significance:  Jun 30, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

adjustments to the wrong instrument, causing a reactor trip on Unit 2

On May 5 an instrument technician performing a calibration of the main steam line high steam flow detectors made adjustments to the wrong instrument, causing a reactor trip on Unit 2. Failure to implement the calibration procedure for the proper channel instrument was considered an NCV of Technical Specification 6.8.A.1. The safety significance of this event was minimal due to the availability of mitigating equipment (Section 4OA.3).

Inspection Report# : [2000007\(pdf\)](#)

Significance:  Feb 29, 2000

Identified By: NRC

Item Type: FIN Finding

Ice Melt Valve Failure

Failure of the ice melt valve on January 22, 2000, resulted in some ice formation in the intake area. Operator detection and compensatory measures prevented the ice from affecting the water level in the intake. The valve gate had become detached from the stem. The failure of the ice melt valve was of very low risk significance because it did not result in an increased initiating event frequency for loss of both normal and ultimate heat sinks. The inspectors compared an estimated valve failure rate to the licensee's evaluation. The licensee's evaluation excluded this initiating event from the probabilistic risk assessment because no precursor event had occurred in the history of the station.

Inspection Report# : [2000001\(pdf\)](#)

Significance:  Sep 08, 1999

Identified By: NRC

Item Type: FIN Finding

Maintenance rule functional failures

Problematic feedwater level control equipment on Unit 2 resulted in two reactor vessel water level transients in early 1999. The licensee initially evaluated these two events as not being maintenance rule functional failures, which was inappropriate. An NRC inspection and a subsequent licensee self-assessment identified the error. The licensee re-evaluated the two transients as being functional failures on July 28, 1999. This issue did not increase the frequency of initiating events and therefore was an issue of very low safety significance (Section 1R12).

Inspection Report# : [1999018\(pdf\)](#)

Significance:  Jul 20, 1999

Identified By: NRC

Item Type: FIN Finding

a 3-inch increase in reactor water level

On Unit 2, a 3-inch increase in reactor water level occurred and required operators to take manual control of the system. Various failures in the level control systems have resulted in about ten similar events since January 1, 1999, in which operators were required to intervene to prevent level transients that could have resulted in a reactor trip. Since the plant effect of the failures is limited to an uncomplicated reactor trip, the failures were considered to be of low risk significance using the significance determination process (Section 1R03).

Inspection Report# : [1999011\(pdf\)](#)

Mitigating Systems

Significance:  Sep 30, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO HAVE APPROPRIATE BEARING FIT-UP AND MOTOR LUBRICATION INSTRUCTIONS

Inadequate bearing fit-up measurement and motor lubrication instructions resulted in a self-revealing failure of the 1A core spray and reactor core isolation cooling room cooler fan inboard motor bearings and a Non-Cited Violation of Technical Specification 5.4.1. The inspectors determined that this finding was more than minor because the improper bearing fit-up and lubrication instructions impacted the availability, reliability, and capability of equipment used to support risk significant mitigating equipment. The failure of the 1A core spray and reactor core isolation cooling room cooler was of low risk significance because the failure was not caused by a design or qualification deficiency, did not result in an actual loss of safety function for the core spray or reactor core isolation cooling systems, and did not screen as potentially risk significant due to a seismic, fire, flooding, or severe weather initiating event.

Inspection Report# : [2002007\(pdf\)](#)

Significance:  Sep 30, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

**FAILURE TO ADEQUATELY CORRECT MULTIPLE FAILURES OF THE 2A RHR
NORMAL/ALTERNATE SWITCH**

Ineffective corrective actions resulted in repetitive failures of the 2A residual heat removal normal/alternate switch between June 1999 and September 2002 and a Non-Cited Violation of 10 CFR 50, Appendix B, Criterion XVI. The failure to correct the multiple normal/alternate switch failures was more than minor because the switch failures impacted the availability, reliability, and capability of equipment used to respond to initiating events and prevent undesirable consequences from a plant fire. This finding was of very low risk significance because the switch failures did not result in an actual loss of function for the residual heat removal system. The switch failures also failed to screen as a risk significant fire issue because the room cooler was not needed until 52 hours after a fire which provided the licensee adequate time to correct the failure.

Inspection Report# : [2002007\(pdf\)](#)

Significance:  Sep 30, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

**FAILURE TO DOCUMENT AN OVERGREASING ISSUE IN THE CORRECTIVE ACTION PROGRAM
AND TAKE ACTION TO ADDRESS THE EXTENT OF CONDITION**

The licensee failed to follow procedural requirements regarding the initiation of condition reports and determining the extent of condition following the discovery of a large amount of grease in the 1A core spray room cooler motor. As a result, the licensee did not provide a basis for continued operability of potentially impacted plant motors for approximately 40 days. This finding was more than minor because the licensee's lack of action resulted in the inability to ensure the availability and reliability of mitigating systems equipment used to respond to initiating events and prevent undesirable consequences. The inspectors determined that this finding was of very low risk significance because subsequent reviews determined that even if the motors susceptible to overgreasing failed, the motors are not credited in the licensee's probabilistic risk assessment.

Inspection Report# : [2002007\(pdf\)](#)

Significance:  Jun 30, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO PERFORM REQUIRED PARTS EVALUATION FOR CONTROL ROD DRIVE ACCUMULATOR CLAMPS

The inspectors identified a design deficiency and a Non-Cited Violation in that licensee personnel failed to perform a parts evaluation when installing hose clamps on the control rod drive system hydraulic accumulators instead of the seismically-qualified steel band clamps. This issue was of very low safety significance because the design deficiency did not result in a loss of function as described in Generic Letter 91-18, "Resolution of Degraded and Non-Conforming Conditions and on Operability."

Inspection Report# : [2002005\(pdf\)](#)

Significance:  Jun 30, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO MEET 10 CFR 50.62 DUE TO RELIEF VALVES LIFTING

The inspectors documented a Non-Cited Violation of 10 CFR 50.62, "Anticipated Transient Without Scram Rule," due to the potential to lift the standby liquid control system relief valves during an anticipated transient without scram. The inspectors determined that this finding was of very low safety significance because the standby liquid control system could be recovered during an anticipated transient without scram event, the cycling of the relief valves would allow a portion of the sodium pentaborate solution to be injected into the reactor vessel, and the plant remained within the acceptance criteria of the original anticipated transient without scram analyses during the relief valve lifts.

Inspection Report# : [2002005\(pdf\)](#)

Significance:  Mar 31, 2002

Identified By: NRC

Item Type: FIN Finding

CATASTROPHIC FAILURE OF 2B CONTROL ROD DRIVE PUMP

On January 24, 2002, a catastrophic failure of the 2B control rod drive pump occurred approximately 4 days after conducting maintenance. The pump failure was caused by the inadequate lubrication of the inboard pump bearing due to the inappropriate setting of a constant level oiler. The root cause was that the constant level oiler was set approximately 15/64 of an inch lower than the specified setting due to maintenance personnel using a previously painted oil level reference line on the pump casing rather than a more exact installation method. No violations of NRC requirements were identified as a result of this event due to the control rod drive system being non-safety related. The finding was of very low safety significance. Although the finding represented an actual loss of safety function of one train of non-Technical Specification equipment designated as risk significant by the maintenance rule for greater than 24 hours, all remaining mitigating equipment remained available to respond to potential transients.

Inspection Report# : [2002004\(pdf\)](#)

Significance:  Mar 31, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO ADEQUATELY DETERMINE CAUSE OF SBLC PUMP TRIP AND TAKE CORRECTIVE ACTION

The inspectors identified a Non-Cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, for the failure to determine the cause of a 1995 2A standby liquid control pump trip and take corrective actions to preclude repetition. On February 15, 2002, during surveillance test actuations of the standby liquid control system explosive valves, the continuity of the firing circuit remained intact. Fragments contacted the standby liquid control system piping creating a circuit path to ground. The existence of a previously unidentified independent ground at a different point in the control circuitry created a condition where the voltage was not adequate to support continued system operation and the 2A standby liquid control pump tripped. The 2A standby liquid control pump tripped during the performance of the same surveillance procedure in 1995. Following the February 2002 pump failure, the licensee determined that troubleshooting performed in 1995 was inadequate in that it failed to identify the actual cause of the pump trip. The finding was of very low safety significance because the 2B train of the standby liquid control system was unaffected by this issue and all remaining mitigating equipment was available to respond to an anticipated transient without scram event.

Inspection Report# : [2002004\(pdf\)](#)

Significance:  Mar 31, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO ESTABLISH MEASURES TO ASSURE THAT ITEMS WERE CORRECTLY TRANSLATED INTO SPECIFICATIONS

The inspectors identified a Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion III for failure to establish measures to assure that items such as thermal effects and the compatibility of materials were correctly translated into specifications for the Unit 2 emergency diesel generator fuel oil transfer system. On May 1, 2001, and May 3, 2001, a solenoid valve in the Unit 2 emergency diesel generator fuel oil transfer system failed to open approximately 12 hours after the start of the emergency diesel generator 24-hour endurance test. The solenoid valve failure was due to thermal pressurization of an isolated section of fuel oil transfer system discharge piping. The finding was of very low safety significance because the Unit 2 station blackout diesel generator was not impacted by this design issue, actions to manually fill the fuel oil day tank were proceduralized such that recovery of the emergency diesel generator should be successful, and alternative mitigating equipment was available to respond to a potential loss of offsite power.

Inspection Report# : [2002004\(pdf\)](#)

Significance:  Feb 01, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to adequately address the erosion of the RHRSW room coolers' supply piping

Green. The inspectors identified a failure to promptly identify and correct conditions adverse to quality involving the erosion of safety-related residual heat removal service water piping. The licensee's corrective actions for the piping leak included replacing the affected piping and performing ultrasonic testing on similar piping for the other trains. During this inspection, NRC inspectors identified that the corrective actions were inadequate in that the ultrasonic testing was not able to examine the area of the piping affected by the erosion as evidenced by the subsequent failure. This finding was determined to be of very low safety significance because the equipment was still capable of performing its intended safety function. A Non-Cited Violation of 10CFR 50 Appendix B, Criterion XVI was identified.

Inspection Report# : [2001015\(pdf\)](#)

Significance: N/A Nov 15, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO FOLLOW OPERATOR REQUALIFICATION PROGRAM PROCEDURAL REQUIREMENTS

No color. The inspectors identified a Non-Cited Violation wherein the facility licensee had failed to follow procedural requirements to evaluate a senior reactor operator (SRO) licensed individual in an SRO licensed position during the year 2001 annual licensed operator requalification examination (10 CFR 55.59). The finding was of very low safety significance because the SRO licensed individual held an "inactive" SRO license (i.e., would not be assigned to licensed duties unless his license was restored to an active status in accordance with 10 CFR 55.53).

Inspection Report# : [2001016\(pdf\)](#)

Significance:  Nov 15, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO MEET 10 CFR 50.65 REQUIREMENTS

On October 24, 2001, the inspectors determined that the licensee failed to count Unit 1 and Unit 2 battery room ventilation system air handling unit drive belt failures as maintenance preventable functional failures and repeat maintenance preventable functional failures where appropriate. The licensee's incorrect assessment of these equipment failures resulted in a failure to develop and implement appropriate action plans for the battery room ventilation systems on Units 1 and 2, assess the Unit 2 battery room ventilation system for (a)(1)classification, and monitor the performance of the systems against licensee-established goals. The failure to properly implement maintenance rule requirements was considered a Non-Cited Violation of 10 CFR 50.65. The risk significance of the issue was determined to be of very low safety significance because the batteries supported by the battery room ventilation systems did not experience an actual loss of safety function.

Inspection Report# : [2001016\(pdf\)](#)

Significance:  Sep 30, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO VERIFY ADEQUATE FILL OF THE HIGH PRESSURE COOLANT INJECTION SYSTEM AS REQUIRED BY TECHNICAL SPECIFICATIONS

On December 27, 2000, the licensee discovered that the high pressure coolant injection system was not filled with water from the pump discharge valve to the system isolation valve following maintenance activities. Technical Specification Surveillance Requirement 4.5.A.1.a.1 required the licensee to verify that the high pressure coolant injection system was filled with water every 31 days. The inspectors determined that greater than 31 days had elapsed since the licensee had verified that the high pressure coolant injection system was properly filled. The failure to perform the surveillance requirement within 31 days also resulted in the high pressure coolant injection system being inoperable for greater than the Technical Specification 3.5.A.3.a.3 allowed outage time of 14 days. The failure to meet the requirements of Technical Specification 3.5.A.3.a.3 and Surveillance Requirement 4.5.A.1.a.1 was considered a Non-Cited Violation. The risk significance of this event was determined to be very low since all remaining mitigation systems were available to provide water to the reactor during an event.

Inspection Report# : [2001014\(pdf\)](#)

Significance:  May 16, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to meet requirement of 10 CFR 50.59.

On June 15, 2000, station personnel removed two of the three rainbow pumps from the site. Quad Cities Updated Final Safety Analysis Report, Section 9.2.5, specifies that portable pumps (called rainbow pumps) of sufficient capacity (5100 gallons per minute) are onsite to provide makeup water to the ultimate heat sink in the event of a Lock and Dam 14 failure on the Mississippi River. The inspectors determined that the licensee had made a change to the facility as described in the Quad Cities Updated Final Safety Analysis Report without first determining if the change required a license amendment, contrary to the requirements of 10 CFR 50.59. The failure to meet the requirements of 10 CFR

50.59 was considered a Non-Cited Violation. The risk significance of this event was determined to be very low due to the very small initiating event frequency of the lock and dam failure, the slow rate of event progression once the initiating event occurs, and the availability of other onsite sources of water not credited in the event analysis.

Inspection Report# : [2001008\(pdf\)](#)

Significance:  Mar 31, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

Surveillance testing involving timing of the Unit 1 and Unit 2 emergency diesel generators shortly after the engines had been shut down from previous runs

Inspectors identified that on two occasions, March 9 and March 27, the licensee performed technical specification required surveillance testing involving timing of the Unit 1 and Unit 2 emergency diesel generators shortly after the engines had been shut down from previous runs. Station procedures were inadequate in prescribing the conditions for performance of the tests. Procedures did not prevent preconditioning of the air start systems, fuel systems, and other engine and electrical components. Inadequate procedures for testing was considered a Non-Cited Violation of 10 CFR Appendix B, Criterion V, "Instruction Procedures and Drawings." The risk significance was very low (Green) because inspectors determined that testing practices had not led to declining performance of the diesel generators (Section 1R22).

Inspection Report# : [2001005\(pdf\)](#)

Significance:  Dec 31, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Place the "A" Train of the Reactor Protection System in the Tripped Condition

On November 6, 2000, the Number 2 turbine control valve fast closure trip failed to cause a half scram as expected during a Unit 2 surveillance test. The licensee then repeated the test three more times and the fast closure trip successfully caused the expected half scram each time. The licensee declared the trip function operable without taking the actions of Technical Specification 3.1.A, Action 1 for an inoperable channel. Generic Letter 91-18 states that repetitive testing to achieve acceptable results without first identifying and correcting the root cause of any problem is not an acceptable means for verifying operability. A subsequent autopsy of the pressure switch for the control valve fast closure trip found evidence of fretting which produced metallic particles believed to have caused the initial failure. The inspectors determined the Number 2 turbine control valve fast closure trip had been declared operable without adequate justification. The failure to implement the required actions of Technical Specification 3.1.A-1 for an inoperable channel of the turbine control valve fast closure trip was considered a Non-Cited Violation (50-265/00-20-01). The finding was determined to be of very low safety significance due to the level of redundancy and diversity of the reactor protection system. During the period of time that the Number 2 turbine control valve fast closure trip was inoperable, a sufficient number of turbine control valve fast closure channels remained operable to result in an automatic scram, if required. Additionally, the turbine control valve fast closure trip is considered an anticipatory trip and, if inoperable, the reactor scram could still have been initiated by the reactor vessel high pressure or the average power range monitor high flux trips.

Inspection Report# : [2000020\(pdf\)](#)

Significance:  Dec 15, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Seal Tops of Electrical Cabinets

The team identified that electrical cabinets in the auxiliary electric equipment room were not sealed at the top to protect equipment from water damage. The failure to seal the top of the cabinets was considered a Non-Cited Violation (NCV 50-254/00-16-01; NCV 50-265/00-16-01) of Operating Licenses DPR-29 and DPR-30, Section h.3.F (Section 1R05.2.b.1). The failure to seal the cabinets, a fire protection feature, involved very low risk (Green) because a fire protection defense-in-depth element, as described by MC 0609, Appendix F, Fire Protection Significance

Determination Process, was not affected.

Inspection Report# : [2000016\(pdf\)](#)

Significance:  Dec 15, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Provide Fire Stops in Cable Trays

The team identified that fire stops were not installed in divisional cable trays for which specified separation had not been maintained. The failure to install fire stops was considered a Non-Cited Violation (NCV 50-254/00-16-02; NCV 50-265/00-16-02) of Operating Licenses DPR-29 and DPR-30, Section H.3.F (Section 1R05.2.b.2). The failure to install fire stops, a fire protection feature, involved very low risk (Green) because a fire protection defense-in-depth element, as described by MC 0609, Appendix F, Fire Protection Significance Determination Process, was not affected.

Inspection Report# : [2000016\(pdf\)](#)

Significance:  Nov 20, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Surveillance testing for torus temperature instrumentation components required by Technical Specification 4.2.F.1 had not been performed since installation in 1990 and 1991.

On October 4, 2000, the licensee identified that surveillance testing for torus temperature instrumentation components required by Technical Specification 4.2.F.1 had not been performed since installation in 1990 and 1991. Condition Report Q2000-03512 was written to address the issue. Failure to perform testing of the instrumentation was considered a Non-Cited Violation of Technical Specification 4.2.F.1 (Section 4OA3). Failure to check instrument accuracy by this 18-month surveillance for Unit 1 and Unit 2 involved very low risk because when the surveillance was subsequently performed, instrument accuracy of the temperature indication loop was within acceptable tolerance.

Inspection Report# : [2000015\(pdf\)](#)

Significance:  Sep 30, 2000

Identified By: NRC

Item Type: FIN Finding

Inadequate operability documentation forms for Problem Identification Form Q2000-2372, regarding a design deficiency for Units 1 and 2 high pressure coolant injection motor speed changers

The inspectors found that the July 3 and August 23, 2000 supporting operability documentation forms for Problem Identification Form Q2000-2372, regarding a design deficiency for Units 1 and 2 high pressure coolant injection motor speed changers, did not adequately support the operability of the system. Inspectors reviewed the risk significance of the motor speed changer being inoperable and found the risk to be very low (GREEN) since the change to core damage frequency was less than E-6/year. In addition, operators were briefed on the potential problems with the system, and the licensee installed design changes to correct the problem on both units (Section 1R15).

Inspection Report# : [2000014\(pdf\)](#)

Significance:  Sep 30, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Degraded condition of fire door 128

On September 15, the inspectors determined that the bottom latch in the inactive leaf of door 128, a 3-hour rated fire door, was not properly latched. The fire protection engineer determined that the degraded door also resulted in the inoperability of the emergency diesel generator room carbon dioxide fire suppression system. This finding constituted a violation of Quad Cities Operating Licensee DPR-29. This violation is being treated as a Non-Cited Violation (50-265/00-14-01), consistent with Section VI.A.1 of the May 1, 2000, Enforcement Policy (Section 1R05). The inspectors

evaluated the degraded condition of fire door 128 using the fire protection Significance Determination Process, and evaluation techniques discussed with Senior Risk Analysts and Fire Protection Engineers in Region III and NRR. Since the degradation of the fire door was minimal, and the area of the turbine building directly in front of the door (within 15 to 20 feet) was relatively free of combustibles and cables, the inspectors determined that the possibility of a fire in the Unit 2 emergency diesel generator room spreading to damage the shared emergency diesel generator was not credible. Therefore the significance of this finding was considered very low (GREEN).

Inspection Report# : [2000014\(pdf\)](#)



Significance: G Sep 30, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to implement modifications to correct a previously identified design deficiency which could have made the motor speed changer inoperable in accident situations

Inspectors found that the licensee failed to implement modifications to correct a previously identified design deficiency which could have made the motor speed changer inoperable in accident situations. The failure to implement corrective actions for this condition was a violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action." This violation is being treated as a Non-Cited Violation (50-254/00-14-02; 50-265/00-14-02), consistent with Section VI.A.1 of the May 1, 2000, Enforcement Policy. The inspectors found that the risk significance for internal and external events was very low (GREEN) since unavailability of the high pressure coolant injection system resulted in a change to core damage frequency of less than E-6/year. The licensee implemented modifications on both units to correct the design deficiency (Section 1R15).

Inspection Report# : [2000014\(pdf\)](#)

Significance: N/A Sep 15, 2000

Identified By: NRC

Item Type: FIN Finding

WHITE Performance Indicators for Units 1 and 2 Safety System Functional Failures

The licensee's August 14, 2000, root cause report for the high number of safety system functional failures on both units listed three root causes: inadequate knowledge of complex systems, a system vice functional focus, and inadequate integration of the new NRC inspection program into the station's processes. Corrective actions listed by the licensee included: Maintenance department clarification of expectations for troubleshooting, Engineering department revision of a troubleshooting procedure to require formal troubleshooting plans, Regulatory Affairs requirement for root cause evaluation of any performance indicator which is "threatened" (less than 50 percent margin to the WHITE threshold), Regulatory Affairs requirement for root cause evaluations to include a section on cumulative effects of the system failure on a "threatened" performance indicator, Regulatory Assurance modification of corrective action program to implement root cause requirements for a "threatened" performance indicator, Plant Health Committee requirement for monthly review of performance indicators, development or revision of process to address a cumulative focus on NRC Mitigating Systems Cornerstone and functional health, Engineering action to expand use of formal troubleshooting techniques and enhance troubleshooting skills and troubleshooting procedure. The inspectors found no current concerns with the individual root cause reports for these issues. Inspectors validated the licensee assertion that poor troubleshooting and poor root causes were an issue at Quad Cities. Two of the ten events from the individual root cause evaluations were repeats of earlier events, and the root cause efforts were not effective initially. Inspectors found weaknesses in the overall root cause report for the multiple safety system functional failures as follows: • The overall root cause evaluation failed to incorporate one of two February 2000 events. Human performance events did not get full coverage in the overall root cause, some events for the safety system functional failures involving human performance were not included. • The evaluation was focused on problems which would cause an NRC performance indicator change, and to a lesser amount on why such a large number of failures were occurring at Quad Cities. The report listed actions to review another method for trending cumulative impact of failures, but another method was not ready for review at the end of the inspection. The inspectors determined that the licensee's search for similar failures focused on the recently instituted category of "performance indicator" and thereby eliminated a number of previous safety system functional failures that occurred in 1997 and 1998. • The corrective action for troubleshooting failed to incorporate the operations department, and only focused on maintenance and engineering. Although the licensee did not entirely agree with all of the weaknesses identified by the inspectors, nevertheless, the licensee revised several of the root cause evaluations to ensure appropriate actions were developed to address the inspector's concerns.

Inspection Report# : [2000013\(pdf\)](#)

Significance:  Sep 15, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

One corrective action problem was found on August 16, 2000, and involved a previously identified design deficiency with the high pressure coolant injection system

One corrective action problem was found on August 16, 2000, and involved a previously identified design deficiency with the high pressure coolant injection system. Problem Identification Form Q1997-04485 documented that the auto initiation signal for high pressure coolant injection did not electrically seal in as described in the updated final safety analysis. However, the tracking item for correcting this problem was closed without corrective action being completed. Condition Report Q2000-02954 was written to again track corrective actions to this problem. This was considered a Non-Cited Violation (NCV) of Criterion XVI, "Corrective Action," of 10 CFR 50, Appendix B. Inspectors considered this problem to be of very low risk significance (GREEN) since it would not have prevented the system from starting automatically or being initiated manually.

Inspection Report# : [2000013\(pdf\)](#)

Significance:  Aug 15, 2000

Identified By: NRC

Item Type: FIN Finding

Contribution of fire risk to core damage frequency associated with the safe shutdown makeup pump discharge valve being in a degraded condition.

On July 19 during a regulatory conference, the licensee discussed the contribution of fire risk to core damage frequency associated with the safe shutdown makeup pump discharge valve being in a degraded condition. Based on the information presented during the conference, the NRC concluded that this condition was of very low safety significance due to the short duration (2 days) the condition existed.

Inspection Report# : [2000011\(pdf\)](#)

Significance: N/A May 16, 2000

Identified By: NRC

Item Type: FIN Finding

Surveillance Testing

During logic testing on March 21, 2000, the Unit 1 high pressure coolant injection auxiliary oil pump failed to properly operate. This condition rendered the system inoperable for automatic initiation for approximately one year. The risk from internal events for this condition was determined to be very low (GREEN) in Inspection Report 50-254/2000003; 50-265/2000003. The effect on risk due to external events, specifically fires, was determined to be potentially significant during a preliminary Significance Determination Process review. However, this issue was also the substantial contributor to a YELLOW high pressure coolant injection unavailability performance indicator, which represents performance that minimally reduces safety margin and requires NRC oversight. Therefore, the NRC considers the inspection findings and the performance indicator to be a single issue and agency action will be determined based on application of the Action Matrix for the YELLOW performance indicator.

Inspection Report# : [2000005\(pdf\)](#)

Significance:  Feb 29, 2000

Identified By: NRC

Item Type: FIN Finding

Safe Shutdown Makeup Pump Valve Failure

On January 19, 2000, during planned maintenance activities, maintenance workers determined that the safe shutdown makeup pump system was inoperable due to a Unit 2 safe shutdown makeup pump injection valve failure to operate. The valve failure was evaluated using the Significance Determination Process and was found to be of very low risk significance because all other mitigating systems were available.

Inspection Report# : [2000001\(pdf\)](#)

Significance:  Feb 29, 2000

Identified By: NRC

Item Type: FIN Finding

Unit 2 Automatic Depressurization System Valves Taken Out-Of-Service in Mode 3

On January 22, 2000, operators did not recognize entry into a Technical Specification action statement when relief valves were removed from service with the reactor in Mode 3. Upon discovery, about 4-1/2 hours later, the valves were returned to service. The Technical Specification action statement was not exceeded. The unavailability of the relief valves was evaluated by the NRC's Senior Reactor Analyst as part of the Significance Determination Process for shutdown issues. This issue was determined to be of very low risk significance because the reactor was in hot shutdown with vessel pressure at approximately 50 psig.

Inspection Report# : [2000001\(pdf\)](#)

Significance:  Feb 29, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Emergency Diesel Generator Ventilation Power Supply Switch Out of Position

On January 28, 2000, with Unit 1 operating at full power and with Unit 2 in Mode 5 (refuel), an operator identified that the Unit 2 emergency diesel generator room ventilation fan power select switch was selected to the Unit 1 power supply. The Unit 2 emergency diesel generator was inoperable, but remained available for service. Since the shared emergency diesel generator was already inoperable to Unit 2, this condition left no operable emergency diesel generators for Unit 2. This issue is considered a non-cited violation consistent with the Interim Enforcement Policy for pilot plants. This issue was considered to be of very low safety significance because the Unit 1 diesel generator would not have been overloaded by the Unit 2 emergency diesel generator room ventilation fan. The Unit 2 emergency diesel generator was also available.

Inspection Report# : [2000001\(pdf\)](#)

Significance:  Feb 29, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Post Maintenance Testing

On February 10, 2000, with Unit 2 in startup mode, the high pressure coolant injection pump failed to start during testing due to incomplete maintenance. A maintenance foreman erroneously signed off the work package as being completed when it was not. This issue is considered a non-cited violation consistent with the Interim Enforcement Policy for pilot plants. This issue was of very low risk significance since the system pressure was low, decay heat was low, and redundant methods of inventory injection were either operating or available.

Inspection Report# : [2000001\(pdf\)](#)

Significance:  Feb 29, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Too Few Intermediate Range Nuclear Instruments During Refueling

From February 1 through 5, 2000, Unit 2 had less than the number of operable intermediate range nuclear instruments per channel (three) for the reactor protective system required by Technical Specification 3.1.A. Only two of four instruments were operable on the "B" channel and three of four were operable on the "A" channel. During this time, the reactor was in Mode 5 (refuel) and operators performed core alterations by moving irradiated fuel in the vessel. This issue is considered a non-cited violation consistent with the Interim Enforcement Policy for pilot plants Unit 2 was in cold shutdown with all control rods inserted. This issue was determined to be of very low risk significance because

shutdown margin calculations and refueling interlocks provided assurance of adequate shutdown margin. Source range nuclear instruments provided a rod block function during refueling. Intermediate range nuclear instrument indication would not have been available until after the point where a reactivity excursion had occurred because the neutron level during refueling operations was too low for the intermediate range nuclear instruments.

Inspection Report# : [2000001\(pdf\)](#)

G

Significance: Jan 19, 2000

Identified By: NRC

Item Type: FIN Finding

Corrective Action Deficiencies Related to Heaters in the Contaminated Condensate Storage Tanks Allowed Degradation of the Heaters

The inspectors found that corrective action deficiencies related to heaters in the contaminated condensate storage tanks allowed degradation of the heaters to the extent that high pressure injection systems could have been adversely affected. The risk significance for the loss of heaters in the contaminated condensate storage tanks was low, partially because both units were shut down during times when the high pressure injection sources could have been rendered inoperable due to lack of sufficient tank heating.

Inspection Report# : [1999025\(pdf\)](#)

G

Significance: Jan 19, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Contaminated Condensate Storage Tank Heaters Inoperable

The inspectors found that design control deficiencies related to heaters in the contaminated condensate storage tanks allowed degradation of the heaters to the extent that high pressure injection systems could have been adversely affected. Modifications to the system did not evaluate the facility change as required by 10 CFR 50.59. This was considered to be a non-cited violation of 10 CFR 50.59. This issue was first documented by the licensee in August 1999 and addressed in Inspection Report 50-254/99020; 50-265/99020. The risk significance for the loss of heaters in the contaminated condensate storage tanks was low, partially because both units were shut down during times when the high pressure injection sources could have been rendered inoperable due to lack of sufficient tank heating.

Inspection Report# : [1999025\(pdf\)](#)

G

Significance: Dec 03, 1999

Identified By: NRC

Item Type: FIN Finding

Corrective Actions for a Design Control Problem with Software Backups were not Timely or Complete

The inspectors found that two failures of a high pressure coolant injection valve to close in September and October 1999 were not properly classified in the maintenance rule program. Licensee engineers initially failed to consider the second failure of the 1-2301-5 valve to close on October 4, 1999, as a repetitive maintenance preventable functional failure, and failed to monitor the system under (a)(1) of the maintenance rule. This is considered an unresolved item. The valve failure was found to be of low risk significance because the inboard isolation valve was available.

Inspection Report# : [1999023\(pdf\)](#)

G

Significance: Nov 19, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Ensure ADS Valves Qualified for Minimum Possible Voltage

Four of the five Unit 1 automatic depressurization system relief valves were not initially qualified for the degraded voltage conditions that would be seen under accident conditions. The licensee had not originally accounted for the voltage drop that would occur between the station batteries and the valve solenoids when specifying the minimum

voltage for which the valves needed to be qualified. The licensee subsequently identified a test report, done for another nuclear station, which qualified the valves to a lower voltage. The inspectors, in conjunction with the Office of Nuclear Reactor Regulations, reviewed the test and accepted it under condition that a ten volt penalty be applied to account for some test deficiencies. The licensee also performed calculations to show that the actual available voltage to the valves, under degraded conditions, was above the accepted minimum voltage. A non-cited violation was identified.

Inspection Report# : [1999021\(pdf\)](#)

G

Significance: Oct 20, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Promptly Correct Control Room Emergency Ventilation System Deficiency

The inspectors identified two examples of inadequate corrective action regarding the Units 1 and 2 safety-related control room emergency ventilation system. In 1995 the licensee identified emergency diesel generator overloading concerns and degraded voltage concerns. This degraded and nonconforming condition was not corrected, and the design basis for the emergency diesel generator system and control room emergency ventilation system were not changed to reflect the condition. Also, safety-related electrical drawing discrepancies with the control room emergency ventilation system were identified in 1997 and never corrected. A non-cited violation for 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action" with two examples was identified. In utilizing the Significance Determination Process, this issue was determined to have low risk significance because control room habitability was assumed to be maintained for the 1 hour to start control room cooling and, therefore, there was no impact on the ability of control room operators to operate the required mitigating systems. Also, the design basis event was estimated to have a very low initiating event frequency (Section 1R16).

Inspection Report# : [1999020\(pdf\)](#)

G

Significance: Sep 08, 1999

Identified By: NRC

Item Type: FIN Finding

A grounded resistor in the governor circuit that caused a failure of the Unit 2 reactor core isolation cooling pump

On August 26, 1999, the licensee identified a grounded resistor in the governor circuit that caused a failure of the Unit 2 reactor core isolation cooling pump. The inspectors used the significance determination process to identify this event as having very low safety significance for the loss of offsite power initiating event due to the availability of other mitigating equipment (Section 1R22.2).

Inspection Report# : [1999018\(pdf\)](#)

G

Significance: Sep 08, 1999

Identified By: NRC

Item Type: FIN Finding

Motor-operated valve dynamic testing

During motor-operated valve dynamic testing on August 4, 1999, the Unit 1 residual heat removal cross-tie valve (19A) failed to fully close. However, approximately one month after the failure occurred, the licensee's corrective action program did not include a plan to determine the cause of the failure or to address any potential generic considerations for other valves (Section 1R22.1). No safety functions were affected and no risk increase resulted from this particular valve failure.

Inspection Report# : [1999018\(pdf\)](#)

Significance: N/A Sep 08, 1999

Identified By: NRC

Item Type: FIN Finding

Removal of a high pressure injection pump in parallel with testing on an emergency diesel generator

On two occasions, the licensee's work authorization process allowed removal of a high pressure injection pump in

parallel with testing on an emergency diesel generator. The inspectors identified that on one occasion, planned conditional core damage probability was increased to greater than that allowed by licensee administrative procedures. The actual risk was lower because the licensee did not perform the work on both systems together. The significance of this finding was not assessed by the significance determination process due to the instantaneous risk involved and the fact that the work was not performed as planned following NRC discussions with plant management (Section 1R13).
Inspection Report# : [1999018\(pdf\)](#)

Significance:  Sep 03, 1999

Identified By: NRC

Item Type: FIN Finding

Copy of post-modification test not retained

The inspectors identified that the Unit 1 post modification test for a design change package on the fuel transfer pump was not retained by the licensee. This item had very low risk significance. The licensee had retained the Unit 2 test and had signature evidence that the Unit 1 test was performed.

Inspection Report# : [1999017\(pdf\)](#)

Significance:  Jul 20, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Corrective Action for Flooding Procedures.

Corrective actions were not implemented for an inadequate flood protection procedure originally identified by the licensee in 1997. The procedures did not provide adequate instructions to protect the plant structurally under the forces of severe flood waters. This issue was inappropriately closed in the corrective action program without resolution. This was a non-cited violation for inadequate corrective action. A qualitative risk assessment of the impact of the procedure deficiencies concluded that the issues were of low risk significance since adequate time would be available to make procedure changes and take action during a flooding event. (Section 1R06).

Inspection Report# : [1999011\(pdf\)](#)

Significance:  Jul 16, 1999

Identified By: NRC

Item Type: FIN Finding

Corrective actions to address a Unit 1 emergency diesel generator failure

Corrective actions to address a January 1998 Unit 1 emergency diesel generator (EDG) failure to start were postponed in some cases and in others only partially completed. (Reference Report Section 4OA1.3, page 5) This item was categorized by the significance determination process as being of low risk significance based on occasional EDG start failures, redundant EDGs and available off site power.

Inspection Report# : [1999012\(pdf\)](#)

Significance:  Jul 16, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Excessive thrust conditions, found during testing of motor operated valves

Excessive thrust conditions, found during testing of motor operated valves (MOVs) from March 1997 through July 2, 1999, were not identified to management and did not receive appropriate corrective action to preclude recurrence. As a result, the cause of the problem was not identified and appropriate corrective action was not taken. This is a non-cited violation. This item was categorized by the significance determination process as being of low risk significance.

(Reference Report Section 4OA1.4) Since nine of the ten valves found outside the acceptable thrust windows functioned as required during testing, the issue was determined to be of low risk significance and was categorized as "Green."

Inspection Report# : [1999012\(pdf\)](#)

Significance:  Jul 15, 1999

Identified By: NRC

Item Type: FIN Finding

The surveillance procedure for evaluating thermal performance of the residual heat removal heat exchangers

The surveillance procedure for evaluating thermal performance of the residual heat removal heat exchangers contained errors which resulted in the licensee overestimating the heat removal capability of the 1A heat exchanger. This item had very low risk significance, since the heat exchanger was still capable of removing its design heat load.

Inspection Report# : [1999014\(pdf\)](#)

Significance:  Jul 15, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Three Examples of Design Control Relating to Original Plant Design

A non-cited design control violation with multiple examples was identified during close out of two unresolved items from the architect-engineer inspection (50-254/265-98201). The issues dealt with ensuring adequate net positive suction head for the emergency core cooling system pumps, ensuring the residual heat removal service water piping was analyzed for its design condition, and determining the adequacy of a thermal relief valve. All the examples in the Non-Cited Violation resulted from original design deficiencies. The licensee's analyses showed that the pumps were operable. Therefore, this issue screened out of the significance determination process as having very low risk significance

Inspection Report# : [1999014\(pdf\)](#)

Barrier Integrity

Significance:  Nov 20, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Three examples of failure to follow procedures.

On November 3, 2000, the 1B channel of the reactor protective system flow biased neutron flux trip was found to be inoperable during reactor startup from the Unit 1 refueling outage 16. The licensee determined that poor wiring practices, poor second verification practices, and inadequate post maintenance testing of nuclear instrumentation wiring led to the malfunction. Maintenance workers failed to follow the wiring requirements in the work request, did not use lift and land sheets when removing and re-terminating the wires, and failed to label the wires which were lifted during the maintenance activity. Failure to follow the procedure (work request) for wiring was considered an example of a Non-Cited Violation. The risk significance of this event was very low because of the short amount of time that the unit was in Mode 1, because the "A" channel of flow biased trip setpoints was still operable, and because the wiring error actually caused the flow biased neutron flux trip to be more conservative (Example A). On October 14, 2000, during disassembly of the Unit 1 reactor for refueling outage 16, reactor service technicians opened a flanged connection of the reactor head vent piping with approximately 5 to 8 psig steam pressure still in the reactor vessel and initiated a steam release to the refueling floor area which lasted for several hours. Numerous procedural, process, and communication problems contributed to the event. Personnel safety, procedure adherence, procedure adequacy, and lack of control of reactor vessel disassembly activities were all concerns brought out by this event. The failure to follow procedures during vessel disassembly was considered an example of a Non-Cited Violation. The risk significance was evaluated as very low because the amount of reactor vessel inventory released to secondary containment was very low, and secondary containment integrity requirements were met (Example B). On October 22, 2000, workers attempting to replace a local power range monitor inadvertently lifted the local power range monitor tube off its seat in the reactor

vessel bottom head. This caused highly contaminated radioactive water from the bottom of the reactor vessel to drain directly onto the workers. The draining stopped immediately after the local power range monitor tube was released and reseated back into the vessel. One worker was contaminated such that a meter held to his body read 5 rem per hour on contact. Extraordinary actions by radiation protection workers resulted in the removal of the majority of the highly contaminated material quickly, such that the overall external shallow dose equivalent for the individual was estimated at 2.784 rem, and the internal dose received by the worker was estimated at 45 millirem. Problems involved in this event included workers not adhering to the instructions by radiation protection technicians, workers not having procedures with them and performing steps of two different procedures concurrently, and workers not informing operators or radiation protection technicians that they were taking actions that could allow water to be drained from the reactor vessel. In addition, the procedures were not adequate to control the work. The failure to follow procedures during local power range monitor replacement was considered an example of a Non-Cited Violation. The safety significance of this event was very low because sufficient makeup capacity to fill the vessel was available even if the local power range monitor failed to reseal, the local power range monitor tube was reseated quickly and the reactor vessel drainage stopped, and the contamination was mostly external and was removed quickly (Example C).

Inspection Report# : [2000015\(pdf\)](#)

Significance:  Jun 30, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Corrective Action for Delinquent ASME Code Work Packages

The inspectors identified a failure of the corrective action program where ASME Code Class 1, 2 and 3 Replacement and Repair program requirements for work package reviews were not met. On four occasions the licensee did not realize that the Code work packages were not meeting 10 CFR 50.55a ASME Code requirements. In each case, corrective actions were not taken to correct the situation. Failure to promptly identify and correct the failure to meet ASME code requirements for work packages was considered a Non-Cited Violation of 10 CFR 50, Appendix B, Criterion XVI. The safety significance of this issue was considered very low based on the absence of adverse consequences and the fact that no technical problems were identified.

Inspection Report# : [2000008\(pdf\)](#)

Significance:  Jan 19, 2000

Identified By: NRC

Item Type: FIN Finding

Failure not classified as a functional failure under the Maintenance Rule

A failure of a Unit 2 containment spray system valve was not properly classified as a maintenance rule functional failure under the maintenance rule program. This individual classification failure was corrected and did not impact the licensee's ability to demonstrate maintenance effectiveness for the system. The valve failure was considered to be of low risk significance using the Significance Determination Process because the other train of containment spray was fully functional.(Section 1R12)

Inspection Report# : [1999025\(pdf\)](#)

Significance:  Jan 19, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Overthrust of Motor-Operated Valve 2-1001-34A

During surveillance testing on December 12, 1999, residual heat removal torus spray/test return valve 2-1001-34A closed with 116,831 pounds of thrust which was almost double the previous as-left thrust setting of the valve. This value also exceeded the seismic thrust limit for the valve. Corrective actions recommended to determine extent of condition after failure of a similar valve in 1998 were not taken. This was considered to be a non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI. The excessive thrust problem was considered to have low risk significance because the valve remained operable.

Inspection Report# : [1999025\(pdf\)](#)

Significance:  Sep 08, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to promptly correct a design deficiency with the standby gas treatment system.

The licensee discovered during surveillance testing on August 23, 1999, that both standby gas treatment trains may not have functioned as designed during a postulated loss of Bus 19. The item had been previously identified in 1992 but not adequately corrected. No design change or design evaluation justifying the degraded condition had been performed.

Failure to take corrective action for this design problem was a Non-cited Violation of Criterion XVI of 10 CFR Part 50, Appendix B. This problem resolution violation could not be classified with a risk significance due to its programmatic nature. However, since 1992 the inspectors were not aware of any failures of the administrative controls that would have jeopardized standby gas treatment operability. Therefore, from an equipment standpoint, this finding has a very low risk significance (Section 4OA1).

Inspection Report# : [1999018\(pdf\)](#)

Significance:  Jul 20, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Secondary Containment Penetration.

Secondary containment integrity did not exist from 1981 until May 1997 due to an unsealed 1 inch diameter penetration. This was a non-cited violation of Technical Specification 3.7 (Section 4OA3). This issue had very low risk significance. Test results showed that the standby gas treatment system could still maintain negative pressure in secondary containment with leak pathways up to 4 inches in diameter.

Inspection Report# : [1999011\(pdf\)](#)

Emergency Preparedness

Occupational Radiation Safety

Significance: N/A Jul 13, 2001

Identified By: NRC

Item Type: FIN Finding

A supplemental inspection was performed by the NRC to assess the licensee's evaluation associated with the failure to provide adequate radiological planning to maintain radiological doses as-low-as

is-reasonably-achievable (ALARA)
This supplemental inspection was performed by the NRC to assess the licensee's evaluation associated with the failure to provide adequate radiological planning to maintain radiological doses as-low-as-is-reasonably-achievable (ALARA) during the Fall 2000 Unit 1 outage. This performance issue was previously characterized as having low to moderate risk significance (White) in NRC Inspection Report No. 50-254/00-18(DRS) and 50-265/00-18(DRS). During this supplemental inspection, performed in accordance with Inspection Procedure 95001, the inspector concluded that the licensee performed a comprehensive evaluation of the radiological planning weaknesses. The licensee's evaluation attributed the planning weaknesses to ineffective job management by the radiation protection and construction staffs (root cause). In determining the root cause, the licensee identified contributing factors which included ineffective management of work force changes and drywell temperature control, inadequate monitoring of job duration and identification of changes in duration, and inadequate consideration of work location dose rates and contamination levels when developing revised job dose estimates. The inspector reviewed the licensee's corrective actions, both completed and planned, and concluded that the corrective actions appeared to address the identified root cause and contributing causes. In particular, the licensee implemented an ALARA job standard to provide additional guidance to the staff for identifying and managing changes in radiological work. The purpose of the job standard was to fully identify the

changes (both prior to the work and based on the as-found conditions) and to communicate the changes to the station ALARA committee so that the planning could be adequately evaluated to determine if replanning was necessary. Initial implementation of the standard during the Spring 2001 Unit 1 recirculation pump seal replacement was adequate; however, the inspector observed weaknesses in the understanding of staff concerning when the standard was to be applied. Due to the licensee's acceptable performance in assessing the radiological planning problems, the White finding associated with this issue will only be considered in assessing plant performance for a total of four quarters in accordance with the guidance in NRC Manual Chapter 0305, "Operating Reactor Assessment Program."

Implementation of the licensee's corrective actions will be reviewed during a future inspection.

Inspection Report# : [2001013\(pdf\)](#)



Significance: Nov 27, 2000

Identified By: NRC

Item Type: FIN Finding

Radiological dose for the Safety Relief Valve (SRV) replacement work results in a determination of a White Finding.

Planning problems caused the dose for the Safety Relief Valve (SRV) replacement work completed during refueling outage Q1R16 to exceed its projected dose by more than 50 percent. Elevated dose rates were encountered in the drywell as a result of cobalt 60 plate-out. The drywell cooling/ventilation system was out of service for maintenance and testing, significantly elevating temperatures in the drywell. Also, less experienced workers performed the SRV job NRC Supplemental Inspection (Report 50-254/01-13, 50-265/01-13): During this supplemental inspection, performed in accordance with Inspection Procedure 95001, the inspector concluded that the licensee performed a comprehensive evaluation of the radiological planning weaknesses. The licensee's evaluation attributed the planning weaknesses to ineffective job management by the radiation protection and construction staffs (root cause). In determining the root cause, the licensee identified contributing factors which included ineffective management of work force changes and drywell temperature control, inadequate monitoring of job duration and identification of changes in duration, and inadequate consideration of work location dose rates and contamination levels when developing revised job dose estimates. The inspector reviewed the licensee's corrective actions, both completed and planned, and concluded that the corrective actions appeared to address the identified root cause and contributing causes. In particular, the licensee implemented an ALARA job standard to provide additional guidance to the staff for identifying and managing changes in radiological work. The purpose of the job standard was to fully identify the changes (both prior to the work and based on the as-found conditions) and to communicate the changes to the station ALARA committee so that the planning could be adequately evaluated to determine if replanning was necessary. Initial implementation of the standard during the Spring 2001 Unit 1 recirculation pump seal replacement was adequate; however, the inspector observed weaknesses in the understanding of staff concerning when the standard was to be applied. Due to the licensee's acceptable performance in assessing the radiological planning problems, the White finding associated with this issue will only be considered in assessing plant performance for a total of four quarters in accordance with the guidance in NRC Manual Chapter 0305, "Operating Reactor Assessment Program." Implementation of the licensee's corrective actions will be reviewed during a future inspection.

Inspection Report# : [2000018\(pdf\)](#)

Inspection Report# : [2001013\(pdf\)](#)

Public Radiation Safety



Significance: Jul 02, 1999

Identified By: NRC

Item Type: FIN Finding

Lack of Documentation for Offsite Dose Calculation Manual Revisions

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

low risk significance based on the results of the independent technical review.

Inspection Report# : [1999013\(pdf\)](#)

Physical Protection

Significance: N/A Jun 14, 2001

Identified By: NRC

Item Type: FIN Finding

A supplemental inspection was performed to assess the licensee's root cause evaluation related to exercise failures during two of four force-on-force contingency exercises.

This supplemental inspection was performed to assess the licensee's root cause evaluation related to exercise failures during two of four force-on-force contingency exercises. This performance issue was characterized as a White finding having a low to moderate risk significance in NRC Inspection Report No. 50-254; 265/00-201. This supplemental inspection determined that the licensee had performed a comprehensive evaluation which identified the root cause and contributing factors associated with the exercise failures noted above. The licensee's evaluation identified that the root cause of the exercise finding was a failure to effectively accomplish exercise control activities. Contributing factors were human performance errors by some security force response personnel and controllers, a lack of effective controller training, vulnerabilities in some defensive positions, and command and control activities. Licensee corrective actions were implemented to address the root cause and each contributing factor. Those actions appeared effective in correcting the identified deficiencies. Therefore, the White performance finding associated with the exercise failures was closed.

Inspection Report# : [2001011\(pdf\)](#)



Significance: G Nov 17, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

An unattended security storage container containing Safeguards Information was found unlocked and open for approximately two hours.

An unattended security storage container containing Safeguards Information was found unlocked and open for approximately two hours (Section 40A3). The inspector reviewed the risk significance of this finding and determined the risk to be very low since no Safeguards Information was compromised and there have not been greater than two similar findings in four quarters.

Inspection Report# : [2000019\(pdf\)](#)



Significance: W Jun 23, 2000

Identified By: NRC

Item Type: FIN Finding

Contingency Response Performance Deficiencies

Deficiencies were noted in the licensee's performance in the contingency response element of the Physical Protection Cornerstone. (The details of this finding are Safeguards Information and are required to be withheld from public disclosure.)

Inspection Report# : [2000201\(pdf\)](#)

Miscellaneous

Significance: SL-IV Aug 14, 2001

Identified By: NRC

Item Type: VIO Violation

FAILURE TO ACCURATELY REPORT PERFORMANCE INDICATOR INFORMATION

The inspectors identified that the licensee failed to report fault exposure hours for the failure of a fuel oil transfer solenoid valve to open during the Unit 2 emergency diesel generator (EDG) 18 month endurance test. The second quarter 2001 data reported to the NRC showed no fault exposure hours recorded for Unit 2 EDG. However, the inspectors found that fault exposure hours from a failed endurance run on May 1, 2001, should have been reported since only the time of the failure's discovery was known with certainty. Fault exposure hours going back to the last successful load test of the EDG on January 14, 2000, were not included in the licensee's July 2001 performance indicator data submittal for the Unit 2 Emergency Alternating Current (AC) - Safety System Unavailability performance indicator. Had the performance indicator data been properly reported, the performance indicator color would have been Red. Failure to properly report the performance indicator was considered a Severity Level IV violation of 10 CFR 50.9.

Inspection Report# : [2001012\(pdf\)](#)

Significance: N/A May 25, 2001

Identified By: NRC

Item Type: FIN Finding

Adverse performance trend.

The corrective actions to prevent recurrence for an event that resulted in an inadvertent steam release during a breach of the reactor pressure boundary proved to be ineffective to prevent a similar event that occurred six months later.

Additionally, corrective actions for the second event were narrow in scope and did not address the aspects in common with the first event. Condition report Q2001-01976 was issued to address the potential common issues. The inspectors concluded that the issue was more than minor since the failure to fully identify and correct deficiencies could be reasonably viewed as a precursor to a significant event. The inspectors reviewed the applicability of the issue with respect to program cornerstones and determined that the issue did not impact a cornerstone. However, this issue contained extenuating circumstances in that the full extent of condition for the October event was not completely identified and corrected, allowing a similar event in April. The combination of these two events indicates an adverse performance trend.

Inspection Report# : [2001009\(pdf\)](#)

Significance: N/A May 25, 2001

Identified By: NRC

Item Type: FIN Finding

Corrective action program problems.

The inspectors concluded that in general the corrective action program was a complete program containing all the necessary attributes to successfully identify and correct issues at Quad Cities. However, over the past year there were several instances of difficulties with problem identification, evaluation and resolution. Most of these were documented in previous findings and violations in inspection reports. In general, these issues have been recognized, and actions have been taken to address them. For most of the issues it is too soon to fully evaluate the effectiveness of these actions so effectiveness is still to be determined. During this inspection, three areas of corrective action program problems were identified. These were the failure to properly implement the M&TE program, several instances when condition reports should have been written and they were not, and, failure to address common causes for similar steam release events on the reactor vessel during the October refueling outage, and in the April maintenance outage.

Inspection Report# : [2001009\(pdf\)](#)

Significance: N/A May 25, 2001

Identified By: NRC

Item Type: FIN Finding

Test problems on condition reports not identified.

In May of 2001, an inspector observing a surveillance noted that instrument maintenance technicians had difficulty conducting calibrations of differential transmitters on the Unit 2 station blackout diesel air intake filter differential pressure detectors. The results were not repeatable and indicated some out-of-tolerance readings on both instruments. No condition reports were generated for either the difficulty with the tests or the apparent out-of-tolerance results until inspectors intervened. Condition Report Q2001-1549 was issued 12 days later and subsequently, Condition Reports Q2001-1474 and Q2001-1475 were written for the out-of-tolerance readings. The inspectors reviewed the significance

of not identifying test problems on condition reports and concluded that the issue was more than a minor issue because if left uncorrected, the issue could become a more significant safety concern. The actual effect on the station blackout diesel was minimal since it did not directly impact operation of the equipment and another diesel was available. However, this corrective action finding is a cross-cutting issue for corrective action process performance and is assigned No Color.

Inspection Report# : [2001009\(pdf\)](#)

Significance: N/A May 25, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to assure that measuring and test equipment was properly calibrated.

In April of 2001, the station Nuclear Oversight staff identified that measurement and test equipment which was found to be out-of-calibration during post-use verifications was not evaluated as required by plant procedure. Also, condition reports on these out-of-tolerance conditions were not written when required by procedures. The licensee initiated a review which identified 159 items of out-of-tolerance equipment which had not been evaluated appropriately. The use of these items was evaluated and appropriate recovery actions taken. Failure to assure that measuring and test equipment used in 2000 and 2001 was properly calibrated was a Non-Cited Violation of 10 CFR 50, Appendix B. The inspectors reviewed the significance of not evaluating out-of-tolerance equipment and determined that the issue was more than a minor issue because if left uncorrected, the issue could become a more significant safety concern. However, since this is a corrective action concern, and no specific cornerstone was impacted, this item is assigned No Color.

Inspection Report# : [2001009\(pdf\)](#)

Significance: N/A May 16, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to report performance indicator data accurately.

Inspectors found that the licensee reported safety system functional failure data improperly. The improperly reported safety system functional failure involved failure of the Unit 2 intermediate range nuclear monitors. Had this been reported properly, it would have caused the safety system functional failure performance indicator for Unit 2 to cross the threshold from Green to White in the first quarter of 2000. The actual submittal showed performance indicator data in the licensee response or Green band. Because a performance indicator would have changed from Green to White, this was considered a Non-Cited Violation of 10 CFR 50.9.

Inspection Report# : [2001008\(pdf\)](#)

Significance: N/A Dec 15, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Technical Errors in Appendix R Safe Shutdown Procedures

The inspectors identified a number of technical errors in safe shutdown procedure QCARP 0050-02. The procedure errors were considered a Non-Cited Violation (NCV 50-254/00-16-03; NCV 50-265/00-16-03) of 10 CFR 50, Appendix R, Section III.L.5 (Section 40A4.1). The technical errors were determined to have no appreciable risk significance (No Color) because the errors would not have impacted safe shutdown. However, the errors were another example of a previously identified adverse trend in human performance.

Inspection Report# : [2000016\(pdf\)](#)

Significance: N/A Nov 20, 2000

Identified By: NRC

Item Type: FIN Finding

The inspectors found that a number of human performance errors during the Q1R16 refueling outage period resulted in undesirable consequences and constituted an adverse trend.

The inspectors found that a number of human performance errors during the Q1R16 refueling outage period, October 14 to November 3, resulted in undesirable consequences and constituted an adverse trend in human performance. These errors resulted from problems with procedure adherence, control of work activities, communications, and procedure quality. Resulting problems included venting the pressurized reactor to containment near maintenance workers who

were not adequately prepared for the subsequent release of steam and contamination, inadvertently draining from the reactor vessel bottom head area resulting in significant personnel contamination, and a number of wiring and second verification errors during electrical modifications and maintenance. Although most of these wiring errors were caught and corrected during testing, one error was not caught and resulted in the inoperability of one of two channels of the reactor protective system flow biased trips. While none of these events resulted in equipment performance outside the licensee response band (GREEN), the overall trend indicated problems with adhering to procedures, proper performance of second verification techniques, and the communication and coordination of activities (Section 40A4).
Inspection Report# : [2000015\(pdf\)](#)

Significance: N/A Jun 30, 2000

Identified By: NRC

Item Type: FIN Finding

Cross-Cutting Issues: Human Performance

Inspectors found that several recent events which affected plant operations and/or had the potential to adversely affect personnel safety involved elements of human performance deficiencies. An apparent adverse trend in human performance during the period May 5, 2000 to June 30, 2000, was evidenced by the following incidents. A senior reactor operator failed to implement a Technical Specification surveillance requirement for removing an emergency diesel generator from service. Control room operators experienced problems controlling reactor vessel water level during post-scrum recovery efforts and failed to close a pair of drain valves during a pre-start of the Unit 1 high pressure coolant injection system. Maintenance personnel errors were involved in a reactor trip on May 5, and spread of contamination in the 2B reactor water cleanup room when a fitting was disconnected under 1000 psig pressure on June 10 (Section 40A.4).

Inspection Report# : [2000007\(pdf\)](#)

Significance: N/A Jun 30, 2000

Identified By: NRC

Item Type: FIN Finding

Weakness in Corrective Action Program.

The corrective action program was fully functional and typically identified and corrected conditions adverse to quality. In general, station personnel effectively identified and entered problems into the corrective action program using problem identification forms (PIFs). The significance threshold for entering issues into the program appeared appropriate. However, over the past year issues were identified at Quad Cities where the corrective action process was not vigorously implemented to address the issues. In addition, the licensee's corrective action process had lost over two items a month since January 2000. Although none of these lost items were considered safety significant, and thousands of other action items were opened and closed in that time frame, this represented a weakness in the licensee's program.

Inspection Report# : [2000008\(pdf\)](#)

Significance:  Apr 01, 2000

Identified By: Licensee

Item Type: NCV NonCited Violation

On September 10, 1999, the control room emergency ventilation system was inoperable

On September 10, 1999, the licensee identified that the control room emergency ventilation system was inoperable. Flow rates were out-of-specification due to repositioning of a ventilation damper 9 days previously. The action statement for Technical Specification 3.8.D allowed the system to be inoperable for 7 days. Failing to comply with the allowed outage time requirements was considered a non-cited violation of Technical Specification 3.8.D. This issue was screened as GREEN (very low risk significance) after a Phase 1 Significance Determination Process review (Section 40A3).

Inspection Report# : [2000003\(pdf\)](#)

Significance: N/A Feb 29, 2000

Identified By: NRC

Item Type: FIN Finding

Human Performance Problems

Inspectors found that errors in review, coordination, and implementation of maintenance activities during or near Unit 2 refueling outage number 16 (January and February 2000) led to inoperable safety systems. Operators were unaware that Technical Specification or administrative limiting condition for operation action statements were entered or exceeded. Required nuclear instruments and emergency diesel generators were not operable during some fuel moves (Sections 1R04 and 1R20.4), automatic depressurization system valves were taken out of service while required (Section 1R20.2), the high pressure coolant injection system was inoperable due to incomplete maintenance (Section 1R19.1), and safe shutdown requirements were not properly addressed (Section 1R20.5). Other events included technician errors in which electrical jumpers were installed in incorrect locations for logic used by the reactor protective system and by the emergency core cooling system. While the risk of the individual events was very low, an increase in maintenance activity problems was evident.

Inspection Report# : [2000001\(pdf\)](#)

Significance: N/A Dec 03, 1999

Identified By: NRC

Item Type: FIN Finding

reactor coolant system leakage performance indicator

The inspectors completed verification inspection of the reactor coolant system leakage performance indicator and found very minor discrepancies which did not affect the validity of the reported performance indicator (Section 4OA2.2).

Inspection Report# : [1999023\(pdf\)](#)

Significance: N/A Dec 03, 1999

Identified By: NRC

Item Type: FIN Finding

the public radiation safety performance indicator

The inspectors verified that the licensee had properly evaluated and reported the public radiation safety performance indicator (Section 4OA2.7).

Inspection Report# : [1999023\(pdf\)](#)

Significance: N/A Dec 03, 1999

Identified By: NRC

Item Type: FIN Finding

verification inspection for the residual heat removal unavailability performance indicator.

The inspectors completed the verification inspection for the residual heat removal unavailability performance indicator. The inspectors identified that the licensee had not included 12.5 hours of residual heat removal system unavailability during system logic testing in January 1999. The licensee explained that the rules for system availability, at that time, did not require documenting the safety system unavailability. The licensee elected to report these hours in a future submittal. The extra hours would not cause the residual heat removal system unavailability to cross a color threshold (Section 4OA2.1).

Inspection Report# : [1999023\(pdf\)](#)

Significance: N/A Dec 03, 1999

Identified By: NRC

Item Type: FIN Finding

verification inspection of the licensee's performance indicators

The inspectors completed verification inspection of the licensee's performance indicators for scrams, scrams with loss of normal decay heat removal, reactor coolant specific activity, and primary containment leakage. No findings were identified (Section 4OA2).

Inspection Report# : [1999023\(pdf\)](#)

Significance: N/A Oct 20, 1999

Identified By: NRC

Item Type: FIN Finding

The licensee corrected discrepancies with the safety system functional failure indicator.

The licensee corrected discrepancies with the safety system functional failure indicator previously identified by the NRC in the September report of performance indicator data. The NRC exercised enforcement discretion and did not

issue a Notice of Violation (Section 40A3).

Inspection Report# : [1999020\(pdf\)](#)

Significance: N/A Oct 20, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Event Reporting Failure

The inspectors identified two violations of NRC reporting requirements. The licensee failed to notify the NRC within 1 hour of identifying a condition in which the control room emergency ventilation system was found outside the design basis. The licensee also failed to notify the NRC within 4 hours of an event in which the reactor core isolation cooling system was unable to perform a required safety function. The licensee made late notifications, submitted a licensee event report for the control room emergency ventilation system, and planned to submit a licensee event report for the reactor core isolation cooling system failure. These were considered two non-cited violations (Plant Status).

Inspection Report# : [1999020\(pdf\)](#)

Significance: N/A Oct 20, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

Notification Failure Under 50.72

The inspectors identified two violations of NRC reporting requirements. The licensee failed to notify the NRC within 1 hour of identifying a condition in which the control room emergency ventilation system was found outside the design basis. The licensee also failed to notify the NRC within 4 hours of an event in which the reactor core isolation cooling system was unable to perform a required safety function. The licensee made late notifications, submitted a licensee event report for the control room emergency ventilation system, and planned to submit a licensee event report for the reactor core isolation cooling system failure. These were considered two non-cited violations (Plant Status).

Inspection Report# : [1999020\(pdf\)](#)



Significance: Oct 08, 1999

Identified By: Licensee

Item Type: FIN Finding

The licensee identified errors in the PI Occupational Radiation Safety Performance Indicator (PI)

Occupational Radiation Safety Performance Indicator (PI). The licensee identified errors in the PI reported to the NRC. Originally, the licensee reported six technical specification high radiation area incidents, which resulted in a white PI. After identifying a missed occurrence and a misinterpretation of the PI criteria, the licensee determined that only two incidents were applicable to the PI, which resulted in the PI indicating that performance was in the licensee response band (green).

Inspection Report# : [1999022\(pdf\)](#)



Significance: Jul 16, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

the repetitive problem of excessive use of overtime.

The root cause report and the corrective actions, approved by the Plant Operations Review Committee and the Corrective Action Review Board, did not fully address the repetitive problem of excessive use of overtime. There were 177 instances between February 1 and 28, 1999, where station procedures were not followed to control overtime of plant workers. Further corrective actions were being developed to ensure that overtime violations did not continue. There were no known incidents where the excessive use of overtime directly impacted or affected the safety of the plant; however, the repetitive failure to follow procedures to control overtime is a non-cited violation. (Reference Report Section 40A1.4, page 8)

Inspection Report# : [1999012\(pdf\)](#)

Quad Cities 2

Initiating Events

G**Significance:** Dec 28, 2002

Identified By: Self Disclosing

Item Type: FIN Finding

INADEQUATE PROCEDURE AND SELF CHECKING RESULTS IN CONNECTING AIR POWERED VACUUM TO INSTRUMENT AIR SYSTEM AND TWO AIR TRANSIENTS

The failure to identify the proper plant air supply prior to installing moisture separator decontamination equipment (air powered vacuum) resulted in two unexpected instrument air system transients on October 14 and 15, 2002. The work package did not contain equipment identification numbers to aid in identifying the proper air supply. In addition, the individual instructed to identify the air supply failed to perform self-checking activities that could have identified the inappropriate selection of instrument air for the equipment installation rather than service air. This finding was more than minor because it affected the loss of instrument air initiating event frequency. The finding was of very low safety significance because the exposure time was short and all mitigating systems needed to address a loss of instrument air were available. No violation of NRC requirements occurred due to the instrument air system being non-safety-related.

Inspection Report# : [2002008\(pdf\)](#)G**Significance:** Dec 20, 2002

Identified By: NRC

Item Type: FIN Finding

Failure to Recognize and Address High Vibration Indications on Plant Equipment

Green. The inspectors identified a Green finding due to the licensee's failure to recognize and address high vibration indications on plant equipment. On April 2, 2002, a Unit 2 main steam drain line broke due to high vibrations. The pipe break occurred down stream of the main steam isolation valves in a non-safety-related portion of the main steam piping. The issue was more than minor, in that if the vibrations were not corrected (on both units) they could become a more significant safety concern. However, due to the location of the actual break, the issue was determined to be of very low safety significance. This issue was not subject to NRC enforcement since the break occurred in a non-safety-related portion of the main steam line and did not impact the operation of safety-related equipment (Section 40A2.1.b1).

Inspection Report# : [2003002\(pdf\)](#)G**Significance:** Sep 30, 2002

Identified By: Self Disclosing

Item Type: FIN Finding

UNEXPECTED CHANGES IN UNIT 2 OPERATING PARAMETERS AND DRYER FAILURE DUE TO FLOW INDUCED VIBRATION.

The failure to consider the impact of new flow induced vibration failure mechanisms on the Unit 2 steam dryer as part of the extended power uprate analysis resulted in unexpected and unpredictable changes in reactor power, reactor vessel level, reactor pressure, and main steam line flow between June 7 and July 11, 2002. The licensee subsequently determined that the changes in Unit 2 operating parameters were caused by the failure of a Unit 2 steam dryer cover plate. This finding was more than minor because the changes in Unit 2 operating parameters caused by the degraded dryer created conditions which increased the likelihood of a plant transient. However, this finding was of very low risk significance because the changes in plant parameters and the dryer failure did not contribute to the likelihood of a primary or secondary loss of coolant accident initiator, did not contribute to the likelihood of a reactor trip with mitigating equipment not available, and did not increase the likelihood of a fire or an internal or external flood. There were no violations of NRC requirements due to the steam dryer being non-safety related.

Inspection Report# : [2002007\(pdf\)](#)G**Significance:** Jun 30, 2002

Identified By: Self Disclosing

Item Type: FIN Finding

INADEQUATE DIGITAL FEEDWATER SYSTEM DESIGN AND INADVERTENT GROUNDING OF PLANT EQUIPMENT RESULTS IN REACTOR SCRAM

A digital feedwater control system design weakness, in conjunction with the inadvertent grounding of a pressure transmitter during an instrument maintenance surveillance, resulted in a manual reactor scram due to increasing reactor vessel water level. The inspectors determined that this issue was of very low safety significance because the feedwater system would have been recoverable following a Level 8 isolation

signal, and adequate mitigating systems equipment remained available to place and maintain the plant in a stable condition.

Inspection Report# : [2002005\(pdf\)](#)



Significance: Jun 30, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO PARTICIPATE IN TURNOVER CONTRIBUTES TO MANUAL REACTOR HEAD VENT ISOLATION VALVES BEING LEFT OPEN DURING UNIT STARTUP

A lack of communications between operations personnel and an administrative senior reactor operator's failure to participate in a formal shift turnover resulted in operations personnel commencing a Unit 2 reactor startup with the manual reactor head vent isolation valves in the open position. The failure to participate in a turnover was considered a Non-Cited Violation of Technical Specification 5.4.1. The inspectors determined that this issue was of very low safety significance because the leak created by the open manual reactor head vent isolation valves was small, and adequate mitigating equipment was available to respond to a potential transient condition.

Inspection Report# : [2002005\(pdf\)](#)

Mitigating Systems



Significance: Dec 28, 2002

Identified By: Self Disclosing

Item Type: FIN Finding

INADEQUATE DESIGN LEADS TO DELAY IN DISCOVERING SAFE SHUTDOWN MAKEUP PUMP WAS INOPERABLE DUE TO STRAINER CLOGGING

A self-revealing failure occurred on October 16, 2002, when the safe shutdown makeup pump room cooler strainer became clogged with duck weed. The inspectors determined that twice per shift rounds to verify strainer operability and multiple strainer cleanings were not effective in ensuring continued operability of this equipment. In addition, control room personnel were not immediately notified of the clogged strainer via a control room alarm or a local alarm due to a system design deficiency. This finding was more than minor because the strainer clogging impacted the operability of the safe shutdown makeup pump which can be used when responding to initiating events. In addition, the system design issues created a situation where operations personnel were unaware of equipment operability issues. This finding was of very low safety significance because the total exposure time was short, all other mitigating systems were available, and the safe shutdown makeup pump could have been recovered if needed. No violation of NRC requirements occurred due to the safe shutdown makeup only being of augmented quality per the licensee's Quality Assurance Report.

Inspection Report# : [2002008\(pdf\)](#)



Significance: Dec 28, 2002

Identified By: Self Disclosing

Item Type: FIN Finding

INADEQUATE PROCEDURE AND COMMUNICATION WEAKNESSES LEADS TO EMERGENCY DIESEL GENERATOR INOPERABILITY

During the 1A stator water heat exchanger tube bundle replacement on November 11, 2002, approximately 200 gallons of water were released as the tube bundle was pulled from the heat exchanger. The water migrated to the Unit 1 emergency diesel generator room below and tripped the circulating oil pump and turbocharger lubricating oil pump rendering the diesel inoperable. The work package used to perform the work did not contain information regarding the large amounts of water that may be present in the heat exchanger. In addition, information regarding the amount of water present in the heat exchanger was not communicated to the contractors performing the work even though this information was well known by operations and maintenance personnel. This finding was more than minor because the inadequate work instructions and poor communications resulted in a situation which impacted the operability, availability, and reliability of the emergency diesel generator. The finding was of very low safety significance since the loss of the emergency diesel generator did not result in an actual loss of safety function of a system and did not result in an actual loss of safety function of a single train for greater than the Technical Specification Allowed Outage Time. No violations of NRC requirements were identified due to the stator water heat exchanger being non-safety-related.

Inspection Report# : [2002008\(pdf\)](#)



Significance: Dec 28, 2002

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

HUMAN PERFORMANCE AND PROBLEM IDENTIFICATION AND RESOLUTION RESULTS IN FAILURE TO DISCOVER IMPACT OF LOOSE LEAD ON RESIDUAL HEAT REMOVAL INOPERABILITY

A loose wire caused a condition that would have resulted in the failure of the 2B residual heat removal system to automatically start when required and would have resulted in the diversion of water from the 2A residual heat removal system if an emergency core cooling system actuation signal was received while the 2B residual heat removal system was operating in torus cooling. One Non-Cited Violation of Technical Specification 3.5.1 was identified. The licensee determined that the wire was loosened during the February 2002 refueling outage. The impact of the loose wire was not addressed until October 2002 even though unexpected equipment performance was experienced on three previous occasions. This finding was more than minor since the loose wire impacted the operability, availability, reliability, and capability of the residual heat removal system. The finding was determined to be of very low risk significance since the both trains of the residual heat removal system were recoverable using simple operator actions and all remaining mitigating systems equipment were available.

Inspection Report# : [2002008\(pdf\)](#)



Significance: Dec 20, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

Violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," Related to the Quality of Design Basis Engineering Calculations

Green. The inspectors identified a Green Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," related to the quality of design basis engineering calculations. Specifically, the inspectors identified that instrument and test uncertainty was not considered in a number of design calculations, such that the calculation acceptance limits could not be validated. The diesel generator cooling water (DGCW), high pressure coolant injection (HPCI), and reactor core isolation cooling (RCIC) system design bases were not being adequately controlled by existing calculations. This finding was considered greater than minor because a loss of design control could affect the reliability of the DGCW, HPCI and RCIC systems to perform their safety functions. Because no operability concerns were identified, the issue was determined to be of very low safety significance (Section).

Inspection Report# : [2003002\(pdf\)](#)



Significance: Sep 30, 2002

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

FAILURE TO HAVE APPROPRIATE BEARING FIT-UP AND MOTOR LUBRICATION INSTRUCTIONS

Inadequate bearing fit-up measurement and motor lubrication instructions resulted in a self-revealing failure of the 1A core spray and reactor core isolation cooling room cooler fan inboard motor bearings and a Non-Cited Violation of Technical Specification 5.4.1. The inspectors determined that this finding was more than minor because the improper bearing fit-up and lubrication instructions impacted the availability, reliability, and capability of equipment used to support risk significant mitigating equipment. The failure of the 1A core spray and reactor core isolation cooling room cooler was of low risk significance because the failure was not caused by a design or qualification deficiency, did not result in an actual loss of safety function for the core spray or reactor core isolation cooling systems, and did not screen as potentially risk significant due to a seismic, fire, flooding, or severe weather initiating event.

Inspection Report# : [2002007\(pdf\)](#)



Significance: Sep 30, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO ADEQUATELY CORRECT MULTIPLE FAILURES OF THE 2A RHR NORMAL/ALTERNATE SWITCH

Ineffective corrective actions resulted in repetitive failures of the 2A residual heat removal normal/alternate switch between June 1999 and September 2002 and a Non-Cited Violation of 10 CFR 50, Appendix B, Criterion XVI. The failure to correct the multiple normal/alternate switch failures was more than minor because the switch failures impacted the availability, reliability, and capability of equipment used to respond to initiating events and prevent undesirable consequences from a plant fire. This finding was of very low risk significance because the switch failures did not result in an actual loss of function for the residual heat removal system. The switch failures also failed to screen as a risk significant fire issue because the room cooler was not needed until 52 hours after a fire which provided the licensee adequate time to correct the failure.

Inspection Report# : [2002007\(pdf\)](#)



Significance: Sep 30, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO DOCUMENT AN OVERGREASING ISSUE IN THE CORRECTIVE ACTION PROGRAM AND TAKE ACTION TO ADDRESS THE EXTENT OF CONDITION

The licensee failed to follow procedural requirements regarding the initiation of condition reports and determining the extent of condition following the discovery of a large amount of grease in the 1A core spray room cooler motor. As a result, the licensee did not provide a basis for continued operability of potentially impacted plant motors for approximately 40 days. This finding was more than minor because the licensee's

lack of action resulted in the inability to ensure the availability and reliability of mitigating systems equipment used to respond to initiating events and prevent undesirable consequences. The inspectors determined that this finding was of very low risk significance because subsequent reviews determined that even if the motors susceptible to overgreasing failed, the motors are not credited in the licensee's probabilistic risk assessment.

Inspection Report# : [2002007\(pdf\)](#)

G

Significance: Jun 30, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO PERFORM REQUIRED PARTS EVALUATION FOR CONTROL ROD DRIVE ACCUMULATOR CLAMPS

The inspectors identified a design deficiency and a Non-Cited Violation in that licensee personnel failed to perform a parts evaluation when installing hose clamps on the control rod drive system hydraulic accumulators instead of the seismically-qualified steel band clamps. This issue was of very low safety significance because the design deficiency did not result in a loss of function as described in Generic Letter 91-18, "Resolution of Degraded and Non-Conforming Conditions and on Operability."

Inspection Report# : [2002005\(pdf\)](#)

G

Significance: Jun 30, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO MEET 10 CFR 50.62 DUE TO RELIEF VALVES LIFTING

The inspectors documented a Non-Cited Violation of 10 CFR 50.62, "Anticipated Transient Without Scram Rule," due to the potential to lift the standby liquid control system relief valves during an anticipated transient without scram. The inspectors determined that this finding was of very low safety significance because the standby liquid control system could be recovered during an anticipated transient without scram event, the cycling of the relief valves would allow a portion of the sodium pentaborate solution to be injected into the reactor vessel, and the plant remained within the acceptance criteria of the original anticipated transient without scram analyses during the relief valve lifts.

Inspection Report# : [2002005\(pdf\)](#)

G

Significance: Mar 31, 2002

Identified By: Self Disclosing

Item Type: FIN Finding

CATASTROPHIC FAILURE OF 2B CONTROL ROD DRIVE PUMP

On January 24, 2002, a catastrophic failure of the 2B control rod drive pump occurred approximately 4 days after conducting maintenance. The pump failure was caused by the inadequate lubrication of the inboard pump bearing due to the inappropriate setting of a constant level oiler. The root cause was that the constant level oiler was set approximately 15/64 of an inch lower than the specified setting due to maintenance personnel using a previously painted oil level reference line on the pump casing rather than a more exact installation method. No violations of NRC requirements were identified as a result of this event due to the control rod drive system being non-safety related. The finding was of very low safety significance. Although the finding represented an actual loss of safety function of one train of non-Technical Specification equipment designated as risk significant by the maintenance rule for greater than 24 hours, all remaining mitigating equipment remained available to respond to potential transients.

Inspection Report# : [2002004\(pdf\)](#)

G

Significance: Mar 31, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO ADEQUATELY DETERMINE CAUSE OF SBLC PUMP TRIP AND TAKE CORRECTIVE ACTION

The inspectors identified a Non-Cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, for the failure to determine the cause of a 1995 2A standby liquid control pump trip and take corrective actions to preclude repetition. On February 15, 2002, during surveillance test actuations of the standby liquid control system explosive valves, the continuity of the firing circuit remained intact. Fragments contacted the standby liquid control system piping creating a circuit path to ground. The existence of a previously unidentified independent ground at a different point in the control circuitry created a condition where the voltage was not adequate to support continued system operation and the 2A standby liquid control pump tripped. The 2A standby liquid control pump tripped during the performance of the same surveillance procedure in 1995. Following the February 2002 pump failure, the licensee determined that troubleshooting performed in 1995 was inadequate in that it failed to identify the actual cause of the pump trip. The finding was of very low safety significance because the 2B train of the standby liquid control system was unaffected by this issue and all remaining mitigating equipment was available to respond to an anticipated transient without scram event.

Inspection Report# : [2002004\(pdf\)](#)

G**Significance:** Mar 31, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO ESTABLISH MEASURES TO ASSURE THAT ITEMS WERE CORRECTLY TRANSLATED INTO SPECIFICATIONS

The inspectors identified a Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion III for failure to establish measures to assure that items such as thermal effects and the compatibility of materials were correctly translated into specifications for the Unit 2 emergency diesel generator fuel oil transfer system. On May 1, 2001, and May 3, 2001, a solenoid valve in the Unit 2 emergency diesel generator fuel oil transfer system failed to open approximately 12 hours after the start of the emergency diesel generator 24-hour endurance test. The solenoid valve failure was due to thermal pressurization of an isolated section of fuel oil transfer system discharge piping. The finding was of very low safety significance because the Unit 2 station blackout diesel generator was not impacted by this design issue, actions to manually fill the fuel oil day tank were proceduralized such that recovery of the emergency diesel generator should be successful, and alternative mitigating equipment was available to respond to a potential loss of offsite power.

Inspection Report# : [2002004\(pdf\)](#)G**Significance:** Feb 01, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to adequately address the erosion of the RHRSW room coolers' supply piping

Green. The inspectors identified a failure to promptly identify and correct conditions adverse to quality involving the erosion of safety-related residual heat removal service water piping. The licensee's corrective actions for the piping leak included replacing the affected piping and performing ultrasonic testing on similar piping for the other trains. During this inspection, NRC inspectors identified that the corrective actions were inadequate in that the ultrasonic testing was not able to examine the area of the piping affected by the erosion as evidenced by the subsequent failure. This finding was determined to be of very low safety significance because the equipment was still capable of performing its intended safety function. A Non-Cited Violation of 10CFR 50 Appendix B, Criterion XVI was identified.

Inspection Report# : [2001015\(pdf\)](#)

Barrier Integrity

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Physical Protection

Miscellaneous

Significance: N/A Dec 20, 2002

Identified By: NRC

Item Type: FIN Finding

Corrective Action Program Generally Effective in Ensuring that Conditions Adverse to Quality were Being Adequately Addressed

Although issues were generally entered into the corrective action process at an appropriate level, there were times when opportunities to identify issues were missed due to a narrow focus. This led to issues either being self-revealing or being identified by outside organizations. Several of these issues resulted in plant shutdowns. Minor issues were generally properly categorized and evaluated. However, there were a number of examples where it appeared that the initial evaluation was limited and narrowly focused. These examples tended to be non-routine and involved multiple organizations and layers of management. In general, the licensee effectively corrected plant problems. On the positive side, the inspectors noted that Nuclear Oversight appeared to be an effective source for identifying performance issues and that plant employees, in general, indicated a strong willingness to report problems "to the highest levels." The inspectors concluded that corrective action program was generally effective in ensuring that conditions adverse to quality were being adequately addressed

Inspection Report# : [2003002\(pdf\)](#)

Last modified : March 25, 2003

Quad Cities 2

1Q/2003 Plant Inspection Findings

Initiating Events

Significance:  Dec 28, 2002

Identified By: Self Disclosing

Item Type: FIN Finding

INADEQUATE PROCEDURE AND SELF CHECKING RESULTS IN CONNECTING AIR POWERED VACUUM TO INSTRUMENT AIR SYSTEM AND TWO AIR TRANSIENTS

The failure to identify the proper plant air supply prior to installing moisture separator decontamination equipment (air powered vacuum) resulted in two unexpected instrument air system transients on October 14 and 15, 2002. The work package did not contain equipment identification numbers to aid in identifying the proper air supply. In addition, the individual instructed to identify the air supply failed to perform self-checking activities that could have identified the inappropriate selection of instrument air for the equipment installation rather than service air. This finding was more than minor because it affected the loss of instrument air initiating event frequency. The finding was of very low safety significance because the exposure time was short and all mitigating systems needed to address a loss of instrument air were available. No violation of NRC requirements occurred due to the instrument air system being non-safety-related. Inspection Report# : [2002008\(pdf\)](#)

Significance:  Dec 20, 2002

Identified By: NRC

Item Type: FIN Finding

Failure to Recognize and Address High Vibration Indications on Plant Equipment

Green. The inspectors identified a Green finding due to the licensee's failure to recognize and address high vibration indications on plant equipment. On April 2, 2002, a Unit 2 main steam drain line broke due to high vibrations. The pipe break occurred down stream of the main steam isolation valves in a non-safety-related portion of the main steam piping. The issue was more than minor, in that if the vibrations were not corrected (on both units) they could become a more significant safety concern. However, due to the location of the actual break, the issue was determined to be of very low safety significance. This issue was not subject to NRC enforcement since the break occurred in a non-safety-related portion of the main steam line and did not impact the operation of safety-related equipment (Section 40A2.1.b1).

Inspection Report# : [2003002\(pdf\)](#)

Significance:  Sep 30, 2002

Identified By: Self Disclosing

Item Type: FIN Finding

UNEXPECTED CHANGES IN UNIT 2 OPERATING PARAMETERS AND DRYER FAILURE DUE TO FLOW INDUCED VIBRATION.

The failure to consider the impact of new flow induced vibration failure mechanisms on the Unit 2 steam dryer as part of the extended power uprate analysis resulted in unexpected and unpredictable changes in reactor power, reactor vessel level, reactor pressure, and main steam line flow between June 7 and July 11, 2002. The licensee subsequently determined that the changes in Unit 2 operating parameters were caused by the failure of a Unit 2 steam dryer cover

plate. This finding was more than minor because the changes in Unit 2 operating parameters caused by the degraded dryer created conditions which increased the likelihood of a plant transient. However, this finding was of very low risk significance because the changes in plant parameters and the dryer failure did not contribute to the likelihood of a primary or secondary loss of coolant accident initiator, did not contribute to the likelihood of a reactor trip with mitigating equipment not available, and did not increase the likelihood of a fire or an internal or external flood. There were no violations of NRC requirements due to the steam dryer being non-safety related.

Inspection Report# : [2002007\(pdf\)](#)

Significance:  Jun 30, 2002

Identified By: Self Disclosing

Item Type: FIN Finding

INADEQUATE DIGITAL FEEDWATER SYSTEM DESIGN AND INADVERTENT GROUNDING OF PLANT EQUIPMENT RESULTS IN REACTOR SCRAM

A digital feedwater control system design weakness, in conjunction with the inadvertent grounding of a pressure transmitter during an instrument maintenance surveillance, resulted in a manual reactor scram due to increasing reactor vessel water level. The inspectors determined that this issue was of very low safety significance because the feedwater system would have been recoverable following a Level 8 isolation signal, and adequate mitigating systems equipment remained available to place and maintain the plant in a stable condition.

Inspection Report# : [2002005\(pdf\)](#)

Significance:  Jun 30, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO PARTICIPATE IN TURNOVER CONTRIBUTES TO MANUAL REACTOR HEAD VENT ISOLATION VALVES BEING LEFT OPEN DURING UNIT STARTUP

A lack of communications between operations personnel and an administrative senior reactor operator's failure to participate in a formal shift turnover resulted in operations personnel commencing a Unit 2 reactor startup with the manual reactor head vent isolation valves in the open position. The failure to participate in a turnover was considered a Non-Cited Violation of Technical Specification 5.4.1. The inspectors determined that this issue was of very low safety significance because the leak created by the open manual reactor head vent isolation valves was small, and adequate mitigating equipment was available to respond to a potential transient condition.

Inspection Report# : [2002005\(pdf\)](#)

Mitigating Systems

Significance:  Mar 31, 2003

Identified By: NRC

Item Type: FIN Finding

UNIT 2 REACTOR CORE ISOLATION COOLING RENDERED INOPERABLE DURING SCAFFOLD DISASSEMBLY

The inspectors identified a finding involving a human performance error that resulted in the loss of the safety function of the Unit 2 reactor core isolation cooling system. An individual inadvertently bumped the system's trip throttle mechanism while removing scaffolding from the area. The inspectors determined that the finding was more than minor because it impacted the mitigating systems attributes and objectives. In particular, the finding affected the availability,

reliability, and capability of the reactor core isolation cooling system, a system that responds to initiating events to prevent undesirable consequences. The finding was of very low safety significance based on the low probability of core damage for the analyzed sequences.

Inspection Report# : [2003003\(pdf\)](#)

Significance:  Mar 31, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO MAINTAIN ADEQUATE SPATIAL SEPARATION OF FLAMMABLES FROM THE DIESEL DRIVEN FIRE PUMPS

The inspectors identified a finding involving a Non-Cited Violation for the licensee's failure to maintain 80 feet of spatial separation between a flammable liquids storage cabinet and the furthest diesel fire pump as required by the Quad Cities Operating Licenses and the Fire Protection Program. The inspectors concluded that this finding was more than minor because the improper cabinet placement and potential storage of a large amount of flammable materials could lead to a fire which could engulf both fire pumps and cause a loss of the non safety-related service water system and the circulating water system. In addition, this finding was associated with the initiating events cornerstone attribute of protecting the plant against external factors and impacted the cornerstone objective of limiting the likelihood of events that upset plant stability and challenge critical safety functions. The finding was of very low safety significance based on the determination that the actual stored flammable liquids, if inadvertently ignited, would not produce sufficient radiative heat flux to damage both fire pumps at the same time.

Inspection Report# : [2003003\(pdf\)](#)

Significance:  Mar 31, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO PROPERLY LATCH FUSE DRAWERS CAUSING AUTOMATIC INITIATION AND LOADING OF EMERGENCY DIESEL GENERATOR

The inspectors identified a finding involving a Non-Cited Violation on Unit 1 for the failure to properly latch the potential transformer fuse drawers for bus 14 and bus 14-1. This resulted in the fuse drawers dropping open and causing the automatic initiation and loading of the emergency diesel generator due to loss of voltage on the emergency bus. Multiple operations department procedures failed to contain instructions to ensure that the potential transformer fuse drawers for the safety-related busses were properly latched. Unit 1 was unknowingly vulnerable to a loss of voltage condition on two safety-related busses during a seismic event. The finding was more than minor because it was associated with attributes in both the mitigating systems and initiating events cornerstones and also affected each cornerstone objective. For example, a seismic event could cause both drawers to open resulting in a loss of both busses; a scram, and the loss of two residual heat removal service water pumps. The finding was of very low safety significance primarily due to the low initiating event frequency associated with a seismically induced loss of offsite power.

Inspection Report# : [2003003\(pdf\)](#)

Significance:  Mar 31, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO RESET PRIMARY CONTAINMENT ISOLATION LOGIC CAUSING RHR LPCI INOPERABILITY

The inspectors identified a finding on Unit 2 involving a Non-Cited Violation for the failure to reset the primary containment isolation logic after testing the low pressure coolant injection valves which caused the inoperability of

both residual heat removal loops for more than 18 days. The inspectors determined that the failure to reset the isolation logic after testing was more than minor because it involved the configuration control, equipment performance, and human performance attributes of the mitigating systems cornerstone, and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The finding was of very low safety significance based on the operators' abilities to recover the system during accident conditions, if required for injection, and the low probability of core damage for the analyzed sequences. Inspection Report# : [2003003\(pdf\)](#)

Significance:  Dec 28, 2002

Identified By: Self Disclosing

Item Type: FIN Finding

INADEQUATE DESIGN LEADS TO DELAY IN DISCOVERING SAFE SHUTDOWN MAKEUP PUMP WAS INOPERABLE DUE TO STRAINER CLOGGING

A self-revealing failure occurred on October 16, 2002, when the safe shutdown makeup pump room cooler strainer became clogged with duck weed. The inspectors determined that twice per shift rounds to verify strainer operability and multiple strainer cleanings were not effective in ensuring continued operability of this equipment. In addition, control room personnel were not immediately notified of the clogged strainer via a control room alarm or a local alarm due to a system design deficiency. This finding was more than minor because the strainer clogging impacted the operability of the safe shutdown makeup pump which can be used when responding to initiating events. In addition, the system design issues created a situation where operations personnel were unaware of equipment operability issues. This finding was of very low safety significance because the total exposure time was short, all other mitigating systems were available, and the safe shutdown makeup pump could have been recovered if needed. No violation of NRC requirements occurred due to the safe shutdown makeup only being of augmented quality per the licensee's Quality Assurance Report.

Inspection Report# : [2002008\(pdf\)](#)

Significance:  Dec 28, 2002

Identified By: Self Disclosing

Item Type: FIN Finding

INADEQUATE PROCEDURE AND COMMUNICATION WEAKNESSES LEADS TO EMERGENCY DIESEL GENERATOR INOPERABILITY

During the 1A stator water heat exchanger tube bundle replacement on November 11, 2002, approximately 200 gallons of water were released as the tube bundle was pulled from the heat exchanger. The water migrated to the Unit 1 emergency diesel generator room below and tripped the circulating oil pump and turbocharger lubricating oil pump rendering the diesel inoperable. The work package used to perform the work did not contain information regarding the large amounts of water that may be present in the heat exchanger. In addition, information regarding the amount of water present in the heat exchanger was not communicated to the contractors performing the work even though this information was well known by operations and maintenance personnel. This finding was more than minor because the inadequate work instructions and poor communications resulted in a situation which impacted the operability, availability, and reliability of the emergency diesel generator. The finding was of very low safety significance since the loss of the emergency diesel generator did not result in an actual loss of safety function of a system and did not result in an actual loss of safety function of a single train for greater than the Technical Specification Allowed Outage Time. No violations of NRC requirements were identified due to the stator water heat exchanger being non-safety-related.

Inspection Report# : [2002008\(pdf\)](#)

Significance:  Dec 28, 2002

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

HUMAN PERFORMANCE AND PROBLEM IDENTIFICATION AND RESOLUTION RESULTS IN FAILURE TO DISCOVER IMPACT OF LOOSE LEAD ON RESIDUAL HEAT REMOVAL INOPERABILITY

A loose wire caused a condition that would have resulted in the failure of the 2B residual heat removal system to automatically start when required and would have resulted in the diversion of water from the 2A residual heat removal system if an emergency core cooling system actuation signal was received while the 2B residual heat removal system was operating in torus cooling. One Non-Cited Violation of Technical Specification 3.5.1 was identified. The licensee determined that the wire was loosened during the February 2002 refueling outage. The impact of the loose wire was not addressed until October 2002 even though unexpected equipment performance was experienced on three previous occasions. This finding was more than minor since the loose wire impacted the operability, availability, reliability, and capability of the residual heat removal system. The finding was determined to be of very low risk significance since the both trains of the residual heat removal system were recoverable using simple operator actions and all remaining mitigating systems equipment were available.

Inspection Report# : [2002008\(pdf\)](#)

G

Significance: Dec 20, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

Violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," Related to the Quality of Design Basis Engineering Calculations

Green. The inspectors identified a Green Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," related to the quality of design basis engineering calculations. Specifically, the inspectors identified that instrument and test uncertainty was not considered in a number of design calculations, such that the calculation acceptance limits could not be validated. The diesel generator cooling water (DGCW), high pressure coolant injection (HPCI), and reactor core isolation cooling (RCIC) system design bases were not being adequately controlled by existing calculations. This finding was considered greater than minor because a loss of design control could affect the reliability of the DGCW, HPCI and RCIC systems to perform their safety functions. Because no operability concerns were identified, the issue was determined to be of very low safety significance (Section).

Inspection Report# : [2003002\(pdf\)](#)

G

Significance: Sep 30, 2002

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

FAILURE TO HAVE APPROPRIATE BEARING FIT-UP AND MOTOR LUBRICATION INSTRUCTIONS

Inadequate bearing fit-up measurement and motor lubrication instructions resulted in a self-revealing failure of the 1A core spray and reactor core isolation cooling room cooler fan inboard motor bearings and a Non-Cited Violation of Technical Specification 5.4.1. The inspectors determined that this finding was more than minor because the improper bearing fit-up and lubrication instructions impacted the availability, reliability, and capability of equipment used to support risk significant mitigating equipment. The failure of the 1A core spray and reactor core isolation cooling room cooler was of low risk significance because the failure was not caused by a design or qualification deficiency, did not result in an actual loss of safety function for the core spray or reactor core isolation cooling systems, and did not screen as potentially risk significant due to a seismic, fire, flooding, or severe weather initiating event.

Inspection Report# : [2002007\(pdf\)](#)

G

Significance: Sep 30, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

**FAILURE TO ADEQUATELY CORRECT MULTIPLE FAILURES OF THE 2A RHR
NORMAL/ALTERNATE SWITCH**

Ineffective corrective actions resulted in repetitive failures of the 2A residual heat removal normal/alternate switch between June 1999 and September 2002 and a Non-Cited Violation of 10 CFR 50, Appendix B, Criterion XVI. The failure to correct the multiple normal/alternate switch failures was more than minor because the switch failures impacted the availability, reliability, and capability of equipment used to respond to initiating events and prevent undesirable consequences from a plant fire. This finding was of very low risk significance because the switch failures did not result in an actual loss of function for the residual heat removal system. The switch failures also failed to screen as a risk significant fire issue because the room cooler was not needed until 52 hours after a fire which provided the licensee adequate time to correct the failure.

Inspection Report# : [2002007\(pdf\)](#)

Significance:  Sep 30, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

**FAILURE TO DOCUMENT AN OVERGREASING ISSUE IN THE CORRECTIVE ACTION PROGRAM
AND TAKE ACTION TO ADDRESS THE EXTENT OF CONDITION**

The licensee failed to follow procedural requirements regarding the initiation of condition reports and determining the extent of condition following the discovery of a large amount of grease in the 1A core spray room cooler motor. As a result, the licensee did not provide a basis for continued operability of potentially impacted plant motors for approximately 40 days. This finding was more than minor because the licensee's lack of action resulted in the inability to ensure the availability and reliability of mitigating systems equipment used to respond to initiating events and prevent undesirable consequences. The inspectors determined that this finding was of very low risk significance because subsequent reviews determined that even if the motors susceptible to overgreasing failed, the motors are not credited in the licensee's probabilistic risk assessment.

Inspection Report# : [2002007\(pdf\)](#)

Significance:  Jun 30, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

**FAILURE TO PERFORM REQUIRED PARTS EVALUATION FOR CONTROL ROD DRIVE
ACCUMULATOR CLAMPS**

The inspectors identified a design deficiency and a Non-Cited Violation in that licensee personnel failed to perform a parts evaluation when installing hose clamps on the control rod drive system hydraulic accumulators instead of the seismically-qualified steel band clamps. This issue was of very low safety significance because the design deficiency did not result in a loss of function as described in Generic Letter 91-18, "Resolution of Degraded and Non-Conforming Conditions and on Operability."

Inspection Report# : [2002005\(pdf\)](#)

Significance:  Jun 30, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO MEET 10 CFR 50.62 DUE TO RELIEF VALVES LIFTING

The inspectors documented a Non-Cited Violation of 10 CFR 50.62, "Anticipated Transient Without Scram Rule," due to the potential to lift the standby liquid control system relief valves during an anticipated transient without scram. The inspectors determined that this finding was of very low safety significance because the standby liquid control system

could be recovered during an anticipated transient without scram event, the cycling of the relief valves would allow a portion of the sodium pentaborate solution to be injected into the reactor vessel, and the plant remained within the acceptance criteria of the original anticipated transient without scram analyses during the relief valve lifts.
Inspection Report# : [2002005\(pdf\)](#)

Barrier Integrity

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Physical Protection

Miscellaneous

Significance: N/A Dec 20, 2002

Identified By: NRC

Item Type: FIN Finding

Corrective Action Program Generally Effective in Ensuring that Conditions Adverse to Quality were Being Adequately Addressed

Although issues were generally entered into the corrective action process at an appropriate level, there were times when opportunities to identify issues were missed due to a narrow focus. This led to issues either being self-revealing or being identified by outside organizations. Several of these issues resulted in plant shutdowns. Minor issues were generally properly categorized and evaluated. However, there were a number of examples where it appeared that the initial evaluation was limited and narrowly focused. These examples tended to be non-routine and involved multiple organizations and layers of management. In general, the licensee effectively corrected plant problems. On the positive side, the inspectors noted that Nuclear Oversight appeared to be an effective source for identifying performance issues and that plant employees, in general, indicated a strong willingness to report problems "to the highest levels." The inspectors concluded that corrective action program was generally effective in ensuring that conditions adverse to quality were being adequately addressed

Inspection Report# : [2003002\(pdf\)](#)

Last modified : May 30, 2003

Quad Cities 2

2Q/2003 Plant Inspection Findings

Initiating Events

Significance:  Dec 28, 2002

Identified By: Self Disclosing

Item Type: FIN Finding

INADEQUATE PROCEDURE AND SELF CHECKING RESULTS IN CONNECTING AIR POWERED VACUUM TO INSTRUMENT AIR SYSTEM AND TWO AIR TRANSIENTS

The failure to identify the proper plant air supply prior to installing moisture separator decontamination equipment (air powered vacuum) resulted in two unexpected instrument air system transients on October 14 and 15, 2002. The work package did not contain equipment identification numbers to aid in identifying the proper air supply. In addition, the individual instructed to identify the air supply failed to perform self-checking activities that could have identified the inappropriate selection of instrument air for the equipment installation rather than service air. This finding was more than minor because it affected the loss of instrument air initiating event frequency. The finding was of very low safety significance because the exposure time was short and all mitigating systems needed to address a loss of instrument air were available. No violation of NRC requirements occurred due to the instrument air system being non-safety-related.

Inspection Report# : [2002008\(pdf\)](#)

Significance:  Dec 20, 2002

Identified By: NRC

Item Type: FIN Finding

Failure to Recognize and Address High Vibration Indications on Plant Equipment

Green. The inspectors identified a Green finding due to the licensee's failure to recognize and address high vibration indications on plant equipment. On April 2, 2002, a Unit 2 main steam drain line broke due to high vibrations. The pipe break occurred down stream of the main steam isolation valves in a non-safety-related portion of the main steam piping. The issue was more than minor, in that if the vibrations were not corrected (on both units) they could become a more significant safety concern. However, due to the location of the actual break, the issue was determined to be of very low safety significance. This issue was not subject to NRC enforcement since the break occurred in a non-safety-related portion of the main steam line and did not impact the operation of safety-related equipment (Section 40A2.1.b1).

Inspection Report# : [2003002\(pdf\)](#)

Significance:  Sep 30, 2002

Identified By: Self Disclosing

Item Type: FIN Finding

UNEXPECTED CHANGES IN UNIT 2 OPERATING PARAMETERS AND DRYER FAILURE DUE TO FLOW INDUCED VIBRATION.

The failure to consider the impact of new flow induced vibration failure mechanisms on the Unit 2 steam dryer as part of the extended power uprate analysis resulted in unexpected and unpredictable changes in reactor power, reactor vessel level, reactor pressure, and main steam line flow between June 7 and July 11, 2002. The licensee subsequently determined that the changes in Unit 2 operating parameters were caused by the failure of a Unit 2 steam dryer cover

plate. This finding was more than minor because the changes in Unit 2 operating parameters caused by the degraded dryer created conditions which increased the likelihood of a plant transient. However, this finding was of very low risk significance because the changes in plant parameters and the dryer failure did not contribute to the likelihood of a primary or secondary loss of coolant accident initiator, did not contribute to the likelihood of a reactor trip with mitigating equipment not available, and did not increase the likelihood of a fire or an internal or external flood. There were no violations of NRC requirements due to the steam dryer being non-safety related.

Inspection Report# : [2002007\(pdf\)](#)

Mitigating Systems

Significance:  Jun 30, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO PROVIDE A CORRECT PROCEDURE FOR VENTING EMERGENCY CORE COOLING SYSTEM TO DEMONSTRATE THE PIPING FULL OF WATER

The inspectors identified a Non-Cited Violation of Technical Specification Paragraph 5.4.1 for the licensee's failure to provide a correct procedure for venting emergency core cooling systems to ensure continued operability. As a result, 1B core spray operability was not properly evaluated after a large volume of gas was vented from the system. This finding was greater than minor because it prevented a proper operability evaluation of the 1B core spray system after operators vented a large volume of gas from the system. It adversely affected the procedure quality attribute of the mitigating systems cornerstone. If left uncorrected, the finding could become a more significant safety concern. The finding was of very low safety significance because the failure to address the as-left operability of the 1B core spray system did not result in the actual loss of the 1B core spray safety function.

Inspection Report# : [2003005\(pdf\)](#)

Significance:  Jun 30, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO IMPLEMENT ADEQUATE CORRECTIVE ACTION FOR A PREVIOUSLY IDENTIFIED EMERGENCY DIESEL GENERATOR PRECONDITIONING CONCERN

The inspectors identified a Non-Cited Violation of 10 CFR 50, Appendix B, Criterion XVI for the licensee's failure to implement adequate corrective action for a previously identified emergency diesel generator preconditioning concern. The inadequate corrective action contributed to the preconditioning of two emergency diesel generators and prevented proper preconditioning evaluations. This finding was greater than minor because it contributed to the preconditioning of two emergency diesel generators and prevented a proper preconditioning evaluation. It adversely affected the procedure quality attribute of the mitigating systems cornerstone. If left uncorrected, the finding could become a more significant safety concern. The finding was of very low safety significance because it did not result in the actual loss of the emergency diesel generator safety function.

Inspection Report# : [2003005\(pdf\)](#)

Significance:  Mar 31, 2003

Identified By: NRC

Item Type: FIN Finding

UNIT 2 REACTOR CORE ISOLATION COOLING RENDERED INOPERABLE DURING SCAFFOLD

DISASSEMBLY

The inspectors identified a finding involving a human performance error that resulted in the loss of the safety function of the Unit 2 reactor core isolation cooling system. An individual inadvertently bumped the system's trip throttle mechanism while removing scaffolding from the area. The inspectors determined that the finding was more than minor because it impacted the mitigating systems attributes and objectives. In particular, the finding affected the availability, reliability, and capability of the reactor core isolation cooling system, a system that responds to initiating events to prevent undesirable consequences. The finding was of very low safety significance based on the low probability of core damage for the analyzed sequences.

Inspection Report# : [2003003\(pdf\)](#)



Significance: Mar 31, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO MAINTAIN ADEQUATE SPATIAL SEPARATION OF FLAMMABLES FROM THE DIESEL DRIVEN FIRE PUMPS

The inspectors identified a finding involving a Non-Cited Violation for the licensee's failure to maintain 80 feet of spatial separation between a flammable liquids storage cabinet and the furthest diesel fire pump as required by the Quad Cities Operating Licenses and the Fire Protection Program. The inspectors concluded that this finding was more than minor because the improper cabinet placement and potential storage of a large amount of flammable materials could lead to a fire which could engulf both fire pumps and cause a loss of the non safety-related service water system and the circulating water system. In addition, this finding was associated with the initiating events cornerstone attribute of protecting the plant against external factors and impacted the cornerstone objective of limiting the likelihood of events that upset plant stability and challenge critical safety functions. The finding was of very low safety significance based on the determination that the actual stored flammable liquids, if inadvertently ignited, would not produce sufficient radiative heat flux to damage both fire pumps at the same time.

Inspection Report# : [2003003\(pdf\)](#)



Significance: Mar 31, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO PROPERLY LATCH FUSE DRAWERS CAUSING AUTOMATIC INITIATION AND LOADING OF EMERGENCY DIESEL GENERATOR

The inspectors identified a finding involving a Non-Cited Violation on Unit 1 for the failure to properly latch the potential transformer fuse drawers for bus 14 and bus 14-1. This resulted in the fuse drawers dropping open and causing the automatic initiation and loading of the emergency diesel generator due to loss of voltage on the emergency bus. Multiple operations department procedures failed to contain instructions to ensure that the potential transformer fuse drawers for the safety-related busses were properly latched. Unit 1 was unknowingly vulnerable to a loss of voltage condition on two safety-related busses during a seismic event. The finding was more than minor because it was associated with attributes in both the mitigating systems and initiating events cornerstones and also affected each cornerstone objective. For example, a seismic event could cause both drawers to open resulting in a loss of both busses; a scram, and the loss of two residual heat removal service water pumps. The finding was of very low safety significance primarily due to the low initiating event frequency associated with a seismically induced loss of offsite power.

Inspection Report# : [2003003\(pdf\)](#)



Significance: Mar 31, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO RESET PRIMARY CONTAINMENT ISOLATION LOGIC CAUSING RHR LPCI INOPERABILITY

The inspectors identified a finding on Unit 2 involving a Non-Cited Violation for the failure to reset the primary containment isolation logic after testing the low pressure coolant injection valves which caused the inoperability of both residual heat removal loops for more than 18 days. The inspectors determined that the failure to reset the isolation logic after testing was more than minor because it involved the configuration control, equipment performance, and human performance attributes of the mitigating systems cornerstone, and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The finding was of very low safety significance based on the operators' abilities to recover the system during accident conditions, if required for injection, and the low probability of core damage for the analyzed sequences. Inspection Report# : [2003003\(pdf\)](#)

Significance:  Dec 28, 2002

Identified By: Self Disclosing

Item Type: FIN Finding

INADEQUATE DESIGN LEADS TO DELAY IN DISCOVERING SAFE SHUTDOWN MAKEUP PUMP WAS INOPERABLE DUE TO STRAINER CLOGGING

A self-revealing failure occurred on October 16, 2002, when the safe shutdown makeup pump room cooler strainer became clogged with duck weed. The inspectors determined that twice per shift rounds to verify strainer operability and multiple strainer cleanings were not effective in ensuring continued operability of this equipment. In addition, control room personnel were not immediately notified of the clogged strainer via a control room alarm or a local alarm due to a system design deficiency. This finding was more than minor because the strainer clogging impacted the operability of the safe shutdown makeup pump which can be used when responding to initiating events. In addition, the system design issues created a situation where operations personnel were unaware of equipment operability issues. This finding was of very low safety significance because the total exposure time was short, all other mitigating systems were available, and the safe shutdown makeup pump could have been recovered if needed. No violation of NRC requirements occurred due to the safe shutdown makeup only being of augmented quality per the licensee's Quality Assurance Report.

Inspection Report# : [2002008\(pdf\)](#)

Significance:  Dec 28, 2002

Identified By: Self Disclosing

Item Type: FIN Finding

INADEQUATE PROCEDURE AND COMMUNICATION WEAKNESSES LEADS TO EMERGENCY DIESEL GENERATOR INOPERABILITY

During the 1A stator water heat exchanger tube bundle replacement on November 11, 2002, approximately 200 gallons of water were released as the tube bundle was pulled from the heat exchanger. The water migrated to the Unit 1 emergency diesel generator room below and tripped the circulating oil pump and turbocharger lubricating oil pump rendering the diesel inoperable. The work package used to perform the work did not contain information regarding the large amounts of water that may be present in the heat exchanger. In addition, information regarding the amount of water present in the heat exchanger was not communicated to the contractors performing the work even though this information was well known by operations and maintenance personnel. This finding was more than minor because the inadequate work instructions and poor communications resulted in a situation which impacted the operability, availability, and reliability of the emergency diesel generator. The finding was of very low safety significance since the loss of the emergency diesel generator did not result in an actual loss of safety function of a system and did not result in an actual loss of safety function of a single train for greater than the Technical Specification Allowed Outage Time. No violations of NRC requirements were identified due to the stator water heat exchanger being non-safety-related.

Inspection Report# : [2002008\(pdf\)](#)

Significance:  Dec 28, 2002

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

HUMAN PERFORMANCE AND PROBLEM IDENTIFICATION AND RESOLUTION RESULTS IN FAILURE TO DISCOVER IMPACT OF LOOSE LEAD ON RESIDUAL HEAT REMOVAL INOPERABILITY

A loose wire caused a condition that would have resulted in the failure of the 2B residual heat removal system to automatically start when required and would have resulted in the diversion of water from the 2A residual heat removal system if an emergency core cooling system actuation signal was received while the 2B residual heat removal system was operating in torus cooling. One Non-Cited Violation of Technical Specification 3.5.1 was identified. The licensee determined that the wire was loosened during the February 2002 refueling outage. The impact of the loose wire was not addressed until October 2002 even though unexpected equipment performance was experienced on three previous occasions. This finding was more than minor since the loose wire impacted the operability, availability, reliability, and capability of the residual heat removal system. The finding was determined to be of very low risk significance since the both trains of the residual heat removal system were recoverable using simple operator actions and all remaining mitigating systems equipment were available.

Inspection Report# : [2002008\(pdf\)](#)

Significance:  Dec 20, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

Violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," Related to the Quality of Design Basis Engineering Calculations

Green. The inspectors identified a Green Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," related to the quality of design basis engineering calculations. Specifically, the inspectors identified that instrument and test uncertainty was not considered in a number of design calculations, such that the calculation acceptance limits could not be validated. The diesel generator cooling water (DGCW), high pressure coolant injection (HPCI), and reactor core isolation cooling (RCIC) system design bases were not being adequately controlled by existing calculations. This finding was considered greater than minor because a loss of design control could affect the reliability of the DGCW, HPCI and RCIC systems to perform their safety functions. Because no operability concerns were identified, the issue was determined to be of very low safety significance (Section).

Inspection Report# : [2003002\(pdf\)](#)

Significance:  Sep 30, 2002

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

FAILURE TO HAVE APPROPRIATE BEARING FIT-UP AND MOTOR LUBRICATION INSTRUCTIONS

Inadequate bearing fit-up measurement and motor lubrication instructions resulted in a self-revealing failure of the 1A core spray and reactor core isolation cooling room cooler fan inboard motor bearings and a Non-Cited Violation of Technical Specification 5.4.1. The inspectors determined that this finding was more than minor because the improper bearing fit-up and lubrication instructions impacted the availability, reliability, and capability of equipment used to support risk significant mitigating equipment. The failure of the 1A core spray and reactor core isolation cooling room cooler was of low risk significance because the failure was not caused by a design or qualification deficiency, did not result in an actual loss of safety function for the core spray or reactor core isolation cooling systems, and did not screen as potentially risk significant due to a seismic, fire, flooding, or severe weather initiating event.

Inspection Report# : [2002007\(pdf\)](#)

Significance:  Sep 30, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

**FAILURE TO ADEQUATELY CORRECT MULTIPLE FAILURES OF THE 2A RHR
NORMAL/ALTERNATE SWITCH**

Ineffective corrective actions resulted in repetitive failures of the 2A residual heat removal normal/alternate switch between June 1999 and September 2002 and a Non-Cited Violation of 10 CFR 50, Appendix B, Criterion XVI. The failure to correct the multiple normal/alternate switch failures was more than minor because the switch failures impacted the availability, reliability, and capability of equipment used to respond to initiating events and prevent undesirable consequences from a plant fire. This finding was of very low risk significance because the switch failures did not result in an actual loss of function for the residual heat removal system. The switch failures also failed to screen as a risk significant fire issue because the room cooler was not needed until 52 hours after a fire which provided the licensee adequate time to correct the failure.

Inspection Report# : [2002007\(pdf\)](#)

Significance:  Sep 30, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

**FAILURE TO DOCUMENT AN OVERGREASING ISSUE IN THE CORRECTIVE ACTION PROGRAM
AND TAKE ACTION TO ADDRESS THE EXTENT OF CONDITION**

The licensee failed to follow procedural requirements regarding the initiation of condition reports and determining the extent of condition following the discovery of a large amount of grease in the 1A core spray room cooler motor. As a result, the licensee did not provide a basis for continued operability of potentially impacted plant motors for approximately 40 days. This finding was more than minor because the licensee's lack of action resulted in the inability to ensure the availability and reliability of mitigating systems equipment used to respond to initiating events and prevent undesirable consequences. The inspectors determined that this finding was of very low risk significance because subsequent reviews determined that even if the motors susceptible to overgreasing failed, the motors are not credited in the licensee's probabilistic risk assessment.

Inspection Report# : [2002007\(pdf\)](#)

Barrier Integrity

Significance:  Apr 29, 2003

Identified By: NRC

Item Type: FIN Finding

DEFICIENT MONITORING AND TRENDING OF TAILPIPE TEMPERATURES ON THE 3B PORV

The inspectors identified a Green finding for deficient monitoring and trending of tailpipe temperatures on the 3B power operated relief valve due, in part, to not fully implementing the recommendations of General Electric Service Information Letter 196 and the long-term acceptance of high temperatures that masked a potential degraded condition. This issue was more than minor because the issue is associated with both the Initiating Events and the RCS (reactor coolant system) Barrier Cornerstones due to the relief valve spuriously lifting. This directly affects the associated cornerstone objectives of limiting the likelihood of those events that upset plant stability and maintaining the

functionality of the reactor coolant system. This capability is important for mitigating events which can lead to core damage. A Phase 3 analysis concluded the safety significance of the inspection finding based on the change in CDF (core damage frequency) to be very low.

Inspection Report# : [2003006\(pdf\)](#)

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Physical Protection

Miscellaneous

Significance: N/A Dec 20, 2002

Identified By: NRC

Item Type: FIN Finding

Corrective Action Program Generally Effective in Ensuring that Conditions Adverse to Quality were Being Adequately Addressed

Although issues were generally entered into the corrective action process at an appropriate level, there were times when opportunities to identify issues were missed due to a narrow focus. This led to issues either being self-revealing or being identified by outside organizations. Several of these issues resulted in plant shutdowns. Minor issues were generally properly categorized and evaluated. However, there were a number of examples where it appeared that the initial evaluation was limited and narrowly focused. These examples tended to be non-routine and involved multiple organizations and layers of management. In general, the licensee effectively corrected plant problems. On the positive side, the inspectors noted that Nuclear Oversight appeared to be an effective source for identifying performance issues and that plant employees, in general, indicated a strong willingness to report problems "to the highest levels." The inspectors concluded that corrective action program was generally effective in ensuring that conditions adverse to quality were being adequately addressed

Inspection Report# : [2003002\(pdf\)](#)

Last modified : September 04, 2003

Quad Cities 2

3Q/2003 Plant Inspection Findings

Initiating Events

Significance:  Sep 30, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

CONDITION ADVERSE TO QUALITY NOT IDENTIFIED AND CORRECTED DUE TO FAILURE TO FOLLOW TROUBLESHOOTING AND EQUIPMENT DEFICIENCY PROCEDURES

The inspectors determined that the failure to perform visual inspection of the dryer's internal surfaces and complete an extent of condition review which evaluated the full spectrum of frequencies acting on the Unit 2 steam dryer following a June 2002 failure contributed to a repetitive failure in June 2003.

This finding was more than minor because it impacted the equipment performance attribute of the initiating events cornerstone and affected the cornerstone objective of limiting the likelihood of events that upset plant stability. The inspectors determined that this finding was of very low risk significance because the failed steam dryer did not contribute to a loss of safety function for any mitigating system. The licensee's corrective actions included repairing the steam dryer and implementing additional measures to ensure that appropriate extent of condition reviews were completed when required.

Inspection Report# : [2003009\(pdf\)](#)

Significance:  Dec 28, 2002

Identified By: Self Disclosing

Item Type: FIN Finding

INADEQUATE PROCEDURE AND SELF CHECKING RESULTS IN CONNECTING AIR POWERED VACUUM TO INSTRUMENT AIR SYSTEM AND TWO AIR TRANSIENTS

The failure to identify the proper plant air supply prior to installing moisture separator decontamination equipment (air powered vacuum) resulted in two unexpected instrument air system transients on October 14 and 15, 2002. The work package did not contain equipment identification numbers to aid in identifying the proper air supply. In addition, the individual instructed to identify the air supply failed to perform self-checking activities that could have identified the inappropriate selection of instrument air for the equipment installation rather than service air.

This finding was more than minor because it affected the loss of instrument air initiating event frequency. The finding was of very low safety significance because the exposure time was short and all mitigating systems needed to address a loss of instrument air were available. No violation of NRC requirements occurred due to the instrument air system being non-safety-related.

Inspection Report# : [2002008\(pdf\)](#)

Significance:  Dec 20, 2002

Identified By: NRC

Item Type: FIN Finding

Failure to Recognize and Address High Vibration Indications on Plant Equipment

Green. The inspectors identified a Green finding due to the licensee's failure to recognize and address high vibration indications on plant equipment. On April 2, 2002, a Unit 2 main steam drain line broke due to high vibrations. The pipe break occurred down stream of the main steam isolation valves in a non-safety-related portion of the main steam piping.

The issue was more than minor, in that if the vibrations were not corrected (on both units) they could become a more significant safety concern. However, due to the location of the actual break, the issue was determined to be of very low safety significance. This issue was not subject to NRC enforcement since the break occurred in a non-safety-related portion of the main steam line and did not impact the operation of safety-related equipment (Section 40A2.1.b1).
Inspection Report# : [2003002\(pdf\)](#)

Mitigating Systems

Significance:  Sep 30, 2003

Identified By: NRC

Item Type: FIN Finding

FAILURE TO PERFORM THOROUGH EXTENT OF CONDITION REVIEW AND INTERNAL DRYER INSPECTION FOLLOWING FIRST STEAM DRYER FAILURE

The inspectors identified a Green finding and a Non-Cited Violation due to the failure to follow procedures after discovering that a shutdown cooling suction valve would not operate from the control room. The failure to follow procedures resulted in several human performance issues including: the failure to initiate a work request when required, the performance of troubleshooting activities prior to developing a formal troubleshooting plan, the use of repetitive cycling to resolve equipment deficiencies, and the use of the equipment cycling results as a basis for continued component operability. The deficiencies in work request initiation subsequently contributed to the licensee's failure to correct this equipment deficiency.

The inspectors determined that the failure to follow procedures after discovering this equipment deficiency was more than minor because if left uncorrected, this practice could lead to the failure to appropriately identify and correct subsequent deficiencies. The inspectors determined that the finding was of very low safety significance because the shutdown cooling suction valve could be manually operated if needed and adequate decay heat removal could be maintained using the remaining residual heat removal equipment. The licensee's corrective actions included maintaining the ability to manually open the suction valve, performing preventive maintenance on the valve's breaker, and re-enforcing the actions to be taken upon discovering an equipment deficiency.

Inspection Report# : [2003009\(pdf\)](#)

Significance:  Jun 30, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO PROVIDE A CORRECT PROCEDURE FOR VENTING EMERGENCY CORE COOLING SYSTEM TO DEMONSTRATE THE PIPING FULL OF WATER

The inspectors identified a Non-Cited Violation of Technical Specification Paragraph 5.4.1 for the licensee's failure to provide a correct procedure for venting emergency core cooling systems to ensure continued operability. As a result, 1B core spray operability was not properly evaluated after a large volume of gas was vented from the system.

This finding was greater than minor because it prevented a proper operability evaluation of the 1B core spray system

after operators vented a large volume of gas from the system. It adversely affected the procedure quality attribute of the mitigating systems cornerstone. If left uncorrected, the finding could become a more significant safety concern. The finding was of very low safety significance because the failure to address the as-left operability of the 1B core spray system did not result in the actual loss of the 1B core spray safety function.

Inspection Report# : [2003005\(pdf\)](#)

Significance:  Jun 30, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO IMPLEMENT ADEQUATE CORRECTIVE ACTION FOR A PREVIOUSLY IDENTIFIED EMERGENCY DIESEL GENERATOR PRECONDITIONING CONCERN

The inspectors identified a Non-Cited Violation of 10 CFR 50, Appendix B, Criterion XVI for the licensee's failure to implement adequate corrective action for a previously identified emergency diesel generator preconditioning concern. The inadequate corrective action contributed to the preconditioning of two emergency diesel generators and prevented proper preconditioning evaluations.

This finding was greater than minor because it contributed to the preconditioning of two emergency diesel generators and prevented a proper preconditioning evaluation. It adversely affected the procedure quality attribute of the mitigating systems cornerstone. If left uncorrected, the finding could become a more significant safety concern. The finding was of very low safety significance because it did not result in the actual loss of the emergency diesel generator safety function.

Inspection Report# : [2003005\(pdf\)](#)

Significance:  Mar 31, 2003

Identified By: NRC

Item Type: FIN Finding

UNIT 2 REACTOR CORE ISOLATION COOLING RENDERED INOPERABLE DURING SCAFFOLD DISASSEMBLY

The inspectors identified a finding involving a human performance error that resulted in the loss of the safety function of the Unit 2 reactor core isolation cooling system. An individual inadvertently bumped the system's trip throttle mechanism while removing scaffolding from the area.

The inspectors determined that the finding was more than minor because it impacted the mitigating systems attributes and objectives. In particular, the finding affected the availability, reliability, and capability of the reactor core isolation cooling system, a system that responds to initiating events to prevent undesirable consequences. The finding was of very low safety significance based on the low probability of core damage for the analyzed sequences.

Inspection Report# : [2003003\(pdf\)](#)

Significance:  Mar 31, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO MAINTAIN ADEQUATE SPATIAL SEPARATION OF FLAMMABLES FROM THE DIESEL DRIVEN FIRE PUMPS

The inspectors identified a finding involving a Non-Cited Violation for the licensee's failure to maintain 80 feet of spatial separation between a flammable liquids storage cabinet and the furthest diesel fire pump as required by the Quad Cities Operating Licenses and the Fire Protection Program.

The inspectors concluded that this finding was more than minor because the improper cabinet placement and potential storage of a large amount of flammable materials could lead to a fire which could engulf both fire pumps and cause a loss of the non safety-related service water system and the circulating water system. In addition, this finding was associated with the initiating events cornerstone attribute of protecting the plant against external factors and impacted the cornerstone objective of limiting the likelihood of events that upset plant stability and challenge critical safety functions. The finding was of very low safety significance based on the determination that the actual stored flammable liquids, if inadvertently ignited, would not produce sufficient radiative heat flux to damage both fire pumps at the same time.

Inspection Report# : [2003003\(pdf\)](#)

Significance:  Mar 31, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO PROPERLY LATCH FUSE DRAWERS CAUSING AUTOMATIC INITIATION AND LOADING OF EMERGENCY DIESEL GENERATOR

The inspectors identified a finding involving a Non-Cited Violation on Unit 1 for the failure to properly latch the potential transformer fuse drawers for bus 14 and bus 14-1. This resulted in the fuse drawers dropping open and causing the automatic initiation and loading of the emergency diesel generator due to loss of voltage on the emergency bus. Multiple operations department procedures failed to contain instructions to ensure that the potential transformer fuse drawers for the safety-related busses were properly latched. Unit 1 was unknowingly vulnerable to a loss of voltage condition on two safety-related busses during a seismic event.

The finding was more than minor because it was associated with attributes in both the mitigating systems and initiating events cornerstones and also affected each cornerstone objective. For example, a seismic event could cause both drawers to open resulting in a loss of both busses; a scram, and the loss of two residual heat removal service water pumps. The finding was of very low safety significance primarily due to the low initiating event frequency associated with a seismically induced loss of offsite power.

Inspection Report# : [2003003\(pdf\)](#)

Significance:  Mar 31, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO RESET PRIMARY CONTAINMENT ISOLATION LOGIC CAUSING RHR LPCI INOPERABILITY

The inspectors identified a finding on Unit 2 involving a Non-Cited Violation for the failure to reset the primary containment isolation logic after testing the low pressure coolant injection valves which caused the inoperability of both residual heat removal loops for more than 18 days.

The inspectors determined that the failure to reset the isolation logic after testing was more than minor because it involved the configuration control, equipment performance, and human performance attributes of the mitigating systems cornerstone, and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The finding was of very low safety significance based on the operators' abilities to recover the system during accident conditions, if required for injection, and the low probability of core damage for the analyzed sequences.

Inspection Report# : [2003003\(pdf\)](#)

Significance:  Dec 28, 2002

Identified By: Self Disclosing

Item Type: FIN Finding

INADEQUATE DESIGN LEADS TO DELAY IN DISCOVERING SAFE SHUTDOWN MAKEUP PUMP WAS INOPERABLE DUE TO STRAINER CLOGGING

A self-revealing failure occurred on October 16, 2002, when the safe shutdown makeup pump room cooler strainer became clogged with duck weed. The inspectors determined that twice per shift rounds to verify strainer operability and multiple strainer cleanings were not effective in ensuring continued operability of this equipment. In addition, control room personnel were not immediately notified of the clogged strainer via a control room alarm or a local alarm due to a system design deficiency.

This finding was more than minor because the strainer clogging impacted the operability of the safe shutdown makeup pump which can be used when responding to initiating events. In addition, the system design issues created a situation where operations personnel were unaware of equipment operability issues. This finding was of very low safety significance because the total exposure time was short, all other mitigating systems were available, and the safe shutdown makeup pump could have been recovered if needed. No violation of NRC requirements occurred due to the safe shutdown makeup only being of augmented quality per the licensee's Quality Assurance Report.

Inspection Report# : [2002008\(pdf\)](#)



Significance: Dec 28, 2002

Identified By: Self Disclosing

Item Type: FIN Finding

INADEQUATE PROCEDURE AND COMMUNICATION WEAKNESSES LEADS TO EMERGENCY DIESEL GENERATOR INOPERABILITY

During the 1A stator water heat exchanger tube bundle replacement on November 11, 2002, approximately 200 gallons of water were released as the tube bundle was pulled from the heat exchanger. The water migrated to the Unit 1 emergency diesel generator room below and tripped the circulating oil pump and turbocharger lubricating oil pump rendering the diesel inoperable. The work package used to perform the work did not contain information regarding the large amounts of water that may be present in the heat exchanger. In addition, information regarding the amount of water present in the heat exchanger was not communicated to the contractors performing the work even though this information was well known by operations and maintenance personnel.

This finding was more than minor because the inadequate work instructions and poor communications resulted in a situation which impacted the operability, availability, and reliability of the emergency diesel generator. The finding was of very low safety significance since the loss of the emergency diesel generator did not result in an actual loss of safety function of a system and did not result in an actual loss of safety function of a single train for greater than the Technical Specification Allowed Outage Time. No violations of NRC requirements were identified due to the stator water heat exchanger being non-safety-related.

Inspection Report# : [2002008\(pdf\)](#)



Significance: Dec 28, 2002

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

HUMAN PERFORMANCE AND PROBLEM IDENTIFICATION AND RESOLUTION RESULTS IN FAILURE TO DISCOVER IMPACT OF LOOSE LEAD ON RESIDUAL HEAT REMOVAL INOPERABILITY

A loose wire caused a condition that would have resulted in the failure of the 2B residual heat removal system to automatically start when required and would have resulted in the diversion of water from the 2A residual heat removal system if an emergency core cooling system actuation signal was received while the 2B residual heat removal system

was operating in torus cooling. One Non-Cited Violation of Technical Specification 3.5.1 was identified. The licensee determined that the wire was loosened during the February 2002 refueling outage. The impact of the loose wire was not addressed until October 2002 even though unexpected equipment performance was experienced on three previous occasions.

This finding was more than minor since the loose wire impacted the operability, availability, reliability, and capability of the residual heat removal system. The finding was determined to be of very low risk significance since the both trains of the residual heat removal system were recoverable using simple operator actions and all remaining mitigating systems equipment were available.

Inspection Report# : [2002008\(pdf\)](#)

Significance:  Dec 20, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

Violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," Related to the Quality of Design Basis Engineering Calculations

Green. The inspectors identified a Green Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," related to the quality of design basis engineering calculations. Specifically, the inspectors identified that instrument and test uncertainty was not considered in a number of design calculations, such that the calculation acceptance limits could not be validated. The diesel generator cooling water (DGCW), high pressure coolant injection (HPCI), and reactor core isolation cooling (RCIC) system design bases were not being adequately controlled by existing calculations.

This finding was considered greater than minor because a loss of design control could affect the reliability of the DGCW, HPCI and RCIC systems to perform their safety functions. Because no operability concerns were identified, the issue was determined to be of very low safety significance (Section).

Inspection Report# : [2003002\(pdf\)](#)

Barrier Integrity

Significance:  Apr 29, 2003

Identified By: NRC

Item Type: FIN Finding

DEFICIENT MONITORING AND TRENDING OF TAILPIPE TEMPERATURES ON THE 3B PORV

The inspectors identified a Green finding for deficient monitoring and trending of tailpipe temperatures on the 3B power operated relief valve due, in part, to not fully implementing the recommendations of General Electric Service Information Letter 196 and the long-term acceptance of high temperatures that masked a potential degraded condition.

This issue was more than minor because the issue is associated with both the Initiating Events and the RCS (reactor coolant system) Barrier Cornerstones due to the relief valve spuriously lifting. This directly affects the associated cornerstone objectives of limiting the likelihood of those events that upset plant stability and maintaining the functionality of the reactor coolant system. This capability is important for mitigating events which can lead to core damage. A Phase 3 analysis concluded the safety significance of the inspection finding based on the change in CDF (core damage frequency) to be very low.

Inspection Report# : [2003006\(pdf\)](#)

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Physical Protection

Miscellaneous

Significance: N/A Dec 20, 2002

Identified By: NRC

Item Type: FIN Finding

Corrective Action Program Generally Effective in Ensuring that Conditions Adverse to Quality were Being Adequately Addressed

Although issues were generally entered into the corrective action process at an appropriate level, there were times when opportunities to identify issues were missed due to a narrow focus. This led to issues either being self-revealing or being identified by outside organizations. Several of these issues resulted in plant shutdowns. Minor issues were generally properly categorized and evaluated. However, there were a number of examples where it appeared that the initial evaluation was limited and narrowly focused. These examples tended to be non-routine and involved multiple organizations and layers of management. In general, the licensee effectively corrected plant problems. On the positive side, the inspectors noted that Nuclear Oversight appeared to be an effective source for identifying performance issues and that plant employees, in general, indicated a strong willingness to report problems "to the highest levels." The inspectors concluded that corrective action program was generally effective in ensuring that conditions adverse to quality were being adequately addressed

Inspection Report# : [2003002\(pdf\)](#)

Last modified : December 01, 2003

Quad Cities 2

4Q/2003 Plant Inspection Findings

Initiating Events

Significance:  Sep 30, 2003

Identified By: NRC

Item Type: FIN Finding

FAILURE TO PERFORM THOROUGH EXTENT OF CONDITION REVIEW AND INTERNAL DRYER INSPECTION FOLLOWING FIRST STEAM DRYER FAILURE

Green. The inspectors determined that the failure to perform visual inspection of the dryer's internal surfaces and complete an extent of condition review which evaluated the full spectrum of frequencies acting on the Unit 2 steam dryer following a June 2002 failure contributed to a repetitive failure in June 2003.

This finding was more than minor because it impacted the equipment performance attribute of the initiating events cornerstone and affected the cornerstone objective of limiting the likelihood of events that upset plant stability. The inspectors determined that this finding was of very low risk significance because the failed steam dryer did not contribute to a loss of safety function for any mitigating system. The licensee's corrective actions included repairing the steam dryer and implementing additional measures to ensure that appropriate extent of condition reviews were completed when required. (Section 40A2.3)

Inspection Report# : [2003009\(pdf\)](#)

Mitigating Systems

Significance:  Dec 31, 2003

Identified By: NRC

Item Type: FIN Finding

FAILURE OF STEAM DRYER MONITORING PLAN TO DETECT SIGNIFICANT DRYER DEGRADATION IN THE EARLY STAGES TO PRECLUDE FAILURE WHICH COULD IMPACT SAFETY-RELATED EQUIPMENT.

A self-revealing finding was identified due to the failure of the steam dryer monitoring plan to detect significant Unit 1 dryer degradation in the early stages. As a result, actions which could have been taken to preclude the generation of loose parts, and minimize potential damage to mitigating systems equipment, were unable to be taken.

This finding was determined to be more than minor because it impacted the equipment performance attribute of the mitigating systems cornerstone and impacted the objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors determined that this finding was of very low safety significance as the dryer failure did not result in the loss of safety function of any mitigating systems equipment.

Inspection Report# : [2003013\(pdf\)](#)

Significance:  Dec 31, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

PROCEDURES FOR PLACING RESIDUAL HEAT REMOVAL PUMP IN SHUTDOWN COOLING NOT APPROPRIATE TO THE CIRCUMSTANCES

A self-revealing event occurred on April 17, 2003, due to the failure to have procedures appropriate to the circumstances for placing a residual heat removal pump in the shutdown cooling mode of operation. When taken in conjunction with a degraded relief valve, the inadequate procedural guidance increased the pressure in the residual heat removal piping to a level which exceeded the relief valve setpoint. The discharge from the relief valve traveled to the reactor building floor drain sump and was unnoticed by control room and radwaste operations personnel for more than 10 hours due to weaknesses in control room and radwaste panel monitoring. By the time this condition was identified, the floor drain sump had overflowed and approximately one-half inch of water had accumulated on portions of the reactor building basement floor. The failure to have a procedure appropriate to the circumstance was determined to be a violation of NRC requirements. The inspectors considered the weakness in panel monitoring by both control room and radwaste operations personnel to be a human performance issue since this delayed the identification of this self-revealing condition. Lastly, the failure of the licensee to identify the weaknesses in operator performance prior to prompting by the inspectors was considered a problem identification and resolution issue.

This finding was more than minor because it was associated with the procedure quality and protection against external factors attributes of the mitigating systems cornerstone. In addition, this finding impacted the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences such as flooding. The inspectors determined that this finding was of very low safety significance as adequate decay heat removal and mitigating systems capability was maintained.

Inspection Report# : [2003013\(pdf\)](#)

Significance:  Dec 31, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO DEMONSTRATE PERFORMANCE OR CONDITION OF REACTOR BUILDING FLOOR DRAIN SUMP HIGH LEVEL ALARMS WERE EFFECTIVELY CONTROLLED THROUGH PERFORMANCE OF PREVENTIVE MAINTENANCE

The inspectors identified a Green finding involving a Non-Cited Violation for the failure to demonstrate effective control of the condition of the reactor building floor drain sump high level alarms through the performance of preventive maintenance. As a result, the licensee had not set goals or monitored the performance of the alarms as required by 10 CFR Part 50.65(a)(1).

This finding was determined to be more than minor because if left uncorrected the failure to perform appropriate preventive maintenance would become a more significant safety concern. Due to the nature of this finding, it was unable to be assessed using the Significance Determination Process. However, the details of this finding were reviewed by Region III management, maintenance rule personnel in the Office of Nuclear Reactor Regulation, and Office of Enforcement personnel and determined to be of very low risk significance.

Inspection Report# : [2003013\(pdf\)](#)

Significance:  Sep 30, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

CONDITION ADVERSE TO QUALITY NOT IDENTIFIED AND CORRECTED DUE TO FAILURE TO

FOLLOW TROUBLESHOOTING AND EQUIPMENT DEFICIENCY PROCEDURES

Green. The inspectors identified a Green finding and a Non-Cited Violation due to the failure to follow procedures after discovering that a shutdown cooling suction valve would not operate from the control room. The failure to follow procedures resulted in several human performance issues including: the failure to initiate a work request when required, the performance of troubleshooting activities prior to developing a formal troubleshooting plan, the use of repetitive cycling to resolve equipment deficiencies, and the use of the equipment cycling results as a basis for continued component operability. The deficiencies in work request initiation subsequently contributed to the licensee's failure to correct this equipment deficiency.

The inspectors determined that the failure to follow procedures after discovering this equipment deficiency was more than minor because if left uncorrected, this practice could lead to the failure to appropriately identify and correct subsequent deficiencies. The inspectors determined that the finding was of very low safety significance because the shutdown cooling suction valve could be manually operated if needed and adequate decay heat removal could be maintained using the remaining residual heat removal equipment. The licensee's corrective actions included maintaining the ability to manually open the suction valve, performing preventive maintenance on the valve's breaker, and re-enforcing the actions to be taken upon discovering an equipment deficiency. (Section 40A2.2)

Inspection Report# : [2003009\(pdf\)](#)



Significance: Jun 30, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO PROVIDE A CORRECT PROCEDURE FOR VENTING EMERGENCY CORE COOLING SYSTEM TO DEMONSTRATE THE PIPING FULL OF WATER

The inspectors identified a Non-Cited Violation of Technical Specification Paragraph 5.4.1 for the licensee's failure to provide a correct procedure for venting emergency core cooling systems to ensure continued operability. As a result, 1B core spray operability was not properly evaluated after a large volume of gas was vented from the system.

This finding was greater than minor because it prevented a proper operability evaluation of the 1B core spray system after operators vented a large volume of gas from the system. It adversely affected the procedure quality attribute of the mitigating systems cornerstone. If left uncorrected, the finding could become a more significant safety concern. The finding was of very low safety significance because the failure to address the as-left operability of the 1B core spray system did not result in the actual loss of the 1B core spray safety function.

Inspection Report# : [2003005\(pdf\)](#)



Significance: Jun 30, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO IMPLEMENT ADEQUATE CORRECTIVE ACTION FOR A PREVIOUSLY IDENTIFIED EMERGENCY DIESEL GENERATOR PRECONDITIONING CONCERN

The inspectors identified a Non-Cited Violation of 10 CFR 50, Appendix B, Criterion XVI for the licensee's failure to implement adequate corrective action for a previously identified emergency diesel generator preconditioning concern. The inadequate corrective action contributed to the preconditioning of two emergency diesel generators and prevented proper preconditioning evaluations.

This finding was greater than minor because it contributed to the preconditioning of two emergency diesel generators and prevented a proper preconditioning evaluation. It adversely affected the procedure quality attribute of the mitigating systems cornerstone. If left uncorrected, the finding could become a more significant safety concern. The finding was of very low safety significance because it did not result in the actual loss of the emergency diesel generator

safety function.

Inspection Report# : [2003005\(pdf\)](#)

Significance:  Mar 31, 2003

Identified By: NRC

Item Type: FIN Finding

UNIT 2 REACTOR CORE ISOLATION COOLING RENDERED INOPERABLE DURING SCAFFOLD DISASSEMBLY

The inspectors identified a finding involving a human performance error that resulted in the loss of the safety function of the Unit 2 reactor core isolation cooling system. An individual inadvertently bumped the system's trip throttle mechanism while removing scaffolding from the area.

The inspectors determined that the finding was more than minor because it impacted the mitigating systems attributes and objectives. In particular, the finding affected the availability, reliability, and capability of the reactor core isolation cooling system, a system that responds to initiating events to prevent undesirable consequences. The finding was of very low safety significance based on the low probability of core damage for the analyzed sequences.

Inspection Report# : [2003003\(pdf\)](#)

Significance:  Mar 31, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO MAINTAIN ADEQUATE SPATIAL SEPARATION OF FLAMMABLES FROM THE DIESEL DRIVEN FIRE PUMPS

The inspectors identified a finding involving a Non-Cited Violation for the licensee's failure to maintain 80 feet of spatial separation between a flammable liquids storage cabinet and the furthest diesel fire pump as required by the Quad Cities Operating Licenses and the Fire Protection Program.

The inspectors concluded that this finding was more than minor because the improper cabinet placement and potential storage of a large amount of flammable materials could lead to a fire which could engulf both fire pumps and cause a loss of the non safety-related service water system and the circulating water system. In addition, this finding was associated with the initiating events cornerstone attribute of protecting the plant against external factors and impacted the cornerstone objective of limiting the likelihood of events that upset plant stability and challenge critical safety functions. The finding was of very low safety significance based on the determination that the actual stored flammable liquids, if inadvertently ignited, would not produce sufficient radiative heat flux to damage both fire pumps at the same time.

Inspection Report# : [2003003\(pdf\)](#)

Significance:  Mar 31, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO PROPERLY LATCH FUSE DRAWERS CAUSING AUTOMATIC INITIATION AND LOADING OF EMERGENCY DIESEL GENERATOR

The inspectors identified a finding involving a Non-Cited Violation on Unit 1 for the failure to properly latch the potential transformer fuse drawers for bus 14 and bus 14-1. This resulted in the fuse drawers dropping open and causing the automatic initiation and loading of the emergency diesel generator due to loss of voltage on the emergency bus. Multiple operations department procedures failed to contain instructions to ensure that the potential transformer fuse drawers for the safety-related busses were properly latched. Unit 1 was unknowingly vulnerable to a loss of

voltage condition on two safety-related busses during a seismic event.

The finding was more than minor because it was associated with attributes in both the mitigating systems and initiating events cornerstones and also affected each cornerstone objective. For example, a seismic event could cause both drawers to open resulting in a loss of both busses; a scram, and the loss of two residual heat removal service water pumps. The finding was of very low safety significance primarily due to the low initiating event frequency associated with a seismically induced loss of offsite power.

Inspection Report# : [2003003\(pdf\)](#)



Significance: Mar 31, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO RESET PRIMARY CONTAINMENT ISOLATION LOGIC CAUSING RHR LPCI INOPERABILITY

The inspectors identified a finding on Unit 2 involving a Non-Cited Violation for the failure to reset the primary containment isolation logic after testing the low pressure coolant injection valves which caused the inoperability of both residual heat removal loops for more than 18 days.

The inspectors determined that the failure to reset the isolation logic after testing was more than minor because it involved the configuration control, equipment performance, and human performance attributes of the mitigating systems cornerstone, and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The finding was of very low safety significance based on the operators' abilities to recover the system during accident conditions, if required for injection, and the low probability of core damage for the analyzed sequences.

Inspection Report# : [2003003\(pdf\)](#)

Barrier Integrity



Significance: Apr 29, 2003

Identified By: NRC

Item Type: FIN Finding

DEFICIENT MONITORING AND TRENDING OF TAILPIPE TEMPERATURES ON THE 3B PORV

The inspectors identified a Green finding for deficient monitoring and trending of tailpipe temperatures on the 3B power operated relief valve due, in part, to not fully implementing the recommendations of General Electric Service Information Letter 196 and the long-term acceptance of high temperatures that masked a potential degraded condition.

This issue was more than minor because the issue is associated with both the Initiating Events and the RCS (reactor coolant system) Barrier Cornerstones due to the relief valve spuriously lifting. This directly affects the associated cornerstone objectives of limiting the likelihood of those events that upset plant stability and maintaining the functionality of the reactor coolant system. This capability is important for mitigating events which can lead to core damage. A Phase 3 analysis concluded the safety significance of the inspection finding based on the change in CDF (core damage frequency) to be very low.

Inspection Report# : [2003006\(pdf\)](#)

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Physical Protection

Miscellaneous

Last modified : March 02, 2004

Quad Cities 2 1Q/2004 Plant Inspection Findings

Initiating Events



Significance: Sep 30, 2003

Identified By: NRC

Item Type: FIN Finding

FAILURE TO PERFORM THOROUGH EXTENT OF CONDITION REVIEW AND INTERNAL DRYER INSPECTION FOLLOWING FIRST STEAM DRYER FAILURE

Green. The inspectors determined that the failure to perform visual inspection of the dryer's internal surfaces and complete an extent of condition review which evaluated the full spectrum of frequencies acting on the Unit 2 steam dryer following a June 2002 failure contributed to a repetitive failure in June 2003.

This finding was more than minor because it impacted the equipment performance attribute of the initiating events cornerstone and affected the cornerstone objective of limiting the likelihood of events that upset plant stability. The inspectors determined that this finding was of very low risk significance because the failed steam dryer did not contribute to a loss of safety function for any mitigating system. The licensee's corrective actions included repairing the steam dryer and implementing additional measures to ensure that appropriate extent of condition reviews were completed when required. (Section 40A2.3)

Inspection Report# : [2003009\(pdf\)](#)

Mitigating Systems



Significance: Mar 31, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

AUTOMATIC DEPRESSURIZATION SYSTEM VALVE 1-0203-3B WAS INOPERABLE WHEN REQUIRED TO BE OPERABLE

Technical Specification 3.4.3.A requires that with one relief valve inoperable, restore the valve to operable status within 14 days or be in mode 3 within 12 hours and in mode 4 within 36 hours. In addition, Technical Specification 3.5.1.G requires that with one automatic depressurization system valve inoperable, restore the valve to operable status within 14 days or be in mode 3 within 12 hours and reduce reactor dome pressure to 150 psig or below within 36 hours. Contrary to the above, the licensee discovered on November 15, 2003, that automatic depressurization system valve 1-0203-3B was inoperable when required to be operable from July 23 until November 11, 2003.

Inspection Report# : [2004002\(pdf\)](#)



Significance: Dec 31, 2003

Identified By: NRC

Item Type: FIN Finding

FAILURE OF STEAM DRYER MONITORING PLAN TO DETECT SIGNIFICANT DRYER DEGRADATION IN THE EARLY STAGES TO PRECLUDE FAILURE WHICH COULD IMPACT SAFETY-RELATED EQUIPMENT.

A self-revealing finding was identified due to the failure of the steam dryer monitoring plan to detect significant Unit 1 dryer degradation in the early stages. As a result, actions which could have been taken to preclude the generation of loose parts, and minimize potential damage to mitigating systems equipment, were unable to be taken.

This finding was determined to be more than minor because it impacted the equipment performance attribute of the mitigating systems cornerstone and impacted the objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors determined that this finding was of very low safety significance as the dryer failure did not result in the loss of safety function of any mitigating systems equipment.

Inspection Report# : [2003013\(pdf\)](#)



Significance: Dec 31, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

PROCEDURES FOR PLACING RESIDUAL HEAT REMOVAL PUMP IN SHUTDOWN COOLING NOT APPROPRIATE TO THE CIRCUMSTANCES

A self-revealing event occurred on April 17, 2003, due to the failure to have procedures appropriate to the circumstances for placing a residual heat removal pump in the shutdown cooling mode of operation. When taken in conjunction with a degraded relief valve, the inadequate procedural guidance increased the pressure in the residual heat removal piping to a level which exceeded the relief valve setpoint. The discharge from the relief valve traveled to the reactor building floor drain sump and was unnoticed by control room and radwaste operations personnel for more than 10 hours due to weaknesses in control room and radwaste panel monitoring. By the time this condition was identified, the floor drain sump had overflowed and approximately one-half inch of water had accumulated on portions of the reactor building basement floor. The failure to have a procedure appropriate to the circumstance was determined to be a violation of NRC requirements. The inspectors considered the weakness in panel monitoring by both control room and radwaste operations personnel to be a human performance issue since this delayed the identification of this self-revealing condition. Lastly, the failure of the licensee to identify the weaknesses in operator performance prior to prompting by the inspectors was considered a problem identification and resolution issue.

This finding was more than minor because it was associated with the procedure quality and protection against external factors attributes of the mitigating systems cornerstone. In addition, this finding impacted the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences such as flooding. The inspectors determined that this finding was of very low safety significance as adequate decay heat removal and mitigating systems capability was maintained.

Inspection Report# : [2003013\(pdf\)](#)



Significance: Dec 31, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO DEMONSTRATE PERFORMANCE OR CONDITION OF REACTOR BUILDING FLOOR DRAIN SUMP HIGH LEVEL ALARMS WERE EFFECTIVELY CONTROLLED THROUGH PERFORMANCE OF PREVENTIVE MAINTENANCE

The inspectors identified a Green finding involving a Non-Cited Violation for the failure to demonstrate effective control of the condition of the reactor building floor drain sump high level alarms through the performance of preventive maintenance. As a result, the licensee had not set goals or monitored the performance of the alarms as required by 10 CFR Part 50.65(a)(1).

This finding was determined to be more than minor because if left uncorrected the failure to perform appropriate preventive maintenance would become a more significant safety concern. Due to the nature of this finding, it was unable to be assessed using the Significance Determination Process. However, the details of this finding were reviewed by Region III management, maintenance rule personnel in the Office of Nuclear Reactor Regulation, and Office of Enforcement personnel and determined to be of very low risk significance.

Inspection Report# : [2003013\(pdf\)](#)



Significance: Sep 30, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

CONDITION ADVERSE TO QUALITY NOT IDENTIFIED AND CORRECTED DUE TO FAILURE TO FOLLOW TROUBLESHOOTING AND EQUIPMENT DEFICIENCY PROCEDURES

Green. The inspectors identified a Green finding and a Non-Cited Violation due to the failure to follow procedures after discovering that a shutdown cooling suction valve would not operate from the control room. The failure to follow procedures resulted in several human performance issues including: the failure to initiate a work request when required, the performance of troubleshooting activities prior to developing a formal troubleshooting plan, the use of repetitive cycling to resolve equipment deficiencies, and the use of the equipment cycling results as a basis for continued component operability. The deficiencies in work request initiation subsequently contributed to the licensee's failure to correct this equipment deficiency.

The inspectors determined that the failure to follow procedures after discovering this equipment deficiency was more than minor because if left uncorrected, this practice could lead to the failure to appropriately identify and correct subsequent deficiencies. The inspectors determined that the finding was of very low safety significance because the shutdown cooling suction valve could be manually operated if needed and adequate decay heat removal could be maintained using the remaining residual heat removal equipment. The licensee's corrective actions included maintaining the ability to manually open the suction valve, performing preventive maintenance on the valve's breaker, and re-enforcing the actions to be taken upon discovering an equipment deficiency. (Section 40A2.2)

Inspection Report# : [2003009\(pdf\)](#)



Significance: Jun 30, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO PROVIDE A CORRECT PROCEDURE FOR VENTING EMERGENCY CORE COOLING SYSTEM TO DEMONSTRATE THE PIPING FULL OF WATER

The inspectors identified a Non-Cited Violation of Technical Specification Paragraph 5.4.1 for the licensee's failure to provide a correct

procedure for venting emergency core cooling systems to ensure continued operability. As a result, 1B core spray operability was not properly evaluated after a large volume of gas was vented from the system.

This finding was greater than minor because it prevented a proper operability evaluation of the 1B core spray system after operators vented a large volume of gas from the system. It adversely affected the procedure quality attribute of the mitigating systems cornerstone. If left uncorrected, the finding could become a more significant safety concern. The finding was of very low safety significance because the failure to address the as-left operability of the 1B core spray system did not result in the actual loss of the 1B core spray safety function.

Inspection Report# : [2003005\(pdf\)](#)



Significance: Jun 30, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO IMPLEMENT ADEQUATE CORRECTIVE ACTION FOR A PREVIOUSLY IDENTIFIED EMERGENCY DIESEL GENERATOR PRECONDITIONING CONCERN

The inspectors identified a Non-Cited Violation of 10 CFR 50, Appendix B, Criterion XVI for the licensee's failure to implement adequate corrective action for a previously identified emergency diesel generator preconditioning concern. The inadequate corrective action contributed to the preconditioning of two emergency diesel generators and prevented proper preconditioning evaluations.

This finding was greater than minor because it contributed to the preconditioning of two emergency diesel generators and prevented a proper preconditioning evaluation. It adversely affected the procedure quality attribute of the mitigating systems cornerstone. If left uncorrected, the finding could become a more significant safety concern. The finding was of very low safety significance because it did not result in the actual loss of the emergency diesel generator safety function.

Inspection Report# : [2003005\(pdf\)](#)

Barrier Integrity



Significance: Apr 29, 2003

Identified By: NRC

Item Type: FIN Finding

DEFICIENT MONITORING AND TRENDING OF TAILPIPE TEMPERATURES ON THE 3B PORV

The inspectors identified a Green finding for deficient monitoring and trending of tailpipe temperatures on the 3B power operated relief valve due, in part, to not fully implementing the recommendations of General Electric Service Information Letter 196 and the long-term acceptance of high temperatures that masked a potential degraded condition.

This issue was more than minor because the issue is associated with both the Initiating Events and the RCS (reactor coolant system) Barrier Cornerstones due to the relief valve spuriously lifting. This directly affects the associated cornerstone objectives of limiting the likelihood of those events that upset plant stability and maintaining the functionality of the reactor coolant system. This capability is important for mitigating events which can lead to core damage. A Phase 3 analysis concluded the safety significance of the inspection finding based on the change in CDF (core damage frequency) to be very low.

Inspection Report# : [2003006\(pdf\)](#)

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Physical Protection


Miscellaneous

Last modified : May 05, 2004

Quad Cities 2

2Q/2004 Plant Inspection Findings

Initiating Events

Significance:  Jun 30, 2004
Identified By: NRC
Item Type: FIN Finding

FAILURE TO APPROPRIATELY IMPLEMENT TURBINE THRUST BEARING WEAR DETECTOR CALIBRATION AND SURVEILLANCE TESTING PROCEDURES

A finding of very low safety significance was self-revealed when the Unit 2 main turbine and reactor automatically tripped during thrust bearing wear detector testing. The turbine trip was a result of the licensee's failure to implement the thrust bearing wear detector test program as described in the vendor manual. The inspectors determined that the licensee had modified their test program to gain efficiencies in plant operation, work control, and radiation protection. However, the licensee did not recognize that the increased efficiencies also increased the likelihood of a plant transient during thrust bearing wear detector testing.

This finding was more than minor because it was viewed as a precursor to a significant event (a transient). This finding was of very low safety significance because Unit 2 responded to the turbine trip and reactor trip as designed and all mitigating systems equipment was available following the reactor trip. The finding was not considered a violation of regulatory requirements since the main turbine thrust bearing wear detector was a non-safety related component.

Inspection Report# : [2004005\(pdf\)](#)

Significance:  Sep 30, 2003
Identified By: NRC
Item Type: FIN Finding

FAILURE TO PERFORM THOROUGH EXTENT OF CONDITION REVIEW AND INTERNAL DRYER INSPECTION FOLLOWING FIRST STEAM DRYER FAILURE

Green. The inspectors determined that the failure to perform visual inspection of the dryer's internal surfaces and complete an extent of condition review which evaluated the full spectrum of frequencies acting on the Unit 2 steam dryer following a June 2002 failure contributed to a repetitive failure in June 2003.

This finding was more than minor because it impacted the equipment performance attribute of the initiating events cornerstone and affected the cornerstone objective of limiting the likelihood of events that upset plant stability. The inspectors determined that this finding was of very low risk significance because the failed steam dryer did not contribute to a loss of safety function for any mitigating system. The licensee's corrective actions included repairing the steam dryer and implementing additional measures to ensure that appropriate extent of condition reviews were completed when required. (Section 40A2.3)

Inspection Report# : [2003009\(pdf\)](#)

Mitigating Systems

Significance:  May 28, 2004
Identified By: NRC
Item Type: FIN Finding

Failure to Provide Adequate Minimum Flow Protection for the RCIC Pump

Green. The inspectors identified a finding of very low safety significance involving inadequate design control of the reactor core isolation cooling system. Specifically, the design of the reactor core isolation cooling system and plant operating procedures did not provide adequate minimum flow protection for the reactor core isolation cooling pump. As a result, the reactor core isolation cooling flow could be reduced below the minimum flow requirements for the pump, potentially resulting in pump damage. This finding applies to both units.

This finding was more than minor since it could have affected the mitigating system cornerstone objective of ensuring the availability of systems required to respond to initiating events. This finding was of low safety significance because it did not represent an actual degradation of the reactor core isolation cooling system. The licensee initiated appropriate corrective actions, including implementing a procedure change and obtaining formal minimum flow information from the pump vendor, to ensure continued operability. No violation of NRC requirements occurred.

Inspection Report# : [2004004\(pdf\)](#)

G

Significance: Mar 31, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

AUTOMATIC DEPRESSURIZATION SYSTEM VALVE 1-0203-3B WAS INOPERABLE WHEN REQUIRED TO BE OPERABLE

Technical Specification 3.4.3.A requires that with one relief valve inoperable, restore the valve to operable status within 14 days or be in mode 3 within 12 hours and in mode 4 within 36 hours. In addition, Technical Specification 3.5.1.G requires that with one automatic depressurization system valve inoperable, restore the valve to operable status within 14 days or be in mode 3 within 12 hours and reduce reactor dome pressure to 150 psig or below within 36 hours. Contrary to the above, the licensee discovered on November 15, 2003, that automatic depressurization system valve 1-0203-3B was inoperable when required to be operable from July 23 until November 11, 2003.

Inspection Report# : [2004002\(pdf\)](#)

G

Significance: Dec 31, 2003

Identified By: NRC

Item Type: FIN Finding

FAILURE OF STEAM DRYER MONITORING PLAN TO DETECT SIGNIFICANT DRYER DEGRADATION IN THE EARLY STAGES TO PRECLUDE FAILURE WHICH COULD IMPACT SAFETY-RELATED EQUIPMENT.

A self-revealing finding was identified due to the failure of the steam dryer monitoring plan to detect significant Unit 1 dryer degradation in the early stages. As a result, actions which could have been taken to preclude the generation of loose parts, and minimize potential damage to mitigating systems equipment, were unable to be taken.

This finding was determined to be more than minor because it impacted the equipment performance attribute of the mitigating systems cornerstone and impacted the objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors determined that this finding was of very low safety significance as the dryer failure did not result in the loss of safety function of any mitigating systems equipment.

Inspection Report# : [2003013\(pdf\)](#)

G

Significance: Dec 31, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

PROCEDURES FOR PLACING RESIDUAL HEAT REMOVAL PUMP IN SHUTDOWN COOLING NOT APPROPRIATE TO THE CIRCUMSTANCES

A self-revealing event occurred on April 17, 2003, due to the failure to have procedures appropriate to the circumstances for placing a residual heat removal pump in the shutdown cooling mode of operation. When taken in conjunction with a degraded relief valve, the inadequate procedural guidance increased the pressure in the residual heat removal piping to a level which exceeded the relief valve setpoint. The discharge from the relief valve traveled to the reactor building floor drain sump and was unnoticed by control room and radwaste operations personnel for more than 10 hours due to weaknesses in control room and radwaste panel monitoring. By the time this condition was identified, the floor drain sump had overflowed and approximately one-half inch of water had accumulated on portions of the reactor building basement floor. The failure to have a procedure appropriate to the circumstance was determined to be a violation of NRC requirements. The inspectors considered the weakness in panel monitoring by both control room and radwaste operations personnel to be a human performance issue since this delayed the identification of this self-revealing condition. Lastly, the failure of the licensee to identify the weaknesses in operator performance prior to prompting by the inspectors was considered a problem identification and resolution issue.

This finding was more than minor because it was associated with the procedure quality and protection against external factors attributes of the mitigating systems cornerstone. In addition, this finding impacted the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences such as flooding. The inspectors determined that this finding was of very low safety significance as adequate decay heat removal and mitigating systems capability was maintained.

Inspection Report# : [2003013\(pdf\)](#)

G

Significance: Dec 31, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO DEMONSTRATE PERFORMANCE OR CONDITION OF REACTOR BUILDING FLOOR DRAIN SUMP HIGH LEVEL ALARMS WERE EFFECTIVELY CONTROLLED THROUGH PERFORMANCE OF PREVENTIVE MAINTENANCE

The inspectors identified a Green finding involving a Non-Cited Violation for the failure to demonstrate effective control of the condition of the reactor building floor drain sump high level alarms through the performance of preventive maintenance. As a result, the licensee had not set goals or monitored the performance of the alarms as required by 10 CFR Part 50.65(a)(1).

This finding was determined to be more than minor because if left uncorrected the failure to perform appropriate preventive maintenance would become a more significant safety concern. Due to the nature of this finding, it was unable to be assessed using the Significance Determination Process. However, the details of this finding were reviewed by Region III management, maintenance rule personnel in the Office of Nuclear Reactor Regulation, and Office of Enforcement personnel and determined to be of very low risk significance.

Inspection Report# : [2003013\(pdf\)](#)

G**Significance:** Sep 30, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

CONDITION ADVERSE TO QUALITY NOT IDENTIFIED AND CORRECTED DUE TO FAILURE TO FOLLOW TROUBLESHOOTING AND EQUIPMENT DEFICIENCY PROCEDURES

Green. The inspectors identified a Green finding and a Non-Cited Violation due to the failure to follow procedures after discovering that a shutdown cooling suction valve would not operate from the control room. The failure to follow procedures resulted in several human performance issues including: the failure to initiate a work request when required, the performance of troubleshooting activities prior to developing a formal troubleshooting plan, the use of repetitive cycling to resolve equipment deficiencies, and the use of the equipment cycling results as a basis for continued component operability. The deficiencies in work request initiation subsequently contributed to the licensee's failure to correct this equipment deficiency.

The inspectors determined that the failure to follow procedures after discovering this equipment deficiency was more than minor because if left uncorrected, this practice could lead to the failure to appropriately identify and correct subsequent deficiencies. The inspectors determined that the finding was of very low safety significance because the shutdown cooling suction valve could be manually operated if needed and adequate decay heat removal could be maintained using the remaining residual heat removal equipment. The licensee's corrective actions included maintaining the ability to manually open the suction valve, performing preventive maintenance on the valve's breaker, and re-enforcing the actions to be taken upon discovering an equipment deficiency. (Section 40A2.2)

Inspection Report# : [2003009\(pdf\)](#)

Barrier Integrity

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Physical Protection

[Physical Protection](#) information not publicly available.

Miscellaneous

Last modified : September 08, 2004

Quad Cities 2

3Q/2004 Plant Inspection Findings

Initiating Events

Significance:  Jun 30, 2004

Identified By: NRC

Item Type: FIN Finding

FAILURE TO APPROPRIATELY IMPLEMENT TURBINE THRUST BEARING WEAR DETECTOR CALIBRATION AND SURVEILLANCE TESTING PROCEDURES

A finding of very low safety significance was self-revealed when the Unit 2 main turbine and reactor automatically tripped during thrust bearing wear detector testing. The turbine trip was a result of the licensee's failure to implement the thrust bearing wear detector test program as described in the vendor manual. The inspectors determined that the licensee had modified their test program to gain efficiencies in plant operation, work control, and radiation protection. However, the licensee did not recognize that the increased efficiencies also increased the likelihood of a plant transient during thrust bearing wear detector testing.

This finding was more than minor because it was viewed as a precursor to a significant event (a transient). This finding was of very low safety significance because Unit 2 responded to the turbine trip and reactor trip as designed and all mitigating systems equipment was available following the reactor trip. The finding was not considered a violation of regulatory requirements since the main turbine thrust bearing wear detector was a non-safety related component.

Inspection Report# : [2004005\(pdf\)](#)

Mitigating Systems

Significance:  Sep 30, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

VIOLATION OF TS 3.3.6.1 DUE TO MAIN STEAM LINE HIGH FLOW SWITCHES BEING FOUND OUT OF TOLERANCE

A finding of very low safety significance was identified when the setpoint for two of the Unit 2 main steam line high flow switches were found to be higher than allowed by Technical Specification 3.3.6.1 in July 2003. As corrective actions, the licensee recalibrated the switches and performed a root cause analysis.

This finding was more than minor because if left uncorrected the switches could have continued to drift to a level above the analytical limit. Had this occurred, the licensee would have been operating in a condition not previously reviewed by the NRC. This finding was determined to be of very low safety significance since the out of tolerance switches did not result in a loss of safety function for the containment isolation system. However, this finding was a Non-Cited Violation of Technical Specification 3.3.6.1 as the out of tolerance switches resulted in the failure to ensure that two trip systems per channel per steam line were operable during Mode 1 operations.

Inspection Report# : [2004009\(pdf\)](#)

Significance:  May 28, 2004

Identified By: NRC

Item Type: FIN Finding

Failure to Provide Adequate Minimum Flow Protection for the RCIC Pump

Green. The inspectors identified a finding of very low safety significance involving inadequate design control of the reactor core isolation cooling system. Specifically, the design of the reactor core isolation cooling system and plant operating procedures did not provide adequate minimum flow protection for the reactor core isolation cooling pump. As a result, the reactor core isolation cooling flow could be reduced below the minimum flow requirements for the pump, potentially resulting in pump damage. This finding applies to both units.

This finding was more than minor since it could have affected the mitigating system cornerstone objective of ensuring the availability of systems required to respond to initiating events. This finding was of low safety significance because it did not represent an actual degradation of the reactor core isolation cooling system. The licensee initiated appropriate corrective actions, including implementing a procedure change and obtaining formal minimum flow information from the pump vendor, to ensure continued operability. No violation of NRC requirements occurred.

Inspection Report# : [2004004\(pdf\)](#)

Significance:  Mar 31, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

AUTOMATIC DEPRESSURIZATION SYSTEM VALVE 1-0203-3B WAS INOPERABLE WHEN REQUIRED TO BE OPERABLE
 Technical Specification 3.4.3.A requires that with one relief valve inoperable, restore the valve to operable status within 14 days or be in mode 3 within 12 hours and in mode 4 within 36 hours. In addition, Technical Specification 3.5.1.G requires that with one automatic depressurization system valve inoperable, restore the valve to operable status within 14 days or be in mode 3 within 12 hours and reduce reactor dome pressure to 150 psig or below within 36 hours. Contrary to the above, the licensee discovered on November 15, 2003, that automatic depressurization system valve 1-0203-3B was inoperable when required to be operable from July 23 until November 11, 2003.
 Inspection Report# : [2004002\(pdf\)](#)

Significance:  Dec 31, 2003

Identified By: NRC

Item Type: FIN Finding

FAILURE OF STEAM DRYER MONITORING PLAN TO DETECT SIGNIFICANT DRYER DEGRADATION IN THE EARLY STAGES TO PRECLUDE FAILURE WHICH COULD IMPACT SAFETY-RELATED EQUIPMENT.

A self-revealing finding was identified due to the failure of the steam dryer monitoring plan to detect significant Unit 1 dryer degradation in the early stages. As a result, actions which could have been taken to preclude the generation of loose parts, and minimize potential damage to mitigating systems equipment, were unable to be taken.

This finding was determined to be more than minor because it impacted the equipment performance attribute of the mitigating systems cornerstone and impacted the objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors determined that this finding was of very low safety significance as the dryer failure did not result in the loss of safety function of any mitigating systems equipment.

Inspection Report# : [2003013\(pdf\)](#)

Significance:  Dec 31, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

PROCEDURES FOR PLACING RESIDUAL HEAT REMOVAL PUMP IN SHUTDOWN COOLING NOT APPROPRIATE TO THE CIRCUMSTANCES

A self-revealing event occurred on April 17, 2003, due to the failure to have procedures appropriate to the circumstances for placing a residual heat removal pump in the shutdown cooling mode of operation. When taken in conjunction with a degraded relief valve, the inadequate procedural guidance increased the pressure in the residual heat removal piping to a level which exceeded the relief valve setpoint. The discharge from the relief valve traveled to the reactor building floor drain sump and was unnoticed by control room and radwaste operations personnel for more than 10 hours due to weaknesses in control room and radwaste panel monitoring. By the time this condition was identified, the floor drain sump had overflowed and approximately one-half inch of water had accumulated on portions of the reactor building basement floor. The failure to have a procedure appropriate to the circumstance was determined to be a violation of NRC requirements. The inspectors considered the weakness in panel monitoring by both control room and radwaste operations personnel to be a human performance issue since this delayed the identification of this self-revealing condition. Lastly, the failure of the licensee to identify the weaknesses in operator performance prior to prompting by the inspectors was considered a problem identification and resolution issue.

This finding was more than minor because it was associated with the procedure quality and protection against external factors attributes of the mitigating systems cornerstone. In addition, this finding impacted the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences such as flooding. The inspectors determined that this finding was of very low safety significance as adequate decay heat removal and mitigating systems capability was maintained.

Inspection Report# : [2003013\(pdf\)](#)

Significance:  Dec 31, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO DEMONSTRATE PERFORMANCE OR CONDITION OF REACTOR BUILDING FLOOR DRAIN SUMP HIGH LEVEL ALARMS WERE EFFECTIVELY CONTROLLED THROUGH PERFORMANCE OF PREVENTIVE MAINTENANCE

The inspectors identified a Green finding involving a Non-Cited Violation for the failure to demonstrate effective control of the condition of the reactor building floor drain sump high level alarms through the performance of preventive maintenance. As a result, the licensee had not set goals or monitored the performance of the alarms as required by 10 CFR Part 50.65(a)(1).

This finding was determined to be more than minor because if left uncorrected the failure to perform appropriate preventive maintenance would become a more significant safety concern. Due to the nature of this finding, it was unable to be assessed using the Significance Determination Process. However, the details of this finding were reviewed by Region III management, maintenance rule personnel in the Office of Nuclear Reactor Regulation, and Office of Enforcement personnel and determined to be of very low risk significance.

Inspection Report# : [2003013\(pdf\)](#)

Barrier Integrity

Significance: **G** Sep 30, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

INADEQUATE CHANNEL CHECK PROCEDURE FOR DRYWELL RADIATION MONITORS

A finding of very low safety significance was self-revealed in January 2004 when the Unit 2 drywell radiation monitor failed downscale due to an un-soldered wire connection. The finding was considered a violation of regulatory requirements due to having a channel check procedure which failed to provide appropriate acceptance criteria to determine whether the radiation monitors remained operable. Corrective actions included validating that additional drywell radiation monitors had soldered wire connections where needed, training personnel to verify the proper operation of the drywell radiation monitors, and revising the appropriate procedures with appropriate quantitative and qualitative acceptance criteria.

This finding was more than minor because it was associated with the containment procedure attribute of the barrier integrity cornerstone and impacted the objective of providing reasonable assurance that the physical design barriers protect the public from radionuclide releases caused by accidents and events. The finding was of very low safety significance because it did not contribute to: (1) a degradation of the radiological barrier function provided for the control room, the auxiliary building, the spent fuel pool, or the standby gas treatment system; (2) a degradation of the barrier function of the control room against smoke or a toxic atmosphere; or (3) an actual open pathway in the physical integrity of reactor containment. The finding was determined to be a Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion V due to the failure to have a channel check procedure which contained appropriate acceptance criteria.

Inspection Report# : [2004009\(pdf\)](#)

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Physical Protection

[Physical Protection](#) information not publicly available.

Miscellaneous

Last modified : December 29, 2004

Quad Cities 2

4Q/2004 Plant Inspection Findings

Initiating Events

G**Significance:** Jun 30, 2004

Identified By: NRC

Item Type: FIN Finding

FAILURE TO APPROPRIATELY IMPLEMENT TURBINE THRUST BEARING WEAR DETECTOR CALIBRATION AND SURVEILLANCE TESTING PROCEDURES

A finding of very low safety significance was self-revealed when the Unit 2 main turbine and reactor automatically tripped during thrust bearing wear detector testing. The turbine trip was a result of the licensee's failure to implement the thrust bearing wear detector test program as described in the vendor manual. The inspectors determined that the licensee had modified their test program to gain efficiencies in plant operation, work control, and radiation protection. However, the licensee did not recognize that the increased efficiencies also increased the likelihood of a plant transient during thrust bearing wear detector testing.

This finding was more than minor because it was viewed as a precursor to a significant event (a transient). This finding was of very low safety significance because Unit 2 responded to the turbine trip and reactor trip as designed and all mitigating systems equipment was available following the reactor trip. The finding was not considered a violation of regulatory requirements since the main turbine thrust bearing wear detector was a non-safety related component.

Inspection Report# : [2004005\(pdf\)](#)

Mitigating Systems

G**Significance:** Dec 31, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE OF UNIT 2 TARGET ROCK VALVE TO MEET TECHNICAL SPECIFICATION SURVEILLANCE REQUIREMENTS OF TECHNICAL SPECIFICATION 3.4.3

The inspectors identified a finding of very low safety significance involving a Non-Cited Violation of Technical Specification 3.4.3 due to the Unit 2 target rock valve being unable to actuate within plus or minus one percent of its nameplate value during as-found testing conducted in April 2004.

This issue was determined to be more than minor because if left uncorrected, this condition could put the licensee at risk for exceeding their vessel overpressure limits following an accident or an anticipated transient without scram. This issue was of very low safety significance because the actuation of the valve at the higher setpoint would not have resulted in exceeding the pressure limits assumed in the licensee's current analyses. Corrective actions for this issue included installing a new valve, performing additional testing to better understand the degradation mechanism, operating the Quad Cities units at pre-extended power uprate power levels, developing a modification to install better materials in the bellows cap area, and continuing the ongoing vibration assessments.

Inspection Report# : [2004010\(pdf\)](#)**G****Significance:** Dec 31, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

HISTORICAL FAILURE OF MAIN STEAM SAFETY VALVES TO MEET TECHNICAL SPECIFICATION SURVEILLANCE REQUIREMENTS

A finding of very low safety significance and a Non-Cited Violation of Technical Specification 3.4.3 were identified by the inspectors in November 2004 due to the licensee's repeated inability to demonstrate that the main steam safety valves would actuate within plus or minus one percent of the nameplate value when required.

This issue was determined to be more than minor because it led to continued degradation of the main steam safety valves and put the licensee at risk for exceeding their vessel overpressure limits following an accident or an anticipated transient without scram. This finding was of very low safety significance because an adequate number of safety valves and relief valves were available to prevent an overpressure condition from occurring. Corrective actions for this issue included installing new main steam safety valves, submitting a license amendment to change the

main steam safety valve operating tolerances, and revising a previously issued Licensee Event Report to report the previous failures.
Inspection Report# : [2004010\(pdf\)](#)

G**Significance:** Dec 31, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO PROVIDE ADEQUATE CAPABILITY TO ISOLATE THE SAFETY RELATED TORUS FROM THE NON-SEISMIC PORTIONS OF THE REACTOR CORE ISOLATION COOLING SYSTEM

The inspectors identified a finding and a Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," in May 2004 when they discovered that the design of the reactor core isolation cooling system did not provide adequate capability to isolate the safety-related torus from the non-seismic reactor core isolation cooling system under all conditions. As a result, torus water could potentially drain into the reactor building following a seismic event and a failure of the reactor core isolation cooling piping. The loss of torus inventory could potentially affect the safety-related water supply for the emergency core cooling systems.

This finding was more than minor since it could have affected the mitigating cornerstone objective of ensuring the availability of systems required to respond to initiating events. This finding was of low safety significance because a subsequent evaluation demonstrated that the reactor core isolation cooling piping would not have failed during a seismic event. The licensee initiated a procedure change to remotely bypass the valve control logic such that the reactor core isolation cooling system remained operable and the operators could close the valve when required for containment isolation. The licensee also initiated engineering changes to revise the valve control logic as a permanent resolution to the issue.

Inspection Report# : [2004010\(pdf\)](#)**G****Significance:** Sep 30, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

VIOLATION OF TS 3.3.6.1 DUE TO MAIN STEAM LINE HIGH FLOW SWITCHES BEING FOUND OUT OF TOLERANCE

A finding of very low safety significance was identified when the setpoint for two of the Unit 2 main steam line high flow switches were found to be higher than allowed by Technical Specification 3.3.6.1 in July 2003. As corrective actions, the licensee recalibrated the switches and performed a root cause analysis.

This finding was more than minor because if left uncorrected the switches could have continued to drift to a level above the analytical limit. Had this occurred, the licensee would have been operating in a condition not previously reviewed by the NRC. This finding was determined to be of very low safety significance since the out of tolerance switches did not result in a loss of safety function for the containment isolation system. However, this finding was a Non-Cited Violation of Technical Specification 3.3.6.1 as the out of tolerance switches resulted in the failure to ensure that two trip systems per channel per steam line were operable during Mode 1 operations.

Inspection Report# : [2004009\(pdf\)](#)**G****Significance:** May 28, 2004

Identified By: NRC

Item Type: FIN Finding

Failure to Provide Adequate Minimum Flow Protection for the RCIC Pump

Green. The inspectors identified a finding of very low safety significance involving inadequate design control of the reactor core isolation cooling system. Specifically, the design of the reactor core isolation cooling system and plant operating procedures did not provide adequate minimum flow protection for the reactor core isolation cooling pump. As a result, the reactor core isolation cooling flow could be reduced below the minimum flow requirements for the pump, potentially resulting in pump damage. This finding applies to both units.

This finding was more than minor since it could have affected the mitigating system cornerstone objective of ensuring the availability of systems required to respond to initiating events. This finding was of low safety significance because it did not represent an actual degradation of the reactor core isolation cooling system. The licensee initiated appropriate corrective actions, including implementing a procedure change and obtaining formal minimum flow information from the pump vendor, to ensure continued operability. No violation of NRC requirements occurred.

Inspection Report# : [2004004\(pdf\)](#)**G****Significance:** Mar 31, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

AUTOMATIC DEPRESSURIZATION SYSTEM VALVE 1-0203-3B WAS INOPERABLE WHEN REQUIRED TO BE OPERABLE

Technical Specification 3.4.3.A requires that with one relief valve inoperable, restore the valve to operable status within 14 days or be in mode 3 within 12 hours and in mode 4 within 36 hours. In addition, Technical Specification 3.5.1.G requires that with one automatic depressurization

system valve inoperable, restore the valve to operable status within 14 days or be in mode 3 within 12 hours and reduce reactor dome pressure to 150 psig or below within 36 hours. Contrary to the above, the licensee discovered on November 15, 2003, that automatic depressurization system valve 1-0203-3B was inoperable when required to be operable from July 23 until November 11, 2003.

Inspection Report# : [2004002\(pdf\)](#)

Barrier Integrity

Significance:  Dec 31, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE OF SAFETY VALVE DISCHARGE LINE FLANGES TO MEET CODE REQUIREMENTS

The inspectors identified a finding of very low safety significance and a Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," in August 2004 due to the licensee's failure to adequately translate code design requirements into an operability evaluation for the main steam safety relief valve discharge line flanges.

This issue was more than minor because if left uncorrected the failure to perform adequate operability evaluations could become a more significant safety concern. This issue was of very low safety significance because it did not involve the degradation of a radiological barrier, a barrier used to protect the control room from smoke or toxic gases, and did not result in an actual open pathway in the physical integrity of the reactor containment. As part of the corrective actions for this issue, the licensee implemented compensatory actions to ensure continued operability of the installed flanges and initiated plans to modify the operable but degraded flanges to meet their design requirements.

Inspection Report# : [2004010\(pdf\)](#)

Significance:  Dec 31, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

CONTROL ROOM EMERGENCY VENTILATION TEST FAILURE DUE TO INADEQUATE PROCEDURE AND DEFICIENT MODIFICATION TO HATCH COVERS

A finding of very low safety significance and a Non-Cited Violation of Technical Specification 3.7.4.A were identified by operations personnel in October 2004 due to the licensee's failure to demonstrate that the control room emergency ventilation system was capable of maintaining the control room emergency zone differential pressure at greater than 1/8 of an inch at a flow rate of 2000 standard cubic feet per minute since 1998.

This issue was determined to be more than minor because if left uncorrected, the condition of the control room emergency ventilation system would have continued to degrade without being identified by the licensee. This issue was of very low safety significance since the finding only represented a degradation of the radiological barrier provided for the control room. Corrective actions for this issue including providing additional sealing material to the cable tunnel hatch covers and revising the control room emergency ventilation surveillance procedures to ensure that the Technical Specifications continue to be met.

Inspection Report# : [2004010\(pdf\)](#)

Significance:  Sep 30, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

INADEQUATE CHANNEL CHECK PROCEDURE FOR DRYWELL RADIATION MONITORS

A finding of very low safety significance was self-revealed in January 2004 when the Unit 2 drywell radiation monitor failed downscale due to an un-soldered wire connection. The finding was considered a violation of regulatory requirements due to having a channel check procedure which failed to provide appropriate acceptance criteria to determine whether the radiation monitors remained operable. Corrective actions included validating that additional drywell radiation monitors had soldered wire connections where needed, training personnel to verify the proper operation of the drywell radiation monitors, and revising the appropriate procedures with appropriate quantitative and qualitative acceptance criteria.

This finding was more than minor because it was associated with the containment procedure attribute of the barrier integrity cornerstone and impacted the objective of providing reasonable assurance that the physical design barriers protect the public from radionuclide releases caused by accidents and events. The finding was of very low safety significance because it did not contribute to: (1) a degradation of the radiological barrier function provided for the control room, the auxiliary building, the spent fuel pool, or the standby gas treatment system; (2) a degradation of the barrier function of the control room against smoke or a toxic atmosphere; or (3) an actual open pathway in the physical integrity of reactor containment. The finding was determined to be a Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion V due to the failure to have a channel check procedure which contained appropriate acceptance criteria.

Inspection Report# : [2004009\(pdf\)](#)

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Physical Protection

[Physical Protection](#) information not publicly available.

Miscellaneous

Last modified : March 09, 2005

Quad Cities 2

1Q/2005 Plant Inspection Findings

Initiating Events

Significance:  Jun 30, 2004

Identified By: NRC

Item Type: FIN Finding

FAILURE TO APPROPRIATELY IMPLEMENT TURBINE THRUST BEARING WEAR DETECTOR CALIBRATION AND SURVEILLANCE TESTING PROCEDURES

A finding of very low safety significance was self-revealed when the Unit 2 main turbine and reactor automatically tripped during thrust bearing wear detector testing. The turbine trip was a result of the licensee's failure to implement the thrust bearing wear detector test program as described in the vendor manual. The inspectors determined that the licensee had modified their test program to gain efficiencies in plant operation, work control, and radiation protection. However, the licensee did not recognize that the increased efficiencies also increased the likelihood of a plant transient during thrust bearing wear detector testing.

This finding was more than minor because it was viewed as a precursor to a significant event (a transient). This finding was of very low safety significance because Unit 2 responded to the turbine trip and reactor trip as designed and all mitigating systems equipment was available following the reactor trip. The finding was not considered a violation of regulatory requirements since the main turbine thrust bearing wear detector was a non-safety related component.

Inspection Report# : [2004005\(pdf\)](#)

Mitigating Systems

Significance:  Dec 31, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE OF UNIT 2 TARGET ROCK VALVE TO MEET TECHNICAL SPECIFICATION SURVEILLANCE REQUIREMENTS OF TECHNICAL SPECIFICATION 3.4.3

The inspectors identified a finding of very low safety significance involving a Non-Cited Violation of Technical Specification 3.4.3 due to the Unit 2 target rock valve being unable to actuate within plus or minus one percent of its nameplate value during as-found testing conducted in April 2004.

This issue was determined to be more than minor because if left uncorrected, this condition could put the licensee at risk for exceeding their vessel overpressure limits following an accident or an anticipated transient without scram. This issue was of very low safety significance because the actuation of the valve at the higher setpoint would not have resulted in exceeding the pressure limits assumed in the licensee's current analyses. Corrective actions for this issue included installing a new valve, performing additional testing to better understand the degradation mechanism, operating the Quad Cities units at pre-extended power uprate power levels, developing a modification to install better materials in the bellows cap area, and continuing the ongoing vibration assessments.

Inspection Report# : [2004010\(pdf\)](#)

Significance:  Dec 31, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

HISTORICAL FAILURE OF MAIN STEAM SAFETY VALVES TO MEET TECHNICAL SPECIFICATION SURVEILLANCE REQUIREMENTS

A finding of very low safety significance and a Non-Cited Violation of Technical Specification 3.4.3 were identified by the inspectors in November 2004 due to the licensee's repeated inability to demonstrate that the main steam safety valves would actuate within plus or minus one percent of the nameplate value when required.

This issue was determined to be more than minor because it led to continued degradation of the main steam safety valves and put the licensee at risk for exceeding their vessel overpressure limits following an accident or an anticipated transient without scram. This finding was of very low safety significance because an adequate number of safety valves and relief valves were available to prevent an overpressure condition from occurring. Corrective actions for this issue included installing new main steam safety valves, submitting a license amendment to change the

main steam safety valve operating tolerances, and revising a previously issued Licensee Event Report to report the previous failures.
Inspection Report# : [2004010\(pdf\)](#)

G**Significance:** Dec 31, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO PROVIDE ADEQUATE CAPABILITY TO ISOLATE THE SAFETY RELATED TORUS FROM THE NON-SEISMIC PORTIONS OF THE REACTOR CORE ISOLATION COOLING SYSTEM

The inspectors identified a finding and a Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," in May 2004 when they discovered that the design of the reactor core isolation cooling system did not provide adequate capability to isolate the safety-related torus from the non-seismic reactor core isolation cooling system under all conditions. As a result, torus water could potentially drain into the reactor building following a seismic event and a failure of the reactor core isolation cooling piping. The loss of torus inventory could potentially affect the safety-related water supply for the emergency core cooling systems.

This finding was more than minor since it could have affected the mitigating cornerstone objective of ensuring the availability of systems required to respond to initiating events. This finding was of low safety significance because a subsequent evaluation demonstrated that the reactor core isolation cooling piping would not have failed during a seismic event. The licensee initiated a procedure change to remotely bypass the valve control logic such that the reactor core isolation cooling system remained operable and the operators could close the valve when required for containment isolation. The licensee also initiated engineering changes to revise the valve control logic as a permanent resolution to the issue.

Inspection Report# : [2004010\(pdf\)](#)**G****Significance:** Sep 30, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

VIOLATION OF TS 3.3.6.1 DUE TO MAIN STEAM LINE HIGH FLOW SWITCHES BEING FOUND OUT OF TOLERANCE

A finding of very low safety significance was identified when the setpoint for two of the Unit 2 main steam line high flow switches were found to be higher than allowed by Technical Specification 3.3.6.1 in July 2003. As corrective actions, the licensee recalibrated the switches and performed a root cause analysis.

This finding was more than minor because if left uncorrected the switches could have continued to drift to a level above the analytical limit. Had this occurred, the licensee would have been operating in a condition not previously reviewed by the NRC. This finding was determined to be of very low safety significance since the out of tolerance switches did not result in a loss of safety function for the containment isolation system. However, this finding was a Non-Cited Violation of Technical Specification 3.3.6.1 as the out of tolerance switches resulted in the failure to ensure that two trip systems per channel per steam line were operable during Mode 1 operations.

Inspection Report# : [2004009\(pdf\)](#)**G****Significance:** May 28, 2004

Identified By: NRC

Item Type: FIN Finding

Failure to Provide Adequate Minimum Flow Protection for the RCIC Pump

Green. The inspectors identified a finding of very low safety significance involving inadequate design control of the reactor core isolation cooling system. Specifically, the design of the reactor core isolation cooling system and plant operating procedures did not provide adequate minimum flow protection for the reactor core isolation cooling pump. As a result, the reactor core isolation cooling flow could be reduced below the minimum flow requirements for the pump, potentially resulting in pump damage. This finding applies to both units.

This finding was more than minor since it could have affected the mitigating system cornerstone objective of ensuring the availability of systems required to respond to initiating events. This finding was of low safety significance because it did not represent an actual degradation of the reactor core isolation cooling system. The licensee initiated appropriate corrective actions, including implementing a procedure change and obtaining formal minimum flow information from the pump vendor, to ensure continued operability. No violation of NRC requirements occurred.

Inspection Report# : [2004004\(pdf\)](#)

Barrier Integrity

G**Significance:** Dec 31, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE OF SAFETY VALVE DISCHARGE LINE FLANGES TO MEET CODE REQUIREMENTS

The inspectors identified a finding of very low safety significance and a Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," in August 2004 due to the licensee's failure to adequately translate code design requirements into an operability evaluation for the main steam safety relief valve discharge line flanges.

This issue was more than minor because if left uncorrected the failure to perform adequate operability evaluations could become a more significant safety concern. This issue was of very low safety significance because it did not involve the degradation of a radiological barrier, a barrier used to protect the control room from smoke or toxic gases, and did not result in an actual open pathway in the physical integrity of the reactor containment. As part of the corrective actions for this issue, the licensee implemented compensatory actions to ensure continued operability of the installed flanges and initiated plans to modify the operable but degraded flanges to meet their design requirements.

Inspection Report# : [2004010\(pdf\)](#)

G

Significance: Dec 31, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

CONTROL ROOM EMERGENCY VENTILATION TEST FAILURE DUE TO INADEQUATE PROCEDURE AND DEFICIENT MODIFICATION TO HATCH COVERS

A finding of very low safety significance and a Non-Cited Violation of Technical Specification 3.7.4.A were identified by operations personnel in October 2004 due to the licensee's failure to demonstrate that the control room emergency ventilation system was capable of maintaining the control room emergency zone differential pressure at greater than 1/8 of an inch at a flow rate of 2000 standard cubic feet per minute since 1998.

This issue was determined to be more than minor because if left uncorrected, the condition of the control room emergency ventilation system would have continued to degrade without being identified by the licensee. This issue was of very low safety significance since the finding only represented a degradation of the radiological barrier provided for the control room. Corrective actions for this issue including providing additional sealing material to the cable tunnel hatch covers and revising the control room emergency ventilation surveillance procedures to ensure that the Technical Specifications continue to be met.

Inspection Report# : [2004010\(pdf\)](#)

G

Significance: Sep 30, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

INADEQUATE CHANNEL CHECK PROCEDURE FOR DRYWELL RADIATION MONITORS

A finding of very low safety significance was self-revealed in January 2004 when the Unit 2 drywell radiation monitor failed downscale due to an un-soldered wire connection. The finding was considered a violation of regulatory requirements due to having a channel check procedure which failed to provide appropriate acceptance criteria to determine whether the radiation monitors remained operable. Corrective actions included validating that additional drywell radiation monitors had soldered wire connections where needed, training personnel to verify the proper operation of the drywell radiation monitors, and revising the appropriate procedures with appropriate quantitative and qualitative acceptance criteria.

This finding was more than minor because it was associated with the containment procedure attribute of the barrier integrity cornerstone and impacted the objective of providing reasonable assurance that the physical design barriers protect the public from radionuclide releases caused by accidents and events. The finding was of very low safety significance because it did not contribute to: (1) a degradation of the radiological barrier function provided for the control room, the auxiliary building, the spent fuel pool, or the standby gas treatment system; (2) a degradation of the barrier function of the control room against smoke or a toxic atmosphere; or (3) an actual open pathway in the physical integrity of reactor containment. The finding was determined to be a Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion V due to the failure to have a channel check procedure which contained appropriate acceptance criteria.

Inspection Report# : [2004009\(pdf\)](#)

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Physical Protection

[Physical Protection](#) information not publicly available.

Miscellaneous

Last modified : June 17, 2005

Quad Cities 2

2Q/2005 Plant Inspection Findings

Initiating Events

Significance:  Jun 30, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO IMPLEMENT CORRECTIVE ACTIONS FOR THE TWO PREVIOUS BUS OVERLOAD EVENTS

A self-revealing finding of very low safety significance and a Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion XVI, were identified on March 27, 2005, due to the failure to implement effective corrective actions following the overloading of an electrical bus. This resulted in an overload of an electrical bus during the Unit 1 refueling outage and the loss the Unit 1 125 V battery chargers, the control room emergency ventilation system, and one half of the fuel pool cooling system.

This finding was more than minor because the ineffective corrective actions resulted in the procedures used to monitor loading on cross connected electrical buses being inadequate. This finding was of very low safety significance since the loads supplied by the Unit 1 battery chargers could be supplied from an alternate source, the fuel pool cooling loss did not result in a significant increase in temperatures, the Unit 1 reactor vessel water level was greater than 23 feet above the vessel flange, and the likelihood of a fire or toxic gas release occurring coincident with the loss of the electrical bus was very low. Corrective actions for this issue included reviewing all procedures which allowed buses to be cross connected to ensure that specific information regarding the prevention of bus overloading was included and establishing positive controls for cross connected equipment within the applicable procedures.

Inspection Report# : [2005003\(pdf\)](#)

Mitigating Systems

Significance:  Jun 30, 2005

Identified By: NRC

Item Type: FIN Finding

FAILURE TO ADEQUATELY ADDRESS THE CONTINUED OPERABILITY OF SEVERAL BRASS FITTINGS AS PART OF OPERABILITY EVALUATION 328851

The inspectors identified a finding of very low safety significance in May 2005 while reviewing an evaluation used to justify the continued operability of commercial grade brass fittings installed on safety-related equipment. The primary cause of this finding was related to the cross-cutting area of Human Performance in that, engineering personnel had information regarding the fact that 5 out of 14 fitting batches were unable to be tested. However, information which justified the continued operability of the untested fittings was not included in the associated operability evaluation.

This finding was more than minor because if left uncorrected, the station could reach inappropriate conclusions regarding the continued operability of equipment important to safety. The finding was of very low safety significance because none of the safety-related equipment was determined to be inoperable. No violations of NRC requirements occurred since operability evaluations were not required by NRC regulations.

Inspection Report# : [2005003\(pdf\)](#)

Significance:  Apr 08, 2005

Identified By: NRC

Item Type: FIN Finding

FAILURE TO INITIATE OPERABILITY DETERMINATIONS OR EVALUATIONS WHEN REQUIRED

The inspectors identified a finding of very low safety significance due to the licensee's failure to perform operability determinations/evaluations for non-safety related structures, systems, or components discussed in the Updated Final Safety Analysis Report which were discovered to be degraded.

This finding was more than minor because if left uncorrected, the failure to properly evaluate the continued operability of degraded equipment could result in the licensee inappropriately relying on structures, systems, or components that were unable to perform their safety function during an initiating event. The finding also impacted the cross-cutting area of problem identification and resolution because the licensee has had multiple examples of failures to initiate operability determinations or evaluations which had not been previously identified. No violation of NRC requirements occurred since the completion of operability determinations/evaluations was not required by NRC regulations.

Inspection Report# : [2005002\(pdf\)](#)

G**Significance:** Dec 31, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE OF UNIT 2 TARGET ROCK VALVE TO MEET TECHNICAL SPECIFICATION SURVEILLANCE REQUIREMENTS OF TECHNICAL SPECIFICATION 3.4.3

The inspectors identified a finding of very low safety significance involving a Non-Cited Violation of Technical Specification 3.4.3 due to the Unit 2 target rock valve being unable to actuate within plus or minus one percent of its nameplate value during as-found testing conducted in April 2004.

This issue was determined to be more than minor because if left uncorrected, this condition could put the licensee at risk for exceeding their vessel overpressure limits following an accident or an anticipated transient without scram. This issue was of very low safety significance because the actuation of the valve at the higher setpoint would not have resulted in exceeding the pressure limits assumed in the licensee's current analyses. Corrective actions for this issue included installing a new valve, performing additional testing to better understand the degradation mechanism, operating the Quad Cities units at pre-extended power uprate power levels, developing a modification to install better materials in the bellows cap area, and continuing the ongoing vibration assessments.

Inspection Report# : [2004010\(pdf\)](#)**G****Significance:** Dec 31, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

HISTORICAL FAILURE OF MAIN STEAM SAFETY VALVES TO MEET TECHNICAL SPECIFICATION SURVEILLANCE REQUIREMENTS

A finding of very low safety significance and a Non-Cited Violation of Technical Specification 3.4.3 were identified by the inspectors in November 2004 due to the licensee's repeated inability to demonstrate that the main steam safety valves would actuate within plus or minus one percent of the nameplate value when required.

This issue was determined to be more than minor because it led to continued degradation of the main steam safety valves and put the licensee at risk for exceeding their vessel overpressure limits following an accident or an anticipated transient without scram. This finding was of very low safety significance because an adequate number of safety valves and relief valves were available to prevent an overpressure condition from occurring. Corrective actions for this issue included installing new main steam safety valves, submitting a license amendment to change the main steam safety valve operating tolerances, and revising a previously issued Licensee Event Report to report the previous failures.

Inspection Report# : [2004010\(pdf\)](#)**G****Significance:** Dec 31, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO PROVIDE ADEQUATE CAPABILITY TO ISOLATE THE SAFETY RELATED TORUS FROM THE NON-SEISMIC PORTIONS OF THE REACTOR CORE ISOLATION COOLING SYSTEM

The inspectors identified a finding and a Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," in May 2004 when they discovered that the design of the reactor core isolation cooling system did not provide adequate capability to isolate the safety-related torus from the non-seismic reactor core isolation cooling system under all conditions. As a result, torus water could potentially drain into the reactor building following a seismic event and a failure of the reactor core isolation cooling piping. The loss of torus inventory could potentially affect the safety-related water supply for the emergency core cooling systems.

This finding was more than minor since it could have affected the mitigating cornerstone objective of ensuring the availability of systems required to respond to initiating events. This finding was of low safety significance because a subsequent evaluation demonstrated that the reactor core isolation cooling piping would not have failed during a seismic event. The licensee initiated a procedure change to remotely bypass the valve control logic such that the reactor core isolation cooling system remained operable and the operators could close the valve when required for containment isolation. The licensee also initiated engineering changes to revise the valve control logic as a permanent resolution to the issue.

Inspection Report# : [2004010\(pdf\)](#)**G****Significance:** Sep 30, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

VIOLATION OF TS 3.3.6.1 DUE TO MAIN STEAM LINE HIGH FLOW SWITCHES BEING FOUND OUT OF TOLERANCE

A finding of very low safety significance was identified when the setpoint for two of the Unit 2 main steam line high flow switches were found to be higher than allowed by Technical Specification 3.3.6.1 in July 2003. As corrective actions, the licensee recalibrated the switches and performed a root cause analysis.

This finding was more than minor because if left uncorrected the switches could have continued to drift to a level above the analytical limit. Had this occurred, the licensee would have been operating in a condition not previously reviewed by the NRC. This finding was determined to be of very low safety significance since the out of tolerance switches did not result in a loss of safety function for the containment isolation system. However, this finding was a Non-Cited Violation of Technical Specification 3.3.6.1 as the out of tolerance switches resulted in the failure to ensure that two trip systems per channel per steam line were operable during Mode 1 operations.

Inspection Report# : [2004009\(pdf\)](#)

Barrier Integrity

Significance:  Dec 31, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE OF SAFETY VALVE DISCHARGE LINE FLANGES TO MEET CODE REQUIREMENTS

The inspectors identified a finding of very low safety significance and a Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," in August 2004 due to the licensee's failure to adequately translate code design requirements into an operability evaluation for the main steam safety relief valve discharge line flanges.

This issue was more than minor because if left uncorrected the failure to perform adequate operability evaluations could become a more significant safety concern. This issue was of very low safety significance because it did not involve the degradation of a radiological barrier, a barrier used to protect the control room from smoke or toxic gases, and did not result in an actual open pathway in the physical integrity of the reactor containment. As part of the corrective actions for this issue, the licensee implemented compensatory actions to ensure continued operability of the installed flanges and initiated plans to modify the operable but degraded flanges to meet their design requirements.

Inspection Report# : [2004010\(pdf\)](#)

Significance:  Dec 31, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

CONTROL ROOM EMERGENCY VENTILATION TEST FAILURE DUE TO INADEQUATE PROCEDURE AND DEFICIENT MODIFICATION TO HATCH COVERS

A finding of very low safety significance and a Non-Cited Violation of Technical Specification 3.7.4.A were identified by operations personnel in October 2004 due to the licensee's failure to demonstrate that the control room emergency ventilation system was capable of maintaining the control room emergency zone differential pressure at greater than 1/8 of an inch at a flow rate of 2000 standard cubic feet per minute since 1998.

This issue was determined to be more than minor because if left uncorrected, the condition of the control room emergency ventilation system would have continued to degrade without being identified by the licensee. This issue was of very low safety significance since the finding only represented a degradation of the radiological barrier provided for the control room. Corrective actions for this issue including providing additional sealing material to the cable tunnel hatch covers and revising the control room emergency ventilation surveillance procedures to ensure that the Technical Specifications continue to be met.

Inspection Report# : [2004010\(pdf\)](#)

Significance:  Sep 30, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

INADEQUATE CHANNEL CHECK PROCEDURE FOR DRYWELL RADIATION MONITORS

A finding of very low safety significance was self-revealed in January 2004 when the Unit 2 drywell radiation monitor failed downscale due to an un-soldered wire connection. The finding was considered a violation of regulatory requirements due to having a channel check procedure which failed to provide appropriate acceptance criteria to determine whether the radiation monitors remained operable. Corrective actions included validating that additional drywell radiation monitors had soldered wire connections where needed, training personnel to verify the proper operation of the drywell radiation monitors, and revising the appropriate procedures with appropriate quantitative and qualitative acceptance criteria.

This finding was more than minor because it was associated with the containment procedure attribute of the barrier integrity cornerstone and impacted the objective of providing reasonable assurance that the physical design barriers protect the public from radionuclide releases caused by accidents and events. The finding was of very low safety significance because it did not contribute to: (1) a degradation of the radiological barrier function provided for the control room, the auxiliary building, the spent fuel pool, or the standby gas treatment system; (2) a degradation of the barrier function of the control room against smoke or a toxic atmosphere; or (3) an actual open pathway in the physical integrity of reactor containment. The finding was determined to be a Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion V due to the failure to have a channel check procedure which contained appropriate acceptance criteria.

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Physical Protection

[Physical Protection](#) information not publicly available.

Miscellaneous

Last modified : August 24, 2005

Quad Cities 2

3Q/2005 Plant Inspection Findings

Initiating Events

Significance:  Sep 30, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

4160 VOLT RELAYING AND METERING SINGLE FAILURE VULNERABILITY

A finding of very low safety significance was identified when the licensee discovered that a spurious open circuit on the relaying and metering transformers for the unit auxiliary or the reserve auxiliary transformer could result in a loss of power to the residual heat removal service water system. This finding was determined to be a Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion III.

This finding was more than minor because if left uncorrected, the open circuit vulnerability would leave the station susceptible to a loss of the residual heat removal service water system following a loss of offsite power event. This finding was determined to be of very low safety significance because the frequency of the circuit failure was less than 1.0E-6 and because the probability of experiencing a control room fire concurrent with the postulated circuit failure was also significantly low. Corrective actions for this issue included installing a temporary modification to eliminate the vulnerability, reviewing other electrical circuitry for similar vulnerabilities, and designing and installing a future permanent modification.

Inspection Report# : [2005005\(pdf\)](#)

Significance:  Jun 30, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO IMPLEMENT CORRECTIVE ACTIONS FOR THE TWO PREVIOUS BUS OVERLOAD EVENTS

A self-revealing finding of very low safety significance and a Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion XVI, were identified on March 27, 2005, due to the failure to implement effective corrective actions following the overloading of an electrical bus. This resulted in an overload of an electrical bus during the Unit 1 refueling outage and the loss the Unit 1 125 V battery chargers, the control room emergency ventilation system, and one half of the fuel pool cooling system.

This finding was more than minor because the ineffective corrective actions resulted in the procedures used to monitor loading on cross connected electrical buses being inadequate. This finding was of very low safety significance since the loads supplied by the Unit 1 battery chargers could be supplied from an alternate source, the fuel pool cooling loss did not result in a significant increase in temperatures, the Unit 1 reactor vessel water level was greater than 23 feet above the vessel flange, and the likelihood of a fire or toxic gas release occurring coincident with the loss of the electrical bus was very low. Corrective actions for this issue included reviewing all procedures which allowed buses to be cross connected to ensure that specific information regarding the prevention of bus overloading was included and establishing positive controls for cross connected equipment within the applicable procedures.

Inspection Report# : [2005003\(pdf\)](#)

Mitigating Systems

Significance:  Sep 30, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO FOLLOW THE CODE CASE N-513 CONTROL MEASURES FOR INSPECTIONS AND TESTS

A finding of very low safety significance was identified for the failure to adequately implement code case instructions for determining the operability and extent of condition when a pipe flaw was found on the residual heat removal service water system. The failure was determined to be a Violation of 10 CFR Part 50, Appendix B, Criterion III.

The finding was more than minor because, if left uncorrected, the extent of the piping flaw geometry would not be fully understood due to a lack of inspection that could result in inappropriately concluding that equipment important to safety was operable. The finding was considered to be of very low safety significance because the licensee was able to verify that the minimum pipe wall thickness of suspect examined areas of the residual heat removal service water piping welds met the functionality requirements for system operability. Corrective actions for this issue include the extent of condition ultrasonic tests that have been completed and the weld repair of the 1D residual heat removal service water pump flaw.

Inspection Report# : [2005005\(pdf\)](#)

G

Significance: Sep 30, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

LACK OF PROCEDURE INSTRUCTION IN PROCEDURE QCEMS 0250-11 TO EVALUATE AERO SHELL 7 GREASE FOR LUBRICANT AND THICKENER SEPARATION

A finding of very low safety significance was identified for the failure to provide adequate instruction for the application of grease as a lubricant to 480 Volt motor control center auxiliary contacts during maintenance. The failure was determined to be a Violation of 10 CFR Part 50, Appendix B, Criterion V.

The finding was more than minor because, if left uncorrected, degraded grease could be applied during maintenance activities to impact the operability, availability, reliability or safety function of a mitigating system. The finding was considered to be of very low safety significance because the finding did not result in an actual loss of a safety system function. Corrective actions for this issue included the removal of the old Aero Shell 7 grease can from the electrical maintenance shop to prevent its use and the generation of work orders to clean and re-lubricate the CR105X auxiliary contacts where white residue has been identified at various motor control center cubicles during the January through February 2005 inspection.

Inspection Report# : [2005005\(pdf\)](#)

G

Significance: Sep 30, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

MISAPPLICATION OF AERO SHELL 7 GREASE

A finding of very low safety significance was identified for failing to follow a maintenance procedure that resulted in the failure of residual heat removal valve 1-1001-26B to operate during testing. The failure was determined to be a violation of 10 CFR Part 50, Appendix B, Criterion V.

The finding was more than minor because if left uncorrected, this inappropriate maintenance practice would result in hardened grease in other auxiliary contact assemblies impacting the operability, availability, reliability, or safety function of mitigating systems. The finding was considered to be of very low safety significance because the finding did not result in an actual loss of a safety system function. Corrective actions for this issue include the auxiliary contact assemblies in the motor control center cubicle being replaced and properly lubricated with Dow Corning 44 grease.

Inspection Report# : [2005005\(pdf\)](#)

G

Significance: Jun 30, 2005

Identified By: NRC

Item Type: FIN Finding

FAILURE TO ADEQUATELY ADDRESS THE CONTINUED OPERABILITY OF SEVERAL BRASS FITTINGS AS PART OF OPERABILITY EVALUATION 328851

The inspectors identified a finding of very low safety significance in May 2005 while reviewing an evaluation used to justify the continued operability of commercial grade brass fittings installed on safety-related equipment. The primary cause of this finding was related to the cross-cutting area of Human Performance in that, engineering personnel had information regarding the fact that 5 out of 14 fitting batches were unable to be tested. However, information which justified the continued operability of the untested fittings was not included in the associated operability evaluation.

This finding was more than minor because if left uncorrected, the station could reach inappropriate conclusions regarding the continued operability of equipment important to safety. The finding was of very low safety significance because none of the safety-related equipment was determined to be inoperable. No violations of NRC requirements occurred since operability evaluations were not required by NRC regulations.

Inspection Report# : [2005003\(pdf\)](#)

G

Significance: Apr 08, 2005

Identified By: NRC

Item Type: FIN Finding

FAILURE TO INITIATE OPERABILITY DETERMINATIONS OR EVALUATIONS WHEN REQUIRED

The inspectors identified a finding of very low safety significance due to the licensee's failure to perform operability determinations/evaluations for non-safety related structures, systems, or components discussed in the Updated Final Safety Analysis Report which were discovered to be degraded.

This finding was more than minor because if left uncorrected, the failure to properly evaluate the continued operability of degraded equipment could result in the licensee inappropriately relying on structures, systems, or components that were unable to perform their safety function during an initiating event. The finding also impacted the cross-cutting area of problem identification and resolution because the licensee has

had multiple examples of failures to initiate operability determinations or evaluations which had not been previously identified. No violation of NRC requirements occurred since the completion of operability determinations/evaluations was not required by NRC regulations.

Inspection Report# : [2005002\(pdf\)](#)

G

Significance: Dec 31, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE OF UNIT 2 TARGET ROCK VALVE TO MEET TECHNICAL SPECIFICATION SURVEILLANCE REQUIREMENTS OF TECHNICAL SPECIFICATION 3.4.3

The inspectors identified a finding of very low safety significance involving a Non-Cited Violation of Technical Specification 3.4.3 due to the Unit 2 target rock valve being unable to actuate within plus or minus one percent of its nameplate value during as-found testing conducted in April 2004.

This issue was determined to be more than minor because if left uncorrected, this condition could put the licensee at risk for exceeding their vessel overpressure limits following an accident or an anticipated transient without scram. This issue was of very low safety significance because the actuation of the valve at the higher setpoint would not have resulted in exceeding the pressure limits assumed in the licensee's current analyses. Corrective actions for this issue included installing a new valve, performing additional testing to better understand the degradation mechanism, operating the Quad Cities units at pre-extended power uprate power levels, developing a modification to install better materials in the bellows cap area, and continuing the ongoing vibration assessments.

Inspection Report# : [2004010\(pdf\)](#)

G

Significance: Dec 31, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

HISTORICAL FAILURE OF MAIN STEAM SAFETY VALVES TO MEET TECHNICAL SPECIFICATION SURVEILLANCE REQUIREMENTS

A finding of very low safety significance and a Non-Cited Violation of Technical Specification 3.4.3 were identified by the inspectors in November 2004 due to the licensee's repeated inability to demonstrate that the main steam safety valves would actuate within plus or minus one percent of the nameplate value when required.

This issue was determined to be more than minor because it led to continued degradation of the main steam safety valves and put the licensee at risk for exceeding their vessel overpressure limits following an accident or an anticipated transient without scram. This finding was of very low safety significance because an adequate number of safety valves and relief valves were available to prevent an overpressure condition from occurring. Corrective actions for this issue included installing new main steam safety valves, submitting a license amendment to change the main steam safety valve operating tolerances, and revising a previously issued Licensee Event Report to report the previous failures.

Inspection Report# : [2004010\(pdf\)](#)

G

Significance: Dec 31, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO PROVIDE ADEQUATE CAPABILITY TO ISOLATE THE SAFETY RELATED TORUS FROM THE NON-SEISMIC PORTIONS OF THE REACTOR CORE ISOLATION COOLING SYSTEM

The inspectors identified a finding and a Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," in May 2004 when they discovered that the design of the reactor core isolation cooling system did not provide adequate capability to isolate the safety-related torus from the non-seismic reactor core isolation cooling system under all conditions. As a result, torus water could potentially drain into the reactor building following a seismic event and a failure of the reactor core isolation cooling piping. The loss of torus inventory could potentially affect the safety-related water supply for the emergency core cooling systems.

This finding was more than minor since it could have affected the mitigating cornerstone objective of ensuring the availability of systems required to respond to initiating events. This finding was of low safety significance because a subsequent evaluation demonstrated that the reactor core isolation cooling piping would not have failed during a seismic event. The licensee initiated a procedure change to remotely bypass the valve control logic such that the reactor core isolation cooling system remained operable and the operators could close the valve when required for containment isolation. The licensee also initiated engineering changes to revise the valve control logic as a permanent resolution to the issue.

Inspection Report# : [2004010\(pdf\)](#)

G**Significance:** Dec 31, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE OF SAFETY VALVE DISCHARGE LINE FLANGES TO MEET CODE REQUIREMENTS

The inspectors identified a finding of very low safety significance and a Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," in August 2004 due to the licensee's failure to adequately translate code design requirements into an operability evaluation for the main steam safety relief valve discharge line flanges.

This issue was more than minor because if left uncorrected the failure to perform adequate operability evaluations could become a more significant safety concern. This issue was of very low safety significance because it did not involve the degradation of a radiological barrier, a barrier used to protect the control room from smoke or toxic gases, and did not result in an actual open pathway in the physical integrity of the reactor containment. As part of the corrective actions for this issue, the licensee implemented compensatory actions to ensure continued operability of the installed flanges and initiated plans to modify the operable but degraded flanges to meet their design requirements.

Inspection Report# : [2004010\(pdf\)](#)**G****Significance:** Dec 31, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

CONTROL ROOM EMERGENCY VENTILATION TEST FAILURE DUE TO INADEQUATE PROCEDURE AND DEFICIENT MODIFICATION TO HATCH COVERS

A finding of very low safety significance and a Non-Cited Violation of Technical Specification 3.7.4.A were identified by operations personnel in October 2004 due to the licensee's failure to demonstrate that the control room emergency ventilation system was capable of maintaining the control room emergency zone differential pressure at greater than 1/8 of an inch at a flow rate of 2000 standard cubic feet per minute since 1998.

This issue was determined to be more than minor because if left uncorrected, the condition of the control room emergency ventilation system would have continued to degrade without being identified by the licensee. This issue was of very low safety significance since the finding only represented a degradation of the radiological barrier provided for the control room. Corrective actions for this issue including providing additional sealing material to the cable tunnel hatch covers and revising the control room emergency ventilation surveillance procedures to ensure that the Technical Specifications continue to be met.

Inspection Report# : [2004010\(pdf\)](#)

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Physical Protection

[Physical Protection](#) information not publicly available.

Miscellaneous

Last modified : November 30, 2005

Quad Cities 2

4Q/2005 Plant Inspection Findings

Initiating Events

Significance:  Sep 30, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

4160 VOLT RELAYING AND METERING SINGLE FAILURE VULNERABILITY

A finding of very low safety significance was identified when the licensee discovered that a spurious open circuit on the relaying and metering transformers for the unit auxiliary or the reserve auxiliary transformer could result in a loss of power to the residual heat removal service water system. This finding was determined to be a Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion III.

This finding was more than minor because if left uncorrected, the open circuit vulnerability would leave the station susceptible to a loss of the residual heat removal service water system following a loss of offsite power event. This finding was determined to be of very low safety significance because the frequency of the circuit failure was less than $1.0E-6$ and because the probability of experiencing a control room fire concurrent with the postulated circuit failure was also significantly low. Corrective actions for this issue included installing a temporary modification to eliminate the vulnerability, reviewing other electrical circuitry for similar vulnerabilities, and designing and installing a future permanent modification.

Inspection Report# : [2005005\(pdf\)](#)

Significance:  Jun 30, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO IMPLEMENT CORRECTIVE ACTIONS FOR THE TWO PREVIOUS BUS OVERLOAD EVENTS

A self-revealing finding of very low safety significance and a Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion XVI, were identified on March 27, 2005, due to the failure to implement effective corrective actions following the overloading of an electrical bus. This resulted in an overload of an electrical bus during the Unit 1 refueling outage and the loss the Unit 1 125 V battery chargers, the control room emergency ventilation system, and one half of the fuel pool cooling system.

This finding was more than minor because the ineffective corrective actions resulted in the procedures used to monitor loading on cross connected electrical buses being inadequate. This finding was of very low safety significance since the loads supplied by the Unit 1 battery chargers could be supplied from an alternate source, the fuel pool cooling loss did not result in a significant increase in temperatures, the Unit 1 reactor vessel water level was greater than 23 feet above the vessel flange, and the likelihood of a fire or toxic gas release occurring coincident with the loss of the electrical bus was very low. Corrective actions for this issue included reviewing all procedures which allowed buses to be cross connected to ensure that specific information regarding the prevention of bus overloading was included and establishing positive controls for cross connected equipment within the applicable procedures.

Inspection Report# : [2005003\(pdf\)](#)

Mitigating Systems

Significance:  Sep 30, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO FOLLOW THE CODE CASE N-513 CONTROL MEASURES FOR INSPECTIONS AND TESTS

A finding of very low safety significance was identified for the failure to adequately implement code case instructions for determining the operability and extent of condition when a pipe flaw was found on the residual heat removal service water system. The failure was determined to be a Violation of 10 CFR Part 50, Appendix B, Criterion III.

The finding was more than minor because, if left uncorrected, the extent of the piping flaw geometry would not be fully understood due to a lack of inspection that could result in inappropriately concluding that equipment important to safety was operable. The finding was considered to be of very low safety significance because the licensee was able to verify that the minimum pipe wall thickness of suspect examined areas of the residual heat removal service water piping welds met the functionality requirements for system operability. Corrective actions for this issue include the extent of condition ultrasonic tests that have been completed and the weld repair of the 1D residual heat removal service water pump flaw.

Inspection Report# : [2005005\(pdf\)](#)

G

Significance: Sep 30, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

LACK OF PROCEDURE INSTRUCTION IN PROCEDURE QCEMS 0250-11 TO EVALUATE AERO SHELL 7 GREASE FOR LUBRICANT AND THICKENER SEPARATION

A finding of very low safety significance was identified for the failure to provide adequate instruction for the application of grease as a lubricant to 480 Volt motor control center auxiliary contacts during maintenance. The failure was determined to be a Violation of 10 CFR Part 50, Appendix B, Criterion V.

The finding was more than minor because, if left uncorrected, degraded grease could be applied during maintenance activities to impact the operability, availability, reliability or safety function of a mitigating system. The finding was considered to be of very low safety significance because the finding did not result in an actual loss of a safety system function. Corrective actions for this issue included the removal of the old Aero Shell 7 grease can from the electrical maintenance shop to prevent its use and the generation of work orders to clean and re-lubricate the CR105X auxiliary contacts where white residue has been identified at various motor control center cubicles during the January through February 2005 inspection.

Inspection Report# : [2005005\(pdf\)](#)

G

Significance: Sep 30, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

MISAPPLICATION OF AERO SHELL 7 GREASE

A finding of very low safety significance was identified for failing to follow a maintenance procedure that resulted in the failure of residual heat removal valve 1-1001-26B to operate during testing. The failure was determined to be a violation of 10 CFR Part 50, Appendix B, Criterion V.

The finding was more than minor because if left uncorrected, this inappropriate maintenance practice would result in hardened grease in other auxiliary contact assemblies impacting the operability, availability, reliability, or safety function of mitigating systems. The finding was considered to be of very low safety significance because the finding did not result in an actual loss of a safety system function. Corrective actions for this issue include the auxiliary contact assemblies in the motor control center cubicle being replaced and properly lubricated with Dow Corning 44 grease.

Inspection Report# : [2005005\(pdf\)](#)

G

Significance: Jun 30, 2005

Identified By: NRC

Item Type: FIN Finding

FAILURE TO ADEQUATELY ADDRESS THE CONTINUED OPERABILITY OF SEVERAL BRASS FITTINGS AS PART OF OPERABILITY EVALUATION 328851

The inspectors identified a finding of very low safety significance in May 2005 while reviewing an evaluation used to justify the continued operability of commercial grade brass fittings installed on safety-related equipment. The primary cause of this finding was related to the cross-cutting area of Human Performance in that, engineering personnel had information regarding the fact that 5 out of 14 fitting batches were unable to be tested. However, information which justified the continued operability of the untested fittings was not included in the associated operability evaluation.

This finding was more than minor because if left uncorrected, the station could reach inappropriate conclusions regarding the continued operability of equipment important to safety. The finding was of very low safety significance because none of the safety-related equipment was determined to be inoperable. No violations of NRC requirements occurred since operability evaluations were not required by NRC regulations.

Inspection Report# : [2005003\(pdf\)](#)

G

Significance: Apr 08, 2005

Identified By: NRC

Item Type: FIN Finding

FAILURE TO INITIATE OPERABILITY DETERMINATIONS OR EVALUATIONS WHEN REQUIRED

The inspectors identified a finding of very low safety significance due to the licensee's failure to perform operability determinations/evaluations for non-safety related structures, systems, or components discussed in the Updated Final Safety Analysis Report which were discovered to be degraded.

This finding was more than minor because if left uncorrected, the failure to properly evaluate the continued operability of degraded equipment could result in the licensee inappropriately relying on structures, systems, or components that were unable to perform their safety function during an initiating event. The finding also impacted the cross-cutting area of problem identification and resolution because the licensee has

had multiple examples of failures to initiate operability determinations or evaluations which had not been previously identified. No violation of NRC requirements occurred since the completion of operability determinations/evaluations was not required by NRC regulations.

Inspection Report# : [2005002\(pdf\)](#)

Barrier Integrity

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Physical Protection

[Physical Protection](#) information not publicly available.

Miscellaneous

Last modified : March 03, 2006

Quad Cities 2

1Q/2006 Plant Inspection Findings

Initiating Events

G**Significance:** Feb 07, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO IDENTIFY DEGRADED UNIT 2 SNUBBER AND BROKEN WELDS ON PILOT VALVE/ACTUATOR SUPPORT

The inspectors identified a finding of very low safety significance and a Non-Cited Violation of 10 CFR 50, Appendix B, Criterion XVI on January 17, 2006, for failure to conduct effective walkdowns during the Unit 2 and Unit 1 outages that occurred on December 30, 2005, and January 7, 2006, respectively. This resulted in the licensee's failure to identify components and systems degraded by increased steam line vibration at EPU power levels. Specifically, during the Unit 2 outage commencing on January 13, a severely degraded snubber (bent extension tube and nearly worn through spherical bearing and attachment pin) on the Unit 2 3D ERV discharge piping was found. In addition, broken tack welds were discovered on both ends of the 3D and 3E ERVs and on one end of the 3C ERV pilot valve/actuator support. Several additional deficiencies of lesser significance were identified during the January 15 Unit 1 outage. Based on the degradation mode and extent of the Unit 2 3D ERV snubber end connection damage and Unit 2 3D, 3C, and 3E ERV turnbuckle tack weld cracks, it was determined that the degraded conditions existed prior to the Unit 2 and Unit 1 outages on December 30, 2005, and January 7, 2006, respectively.

This finding was determined to be more than minor because, if left uncorrected, the finding would become a significant safety concern. Specifically, the degraded components would continue to degrade and, if not identified and corrected, could eventually result in component or system failure. This finding was of very low safety significance because the degraded items identified did not result in a loss of safety function of any system. The inspectors determined that this finding also affected the cross cutting area of problem identification and resolution because the licensee had performed multiple drywell walkdowns in an effort to assess the main steam line vibration impacts, but had failed to identify the degraded equipment discussed above. The licensee conducted additional focused walkdowns during the January 13, 2006, Unit 2 outage and the Unit 1 outage which began on January 15, 2006, and initiated Issue Report 451822 to document the issue and determine corrective actions to be taken.

Inspection Report# : [2006009\(pdf\)](#)**G****Significance:** Sep 30, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

4160 VOLT RELAYING AND METERING SINGLE FAILURE VULNERABILITY

A finding of very low safety significance was identified when the licensee discovered that a spurious open circuit on the relaying and metering transformers for the unit auxiliary or the reserve auxiliary transformer could result in a loss of power to the residual heat removal service water system. This finding was determined to be a Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion III.

This finding was more than minor because if left uncorrected, the open circuit vulnerability would leave the station susceptible to a loss of the residual heat removal service water system following a loss of offsite power event. This finding was determined to be of very low safety significance because the frequency of the circuit failure was less than $1.0E-6$ and because the probability of experiencing a control room fire concurrent with the postulated circuit failure was also significantly low. Corrective actions for this issue included installing a temporary modification to eliminate the vulnerability, reviewing other electrical circuitry for similar vulnerabilities, and designing and installing a future permanent modification.

Inspection Report# : [2005005\(pdf\)](#)**G****Significance:** Jun 30, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO IMPLEMENT CORRECTIVE ACTIONS FOR THE TWO PREVIOUS BUS OVERLOAD EVENTS

A self-revealing finding of very low safety significance and a Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion XVI, were identified on March 27, 2005, due to the failure to implement effective corrective actions following the overloading of an electrical bus. This resulted in an overload of an electrical bus during the Unit 1 refueling outage and the loss the Unit 1 125 V battery chargers, the control room emergency ventilation system, and one half of the fuel pool cooling system.

This finding was more than minor because the ineffective corrective actions resulted in the procedures used to monitor loading on cross connected electrical buses being inadequate. This finding was of very low safety significance since the loads supplied by the Unit 1 battery chargers could be supplied from an alternate source, the fuel pool cooling loss did not result in a significant increase in temperatures, the Unit 1 reactor vessel water level was greater than 23 feet above the vessel flange, and the likelihood of a fire or toxic gas release occurring coincident

with the loss of the electrical bus was very low. Corrective actions for this issue included reviewing all procedures which allowed buses to be cross connected to ensure that specific information regarding the prevention of bus overloading was included and establishing positive controls for cross connected equipment within the applicable procedures.

Inspection Report# : [2005003\(pdf\)](#)

Mitigating Systems

Significance:  Feb 07, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO APPLY DESIGN CONTROL MEASURES TO ENSURE ERV PILOT VALVE/ACTUATOR SUPPORT WAS ADEQUATE FOR EPU OPERATION

The inspectors identified a finding of very low safety significance and a Non-Cited Violation of 10 CFR 50, Appendix B, Criterion III on January 15, 2006, for failure to adequately implement design control measures to ensure that the ERV assemblies were suitable for Extended Power Uprate (EPU) operations. This resulted in the licensee's failure to identify that the ERV pilot valve/actuator supports (turnbuckles) would degrade at EPU power levels. Following the January 13, 2006, Unit 2 shutdown, the licensee reported broken turnbuckle tack welds on both ends of the 3D and 3E ERVs and on one end of the 3C ERV. Inspection of the threaded portions of the 3D turnbuckle indicated significant degradation from thread fretting and thread fracture.

This finding was determined to be more than minor because if left uncorrected, the ERV turnbuckles would continue to degrade, potentially fail, and result in an inoperable ERV or inadvertent opening of the ERV due to a pilot line failure. This finding was of very low safety significance because although the Unit 2 3D ERV turnbuckle was degraded and considered to be a design deficiency, the degradation/deficiency did not result in an ERV loss of function. The inspectors concluded that this finding also affected the cross cutting area of problem identification and resolution because the licensee had performed several evaluations regarding the acceptability of equipment operation at EPU power levels and had failed to identify the ERV turnbuckle as a high stress, and potential failure, location. Corrective actions for this issue included inspecting the remaining turnbuckle tack welds, scheduling an inspection of the Unit 2 3E ERV turnbuckle during the March 2006 refueling outage, performing additional extent of condition reviews to identify other EPU vulnerable components, and addressing the organizational issues which contributed to the failure to identify the turnbuckle as a potential high stress location.

Inspection Report# : [2006009\(pdf\)](#)

Significance:  Feb 07, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

INADEQUATE MAINTENANCE PROCEDURE TO INSPECT ERV ACTUATORS

The inspectors identified a finding of very low safety significance and a Non-Cited Violation of 10 CFR 50, Appendix B, Criterion V on January 10, 2006, for failure to implement procedures appropriate to the circumstance for previous inspection and disassembly of the Unit 1 3D ERV actuator. The licensee had not identified that the ERV actuator disassembly and inspection procedures failed to include the inspection of all critical components subject to wear or loosening. This resulted in the licensee's failure to adequately inspect the ERV pivot bolts for tightness or wear. In addition to significant wear identified on the Unit 1 3D ERV pivot bolts, one of the Unit 1 3E ERV pivot bolts was found backed out and the Unit 2 3D ERV was missing one of the two pivot bolts.

This finding was determined to be more than minor because, if left uncorrected, the ERV pivot bolts would continue to degrade or loosen and could result in the failure of an ERV to actuate when required. This finding was of very low safety significance because although the results of a subsequent pivot bolt inspection indicated that some of the bolts were degraded, missing, or loose, the degradation in these instances did not result in an actual loss of system function. Corrective actions for this issue included revising the appropriate maintenance procedures, inspecting the Unit 2 pivot bolts, and installing new pivot bolts where needed.

Inspection Report# : [2006009\(pdf\)](#)

Significance:  Sep 30, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO FOLLOW THE CODE CASE N-513 CONTROL MEASURES FOR INSPECTIONS AND TESTS

A finding of very low safety significance was identified for the failure to adequately implement code case instructions for determining the operability and extent of condition when a pipe flaw was found on the residual heat removal service water system. The failure was determined to be a Violation of 10 CFR Part 50, Appendix B, Criterion III.

The finding was more than minor because, if left uncorrected, the extent of the piping flaw geometry would not be fully understood due to a lack of inspection that could result in inappropriately concluding that equipment important to safety was operable. The finding was considered to be of very low safety significance because the licensee was able to verify that the minimum pipe wall thickness of suspect examined areas of the residual heat removal service water piping welds met the functionality requirements for system operability. Corrective actions for this issue

include the extent of condition ultrasonic tests that have been completed and the weld repair of the 1D residual heat removal service water pump flaw.

Inspection Report# : [2005005\(pdf\)](#)

Significance:  Sep 30, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

LACK OF PROCEDURE INSTRUCTION IN PROCEDURE QCEMS 0250-11 TO EVALUATE AERO SHELL 7 GREASE FOR LUBRICANT AND THICKENER SEPARATION

A finding of very low safety significance was identified for the failure to provide adequate instruction for the application of grease as a lubricant to 480 Volt motor control center auxiliary contacts during maintenance. The failure was determined to be a Violation of 10 CFR Part 50, Appendix B, Criterion V.

The finding was more than minor because, if left uncorrected, degraded grease could be applied during maintenance activities to impact the operability, availability, reliability or safety function of a mitigating system. The finding was considered to be of very low safety significance because the finding did not result in an actual loss of a safety system function. Corrective actions for this issue included the removal of the old Aero Shell 7 grease can from the electrical maintenance shop to prevent its use and the generation of work orders to clean and re-lubricate the CR105X auxiliary contacts where white residue has been identified at various motor control center cubicles during the January through February 2005 inspection.

Inspection Report# : [2005005\(pdf\)](#)

Significance:  Sep 30, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

MISAPPLICATION OF AERO SHELL 7 GREASE

A finding of very low safety significance was identified for failing to follow a maintenance procedure that resulted in the failure of residual heat removal valve 1-1001-26B to operate during testing. The failure was determined to be a violation of 10 CFR Part 50, Appendix B, Criterion V.

The finding was more than minor because if left uncorrected, this inappropriate maintenance practice would result in hardened grease in other auxiliary contact assemblies impacting the operability, availability, reliability, or safety function of mitigating systems. The finding was considered to be of very low safety significance because the finding did not result in an actual loss of a safety system function. Corrective actions for this issue include the auxiliary contact assemblies in the motor control center cubicle being replaced and properly lubricated with Dow Corning 44 grease.

Inspection Report# : [2005005\(pdf\)](#)

Significance:  Jun 30, 2005

Identified By: NRC

Item Type: FIN Finding

FAILURE TO ADEQUATELY ADDRESS THE CONTINUED OPERABILITY OF SEVERAL BRASS FITTINGS AS PART OF OPERABILITY EVALUATION 328851

The inspectors identified a finding of very low safety significance in May 2005 while reviewing an evaluation used to justify the continued operability of commercial grade brass fittings installed on safety-related equipment. The primary cause of this finding was related to the cross-cutting area of Human Performance in that, engineering personnel had information regarding the fact that 5 out of 14 fitting batches were unable to be tested. However, information which justified the continued operability of the untested fittings was not included in the associated operability evaluation.

This finding was more than minor because if left uncorrected, the station could reach inappropriate conclusions regarding the continued operability of equipment important to safety. The finding was of very low safety significance because none of the safety-related equipment was determined to be inoperable. No violations of NRC requirements occurred since operability evaluations were not required by NRC regulations.

Inspection Report# : [2005003\(pdf\)](#)

Significance:  Apr 08, 2005

Identified By: NRC

Item Type: FIN Finding

FAILURE TO INITIATE OPERABILITY DETERMINATIONS OR EVALUATIONS WHEN REQUIRED

The inspectors identified a finding of very low safety significance due to the licensee's failure to perform operability determinations/evaluations for non-safety related structures, systems, or components discussed in the Updated Final Safety Analysis Report which were discovered to be degraded.

This finding was more than minor because if left uncorrected, the failure to properly evaluate the continued operability of degraded equipment

could result in the licensee inappropriately relying on structures, systems, or components that were unable to perform their safety function during an initiating event. The finding also impacted the cross-cutting area of problem identification and resolution because the licensee has had multiple examples of failures to initiate operability determinations or evaluations which had not been previously identified. No violation of NRC requirements occurred since the completion of operability determinations/evaluations was not required by NRC regulations.

Inspection Report# : [2005002\(pdf\)](#)

Barrier Integrity

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Physical Protection

[Physical Protection](#) information not publicly available.

Miscellaneous

Last modified : May 25, 2006

Quad Cities 2

2Q/2006 Plant Inspection Findings

Initiating Events

G**Significance:** Feb 07, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO IDENTIFY DEGRADED UNIT 2 SNUBBER AND BROKEN WELDS ON PILOT VALVE/ACTUATOR SUPPORT

The inspectors identified a finding of very low safety significance and a Non-Cited Violation of 10 CFR 50, Appendix B, Criterion XVI on January 17, 2006, for failure to conduct effective walkdowns during the Unit 2 and Unit 1 outages that occurred on December 30, 2005, and January 7, 2006, respectively. This resulted in the licensee's failure to identify components and systems degraded by increased steam line vibration at EPU power levels. Specifically, during the Unit 2 outage commencing on January 13, a severely degraded snubber (bent extension tube and nearly worn through spherical bearing and attachment pin) on the Unit 2 3D ERV discharge piping was found. In addition, broken tack welds were discovered on both ends of the 3D and 3E ERVs and on one end of the 3C ERV pilot valve/actuator support. Several additional deficiencies of lesser significance were identified during the January 15 Unit 1 outage. Based on the degradation mode and extent of the Unit 2 3D ERV snubber end connection damage and Unit 2 3D, 3C, and 3E ERV turnbuckle tack weld cracks, it was determined that the degraded conditions existed prior to the Unit 2 and Unit 1 outages on December 30, 2005, and January 7, 2006, respectively.

This finding was determined to be more than minor because, if left uncorrected, the finding would become a significant safety concern. Specifically, the degraded components would continue to degrade and, if not identified and corrected, could eventually result in component or system failure. This finding was of very low safety significance because the degraded items identified did not result in a loss of safety function of any system. The inspectors determined that this finding also affected the cross cutting area of problem identification and resolution because the licensee had performed multiple drywell walkdowns in an effort to assess the main steam line vibration impacts, but had failed to identify the degraded equipment discussed above. The licensee conducted additional focused walkdowns during the January 13, 2006, Unit 2 outage and the Unit 1 outage which began on January 15, 2006, and initiated Issue Report 451822 to document the issue and determine corrective actions to be taken. Inspection Report# : [2006009\(pdf\)](#)

G**Significance:** Sep 30, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

4160 VOLT RELAYING AND METERING SINGLE FAILURE VULNERABILITY

A finding of very low safety significance was identified when the licensee discovered that a spurious open circuit on the relaying and metering transformers for the unit auxiliary or the reserve auxiliary transformer could result in a loss of power to the residual heat removal service water system. This finding was determined to be a Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion III.

This finding was more than minor because if left uncorrected, the open circuit vulnerability would leave the station susceptible to a loss of the residual heat removal service water system following a loss of offsite power event. This finding was determined to be of very low safety significance because the frequency of the circuit failure was less than 1.0E-6 and because the probability of experiencing a control room fire concurrent with the postulated circuit failure was also significantly low. Corrective actions for this issue included installing a temporary modification to eliminate the vulnerability, reviewing other electrical circuitry for similar vulnerabilities, and designing and installing a future permanent modification.

Inspection Report# : [2005005\(pdf\)](#)

Mitigating Systems

G**Significance:** 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\(pdf\)](#)

G

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\(pdf\)](#)

G

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\(pdf\)](#)

G

Significance: Jun 29, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

Procedure Included Unapproved Fuse Repair for Appendix 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\(pdf\)](#)

G

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 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). 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\(pdf\)](#)

Significance:  May 23, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO ESTABLISH MEASURES TO ENSURE THAT THE UNIT 2 ERV ACTUATORS REMAINED SUITABLE FOR OPERATION WHILE OPERATING AT EPU POWER LEVELS

A self-revealing finding of very low safety significance, and a Non-Cited Violation of 10 CFR 50, Appendix B, Criterion III, Design Control, was identified on December 30, 2005, following the discovery that the Unit 2 3D ERV would not have performed its safety function when called upon. Increased vibrations experienced while operating at EPU power levels resulted in the degradation of multiple ERV actuator components which rendered the valve inoperable. The inspectors determined that the licensee implemented the Unit 2 EPU in February 2002, but failed to verify that the ERV actuator design was suitable for operation at the increased vibration levels experienced at EPU power levels. Organizational weaknesses at both the station and corporate levels contributed to the licensee's failure to identify this issue prior to, or immediately following, EPU implementation.

The finding was determined to be more than minor because it affected the Mitigating Systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The specific attributes of design control and equipment performance were adversely impacted by the failure of the ERV actuator. This finding was determined to be of very low safety significance since the remaining number of operable valves was adequate to ensure the success of the reactor vessel overpressure protection and the

automatic depressurization functions. 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 taken by the licensee included replacing the Unit 2 ERV actuators in January 2006, installing new ERV actuators designed to withstand the increased vibrations experienced during EPU operations in March 2006, and installing an additional modification to reduce the overall main steam line vibration levels. Additional corrective actions are in progress to address the organizational aspects that contributed to this issue.

Inspection Report# : [2006012\(pdf\)](#)



Significance: Feb 07, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO APPLY DESIGN CONTROL MEASURES TO ENSURE ERV PILOT VALVE/ACTUATOR SUPPORT WAS ADEQUATE FOR EPU OPERATION

The inspectors identified a finding of very low safety significance and a Non-Cited Violation of 10 CFR 50, Appendix B, Criterion III on January 15, 2006, for failure to adequately implement design control measures to ensure that the ERV assemblies were suitable for Extended Power Uprate (EPU) operations. This resulted in the licensee's failure to identify that the ERV pilot valve/actuator supports (turnbuckles) would degrade at EPU power levels. Following the January 13, 2006, Unit 2 shutdown, the licensee reported broken turnbuckle tack welds on both ends of the 3D and 3E ERVs and on one end of the 3C ERV. Inspection of the threaded portions of the 3D turnbuckle indicated significant degradation from thread fretting and thread fracture.

This finding was determined to be more than minor because if left uncorrected, the ERV turnbuckles would continue to degrade, potentially fail, and result in an inoperable ERV or inadvertent opening of the ERV due to a pilot line failure. This finding was of very low safety significance because although the Unit 2 3D ERV turnbuckle was degraded and considered to be a design deficiency, the degradation/deficiency did not result in an ERV loss of function. The inspectors concluded that this finding also affected the cross cutting area of problem identification and resolution because the licensee had performed several evaluations regarding the acceptability of equipment operation at EPU power levels and had failed to identify the ERV turnbuckle as a high stress, and potential failure, location. Corrective actions for this issue included inspecting the remaining turnbuckle tack welds, scheduling an inspection of the Unit 2 3E ERV turnbuckle during the March 2006 refueling outage, performing additional extent of condition reviews to identify other EPU vulnerable components, and addressing the organizational issues which contributed to the failure to identify the turnbuckle as a potential high stress location.

Inspection Report# : [2006009\(pdf\)](#)



Significance: Feb 07, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

INADEQUATE MAINTENANCE PROCEDURE TO INSPECT ERV ACTUATORS

The inspectors identified a finding of very low safety significance and a Non-Cited Violation of 10 CFR 50, Appendix B, Criterion V on January 10, 2006, for failure to implement procedures appropriate to the circumstance for previous inspection and disassembly of the Unit 1 3D ERV actuator. The licensee had not identified that the ERV actuator disassembly and inspection procedures failed to include the inspection of all critical components subject to wear or loosening. This resulted in the licensee's failure to adequately inspect the ERV pivot bolts for tightness or wear. In addition to significant wear identified on the Unit 1 3D ERV pivot bolts, one of the Unit 1 3E ERV pivot bolts was found backed out and the Unit 2 3D ERV was missing one of the two pivot bolts.

This finding was determined to be more than minor because, if left uncorrected, the ERV pivot bolts would continue to degrade or loosen and could result in the failure of an ERV to actuate when required. This finding was of very low safety significance because although the results of a subsequent pivot bolt inspection indicated that some of the bolts were degraded, missing, or loose, the degradation in these instances did not result in an actual loss of system function. Corrective actions for this issue included revising the appropriate maintenance procedures, inspecting the Unit 2 pivot bolts, and installing new pivot bolts where needed.

Inspection Report# : [2006009\(pdf\)](#)



Significance: Sep 30, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO FOLLOW THE CODE CASE N-513 CONTROL MEASURES FOR INSPECTIONS AND TESTS

A finding of very low safety significance was identified for the failure to adequately implement code case instructions for determining the operability and extent of condition when a pipe flaw was found on the residual heat removal service water system. The failure was determined to be a Violation of 10 CFR Part 50, Appendix B, Criterion III.

The finding was more than minor because, if left uncorrected, the extent of the piping flaw geometry would not be fully understood due to a lack of inspection that could result in inappropriately concluding that equipment important to safety was operable. The finding was considered to be of very low safety significance because the licensee was able to verify that the minimum pipe wall thickness of suspect examined areas of the residual heat removal service water piping welds met the functionality requirements for system operability. Corrective actions for this issue include the extent of condition ultrasonic tests that have been completed and the weld repair of the 1D residual heat removal service water pump flaw.

Inspection Report# : [2005005\(pdf\)](#)

G**Significance:** Sep 30, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

LACK OF PROCEDURE INSTRUCTION IN PROCEDURE QCEMS 0250-11 TO EVALUATE AERO SHELL 7 GREASE FOR LUBRICANT AND THICKENER SEPARATION

A finding of very low safety significance was identified for the failure to provide adequate instruction for the application of grease as a lubricant to 480 Volt motor control center auxiliary contacts during maintenance. The failure was determined to be a Violation of 10 CFR Part 50, Appendix B, Criterion V.

The finding was more than minor because, if left uncorrected, degraded grease could be applied during maintenance activities to impact the operability, availability, reliability or safety function of a mitigating system. The finding was considered to be of very low safety significance because the finding did not result in an actual loss of a safety system function. Corrective actions for this issue included the removal of the old Aero Shell 7 grease can from the electrical maintenance shop to prevent its use and the generation of work orders to clean and re-lubricate the CR105X auxiliary contacts where white residue has been identified at various motor control center cubicles during the January through February 2005 inspection.

Inspection Report# : [2005005\(pdf\)](#)G**Significance:** Sep 30, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

MISAPPLICATION OF AERO SHELL 7 GREASE

A finding of very low safety significance was identified for failing to follow a maintenance procedure that resulted in the failure of residual heat removal valve 1-1001-26B to operate during testing. The failure was determined to be a violation of 10 CFR Part 50, Appendix B, Criterion V.

The finding was more than minor because if left uncorrected, this inappropriate maintenance practice would result in hardened grease in other auxiliary contact assemblies impacting the operability, availability, reliability, or safety function of mitigating systems. The finding was considered to be of very low safety significance because the finding did not result in an actual loss of a safety system function. Corrective actions for this issue include the auxiliary contact assemblies in the motor control center cubicle being replaced and properly lubricated with Dow Corning 44 grease.

Inspection Report# : [2005005\(pdf\)](#)

Barrier Integrity

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Physical Protection

[Physical Protection](#) information not publicly available.

Miscellaneous

Last modified : August 25, 2006

Quad Cities 2

3Q/2006 Plant Inspection Findings

Initiating Events

Significance:  Feb 07, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO IDENTIFY DEGRADED UNIT 2 SNUBBER AND BROKEN WELDS ON PILOT VALVE/ACTUATOR SUPPORT

The inspectors identified a finding of very low safety significance and a Non-Cited Violation of 10 CFR 50, Appendix B, Criterion XVI on January 17, 2006, for failure to conduct effective walkdowns during the Unit 2 and Unit 1 outages that occurred on December 30, 2005, and January 7, 2006, respectively. This resulted in the licensee's failure to identify components and systems degraded by increased steam line vibration at EPU power levels. Specifically, during the Unit 2 outage commencing on January 13, a severely degraded snubber (bent extension tube and nearly worn through spherical bearing and attachment pin) on the Unit 2 3D ERV discharge piping was found. In addition, broken tack welds were discovered on both ends of the 3D and 3E ERVs and on one end of the 3C ERV pilot valve/actuator support. Several additional deficiencies of lesser significance were identified during the January 15 Unit 1 outage. Based on the degradation mode and extent of the Unit 2 3D ERV snubber end connection damage and Unit 2 3D, 3C, and 3E ERV turnbuckle tack weld cracks, it was determined that the degraded conditions existed prior to the Unit 2 and Unit 1 outages on December 30, 2005, and January 7, 2006, respectively.

This finding was determined to be more than minor because, if left uncorrected, the finding would become a significant safety concern. Specifically, the degraded components would continue to degrade and, if not identified and corrected, could eventually result in component or system failure. This finding was of very low safety significance because the degraded items identified did not result in a loss of safety function of any system. The inspectors determined that this finding also affected the cross cutting area of problem identification and resolution because the licensee had performed multiple drywell walkdowns in an effort to assess the main steam line vibration impacts, but had failed to identify the degraded equipment discussed above. The licensee conducted additional focused walkdowns during the January 13, 2006, Unit 2 outage and the Unit 1 outage which began on January 15, 2006, and initiated Issue Report 451822 to document the issue and determine corrective actions to be taken.

Inspection Report# : [2006009\(pdf\)](#)

Mitigating Systems

Significance:  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:  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:  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:  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 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). 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\(pdf\)](#)



Significance: May 23, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO ESTABLISH MEASURES TO ENSURE THAT THE UNIT 2 ERV ACTUATORS REMAINED SUITABLE FOR OPERATION WHILE OPERATING AT EPU POWER LEVELS

A self-revealing finding of very low safety significance, and a Non-Cited Violation of 10 CFR 50, Appendix B, Criterion III, Design Control, was identified on December 30, 2005, following the discovery that the Unit 2 3D ERV would not have

performed its safety function when called upon. Increased vibrations experienced while operating at EPU power levels resulted in the degradation of multiple ERV actuator components which rendered the valve inoperable. The inspectors determined that the licensee implemented the Unit 2 EPU in February 2002, but failed to verify that the ERV actuator design was suitable for operation at the increased vibration levels experienced at EPU power levels. Organizational weaknesses at both the station and corporate levels contributed to the licensee's failure to identify this issue prior to, or immediately following, EPU implementation.

The finding was determined to be more than minor because it affected the Mitigating Systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The specific attributes of design control and equipment performance were adversely impacted by the failure of the ERV actuator. This finding was determined to be of very low safety significance since the remaining number of operable valves was adequate to ensure the success of the reactor vessel overpressure protection and the automatic depressurization functions. 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 taken by the licensee included replacing the Unit 2 ERV actuators in January 2006, installing new ERV actuators designed to withstand the increased vibrations experienced during EPU operations in March 2006, and installing an additional modification to reduce the overall main steam line vibration levels. Additional corrective actions are in progress to address the organizational aspects that contributed to this issue.

Inspection Report# : [2006012\(pdf\)](#)

Significance:  Feb 07, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO APPLY DESIGN CONTROL MEASURES TO ENSURE ERV PILOT VALVE/ACTUATOR SUPPORT WAS ADEQUATE FOR EPU OPERATION

The inspectors identified a finding of very low safety significance and a Non-Cited Violation of 10 CFR 50, Appendix B, Criterion III on January 15, 2006, for failure to adequately implement design control measures to ensure that the ERV assemblies were suitable for Extended Power Uprate (EPU) operations. This resulted in the licensee's failure to identify that the ERV pilot valve/actuator supports (turnbuckles) would degrade at EPU power levels. Following the January 13, 2006, Unit 2 shutdown, the licensee reported broken turnbuckle tack welds on both ends of the 3D and 3E ERVs and on one end of the 3C ERV. Inspection of the threaded portions of the 3D turnbuckle indicated significant degradation from thread fretting and thread fracture.

This finding was determined to be more than minor because if left uncorrected, the ERV turnbuckles would continue to degrade, potentially fail, and result in an inoperable ERV or inadvertent opening of the ERV due to a pilot line failure. This finding was of very low safety significance because although the Unit 2 3D ERV turnbuckle was degraded and considered to be a design deficiency, the degradation/deficiency did not result in an ERV loss of function. The inspectors concluded that this finding also affected the cross cutting area of problem identification and resolution because the licensee had performed several evaluations regarding the acceptability of equipment operation at EPU power levels and had failed to identify the ERV turnbuckle as a high stress, and potential failure, location. Corrective actions for this issue included inspecting the remaining turnbuckle tack welds, scheduling an inspection of the Unit 2 3E ERV turnbuckle during the March 2006 refueling outage, performing additional extent of condition reviews to identify other EPU vulnerable components, and addressing the organizational issues which contributed to the failure to identify the turnbuckle as a potential high stress location.

Inspection Report# : [2006009\(pdf\)](#)

Significance:  Feb 07, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

INADEQUATE MAINTENANCE PROCEDURE TO INSPECT ERV ACTUATORS

The inspectors identified a finding of very low safety significance and a Non-Cited Violation of 10 CFR 50, Appendix B, Criterion V on January 10, 2006, for failure to implement procedures appropriate to the circumstance for previous inspection and disassembly of the Unit 1 3D ERV actuator. The licensee had not identified that the ERV actuator disassembly and inspection procedures failed to include the inspection of all critical components subject to wear or

loosening. This resulted in the licensee's failure to adequately inspect the ERV pivot bolts for tightness or wear. In addition to significant wear identified on the Unit 1 3D ERV pivot bolts, one of the Unit 1 3E ERV pivot bolts was found backed out and the Unit 2 3D ERV was missing one of the two pivot bolts.

This finding was determined to be more than minor because, if left uncorrected, the ERV pivot bolts would continue to degrade or loosen and could result in the failure of an ERV to actuate when required. This finding was of very low safety significance because although the results of a subsequent pivot bolt inspection indicated that some of the bolts were degraded, missing, or loose, the degradation in these instances did not result in an actual loss of system function. Corrective actions for this issue included revising the appropriate maintenance procedures, inspecting the Unit 2 pivot bolts, and installing new pivot bolts where needed.

Inspection Report# : [2006009\(pdf\)](#)

Barrier Integrity

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Physical Protection

[Physical Protection](#) information not publicly available.

Miscellaneous

Last modified : December 21, 2006

Quad Cities 2

4Q/2006 Plant Inspection Findings

Initiating Events

Significance:  Feb 07, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO IDENTIFY DEGRADED UNIT 2 SNUBBER AND BROKEN WELDS ON PILOT VALVE/ACTUATOR SUPPORT

The inspectors identified a finding of very low safety significance and a Non-Cited Violation of 10 CFR 50, Appendix B, Criterion XVI on January 17, 2006, for failure to conduct effective walkdowns during the Unit 2 and Unit 1 outages that occurred on December 30, 2005, and January 7, 2006, respectively. This resulted in the licensee's failure to identify components and systems degraded by increased steam line vibration at EPU power levels. Specifically, during the Unit 2 outage commencing on January 13, a severely degraded snubber (bent extension tube and nearly worn through spherical bearing and attachment pin) on the Unit 2 3D ERV discharge piping was found. In addition, broken tack welds were discovered on both ends of the 3D and 3E ERVs and on one end of the 3C ERV pilot valve/actuator support. Several additional deficiencies of lesser significance were identified during the January 15 Unit 1 outage. Based on the degradation mode and extent of the Unit 2 3D ERV snubber end connection damage and Unit 2 3D, 3C, and 3E ERV turnbuckle tack weld cracks, it was determined that the degraded conditions existed prior to the Unit 2 and Unit 1 outages on December 30, 2005, and January 7, 2006, respectively.

This finding was determined to be more than minor because, if left uncorrected, the finding would become a significant safety concern. Specifically, the degraded components would continue to degrade and, if not identified and corrected, could eventually result in component or system failure. This finding was of very low safety significance because the degraded items identified did not result in a loss of safety function of any system. The inspectors determined that this finding also affected the cross cutting area of problem identification and resolution because the licensee had performed multiple drywell walkdowns in an effort to assess the main steam line vibration impacts, but had failed to identify the degraded equipment discussed above. The licensee conducted additional focused walkdowns during the January 13, 2006, Unit 2 outage and the Unit 1 outage which began on January 15, 2006, and initiated Issue Report 451822 to document the issue and determine corrective actions to be taken.

Inspection Report# : [2006009](#) (*pdf*)

Mitigating Systems

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 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:  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:  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:  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:  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:  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:  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:  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:  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:  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:  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:  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:  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:  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:  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 Appendix 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)

Significance:  May 23, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO ESTABLISH MEASURES TO ENSURE THAT THE UNIT 2 ERV ACTUATORS REMAINED SUITABLE FOR OPERATION WHILE OPERATING AT EPU POWER LEVELS

A self-revealing finding of very low safety significance, and a Non-Cited Violation of 10 CFR 50, Appendix B, Criterion III, Design Control, was identified on December 30, 2005, following the discovery that the Unit 2 3D ERV would not have performed its safety function when called upon. Increased vibrations experienced while operating at EPU power levels resulted in the degradation of multiple ERV actuator components which rendered the valve inoperable. The inspectors determined that the licensee implemented the Unit 2 EPU in February 2002, but failed to verify that the ERV actuator design was suitable for operation at the increased vibration levels experienced at EPU power levels. Organizational weaknesses at both the station and corporate levels contributed to the licensee's failure to identify this issue prior to, or immediately following, EPU implementation.

The finding was determined to be more than minor because it affected the Mitigating Systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The specific attributes of design control and equipment performance were adversely impacted by the failure of the ERV actuator. This finding was determined to be of very low safety significance since the remaining number of operable valves was adequate to ensure the success of the reactor vessel overpressure protection and the automatic depressurization functions. 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 taken by the licensee included replacing the Unit 2 ERV actuators in January 2006, installing new ERV actuators designed to withstand the increased vibrations experienced during EPU operations in March 2006, and installing an additional modification to reduce the overall main steam line vibration levels. Additional corrective actions are in progress to address the organizational aspects that contributed to this issue.

Inspection Report# : [2006012](#) (pdf)

G**Significance:** Feb 07, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO APPLY DESIGN CONTROL MEASURES TO ENSURE ERV PILOT VALVE/ACTUATOR SUPPORT WAS ADEQUATE FOR EPU OPERATION

The inspectors identified a finding of very low safety significance and a Non-Cited Violation of 10 CFR 50, Appendix B, Criterion III on January 15, 2006, for failure to adequately implement design control measures to ensure that the ERV assemblies were suitable for Extended Power Uprate (EPU) operations. This resulted in the licensee's failure to identify that the ERV pilot valve/actuator supports (turnbuckles) would degrade at EPU power levels. Following the January 13, 2006, Unit 2 shutdown, the licensee reported broken turnbuckle tack welds on both ends of the 3D and 3E ERVs and on one end of the 3C ERV. Inspection of the threaded portions of the 3D turnbuckle indicated significant degradation from thread fretting and thread fracture.

This finding was determined to be more than minor because if left uncorrected, the ERV turnbuckles would continue to degrade, potentially fail, and result in an inoperable ERV or inadvertent opening of the ERV due to a pilot line failure. This finding was of very low safety significance because although the Unit 2 3D ERV turnbuckle was degraded and considered to be a design deficiency, the degradation/deficiency did not result in an ERV loss of function. The inspectors concluded that this finding also affected the cross cutting area of problem identification and resolution because the licensee had performed several evaluations regarding the acceptability of equipment operation at EPU power levels and had failed to identify the ERV turnbuckle as a high stress, and potential failure, location. Corrective actions for this issue included inspecting the remaining turnbuckle tack welds, scheduling an inspection of the Unit 2 3E ERV turnbuckle during the March 2006 refueling outage, performing additional extent of condition reviews to identify other EPU vulnerable components, and addressing the organizational issues which contributed to the failure to identify the turnbuckle as a potential high stress location.

Inspection Report# : [2006009](#) (pdf)**G****Significance:** Feb 07, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

INADEQUATE MAINTENANCE PROCEDURE TO INSPECT ERV ACTUATORS

The inspectors identified a finding of very low safety significance and a Non-Cited Violation of 10 CFR 50, Appendix B, Criterion V on January 10, 2006, for failure to implement procedures appropriate to the circumstance for previous inspection and disassembly of the Unit 1 3D ERV actuator. The licensee had not identified that the ERV actuator disassembly and inspection procedures failed to include the inspection of all critical components subject to wear or loosening. This resulted in the licensee's failure to adequately inspect the ERV pivot bolts for tightness or wear. In addition to significant wear identified on the Unit 1 3D ERV pivot bolts, one of the Unit 1 3E ERV pivot bolts was found backed out and the Unit 2 3D ERV was missing one of the two pivot bolts.

This finding was determined to be more than minor because, if left uncorrected, the ERV pivot bolts would continue to degrade or loosen and could result in the failure of an ERV to actuate when required. This finding was of very low safety significance because although the results of a subsequent pivot bolt inspection indicated that some of the bolts were degraded, missing, or loose, the degradation in these instances did not result in an actual loss of system function. Corrective actions for this issue included revising the appropriate maintenance procedures, inspecting the Unit 2 pivot bolts, and installing new pivot bolts where needed.

Inspection Report# : [2006009](#) (pdf)

Barrier Integrity

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Physical Protection

[Physical Protection](#) information not publicly available.

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 : March 01, 2007

Quad Cities 2

1Q/2007 Plant Inspection Findings

Initiating Events

Significance:  Mar 31, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO HAVE PROCEDURES APPROPRIATE TO THE CIRCUMSTANCE FOR REPLACING THE MAIN STEAM LINE LOW PRESSURE TIME DELAY RELAY

A self-revealed finding was identified when Unit 2 experienced an unexpected half Group I containment isolation signal on January 23, 2007. The half isolation signal was caused by the licensee's failure to have procedures appropriate to the circumstance for replacing the main steam line low pressure time delay relays. As a result, one of eight relays installed in 1991 was allowed to remain in operation until it failed. The inspectors determined that the failure to have procedures for replacing the relays was a Non-cited Violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings." Immediate corrective actions included replacing the failed relay, resetting the half containment isolation signal, and implementing a preventive maintenance activity to replace the remaining relays at a later date.

This finding was more than minor because it was associated with the procedure quality attribute of the Initiating Events Cornerstone. It also affected the cornerstone objective of limiting the likelihood of events that upset plant stability. The inspectors determined that the finding was of very low safety significance because it did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available. Lastly, the inspectors concluded that this finding was cross-cutting in the area of Human Performance, Resources, because the licensee did not have complete, accurate, and up-to-date procedures for replacing the relays.

Inspection Report# : [2007002](#) (*pdf*)

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:  Mar 31, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

REPLACING UNIT 2 PORVS WITH ERVS NOT IN ACOCRDANCE WITH 10 CFR 50.49

The team identified a finding of very low safety significance involving the replacement of an environmentally qualified (EQ) Category I component with an EQ Category II component. Specifically, a Non-Cited Violation of 10 CFR 50.49, was associated with this finding, in that, in 2004, the licensee replaced the Target Rock Power Operated Relief Valves, qualified Category I in accordance with environmental qualification requirements, with Dresser Electromatic Relief Valves, qualified as Category II components, which was not allowed under the regulation. Corrective actions for this issue included evaluating whether the currently installed valves could be qualified as EQ Category I components.

The finding was more than minor because it was associated with the design control attribute of the Mitigating System cornerstone and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The finding was of very low safety significance because the valves continued to be operable based upon qualification to EQ Category II. Therefore, reasonable confidence remained that the valves would perform their safety function under accident conditions. This finding is related to the cross-cutting element of Human Performance, Decision Making, in that the licensee did not use conservative assumptions in the decision to replace EQ Category I valves with EQ Category II valves. Specifically, the licensee continued to rely on an incorrect interpretation that EQ requirements were met.

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 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)

G**Significance:** 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*)**G****Significance:** 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*)**G****Significance:** 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:  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:  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:  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 \(pdf\)](#)

G**Significance:** 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*)**G****Significance:** 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*)**G****Significance:** 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*)

G**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*)**G****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*)**G****Significance:** 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*)**G****Significance:** 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:  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:  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:  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 Appendix 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)

Significance:  May 23, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO ESTABLISH MEASURES TO ENSURE THAT THE UNIT 2 ERV ACTUATORS REMAINED SUITABLE FOR OPERATION WHILE OPERATING AT EPU POWER LEVELS

A self-revealing finding of very low safety significance, and a Non-Cited Violation of 10 CFR 50, Appendix B, Criterion III, Design Control, was identified on December 30, 2005, following the discovery that the Unit 2 3D ERV would not have performed its safety function when called upon. Increased vibrations experienced while operating at EPU power levels resulted in the degradation of multiple ERV actuator components which rendered the valve inoperable. The inspectors determined that the licensee implemented the Unit 2 EPU in February 2002, but failed to verify that the ERV actuator design was suitable for operation at the increased vibration levels experienced at EPU power levels. Organizational weaknesses at both the station and corporate levels contributed to the licensee's failure to identify this issue prior to, or immediately following, EPU implementation.

The finding was determined to be more than minor because it affected the Mitigating Systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The specific attributes of design control and equipment performance were adversely impacted by the failure of the ERV actuator. This finding was determined to be of very low safety significance since the remaining number of operable valves was adequate to ensure the success of the reactor vessel overpressure protection and the automatic depressurization functions. 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 taken by the licensee included replacing the Unit 2 ERV actuators in January 2006, installing new ERV actuators designed to withstand the increased vibrations experienced during EPU operations in March 2006, and installing an additional modification to reduce the overall main steam line vibration levels. Additional corrective actions are in progress to address the organizational aspects that contributed to this issue.

Inspection Report# : [2006012](#) (*pdf*)

Barrier Integrity

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*)

Occupational Radiation Safety

Public Radiation Safety

Physical Protection

[Physical Protection](#) information not publicly available.

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

Quad Cities 2

2Q/2007 Plant Inspection Findings

Initiating Events

Significance:  Jun 30, 2007

Identified By: NRC

Item Type: FIN Finding

MANUAL REACTOR SCRAM DUE TO PLUGGED PRESSURE SENSING LINE

A finding of very low safety significance was self-revealed on February 28, 2007, when operations personnel inserted a manual scram in response to increasing condenser back pressure. The licensee determined that blockage of an offgas system pressure sensing line created a condition which resulted in a system relief valve opening. The open relief valve caused the 2A steam jet air ejector efficiency to drop and increased condenser back pressure. Corrective actions for this issue included removing the blockage from the sensing line and developing a periodic maintenance task to ensure the sensing line remained clean. No violations of NRC requirements were identified due to the offgas system being non-safety related.

This finding was more than minor because it was associated with the equipment performance and procedure adequacy attributes of the initiating events cornerstone. The finding also impacted the cornerstone's objective of limiting the likelihood of events that upset plant stability and challenge safety functions. This finding was of very low safety significance because adequate mitigating systems equipment remained available to respond to a transient with a loss of the power conversion system. The inspectors concluded that this finding was cross-cutting in the area of human performance, resources (H.2(c)), in that the licensee failed to have complete, accurate, and up-to-date procedures regarding pressure sensing line maintenance.

Inspection Report# : [2007003](#) (*pdf*)

Significance:  Mar 31, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO HAVE PROCEDURES APPROPRIATE TO THE CIRCUMSTANCE FOR REPLACING THE MAIN STEAM LINE LOW PRESSURE TIME DELAY RELAY

A self-revealed finding was identified when Unit 2 experienced an unexpected half Group I containment isolation signal on January 23, 2007. The half isolation signal was caused by the licensee's failure to have procedures appropriate to the circumstance for replacing the main steam line low pressure time delay relays. As a result, one of eight relays installed in 1991 was allowed to remain in operation until it failed. The inspectors determined that the failure to have procedures for replacing the relays was a Non-cited Violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings." Immediate corrective actions included replacing the failed relay, resetting the half containment isolation signal, and implementing a preventive maintenance activity to replace the remaining relays at a later date.

This finding was more than minor because it was associated with the procedure quality attribute of the Initiating Events Cornerstone. It also affected the cornerstone objective of limiting the likelihood of events that upset plant stability. The inspectors determined that the finding was of very low safety significance because it did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available. Lastly, the inspectors concluded that this finding was cross-cutting in the area of Human Performance, Resources, because the licensee did not have complete, accurate, and up-to-date procedures for replacing the relays.

Inspection Report# : [2007002](#) (*pdf*)

Mitigating Systems

G**Significance:** Jun 30, 2007

Identified By: NRC

Item Type: FIN Finding

INADEQUATE OPERABILITY JUSTIFICATION FOR UNIT 2 4 KV BREAKERS

The inspectors identified a finding of very low safety significance on May 21, 2007, due to the failure to adequately document and justify the basis for continued operability of the 4 kV breakers in Unit 2 following the identification of a common mode failure mechanism on the 4 kV breakers in Unit 1. In response to this issue, the licensee documented additional information to justify the continued operability of the breakers. The licensee was also developing additional corrective actions to improve the implementation of the operability determination/evaluation process. No violation of NRC requirements was identified because operability determinations were not required by NRC regulations.

This finding was more than minor because if left uncorrected, continued inadequate justifications could result in incorrectly concluding that safety-related components remained operable rather than inoperable. This finding was of very low safety significance because it was not a design deficiency, did not result in a loss of safety function, and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. The inspectors concluded that this finding was cross-cutting in the area of human performance, decision making (H.1(b)), in that the licensee did not use conservative assumptions to demonstrate that the proposed action was safe rather than unsafe.

Inspection Report# : [2007003](#) (*pdf*)**G****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*)**G****Significance:** Mar 31, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

REPLACING UNIT 2 PORVS WITH ERVS NOT IN ACORDANCE WITH 10 CFR 50.49

The team identified a finding of very low safety significance involving the replacement of an environmentally qualified (EQ) Category I component with an EQ Category II component. Specifically, a Non-Cited Violation of 10 CFR 50.49, was associated with this finding, in that, in 2004, the licensee replaced the Target Rock Power Operated Relief Valves, qualified Category I in accordance with environmental qualification requirements, with Dresser Electromatic Relief Valves, qualified as Category II components, which was not allowed under the regulation. Corrective actions for this issue included evaluating whether the currently installed valves could be qualified as EQ Category I components.

The finding was more than minor because it was associated with the design control attribute of the Mitigating System cornerstone and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The finding was of very low safety significance because the valves continued to be operable based upon qualification to EQ Category II. Therefore, reasonable confidence remained that the valves would perform their safety function under accident conditions. This finding is

related to the cross-cutting element of Human Performance, Decision Making, in that the licensee did not use conservative assumptions in the decision to replace EQ Category I valves with EQ Category II valves. Specifically, the licensee continued to rely on an incorrect interpretation that EQ requirements were met.

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 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:  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:  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:  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:  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:  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:  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:  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:  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:  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:  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:  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:  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*)

Barrier Integrity

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*)

Occupational Radiation Safety

Public Radiation Safety

Physical Protection

Although the NRC is actively overseeing the Security cornerstone, the Commission has decided that certain findings pertaining to security cornerstone will not be publicly available to ensure that potentially useful information is not provided to a possible adversary. Therefore, the [cover letters](#) to security inspection reports may be viewed.

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 : August 24, 2007

Quad Cities 2

3Q/2007 Plant Inspection Findings

Initiating Events

Significance:  Sep 30, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO CONTROL TRANSIENT COMBUSTIBLES IN THE CABLE SPREADING ROOM

An inspector-identified finding and a Non-Cited Violation of a Quad Cities Nuclear Power Station license condition for fire protection was identified on May 3, 2007, due to the failure to adequately control transient combustible materials in a transient combustible exclusion zone. Specifically, the inspectors discovered two large cardboard boxes and an aerosol spray can that contained methyl alcohol improperly controlled and unattended in the cable spreading room. Corrective actions for this issue included removing the materials from the cable spreading room, providing additional oversight of the transient combustibles control program, and clearly labeling the cable spreading room as a transient combustible exclusion zone.

The inspectors determined that this issue was more than minor because it could be viewed as a precursor to a significant event, i.e., fire impacting multiple pieces of safety-related equipment. Specifically, multiple vertical cable risers were located within the zone of influence for the aerosol can. The inspectors determined that this issue was of very low safety significance based upon the criteria established in Inspection Manual Chapter 0609F, Table 2.9.1, "Risk Significance Based on Core Damage Frequency." The inspectors concluded that this finding was cross-cutting in the area of Human Performance, Work Practices, Oversight, in that the licensee did not ensure that supervisory and management oversight of work activities, including contractors, was appropriate such that nuclear safety was supported.

Inspection Report# : [2007004](#) (*pdf*)

Significance:  Jun 30, 2007

Identified By: NRC

Item Type: FIN Finding

MANUAL REACTOR SCRAM DUE TO PLUGGED PRESSURE SENSING LINE

A finding of very low safety significance was self-revealed on February 28, 2007, when operations personnel inserted a manual scram in response to increasing condenser back pressure. The licensee determined that blockage of an offgas system pressure sensing line created a condition which resulted in a system relief valve opening. The open relief valve caused the 2A steam jet air ejector efficiency to drop and increased condenser back pressure. Corrective actions for this issue included removing the blockage from the sensing line and developing a periodic maintenance task to ensure the sensing line remained clean. No violations of NRC requirements were identified due to the offgas system being non-safety related.

This finding was more than minor because it was associated with the equipment performance and procedure adequacy attributes of the initiating events cornerstone. The finding also impacted the cornerstone's objective of limiting the likelihood of events that upset plant stability and challenge safety functions. This finding was of very low safety significance because adequate mitigating systems equipment remained available to respond to a transient with a loss of the power conversion system. The inspectors concluded that this finding was cross-cutting in the area of human performance, resources (H.2(c)), in that the licensee failed to have complete, accurate, and up-to-date procedures regarding pressure sensing line maintenance.

Inspection Report# : [2007003](#) (*pdf*)

Significance:  Mar 31, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO HAVE PROCEDURES APPROPRIATE TO THE CIRCUMSTANCE FOR REPLACING THE MAIN STEAM LINE LOW PRESSURE TIME DELAY RELAY

A self-revealed finding was identified when Unit 2 experienced an unexpected half Group I containment isolation signal on January 23, 2007. The half isolation signal was caused by the licensee's failure to have procedures appropriate to the circumstance for replacing the main steam line low pressure time delay relays. As a result, one of eight relays installed in 1991 was allowed to remain in operation until it failed. The inspectors determined that the failure to have procedures for replacing the relays was a Non-cited Violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings." Immediate corrective actions included replacing the failed relay, resetting the half containment isolation signal, and implementing a preventive maintenance activity to replace the remaining relays at a later date.

This finding was more than minor because it was associated with the procedure quality attribute of the Initiating Events Cornerstone. It also affected the cornerstone objective of limiting the likelihood of events that upset plant stability. The inspectors determined that the finding was of very low safety significance because it did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available. Lastly, the inspectors concluded that this finding was cross-cutting in the area of Human Performance, Resources, because the licensee did not have complete, accurate, and up-to-date procedures for replacing the relays. Inspection Report# : [2007002](#) (*pdf*)

Mitigating Systems

Significance:  Sep 30, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO PROMPTLY CORRECT MARCH 2007 1D RESIDUAL HEAT REMOVAL PUMP BREAKER FAILURE

A self-revealing finding and a Non-Cited Violation of 10 CFR 50, Appendix B, Criterion XVI, was identified in September 2007 for the failure to identify and correct a condition adverse to quality. Specifically, the licensee failed to assure that the cause of the March 2007 failure of the 1D residual heat removal pump breaker was promptly identified and corrected. This resulted in an additional 1D residual heat removal pump breaker failure in May 2007. Corrective actions for this issue included performing an extent of condition review and modifying all of the Unit 1 Merlin Gerin breakers and cubicles. At the conclusion of the inspection period, 17 of the 47 Unit 2 breaker cubicles had also been modified. The remainder will be modified during the next Unit 2 refueling outage.

This issue was more than minor because, if left uncorrected, the failure of safety-related breakers would continue to result in the inoperability of risk significant equipment. This finding was of very low safety significance because it was not a design deficiency, did not result in the total loss of a safety function, and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. This finding was determined to be cross-cutting in the area of Problem Identification and Resolution, Corrective Action Program, Evaluation, because the licensee failed to thoroughly evaluate the March 2007 breaker failure to ensure that the resolution addressed the cause and extent of condition.

Inspection Report# : [2007004](#) (*pdf*)

Significance: SL-IV Sep 07, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate 10 CFR 50.59 Evaluations for the Main Steam Line Tunnel High Temperature Instrumentation and the Electrohydraulic Control System Pressure Regulator

The inspectors identified a Severity Level IV NCV of 10 CFR 50.59(d)(1) for the licensee's failure to perform an adequate 10 CFR 50.59 evaluation for bypassing a channel of the Main Steam Line (MSL) tunnel high temperature instrumentation and for the failure to perform an adequate 10 CFR 50.59 evaluation for changing the license basis to allow operating the Electrohydraulic Control (EHC) System pressure regulator with only one channel in service. Even though the licensee did not intend to operate the plant permanently with a channel of the MSL tunnel high temperature bypassed or with only one EHC pressure regulator channel, the 10 CFR 50.59 evaluations that were performed

allowed it. Because of this, the inspection team could not reasonably determine that these changes would not have required a license amendment, because the bypassing of the MSL tunnel high temperature channel could have resulted in more than a minimal increase in the likelihood of a malfunction of a structure, system, or component important to safety. Additionally, the change to allow operating the EHC System pressure regulator with only one channel in service could have created a possibility of a malfunction of an SSC important to safety with a different result. This issue was entered into the licensee's corrective action program.

Because the issue potentially impacted the NRC's ability to perform its regulatory function, this finding was evaluated using the traditional enforcement process. The finding was determined to be more than minor because the inspectors could not reasonably determine that these 10 CFR 50.59 evaluations would not have ultimately required NRC prior approval. The inspectors evaluated the finding using Inspection Manual Chapter (IMC) 0609, Appendix A, Phase 1 screening for the mitigating systems cornerstone and determined that the finding was of very low safety significance because they were able to answer "no" to the Mitigating Systems screening questions in the Phase 1 Screening Worksheet. Specifically, while the licensee failed to perform an adequate 10 CFR 50.59 evaluation for bypassing a channel of the MSL tunnel high temperature instrumentation and for allowing operation of the EHC System pressure regulator with only one channel in service, the licensee would have been able to perform these same actions under the NRC Part 9900 Technical Guidance for Degraded or Nonconforming Conditions.

Inspection Report# : [2007008](#) (pdf)

Significance:  Sep 07, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Account for Delays in ECCS MOV's Due to Voltage Dips during Load Sequencing

The inspections identified an NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," that was of very low safety significance. Specifically, Motor Operated Valve (MOV) delays caused by voltage dips during load sequencing were not translated into and accounted for in the design basis for the In-Service Testing (IST) stroke time acceptance criteria for the Residual Heat Removal (RHR) system inboard and outboard shutoff valves and two core spray inboard isolation valves. This issue was entered into the licensee's corrective action program.

The issue was more than minor because it was associated with the Mitigating System Cornerstone attribute of "Design Control," and affected the cornerstone objective of ensuring the capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the MOV delays caused by voltage dips during Emergency Core Cooling System (ECCS) load sequencing were not accounted for in the licensee's design basis. This introduced non-conservativisms in the margins for MOV IST acceptance criteria and also potentially for the acceptance criteria themselves. This finding was of very low safety significance, because the inspectors answered "no" to all five questions under the Mitigating Systems Cornerstone column of the Phase 1 worksheet. Specifically, even though the MOV delays were non-conservative, the actual MOV stroke times during the most recent IST testing for the valves in question were much less than the IST acceptance criteria

Inspection Report# : [2007008](#) (pdf)

Significance:  Jun 30, 2007

Identified By: NRC

Item Type: FIN Finding

INADEQUATE OPERABILITY JUSTIFICATION FOR UNIT 2 4 KV BREAKERS

The inspectors identified a finding of very low safety significance on May 21, 2007, due to the failure to adequately document and justify the basis for continued operability of the 4 kV breakers in Unit 2 following the identification of a common mode failure mechanism on the 4 kV breakers in Unit 1. In response to this issue, the licensee documented additional information to justify the continued operability of the breakers. The licensee was also developing additional corrective actions to improve the implementation of the operability determination/evaluation process. No violation of NRC requirements was identified because operability determinations were not required by NRC regulations.

This finding was more than minor because if left uncorrected, continued inadequate justifications could result in incorrectly concluding that safety-related components remained operable rather than inoperable. This finding was of very low safety significance because it was not a design deficiency, did not result in a loss of safety function, and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. The inspectors concluded that this finding was cross-cutting in the area of human performance, decision making (H.1(b)), in that the

licensee did not use conservative assumptions to demonstrate that the proposed action was safe rather than unsafe.
Inspection Report# : [2007003 \(pdf\)](#)

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:  Mar 31, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

REPLACING UNIT 2 PORVS WITH ERVS NOT IN ACOCRDANCE WITH 10 CFR 50.49

The team identified a finding of very low safety significance involving the replacement of an environmentally qualified (EQ) Category I component with an EQ Category II component. Specifically, a Non-Cited Violation of 10 CFR 50.49, was associated with this finding, in that, in 2004, the licensee replaced the Target Rock Power Operated Relief Valves, qualified Category I in accordance with environmental qualification requirements, with Dresser Electromatic Relief Valves, qualified as Category II components, which was not allowed under the regulation. Corrective actions for this issue included evaluating whether the currently installed valves could be qualified as EQ Category I components.

The finding was more than minor because it was associated with the design control attribute of the Mitigating System cornerstone and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The finding was of very low safety significance because the valves continued to be operable based upon qualification to EQ Category II. Therefore, reasonable confidence remained that the valves would perform their safety function under accident conditions. This finding is related to the cross-cutting element of Human Performance, Decision Making, in that the licensee did not use conservative assumptions in the decision to replace EQ Category I valves with EQ Category II valves. Specifically, the licensee continued to rely on an incorrect interpretation that EQ requirements were met.

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 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:  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:  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:  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:  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:  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:  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:  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:  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:  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:  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*)

Barrier Integrity

Significance:  Sep 30, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO FOLLOW PROCEDURES AND USE HUMAN PERFORMANCE TOOLS RESULTS IN REACTOR BUILDING VENTILATION ISOLATION

A self-revealing finding and a Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion V, was identified on September 8, 2007, due to the failure to follow procedures during the performance of Unit 1 125 Vdc ground detection activities. The failure to follow procedures resulted in the inadvertent isolation of the Unit 2 reactor building ventilation system. Corrective actions for this issue included restoring the isolated plant equipment, briefing personnel on the event, revising the ground detection procedure to ensure consistency with other Exelon stations, requiring additional oversight of ground detection activities, and implementing additional human performance improvement initiatives.

The inspectors determined that this issue was more than minor because if left uncorrected, it would lead to additional equipment issues. The inspectors determined that this issue was of very low safety significance because it did not represent a degradation of a radiological barrier provided by the standby gas treatment system, did not represent a degradation of the barrier function of the control room ventilation system against smoke or a toxic atmosphere, and did not represent an actual open pathway in the physical integrity of the reactor containment. The inspectors concluded that this finding was cross-cutting in the area of Human Performance, Work Practices, Human Error Prevention because the licensee's human error prevention techniques were not used to ensure that the work activity was performed safely.

Inspection Report# : [2007004](#) (*pdf*)

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*)

Occupational Radiation Safety

Public Radiation Safety

Physical Protection

Although the NRC is actively overseeing the Security cornerstone, the Commission has decided that certain findings pertaining to security cornerstone will not be publicly available to ensure that potentially useful information is not provided to a possible adversary. Therefore, the [cover letters](#) to security inspection reports may be viewed.

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 : December 07, 2007

Quad Cities 2

4Q/2007 Plant Inspection Findings

Initiating Events

Significance:  Sep 30, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO CONTROL TRANSIENT COMBUSTIBLES IN THE CABLE SPREADING ROOM

An inspector-identified finding and a Non-Cited Violation of a Quad Cities Nuclear Power Station license condition for fire protection was identified on May 3, 2007, due to the failure to adequately control transient combustible materials in a transient combustible exclusion zone. Specifically, the inspectors discovered two large cardboard boxes and an aerosol spray can that contained methyl alcohol improperly controlled and unattended in the cable spreading room. Corrective actions for this issue included removing the materials from the cable spreading room, providing additional oversight of the transient combustibles control program, and clearly labeling the cable spreading room as a transient combustible exclusion zone.

The inspectors determined that this issue was more than minor because it could be viewed as a precursor to a significant event, i.e., fire impacting multiple pieces of safety-related equipment. Specifically, multiple vertical cable risers were located within the zone of influence for the aerosol can. The inspectors determined that this issue was of very low safety significance based upon the criteria established in Inspection Manual Chapter 0609F, Table 2.9.1, "Risk Significance Based on ?Core Damage Frequency." The inspectors concluded that this finding was cross-cutting in the area of Human Performance, Work Practices, Oversight, in that the licensee did not ensure that supervisory and management oversight of work activities, including contractors, was appropriate such that nuclear safety was supported.

Inspection Report# : [2007004](#) (*pdf*)

Significance:  Jun 30, 2007

Identified By: NRC

Item Type: FIN Finding

MANUAL REACTOR SCRAM DUE TO PLUGGED PRESSURE SENSING LINE

A finding of very low safety significance was self-revealed on February 28, 2007, when operations personnel inserted a manual scram in response to increasing condenser back pressure. The licensee determined that blockage of an offgas system pressure sensing line created a condition which resulted in a system relief valve opening. The open relief valve caused the 2A steam jet air ejector efficiency to drop and increased condenser back pressure. Corrective actions for this issue included removing the blockage from the sensing line and developing a periodic maintenance task to ensure the sensing line remained clean. No violations of NRC requirements were identified due to the offgas system being non-safety related.

This finding was more than minor because it was associated with the equipment performance and procedure adequacy attributes of the initiating events cornerstone. The finding also impacted the cornerstone's objective of limiting the likelihood of events that upset plant stability and challenge safety functions. This finding was of very low safety significance because adequate mitigating systems equipment remained available to respond to a transient with a loss of the power conversion system. The inspectors concluded that this finding was cross-cutting in the area of human performance, resources (H.2(c)), in that the licensee failed to have complete, accurate, and up-to-date procedures regarding pressure sensing line maintenance.

Inspection Report# : [2007003](#) (*pdf*)

Significance:  Mar 31, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO HAVE PROCEDURES APPROPRIATE TO THE CIRCUMSTANCE FOR REPLACING THE MAIN STEAM LINE LOW PRESSURE TIME DELAY RELAY

A self-revealed finding was identified when Unit 2 experienced an unexpected half Group I containment isolation signal on January 23, 2007. The half isolation signal was caused by the licensee's failure to have procedures appropriate to the circumstance for replacing the main steam line low pressure time delay relays. As a result, one of eight relays installed in 1991 was allowed to remain in operation until it failed. The inspectors determined that the failure to have procedures for replacing the relays was a Non-cited Violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings." Immediate corrective actions included replacing the failed relay, resetting the half containment isolation signal, and implementing a preventive maintenance activity to replace the remaining relays at a later date.

This finding was more than minor because it was associated with the procedure quality attribute of the Initiating Events Cornerstone. It also affected the cornerstone objective of limiting the likelihood of events that upset plant stability. The inspectors determined that the finding was of very low safety significance because it did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available. Lastly, the inspectors concluded that this finding was cross-cutting in the area of Human Performance, Resources, because the licensee did not have complete, accurate, and up-to-date procedures for replacing the relays. Inspection Report# : [2007002](#) (*pdf*)

Mitigating Systems

Significance:  Sep 30, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO PROMPTLY CORRECT MARCH 2007 1D RESIDUAL HEAT REMOVAL PUMP BREAKER FAILURE

A self-revealing finding and a Non-Cited Violation of 10 CFR 50, Appendix B, Criterion XVI, was identified in September 2007 for the failure to identify and correct a condition adverse to quality. Specifically, the licensee failed to assure that the cause of the March 2007 failure of the 1D residual heat removal pump breaker was promptly identified and corrected. This resulted in an additional 1D residual heat removal pump breaker failure in May 2007. Corrective actions for this issue included performing an extent of condition review and modifying all of the Unit 1 Merlin Gerin breakers and cubicles. At the conclusion of the inspection period, 17 of the 47 Unit 2 breaker cubicles had also been modified. The remainder will be modified during the next Unit 2 refueling outage.

This issue was more than minor because, if left uncorrected, the failure of safety-related breakers would continue to result in the inoperability of risk significant equipment. This finding was of very low safety significance because it was not a design deficiency, did not result in the total loss of a safety function, and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. This finding was determined to be cross-cutting in the area of Problem Identification and Resolution, Corrective Action Program, Evaluation, because the licensee failed to thoroughly evaluate the March 2007 breaker failure to ensure that the resolution addressed the cause and extent of condition.

Inspection Report# : [2007004](#) (*pdf*)

Significance: SL-IV Sep 07, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate 10 CFR 50.59 Evaluations for the Main Steam Line Tunnel High Temperature Instrumentation and the Electrohydraulic Control System Pressure Regulator

The inspectors identified a Severity Level IV NCV of 10 CFR 50.59(d)(1) for the licensee's failure to perform an adequate 10 CFR 50.59 evaluation for bypassing a channel of the Main Steam Line (MSL) tunnel high temperature instrumentation and for the failure to perform an adequate 10 CFR 50.59 evaluation for changing the license basis to allow operating the Electrohydraulic Control (EHC) System pressure regulator with only one channel in service. Even though the licensee did not intend to operate the plant permanently with a channel of the MSL tunnel high temperature bypassed or with only one EHC pressure regulator channel, the 10 CFR 50.59 evaluations that were performed

allowed it. Because of this, the inspection team could not reasonably determine that these changes would not have required a license amendment, because the bypassing of the MSL tunnel high temperature channel could have resulted in more than a minimal increase in the likelihood of a malfunction of a structure, system, or component important to safety. Additionally, the change to allow operating the EHC System pressure regulator with only one channel in service could have created a possibility of a malfunction of an SSC important to safety with a different result. This issue was entered into the licensee's corrective action program.

Because the issue potentially impacted the NRC's ability to perform its regulatory function, this finding was evaluated using the traditional enforcement process. The finding was determined to be more than minor because the inspectors could not reasonably determine that these 10 CFR 50.59 evaluations would not have ultimately required NRC prior approval. The inspectors evaluated the finding using Inspection Manual Chapter (IMC) 0609, Appendix A, Phase 1 screening for the mitigating systems cornerstone and determined that the finding was of very low safety significance because they were able to answer "no" to the Mitigating Systems screening questions in the Phase 1 Screening Worksheet. Specifically, while the licensee failed to perform an adequate 10 CFR 50.59 evaluation for bypassing a channel of the MSL tunnel high temperature instrumentation and for allowing operation of the EHC System pressure regulator with only one channel in service, the licensee would have been able to perform these same actions under the NRC Part 9900 Technical Guidance for Degraded or Nonconforming Conditions.

Inspection Report# : [2007008](#) (pdf)

Significance:  Sep 07, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Account for Delays in ECCS MOV's Due to Voltage Dips during Load Sequencing

The inspections identified an NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," that was of very low safety significance. Specifically, Motor Operated Valve (MOV) delays caused by voltage dips during load sequencing were not translated into and accounted for in the design basis for the In-Service Testing (IST) stroke time acceptance criteria for the Residual Heat Removal (RHR) system inboard and outboard shutoff valves and two core spray inboard isolation valves. This issue was entered into the licensee's corrective action program.

The issue was more than minor because it was associated with the Mitigating System Cornerstone attribute of "Design Control," and affected the cornerstone objective of ensuring the capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the MOV delays caused by voltage dips during Emergency Core Cooling System (ECCS) load sequencing were not accounted for in the licensee's design basis. This introduced non-conservativisms in the margins for MOV IST acceptance criteria and also potentially for the acceptance criteria themselves. This finding was of very low safety significance, because the inspectors answered "no" to all five questions under the Mitigating Systems Cornerstone column of the Phase 1 worksheet. Specifically, even though the MOV delays were non-conservative, the actual MOV stroke times during the most recent IST testing for the valves in question were much less than the IST acceptance criteria

Inspection Report# : [2007008](#) (pdf)

Significance:  Jun 30, 2007

Identified By: NRC

Item Type: FIN Finding

INADEQUATE OPERABILITY JUSTIFICATION FOR UNIT 2 4 KV BREAKERS

The inspectors identified a finding of very low safety significance on May 21, 2007, due to the failure to adequately document and justify the basis for continued operability of the 4 kV breakers in Unit 2 following the identification of a common mode failure mechanism on the 4 kV breakers in Unit 1. In response to this issue, the licensee documented additional information to justify the continued operability of the breakers. The licensee was also developing additional corrective actions to improve the implementation of the operability determination/evaluation process. No violation of NRC requirements was identified because operability determinations were not required by NRC regulations.

This finding was more than minor because if left uncorrected, continued inadequate justifications could result in incorrectly concluding that safety-related components remained operable rather than inoperable. This finding was of very low safety significance because it was not a design deficiency, did not result in a loss of safety function, and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. The inspectors concluded that this finding was cross-cutting in the area of human performance, decision making (H.1(b)), in that the

licensee did not use conservative assumptions to demonstrate that the proposed action was safe rather than unsafe.
Inspection Report# : [2007003 \(pdf\)](#)

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:  Mar 31, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

REPLACING UNIT 2 PORVS WITH ERVS NOT IN ACOCRDANCE WITH 10 CFR 50.49

The team identified a finding of very low safety significance involving the replacement of an environmentally qualified (EQ) Category I component with an EQ Category II component. Specifically, a Non-Cited Violation of 10 CFR 50.49, was associated with this finding, in that, in 2004, the licensee replaced the Target Rock Power Operated Relief Valves, qualified Category I in accordance with environmental qualification requirements, with Dresser Electromatic Relief Valves, qualified as Category II components, which was not allowed under the regulation. Corrective actions for this issue included evaluating whether the currently installed valves could be qualified as EQ Category I components.

The finding was more than minor because it was associated with the design control attribute of the Mitigating System cornerstone and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The finding was of very low safety significance because the valves continued to be operable based upon qualification to EQ Category II. Therefore, reasonable confidence remained that the valves would perform their safety function under accident conditions. This finding is related to the cross-cutting element of Human Performance, Decision Making, in that the licensee did not use conservative assumptions in the decision to replace EQ Category I valves with EQ Category II valves. Specifically, the licensee continued to rely on an incorrect interpretation that EQ requirements were met.

Inspection Report# : [2007002 \(pdf\)](#)

Barrier Integrity

Significance:  Sep 30, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO FOLLOW PROCEDURES AND USE HUMAN PERFORMANCE TOOLS RESULTS IN REACTOR BUILDING VENTILATION ISOLATION

A self-revealing finding and a Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion V, was identified on

September 8, 2007, due to the failure to follow procedures during the performance of Unit 1 125 Vdc ground detection activities. The failure to follow procedures resulted in the inadvertent isolation of the Unit 2 reactor building ventilation system. Corrective actions for this issue included restoring the isolated plant equipment, briefing personnel on the event, revising the ground detection procedure to ensure consistency with other Exelon stations, requiring additional oversight of ground detection activities, and implementing additional human performance improvement initiatives.

The inspectors determined that this issue was more than minor because if left uncorrected, it would lead to additional equipment issues. The inspectors determined that this issue was of very low safety significance because it did not represent a degradation of a radiological barrier provided by the standby gas treatment system, did not represent a degradation of the barrier function of the control room ventilation system against smoke or a toxic atmosphere, and did not represent an actual open pathway in the physical integrity of the reactor containment. The inspectors concluded that this finding was cross-cutting in the area of Human Performance, Work Practices, Human Error Prevention because the licensee's human error prevention techniques were not used to ensure that the work activity was performed safely.

Inspection Report# : [2007004](#) (*pdf*)

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*)

Occupational Radiation Safety

Public Radiation Safety

Physical Protection

Although the NRC is actively overseeing the Security cornerstone, the Commission has decided that certain findings pertaining to security cornerstone will not be publicly available to ensure that potentially useful information is not provided to a possible adversary. Therefore, the [cover letters](#) to security inspection reports may be viewed.

Miscellaneous

Last modified : February 04, 2008

Quad Cities 2

1Q/2008 Plant Inspection Findings

Initiating Events

Significance:  Dec 31, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

INADEQUATE FIRE PROTECTION PROCEDURES

A self-revealing finding of very low safety significance and a Non-Cited Violation of Technical Specification 5.4.1 was identified on November 10, 2006, due to the failure to establish, implement, and maintain procedures associated with the fire protection program. The failure to implement and maintain these procedures resulted in a fire protection system hydraulic transient and the wetting of an electrical bus which powered risk significant equipment. Corrective actions for this issue included providing improved procedural instructions regarding fire pump relief valve setpoint verifications, fire protection system strainer maintenance, and fire hydrant flushing activities.

This issue was more than minor because the procedural deficiencies were a precursor to a switchgear wetting event which could have resulted in the tripping of risk significant equipment and a reactor scram. This finding was determined to be of very low safety significance because had the risk significant mitigating systems equipment tripped, the remaining mitigating systems would have been sufficient to address a transient with a loss of the power conversion system and the failure of all containment heat removal. The inspectors concluded that this finding was cross-cutting in the area of Human Performance, Resources, Documentation because the licensee failed to have complete, accurate and up-to-date procedures governing fire pump relief valve setpoint verifications, fire protection system strainer maintenance, and fire hydrant flushing activities.

Inspection Report# : [2007005 \(pdf\)](#)

Significance:  Sep 30, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO CONTROL TRANSIENT COMBUSTIBLES IN THE CABLE SPREADING ROOM

An inspector-identified finding and a Non-Cited Violation of a Quad Cities Nuclear Power Station license condition for fire protection was identified on May 3, 2007, due to the failure to adequately control transient combustible materials in a transient combustible exclusion zone. Specifically, the inspectors discovered two large cardboard boxes and an aerosol spray can that contained methyl alcohol improperly controlled and unattended in the cable spreading room. Corrective actions for this issue included removing the materials from the cable spreading room, providing additional oversight of the transient combustibles control program, and clearly labeling the cable spreading room as a transient combustible exclusion zone.

The inspectors determined that this issue was more than minor because it could be viewed as a precursor to a significant event, i.e., fire impacting multiple pieces of safety-related equipment. Specifically, multiple vertical cable risers were located within the zone of influence for the aerosol can. The inspectors determined that this issue was of very low safety significance based upon the criteria established in Inspection Manual Chapter 0609F, Table 2.9.1, "Risk Significance Based on Core Damage Frequency." The inspectors concluded that this finding was cross-cutting in the area of Human Performance, Work Practices, Oversight, in that the licensee did not ensure that supervisory and management oversight of work activities, including contractors, was appropriate such that nuclear safety was supported.

Inspection Report# : [2007004 \(pdf\)](#)

Significance:  Jun 30, 2007

Identified By: NRC

Item Type: FIN Finding

MANUAL REACTOR SCRAM DUE TO PLUGGED PRESSURE SENSING LINE

A finding of very low safety significance was self-revealed on February 28, 2007, when operations personnel inserted a manual scram in response to increasing condenser back pressure. The licensee determined that blockage of an offgas system pressure sensing line created a condition which resulted in a system relief valve opening. The open relief valve caused the 2A steam jet air ejector efficiency to drop and increased condenser back pressure. Corrective actions for this issue included removing the blockage from the sensing line and developing a periodic maintenance task to ensure the sensing line remained clean. No violations of NRC requirements were identified due to the offgas system being non-safety related.

This finding was more than minor because it was associated with the equipment performance and procedure adequacy attributes of the initiating events cornerstone. The finding also impacted the cornerstone's objective of limiting the likelihood of events that upset plant stability and challenge safety functions. This finding was of very low safety significance because adequate mitigating systems equipment remained available to respond to a transient with a loss of the power conversion system. The inspectors concluded that this finding was cross-cutting in the area of human performance, resources (H.2(c)), in that the licensee failed to have complete, accurate, and up-to-date procedures regarding pressure sensing line maintenance.

Inspection Report# : [2007003](#) (*pdf*)

Mitigating Systems

Significance:  Mar 31, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

SAFE SHUTDOWN MAKEUP PUMP LOW DISCHARGE PRESSURE

A self-revealing finding of very low safety significance and a Non-Cited Violation of 10 CFR 50, Appendix B, Criterion V, was identified on December 17, 2007, for an inadequate pump fill and vent procedure that resulted in pump degradation to the safe shutdown makeup pump. QCOP 2900-01, "Safe Shutdown Makeup Pump System Preparation for Standby Lineup," was used to fill and vent the safe shutdown makeup pump following maintenance and, although the system passed surveillance testing, air was later identified in the system. Air migration within the system was later identified as the cause of safe shutdown makeup pump degradation which resulted in the subsequent failure to meet Technical Specification flow requirements. Corrective actions for this event included the installation of additional vents on the suction piping, an aggressive extent of condition evaluation of other susceptible systems, refurbishment of the safe shutdown makeup pump, briefing personnel on the trending failure, and a review of inservice test alert setpoints to ensure triggers are set appropriately to allow corrective actions to be planned for program components.

The inspectors determined that the failure to provide procedural direction that ensured adequate venting was more than minor because it impacted the Mitigating Systems cornerstone attribute of Equipment Performance and affected the availability and reliability of the system. This finding was determined to be of very low safety significance because although operability of the pump was impacted, the credited safety function was maintained. Contributing to the performance deficiency was that the monitoring program in place was not effective in identifying the gradual degradation before pump operability was impacted. Additionally, the alert threshold for the pump parameter in the monitoring program, which would trigger additional actions such as pump overhaul, was set below the Technical Specification allowable value and was thus an ineffective barrier to prevent loss of operability or function. The inspectors determined this failure to be cross-cutting in the area of Problem Identification and Resolution, Corrective Action Program, Corrective Actions due to the failure of the licensee to address the adverse trend in pump performance in a timely manner, commensurate with the safety significance of the components (P.1(b)).

Inspection Report# : [2008002](#) (*pdf*)

Significance:  Mar 31, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

1/2 "A" DIESEL FIRE PUMP OIL LEAK AND FIRE

A self-revealing finding of very low safety significance and a Non-Cited Violation of Technical Specification 5.4.1 was identified due to the failure to establish, implement, and maintain procedures associated with the fire protection

program. Work instructions, Work Order 787787-01, performed on the 1/2 "A" diesel fire pump in September 2007 did not specify the thread sealant to be used in the work activity and the mechanics used a material that subsequently resulted in an oil leak and subsequent fire on December 22, 2007, caused by oil-contaminated insulation. Corrective actions included revision of model work orders for the pump to include guidance for using high temperature thread sealant and performance expectations for work planners to include identification of thread sealant for similar tasks. Additionally, maintenance personnel were briefed on the issue of workers failing to identify and/or replace the oil-contaminated insulation pad replacing the turbocharger oil supply hose during a corrective maintenance activity. Inspectors determined the issue was more than minor because the procedural deficiencies were a precursor to an oil leak and subsequent insulation fire that impacted the reliability and availability of the 1/2 "A" fire pump. The finding was determined to be of very low safety significance because the 100% capacity "B" pump was not impacted and the operator actions after removing the combustibles could have made the "A" pump available shortly after the event. The inspectors determined this failure to be cross-cutting in the area of Problem Identification and Resolution, Identification, due to the failure of multiple individuals to investigate the condition of the insulation that was near the oil leak and thereby failing to identify the oil contamination of that insulation in time to prevent the impact to the diesel fire pump (P.1(a)).

Inspection Report# : [2008002](#) (pdf)

Significance:  Dec 31, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

INADEQUATE PROCEDURES FOR EXTERNAL FLOODING AND TESTING OF FLOODING PUMP

The inspectors identified a finding of very low safety significance and a Non Cited Violation of Technical Specification 5.4.1 due to the failure to develop adequate surveillance testing and operating procedures for equipment used during an external flooding event. Corrective actions for this issue included revising the current 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 flood.

This issue was more than minor because it involved the equipment performance and procedure quality attributes of the mitigating systems cornerstone and affected the objective of ensuring the reliability and capability of systems that respond to initiating events to prevent undesirable consequences. This issue was determined to be of very low safety significance due to the very low probability of an external flood of the magnitude which required use of the portable pump and the amount of additional time available to implement other compensatory measures if needed. The inspectors concluded that this finding was cross-cutting in the area of Human Performance, Resources, Documentation because the licensee failed to have complete, accurate and up-to-date procedures to combat an external flooding event.

Inspection Report# : [2007005](#) (pdf)

Significance:  Sep 30, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO PROMPTLY CORRECT MARCH 2007 1D RESIDUAL HEAT REMOVAL PUMP BREAKER FAILURE

A self-revealing finding and a Non-Cited Violation of 10 CFR 50, Appendix B, Criterion XVI, was identified in September 2007 for the failure to identify and correct a condition adverse to quality. Specifically, the licensee failed to assure that the cause of the March 2007 failure of the 1D residual heat removal pump breaker was promptly identified and corrected. This resulted in an additional 1D residual heat removal pump breaker failure in May 2007. Corrective actions for this issue included performing an extent of condition review and modifying all of the Unit 1 Merlin Gerin breakers and cubicles. At the conclusion of the inspection period, 17 of the 47 Unit 2 breaker cubicles had also been modified. The remainder will be modified during the next Unit 2 refueling outage.

This issue was more than minor because, if left uncorrected, the failure of safety-related breakers would continue to result in the inoperability of risk significant equipment. This finding was of very low safety significance because it was not a design deficiency, did not result in the total loss of a safety function, and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. This finding was determined to be cross-cutting in the area of Problem Identification and Resolution, Corrective Action Program, Evaluation, because the licensee failed to thoroughly evaluate the March 2007 breaker failure to ensure that the resolution addressed the cause

and extent of condition.

Inspection Report# : [2007004 \(pdf\)](#)

Significance: SL-IV Sep 07, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate 10 CFR 50.59 Evaluations for the Main Steam Line Tunnel High Temperature Instrumentation and the Electrohydraulic Control System Pressure Regulator

The inspectors identified a Severity Level IV NCV of 10 CFR 50.59(d)(1) for the licensee's failure to perform an adequate 10 CFR 50.59 evaluation for bypassing a channel of the Main Steam Line (MSL) tunnel high temperature instrumentation and for the failure to perform an adequate 10 CFR 50.59 evaluation for changing the license basis to allow operating the Electrohydraulic Control (EHC) System pressure regulator with only one channel in service. Even though the licensee did not intend to operate the plant permanently with a channel of the MSL tunnel high temperature bypassed or with only one EHC pressure regulator channel, the 10 CFR 50.59 evaluations that were performed allowed it. Because of this, the inspection team could not reasonably determine that these changes would not have required a license amendment, because the bypassing of the MSL tunnel high temperature channel could have resulted in more than a minimal increase in the likelihood of a malfunction of a structure, system, or component important to safety. Additionally, the change to allow operating the EHC System pressure regulator with only one channel in service could have created a possibility of a malfunction of an SSC important to safety with a different result. This issue was entered into the licensee's corrective action program.

Because the issue potentially impacted the NRC's ability to perform its regulatory function, this finding was evaluated using the traditional enforcement process. The finding was determined to be more than minor because the inspectors could not reasonably determine that these 10 CFR 50.59 evaluations would not have ultimately required NRC prior approval. The inspectors evaluated the finding using Inspection Manual Chapter (IMC) 0609, Appendix A, Phase 1 screening for the mitigating systems cornerstone and determined that the finding was of very low safety significance because they were able to answer "no" to the Mitigating Systems screening questions in the Phase 1 Screening Worksheet. Specifically, while the licensee failed to perform an adequate 10 CFR 50.59 evaluation for bypassing a channel of the MSL tunnel high temperature instrumentation and for allowing operation of the EHC System pressure regulator with only one channel in service, the licensee would have been able to perform these same actions under the NRC Part 9900 Technical Guidance for Degraded or Nonconforming Conditions.

Inspection Report# : [2007008 \(pdf\)](#)

Significance:  Sep 07, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Account for Delays in ECCS MOV's Due to Voltage Dips during Load Sequencing

The inspections identified an NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," that was of very low safety significance. Specifically, Motor Operated Valve (MOV) delays caused by voltage dips during load sequencing were not translated into and accounted for in the design basis for the In-Service Testing (IST) stroke time acceptance criteria for the Residual Heat Removal (RHR) system inboard and outboard shutoff valves and two core spray inboard isolation valves. This issue was entered into the licensee's corrective action program.

The issue was more than minor because it was associated with the Mitigating System Cornerstone attribute of "Design Control," and affected the cornerstone objective of ensuring the capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the MOV delays caused by voltage dips during Emergency Core Cooling System (ECCS) load sequencing were not accounted for in the licensee's design basis. This introduced non-conservativisms in the margins for MOV IST acceptance criteria and also potentially for the acceptance criteria themselves. This finding was of very low safety significance, because the inspectors answered "no" to all five questions under the Mitigating Systems Cornerstone column of the Phase 1 worksheet. Specifically, even though the MOV delays were non-conservative, the actual MOV stroke times during the most recent IST testing for the valves in question were much less than the IST acceptance criteria

Inspection Report# : [2007008 \(pdf\)](#)

Significance:  Jun 30, 2007

Identified By: NRC

Item Type: FIN Finding

INADEQUATE OPERABILITY JUSTIFICATION FOR UNIT 2 4 KV BREAKERS

The inspectors identified a finding of very low safety significance on May 21, 2007, due to the failure to adequately document and justify the basis for continued operability of the 4 kV breakers in Unit 2 following the identification of a common mode failure mechanism on the 4 kV breakers in Unit 1. In response to this issue, the licensee documented additional information to justify the continued operability of the breakers. The licensee was also developing additional corrective actions to improve the implementation of the operability determination/evaluation process. No violation of NRC requirements was identified because operability determinations were not required by NRC regulations.

This finding was more than minor because if left uncorrected, continued inadequate justifications could result in incorrectly concluding that safety-related components remained operable rather than inoperable. This finding was of very low safety significance because it was not a design deficiency, did not result in a loss of safety function, and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. The inspectors concluded that this finding was cross-cutting in the area of human performance, decision making (H.1(b)), in that the licensee did not use conservative assumptions to demonstrate that the proposed action was safe rather than unsafe.

Inspection Report# : [2007003](#) (pdf)

Barrier Integrity

Significance:  Mar 31, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

UNIT 2 ISOLATION OF REACTOR BUILDING VENTILATION AND AUTO START OF STANDBY GAS TREATMENT

A self-revealing finding of very low safety significance and a Non-Cited Violation of Technical Specification 5.4.1 was identified on March 14, 2008, when operators transferring power using procedure QCOP 6800-03, "Essential Service System," caused an unplanned isolation of the reactor building ventilation system and automatically started the standby gas treatment system. QOP 6800-03, "Essential Service System," implements the Technical Specification 5.4.1 as provided in Regulatory Guide 1.33. Procedural steps in QOP 6800-03 did not include adequate instruction to transfer power without impacting the safety systems in that the procedural instructions directed the operators to take the bypass switch for radiation instruments out of the bypass position, but did not direct them to verify that there was no isolation signal present. Corrective actions included revising the affected procedure and briefing operating crews on the circumstances surrounding the event.

The failure to implement adequate procedural directions for transferring electrical power without challenging safety-related equipment was more than minor because it impacts the Barrier Integrity cornerstone attribute of Structures, Systems and Components and Barrier Performance for Containment Isolation Structures, Systems, and Components reliability and, if the condition were to go uncorrected, the Containment isolation function could be impacted. This finding was determined to be of very low safety significance because the finding impacted only the radiological barrier function of the control room and standby gas treatment systems, and the systems functioned as designed. The inspectors also determined that the operators implementing the procedure had the opportunity to identify the procedural deficiency either during the job preparation activities or while executing the procedural steps if they had verified the trip signals were cleared prior to moving the switch. Properly executed self-checking and peer-checking would have identified the possible action and provided the operators with the opportunity to prevent the challenge to the safety-related system components. The inspectors identified the deficient use of Human Performance tools as a contributor to the event and therefore determined that the event was cross-cutting in Human Performance, Work Practices, Prevention (H.4(a)).

Inspection Report# : [2008002](#) (pdf)

Significance:  Sep 30, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO FOLLOW PROCEDURES AND USE HUMAN PERFORMANCE TOOLS RESULTS IN REACTOR BUILDING VENTILATION ISOLATION

A self-revealing finding and a Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion V, was identified on

September 8, 2007, due to the failure to follow procedures during the performance of Unit 1 125 Vdc ground detection activities. The failure to follow procedures resulted in the inadvertent isolation of the Unit 2 reactor building ventilation system. Corrective actions for this issue included restoring the isolated plant equipment, briefing personnel on the event, revising the ground detection procedure to ensure consistency with other Exelon stations, requiring additional oversight of ground detection activities, and implementing additional human performance improvement initiatives.

The inspectors determined that this issue was more than minor because if left uncorrected, it would lead to additional equipment issues. The inspectors determined that this issue was of very low safety significance because it did not represent a degradation of a radiological barrier provided by the standby gas treatment system, did not represent a degradation of the barrier function of the control room ventilation system against smoke or a toxic atmosphere, and did not represent an actual open pathway in the physical integrity of the reactor containment. The inspectors concluded that this finding was cross-cutting in the area of Human Performance, Work Practices, Human Error Prevention because the licensee's human error prevention techniques were not used to ensure that the work activity was performed safely.

Inspection Report# : [2007004](#) (*pdf*)

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Physical Protection

Although the NRC is actively overseeing the Security cornerstone, the Commission has decided that certain findings pertaining to security cornerstone will not be publicly available to ensure that potentially useful information is not provided to a possible adversary. Therefore, the [cover letters](#) to security inspection reports may be viewed.

Miscellaneous

Last modified : June 05, 2008

Quad Cities 2

2Q/2008 Plant Inspection Findings

Initiating Events

Significance:  Dec 31, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

INADEQUATE FIRE PROTECTION PROCEDURES

A self-revealing finding of very low safety significance and a Non-Cited Violation of Technical Specification 5.4.1 was identified on November 10, 2006, due to the failure to establish, implement, and maintain procedures associated with the fire protection program. The failure to implement and maintain these procedures resulted in a fire protection system hydraulic transient and the wetting of an electrical bus which powered risk significant equipment. Corrective actions for this issue included providing improved procedural instructions regarding fire pump relief valve setpoint verifications, fire protection system strainer maintenance, and fire hydrant flushing activities.

This issue was more than minor because the procedural deficiencies were a precursor to a switchgear wetting event which could have resulted in the tripping of risk significant equipment and a reactor scram. This finding was determined to be of very low safety significance because had the risk significant mitigating systems equipment tripped, the remaining mitigating systems would have been sufficient to address a transient with a loss of the power conversion system and the failure of all containment heat removal. The inspectors concluded that this finding was cross-cutting in the area of Human Performance, Resources, Documentation because the licensee failed to have complete, accurate and up-to-date procedures governing fire pump relief valve setpoint verifications, fire protection system strainer maintenance, and fire hydrant flushing activities.

Inspection Report# : [2007005](#) (*pdf*)

Significance:  Sep 30, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO CONTROL TRANSIENT COMBUSTIBLES IN THE CABLE SPREADING ROOM

An inspector-identified finding and a Non-Cited Violation of a Quad Cities Nuclear Power Station license condition for fire protection was identified on May 3, 2007, due to the failure to adequately control transient combustible materials in a transient combustible exclusion zone. Specifically, the inspectors discovered two large cardboard boxes and an aerosol spray can that contained methyl alcohol improperly controlled and unattended in the cable spreading room. Corrective actions for this issue included removing the materials from the cable spreading room, providing additional oversight of the transient combustibles control program, and clearly labeling the cable spreading room as a transient combustible exclusion zone.

The inspectors determined that this issue was more than minor because it could be viewed as a precursor to a significant event, i.e., fire impacting multiple pieces of safety-related equipment. Specifically, multiple vertical cable risers were located within the zone of influence for the aerosol can. The inspectors determined that this issue was of very low safety significance based upon the criteria established in Inspection Manual Chapter 0609F, Table 2.9.1, "Risk Significance Based on ?Core Damage Frequency." The inspectors concluded that this finding was cross-cutting in the area of Human Performance, Work Practices, Oversight, in that the licensee did not ensure that supervisory and management oversight of work activities, including contractors, was appropriate such that nuclear safety was supported.

Inspection Report# : [2007004](#) (*pdf*)

Mitigating Systems

Significance:  Mar 31, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

SAFE SHUTDOWN MAKEUP PUMP LOW DISCHARGE PRESSURE

A self-revealing finding of very low safety significance and a Non-Cited Violation of 10 CFR 50, Appendix B, Criterion V, was identified on December 17, 2007, for an inadequate pump fill and vent procedure that resulted in pump degradation to the safe shutdown makeup pump. QCOP 2900-01, "Safe Shutdown Makeup Pump System Preparation for Standby Lineup," was used to fill and vent the safe shutdown makeup pump following maintenance and, although the system passed surveillance testing, air was later identified in the system. Air migration within the system was later identified as the cause of safe shutdown makeup pump degradation which resulted in the subsequent failure to meet Technical Specification flow requirements. Corrective actions for this event included the installation of additional vents on the suction piping, an aggressive extent of condition evaluation of other susceptible systems, refurbishment of the safe shutdown makeup pump, briefing personnel on the trending failure, and a review of inservice test alert setpoints to ensure triggers are set appropriately to allow corrective actions to be planned for program components.

The inspectors determined that the failure to provide procedural direction that ensured adequate venting was more than minor because it impacted the Mitigating Systems cornerstone attribute of Equipment Performance and affected the availability and reliability of the system. This finding was determined to be of very low safety significance because although operability of the pump was impacted, the credited safety function was maintained. Contributing to the performance deficiency was that the monitoring program in place was not effective in identifying the gradual degradation before pump operability was impacted. Additionally, the alert threshold for the pump parameter in the monitoring program, which would trigger additional actions such as pump overhaul, was set below the Technical Specification allowable value and was thus an ineffective barrier to prevent loss of operability or function. The inspectors determined this failure to be cross-cutting in the area of Problem Identification and Resolution, Corrective Action Program, Corrective Actions due to the failure of the licensee to address the adverse trend in pump performance in a timely manner, commensurate with the safety significance of the components (P.1(b)).

Inspection Report# : [2008002](#) (pdf)

Significance:  Mar 31, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

1/2 "A" DIESEL FIRE PUMP OIL LEAK AND FIRE

A self-revealing finding of very low safety significance and a Non-Cited Violation of Technical Specification 5.4.1 was identified due to the failure to establish, implement, and maintain procedures associated with the fire protection program. Work instructions, Work Order 787787-01, performed on the 1/2 "A" diesel fire pump in September 2007 did not specify the thread sealant to be used in the work activity and the mechanics used a material that subsequently resulted in an oil leak and subsequent fire on December 22, 2007, caused by oil-contaminated insulation. Corrective actions included revision of model work orders for the pump to include guidance for using high temperature thread sealant and performance expectations for work planners to include identification of thread sealant for similar tasks. Additionally, maintenance personnel were briefed on the issue of workers failing to identify and/or replace the oil-contaminated insulation pad replacing the turbocharger oil supply hose during a corrective maintenance activity. Inspectors determined the issue was more than minor because the procedural deficiencies were a precursor to an oil leak and subsequent insulation fire that impacted the reliability and availability of the 1/2 "A" fire pump. The finding was determined to be of very low safety significance because the 100% capacity "B" pump was not impacted and the operator actions after removing the combustibles could have made the "A" pump available shortly after the event. The inspectors determined this failure to be cross-cutting in the area of Problem Identification and Resolution, Identification, due to the failure of multiple individuals to investigate the condition of the insulation that was near the oil leak and thereby failing to identify the oil contamination of that insulation in time to prevent the impact to the diesel fire pump (P.1(a)).

Inspection Report# : [2008002](#) (pdf)

Significance:  Dec 31, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

INADEQUATE PROCEDURES FOR EXTERNAL FLOODING AND TESTING OF FLOODING PUMP

The inspectors identified a finding of very low safety significance and a Non Cited Violation of Technical Specification 5.4.1 due to the failure to develop adequate surveillance testing and operating procedures for equipment used during an external flooding event. Corrective actions for this issue included revising the current 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 flood.

This issue was more than minor because it involved the equipment performance and procedure quality attributes of the mitigating systems cornerstone and affected the objective of ensuring the reliability and capability of systems that respond to initiating events to prevent undesirable consequences. This issue was determined to be of very low safety significance due to the very low probability of an external flood of the magnitude which required use of the portable pump and the amount of additional time available to implement other compensatory measures if needed. The inspectors concluded that this finding was cross-cutting in the area of Human Performance, Resources, Documentation because the licensee failed to have complete, accurate and up-to-date procedures to combat an external flooding event.

Inspection Report# : [2007005](#) (*pdf*)

Significance: G Sep 30, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO PROMPTLY CORRECT MARCH 2007 1D RESIDUAL HEAT REMOVAL PUMP BREAKER FAILURE

A self-revealing finding and a Non-Cited Violation of 10 CFR 50, Appendix B, Criterion XVI, was identified in September 2007 for the failure to identify and correct a condition adverse to quality. Specifically, the licensee failed to assure that the cause of the March 2007 failure of the 1D residual heat removal pump breaker was promptly identified and corrected. This resulted in an additional 1D residual heat removal pump breaker failure in May 2007. Corrective actions for this issue included performing an extent of condition review and modifying all of the Unit 1 Merlin Gerin breakers and cubicles. At the conclusion of the inspection period, 17 of the 47 Unit 2 breaker cubicles had also been modified. The remainder will be modified during the next Unit 2 refueling outage.

This issue was more than minor because, if left uncorrected, the failure of safety-related breakers would continue to result in the inoperability of risk significant equipment. This finding was of very low safety significance because it was not a design deficiency, did not result in the total loss of a safety function, and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. This finding was determined to be cross-cutting in the area of Problem Identification and Resolution, Corrective Action Program, Evaluation, because the licensee failed to thoroughly evaluate the March 2007 breaker failure to ensure that the resolution addressed the cause and extent of condition.

Inspection Report# : [2007004](#) (*pdf*)

Significance: SL-IV Sep 07, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate 10 CFR 50.59 Evaluations for the Main Steam Line Tunnel High Temperature Instrumentation and the Electrohydraulic Control System Pressure Regulator

The inspectors identified a Severity Level IV NCV of 10 CFR 50.59(d)(1) for the licensee's failure to perform an adequate 10 CFR 50.59 evaluation for bypassing a channel of the Main Steam Line (MSL) tunnel high temperature instrumentation and for the failure to perform an adequate 10 CFR 50.59 evaluation for changing the license basis to allow operating the Electrohydraulic Control (EHC) System pressure regulator with only one channel in service. Even though the licensee did not intend to operate the plant permanently with a channel of the MSL tunnel high temperature bypassed or with only one EHC pressure regulator channel, the 10 CFR 50.59 evaluations that were performed allowed it. Because of this, the inspection team could not reasonably determine that these changes would not have required a license amendment, because the bypassing of the MSL tunnel high temperature channel could have resulted in more than a minimal increase in the likelihood of a malfunction of a structure, system, or component important to safety. Additionally, the change to allow operating the EHC System pressure regulator with only one channel in service could have created a possibility of a malfunction of an SSC important to safety with a different result. This issue was entered into the licensee's corrective action program.

Because the issue potentially impacted the NRC's ability to perform its regulatory function, this finding was evaluated

using the traditional enforcement process. The finding was determined to be more than minor because the inspectors could not reasonably determine that these 10 CFR 50.59 evaluations would not have ultimately required NRC prior approval. The inspectors evaluated the finding using Inspection Manual Chapter (IMC) 0609, Appendix A, Phase 1 screening for the mitigating systems cornerstone and determined that the finding was of very low safety significance because they were able to answer “no” to the Mitigating Systems screening questions in the Phase 1 Screening Worksheet. Specifically, while the licensee failed to perform an adequate 10 CFR 50.59 evaluation for bypassing a channel of the MSL tunnel high temperature instrumentation and for allowing operation of the EHC System pressure regulator with only one channel in service, the licensee would have been able to perform these same actions under the NRC Part 9900 Technical Guidance for Degraded or Nonconforming Conditions.

Inspection Report# : [2007008 \(pdf\)](#)

Significance:  Sep 07, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Account for Delays in ECCS MOV's Due to Voltage Dips during Load Sequencing

The inspections identified an NCV of 10 CFR Part 50, Appendix B, Criterion III, “Design Control,” that was of very low safety significance. Specifically, Motor Operated Valve (MOV) delays caused by voltage dips during load sequencing were not translated into and accounted for in the design basis for the In-Service Testing (IST) stroke time acceptance criteria for the Residual Heat Removal (RHR) system inboard and outboard shutoff valves and two core spray inboard isolation valves. This issue was entered into the licensee’s corrective action program.

The issue was more than minor because it was associated with the Mitigating System Cornerstone attribute of “Design Control,” and affected the cornerstone objective of ensuring the capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the MOV delays caused by voltage dips during Emergency Core Cooling System (ECCS) load sequencing were not accounted for in the licensee’s design basis. This introduced non-conservativisms in the margins for MOV IST acceptance criteria and also potentially for the acceptance criteria themselves. This finding was of very low safety significance, because the inspectors answered “no” to all five questions under the Mitigating Systems Cornerstone column of the Phase 1 worksheet. Specifically, even though the MOV delays were non-conservative, the actual MOV stroke times during the most recent IST testing for the valves in question were much less than the IST acceptance criteria

Inspection Report# : [2007008 \(pdf\)](#)

Barrier Integrity

Significance:  Jun 30, 2008

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Exceeded 50 Degree Differential Temperature Limit of TS 3.4.9 when starting Recirculation Pump

A Non-Cited violation of Technical Specification 3.4.9, “RCS Pressure and Temperature (P/T) Limits,” was identified on March 31, 2008 when operators did not establish effective controls to ensure compliance with the Technical specification when they started the 2A reactor coolant recirculation pump with temperature in the 2A loop more than 50°F below the bulk temperature in the reactor vessel represented by the 2B loop temperature. The failure to implement effective controls to prevent exceeding the Technical Specification limit was more than minor because it was associated with the Barrier Integrity Cornerstone attribute of Human Performance and affected the cornerstone objective by challenging the physical design barriers intended to maintain the functionality of the Reactor Coolant System. This finding was determined to be of very low safety significance because the plant conditions were determined to be within the bounds of the existing analysis and therefore the issue did not result in degrading the reactor coolant system boundary. This finding has a cross-cutting aspect in the area of Human Performance for the Decision-Making component because the licensee failed to communicate the decisions and the basis for decisions to personnel who have a need to know the information in order to perform work safely, in a timely manner (H.1(c)). Specifically, planning decisions such as the compensatory actions for prompt restoration made during the dayshift for this repair were not effectively communicated to those individuals that were called upon to implement the plan in a safe and timely manner.

Significance:  Mar 31, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

UNIT 2 ISOLATION OF REACTOR BUILDING VENTILATION AND AUTO START OF STANDBY GAS TREATMENT

A self-revealing finding of very low safety significance and a Non-Cited Violation of Technical Specification 5.4.1 was identified on March 14, 2008, when operators transferring power using procedure QCOP 6800-03, "Essential Service System," caused an unplanned isolation of the reactor building ventilation system and automatically started the standby gas treatment system. QOP 6800-03, "Essential Service System," implements the Technical Specification 5.4.1 as provided in Regulatory Guide 1.33. Procedural steps in QOP 6800-03 did not include adequate instruction to transfer power without impacting the safety systems in that the procedural instructions directed the operators to take the bypass switch for radiation instruments out of the bypass position, but did not direct them to verify that there was no isolation signal present. Corrective actions included revising the affected procedure and briefing operating crews on the circumstances surrounding the event.

The failure to implement adequate procedural directions for transferring electrical power without challenging safety-related equipment was more than minor because it impacts the Barrier Integrity cornerstone attribute of Structures, Systems and Components and Barrier Performance for Containment Isolation Structures, Systems, and Components reliability and, if the condition were to go uncorrected, the Containment isolation function could be impacted. This finding was determined to be of very low safety significance because the finding impacted only the radiological barrier function of the control room and standby gas treatment systems, and the systems functioned as designed. The inspectors also determined that the operators implementing the procedure had the opportunity to identify the procedural deficiency either during the job preparation activities or while executing the procedural steps if they had verified the trip signals were cleared prior to moving the switch. Properly executed self-checking and peer-checking would have identified the possible action and provided the operators with the opportunity to prevent the challenge to the safety-related system components. The inspectors identified the deficient use of Human Performance tools as a contributor to the event and therefore determined that the event was cross-cutting in Human Performance, Work Practices, Prevention (H.4(a)).

Significance:  Sep 30, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO FOLLOW PROCEDURES AND USE HUMAN PERFORMANCE TOOLS RESULTS IN REACTOR BUILDING VENTILATION ISOLATION

A self-revealing finding and a Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion V, was identified on September 8, 2007, due to the failure to follow procedures during the performance of Unit 1 125 Vdc ground detection activities. The failure to follow procedures resulted in the inadvertent isolation of the Unit 2 reactor building ventilation system. Corrective actions for this issue included restoring the isolated plant equipment, briefing personnel on the event, revising the ground detection procedure to ensure consistency with other Exelon stations, requiring additional oversight of ground detection activities, and implementing additional human performance improvement initiatives.

The inspectors determined that this issue was more than minor because if left uncorrected, it would lead to additional equipment issues. The inspectors determined that this issue was of very low safety significance because it did not represent a degradation of a radiological barrier provided by the standby gas treatment system, did not represent a degradation of the barrier function of the control room ventilation system against smoke or a toxic atmosphere, and did not represent an actual open pathway in the physical integrity of the reactor containment. The inspectors concluded that this finding was cross-cutting in the area of Human Performance, Work Practices, Human Error Prevention because the licensee's human error prevention techniques were not used to ensure that the work activity was performed safely.

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Physical Protection

Although the NRC is actively overseeing the Security cornerstone, the Commission has decided that certain findings pertaining to security cornerstone will not be publicly available to ensure that potentially useful information is not provided to a possible adversary. Therefore, the [cover letters](#) to security inspection reports may be viewed.


Miscellaneous

Last modified : August 29, 2008

Quad Cities 2

3Q/2008 Plant Inspection Findings

Initiating Events


Significance:  Dec 31, 2007
Identified By: NRC
Item Type: NCV NonCited Violation

INADEQUATE FIRE PROTECTION PROCEDURES

A self-revealing finding of very low safety significance and a Non-Cited Violation of Technical Specification 5.4.1 was identified on November 10, 2006, due to the failure to establish, implement, and maintain procedures associated with the fire protection program. The failure to implement and maintain these procedures resulted in a fire protection system hydraulic transient and the wetting of an electrical bus which powered risk significant equipment. Corrective actions for this issue included providing improved procedural instructions regarding fire pump relief valve setpoint verifications, fire protection system strainer maintenance, and fire hydrant flushing activities. This issue was more than minor because the procedural deficiencies were a precursor to a switchgear wetting event which could have resulted in the tripping of risk significant equipment and a reactor scram. This finding was determined to be of very low safety significance because had the risk significant mitigating systems equipment tripped, the remaining mitigating systems would have been sufficient to address a transient with a loss of the power conversion system and the failure of all containment heat removal. The inspectors concluded that this finding was cross-cutting in the area of Human Performance, Resources, Documentation because the licensee failed to have complete, accurate and up-to-date procedures governing fire pump relief valve setpoint verifications, fire protection system strainer maintenance, and fire hydrant flushing activities.

Inspection Report# : [2007005](#) (*pdf*)

Mitigating Systems

Significance:  Sep 30, 2008
Identified By: NRC
Item Type: NCV NonCited Violation

2D Vault Door Work Order Instructions Not Followed

A self-revealing finding of very low safety significance and associated NCV of TS 5.4.1 was identified for failure to follow written work instructions resulting in a non-functional main control room alarm and degraded flood protection measures. Specifically, a contract electrician did not perform work instructions as written and lifted energized leads for the 2D residual heat removal service water (RHRSW) vault door limit switch without the appropriate work package documents as required by station procedures. This action resulted in an inoperable control room alarm that was not corrected for approximately three months. Further investigation revealed the licensee was performing a surveillance to verify the RHRSW vault doors closed once per day, contrary to the surveillance periodicity of once per shift credited in the licensee's flood protection analysis. The failure to follow the credited once-per-shift surveillance in combination with the non-functional supplemental control room alarm resulted in degraded flood protection measures associated with the 2D RHRSW vault. This finding has a cross-cutting aspect in the area of Human Performance, Resources Component, Documentation Aspect because the licensee failed to provide enough detail in the work package to ensure that the control room alarm was verified as functional during the post-maintenance testing following completion of the work activity (H.2(c)). Corrective actions included repair of the limit switch and correction of the operator rounds to verify the vault doors closed each shift.

The finding is determined to be more than minor because it is associated with the Mitigating Systems Cornerstone attribute of external factors, flood hazard, and affects the cornerstone objective of ensuring the availability and capability of systems that respond to initiating events to prevent undesirable consequences. 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 for the Mitigating Systems cornerstone because the finding is associated with the operability and availability of the 2D train of the RHRSW mitigating system. The finding is of very low safety significance, Green, because the degraded flood protection measures did not result in the loss of operability or functionality of the 2D RHRSW system

Inspection Report# : [2008004](#) (*pdf*)

Significance:  Sep 30, 2008
Identified By: NRC

Item Type: NCV NonCited Violation

Licensee Failure to Adequately Assess and Manage Risk Associated with Work on U1 SBO.

NRC inspectors identified a finding of very low safety significance and an associated NCV of 10 CFR 50.65(a) (4), "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," when the licensee failed to effectively evaluate the risk associated with work on the Unit 1 station blackout (SBO) diesel generator, which resulted in an unplanned risk condition for Unit 1 and Unit 2 without the appropriate risk management actions. Specifically, the Unit 2 SBO diesel generator was determined to be unavailable after inspectors found the oil level in the governor below the indicating sight glass level due to leakage from a loose connection. Concurrently, the Unit 1 SBO diesel generator was unavailable due to planned maintenance. When unavailability of the Unit 2 SBO diesel generator was factored into the on-line risk model with the Unit 1 SBO diesel generator unavailable, the risk profile changed from Green to Yellow. Since the Unit 2 SBO diesel generator was assumed to be available in the original risk evaluation, the underestimation of risk resulted in the station having no risk management actions in place as would have been required by procedure. Those actions include protecting pathways of safety-related equipment that could have a significant impact on the increase in risk, if unavailable. The inspectors also determined that the finding has a cross-cutting aspect in the area of Human Performance, Resources Component, Documentation Aspect because the licensee failed to provide timely and up-to-date procedures to check the engine governor oil sight glass level following the permanent modification to a different governor model that has an oil level sight glass (H.2(c)). Corrective actions included protecting the appropriate equipment and contacting mechanical maintenance to have the fitting tightened and the governor oil sump refilled to the proper level. The Operations Department initiated a process requiring a walkthrough verification of redundant equipment areas before removing equipment from service. Additionally, procedure revisions to operator rounds were made to include verification of sight glass level.

The finding is determined to be more than minor because the finding is based on incorrect assumptions that changed the outcome of the risk assessment and therefore crossed the risk threshold requiring additional actions to manage the risk. The inspectors evaluated this finding using the Appendix K, "Maintenance Risk Assessment and Risk Management Significance Determination Process," worksheets of IMC 0609 because the finding is a maintenance risk assessment issue. Flowchart 1, "Assessment of Risk Deficit," requires the inspectors to determine the risk deficit associated with this issue. This finding was determined to be of very low safety significance because the incremental core damage probability deficit was less than 1E 6.

Inspection Report# : [2008004](#) (pdf)

G

Significance: Mar 31, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

SAFE SHUTDOWN MAKEUP PUMP LOW DISCHARGE PRESSURE

A self-revealing finding of very low safety significance and a Non-Cited Violation of 10 CFR 50, Appendix B, Criterion V, was identified on December 17, 2007, for an inadequate pump fill and vent procedure that resulted in pump degradation to the safe shutdown makeup pump. QCOP 2900-01, "Safe Shutdown Makeup Pump System Preparation for Standby Lineup," was used to fill and vent the safe shutdown makeup pump following maintenance and, although the system passed surveillance testing, air was later identified in the system. Air migration within the system was later identified as the cause of safe shutdown makeup pump degradation which resulted in the subsequent failure to meet Technical Specification flow requirements. Corrective actions for this event included the installation of additional vents on the suction piping, an aggressive extent of condition evaluation of other susceptible systems, refurbishment of the safe shutdown makeup pump, briefing personnel on the trending failure, and a review of inservice test alert setpoints to ensure triggers are set appropriately to allow corrective actions to be planned for program components.

The inspectors determined that the failure to provide procedural direction that ensured adequate venting was more than minor because it impacted the Mitigating Systems cornerstone attribute of Equipment Performance and affected the availability and reliability of the system. This finding was determined to be of very low safety significance because although operability of the pump was impacted, the credited safety function was maintained. Contributing to the performance deficiency was that the monitoring program in place was not effective in identifying the gradual degradation before pump operability was impacted. Additionally, the alert threshold for the pump parameter in the monitoring program, which would trigger additional actions such as pump overhaul, was set below the Technical Specification allowable value and was thus an ineffective barrier to prevent loss of operability or function. The inspectors determined this failure to be cross-cutting in the area of Problem Identification and Resolution, Corrective Action Program, Corrective Actions due to the failure of the licensee to address the adverse trend in pump performance in a timely manner, commensurate with the safety significance of the components (P.1(b)).

Inspection Report# : [2008002](#) (pdf)

G

Significance: Mar 31, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

1/2 "A" DIESEL FIRE PUMP OIL LEAK AND FIRE

A self-revealing finding of very low safety significance and a Non-Cited Violation of Technical Specification 5.4.1 was identified due to the failure to establish, implement, and maintain procedures associated with the fire protection program. Work instructions, Work Order 787787-01, performed on the 1/2 "A" diesel fire pump in September 2007 did not specify the thread sealant to be used in the work activity and the mechanics used a material that subsequently resulted in an oil leak and subsequent fire on December 22, 2007, caused by oil-contaminated insulation. Corrective actions included revision of model work orders for the pump to include guidance for using high temperature thread sealant and performance expectations for work planners to include identification of thread sealant for similar tasks. Additionally, maintenance personnel were briefed on the issue of workers failing to identify and/or replace the oil-contaminated insulation pad replacing the turbocharger oil supply hose during a corrective maintenance activity.

Inspectors determined the issue was more than minor because the procedural deficiencies were a precursor to an oil leak and subsequent

insulation fire that impacted the reliability and availability of the 1/2 "A" fire pump. The finding was determined to be of very low safety significance because the 100% capacity "B" pump was not impacted and the operator actions after removing the combustibles could have made the "A" pump available shortly after the event. The inspectors determined this failure to be cross-cutting in the area of Problem Identification and Resolution, Identification, due to the failure of multiple individuals to investigate the condition of the insulation that was near the oil leak and thereby failing to identify the oil contamination of that insulation in time to prevent the impact to the diesel fire pump (P.1(a)).

Inspection Report# : [2008002](#) (pdf)

Significance:  Dec 31, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

INADEQUATE PROCEDURES FOR EXTERNAL FLOODING AND TESTING OF FLOODING PUMP

The inspectors identified a finding of very low safety significance and a Non Cited Violation of Technical Specification 5.4.1 due to the failure to develop adequate surveillance testing and operating procedures for equipment used during an external flooding event. Corrective actions for this issue included revising the current 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 flood.

This issue was more than minor because it involved the equipment performance and procedure quality attributes of the mitigating systems cornerstone and affected the objective of ensuring the reliability and capability of systems that respond to initiating events to prevent undesirable consequences. This issue was determined to be of very low safety significance due to the very low probability of an external flood of the magnitude which required use of the portable pump and the amount of additional time available to implement other compensatory measures if needed. The inspectors concluded that this finding was cross-cutting in the area of Human Performance, Resources, Documentation because the licensee failed to have complete, accurate and up-to-date procedures to combat an external flooding event.

Inspection Report# : [2007005](#) (pdf)

Barrier Integrity

Significance:  Jun 30, 2008

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Exceeded 50 Degree Differential Temperature Limit of TS 3.4.9 when starting Recirculation Pump

A Non-Cited violation of Technical Specification 3.4.9, "RCS Pressure and Temperature (P/T) Limits," was identified on March 31, 2008 when operators did not establish effective controls to ensure compliance with the Technical specification when they started the 2A reactor coolant recirculation pump with temperature in the 2A loop more than 50°F below the bulk temperature in the reactor vessel represented by the 2B loop temperature. The failure to implement effective controls to prevent exceeding the Technical Specification limit was more than minor because it was associated with the Barrier Integrity Cornerstone attribute of Human Performance and affected the cornerstone objective by challenging the physical design barriers intended to maintain the functionality of the Reactor Coolant System. This finding was determined to be of very low safety significance because the plant conditions were determined to be within the bounds of the existing analysis and therefore the issue did not result in degrading the reactor coolant system boundary. This finding has a cross-cutting aspect in the area of Human Performance for the Decision-Making component because the licensee failed to communicate the decisions and the basis for decisions to personnel who have a need to know the information in order to perform work safely, in a timely manner (H.1(c)). Specifically, planning decisions such as the compensatory actions for prompt restoration made during the dayshift for this repair were not effectively communicated to those individuals that were called upon to implement the plan in a safe and timely manner.

This finding was determined to be of very low safety significance because the plant conditions were determined to be within the bounds of the existing analysis and therefore the issue did not result in degrading the reactor coolant system boundary, in exceeding the Technical Specification Limit for any Reactor Coolant System Leakage, nor could it have likely affected other mitigation systems to result in a loss of their safety functions. This finding has a cross-cutting aspect in the area of Human Performance for the Decision-Making component because the licensee failed to communicate the decisions and the basis for decisions to personnel who have a need to know the information in order to perform work safely, in a timely manner (H.1(c)). Specifically, planning decisions such as the compensatory actions for prompt restoration made during the dayshift for this repair were not effectively communicated to those individuals that were called upon to implement the plan in a safe and timely manner.

Inspection Report# : [2008003](#) (pdf)

Significance:  Mar 31, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

UNIT 2 ISOLATION OF REACTOR BUILDING VENTILATION AND AUTO START OF STANDBY GAS TREATMENT

A self-revealing finding of very low safety significance and a Non-Cited Violation of Technical Specification 5.4.1 was identified on March

14, 2008, when operators transferring power using procedure QCOP 6800-03, "Essential Service System," caused an unplanned isolation of the reactor building ventilation system and automatically started the standby gas treatment system. QOP 6800-03, "Essential Service System," implements the Technical Specification 5.4.1 as provided in Regulatory Guide 1.33. Procedural steps in QOP 6800-03 did not include adequate instruction to transfer power without impacting the safety systems in that the procedural instructions directed the operators to take the bypass switch for radiation instruments out of the bypass position, but did not direct them to verify that there was no isolation signal present. Corrective actions included revising the affected procedure and briefing operating crews on the circumstances surrounding the event. The failure to implement adequate procedural directions for transferring electrical power without challenging safety-related equipment was more than minor because it impacts the Barrier Integrity cornerstone attribute of Structures, Systems and Components and Barrier Performance for Containment Isolation Structures, Systems, and Components reliability and, if the condition were to go uncorrected, the Containment isolation function could be impacted. This finding was determined to be of very low safety significance because the finding impacted only the radiological barrier function of the control room and standby gas treatment systems, and the systems functioned as designed. The inspectors also determined that the operators implementing the procedure had the opportunity to identify the procedural deficiency either during the job preparation activities or while executing the procedural steps if they had verified the trip signals were cleared prior to moving the switch. Properly executed self-checking and peer-checking would have identified the possible action and provided the operators with the opportunity to prevent the challenge to the safety-related system components. The inspectors identified the deficient use of Human Performance tools as a contributor to the event and therefore determined that the event was cross-cutting in Human Performance, Work Practices, Prevention (H.4(a)).

Inspection Report# : [2008002](#) (*pdf*)

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Physical Protection

Although the NRC is actively overseeing the Security cornerstone, the Commission has decided that certain findings pertaining to security cornerstone will not be publicly available to ensure that potentially useful information is not provided to a possible adversary. Therefore, the [cover letters](#) to security inspection reports may be viewed.

Miscellaneous

Significance: N/A Aug 08, 2008

Identified By: NRC

Item Type: FIN Finding

PI&R Assessment

On the basis of the sample selected for review, the team concluded that implementation of the CAP was generally good. The licensee had a low threshold for identifying problems and entering them in the CAP. Items entered into the CAP were screened and prioritized in a timely manner using established criteria; were properly evaluated commensurate with their safety significance; and corrective actions were generally implemented in a timely manner, commensurate with the safety significance. The team noted that the licensee reviewed operating experience for applicability to station activities. Audits and self assessments were determined to be performed at an appropriate level to identify deficiencies. On the basis of licensee self-assessments and interviews conducted during the inspection, workers at the site expressed freedom to raise safety concerns. The team observed that some significant adverse trends in human performance and equipment clearances and tagging were not initially identified and aggressively addressed for effective results. Subsequent efforts were more effective.

Inspection Report# : [2008008](#) (*pdf*)

Last modified : November 26, 2008

Quad Cities 2

4Q/2008 Plant Inspection Findings

Initiating Events

Significance:  Dec 31, 2008

Identified By: NRC

Item Type: FIN Finding

EXPLOSION OF THE FDSgT VESTIBULE.

A self-revealed finding of very low safety significance was identified for inadequate procedures that resulted in an onsite explosion on October 27, 2008. Specifically, operating procedures for the floor drain surge tank did not include appropriate warnings, cautions, or notes to alert operators to potentially hazardous conditions or operating sequences that could result in localized elevated concentrations of methane gas. As a result, waste water transfer activities resulted in an accumulation of methane gas in the floor drain surge tank building vestibule that subsequently ignited, damaging the onsite structure and putting the station in an emergency plan Unusual Event. Corrective actions for the affected tank included purging the tank with nitrogen, repairing the installed tank ventilation, monitoring for methane gas buildup until the tank is cleaned, and processing the waste water stored in the tank. Restrictions on system operation are in place pending final procedure revisions.

The finding is more than minor because if left uncorrected this finding would become a more significant safety concern. In addition, it affected the Reactor Safety: Initiating Events Cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the Reactor Safety: Initiating Events Cornerstone attribute of protection against external factors relating to production and control of hazardous gasses. The finding is of very low safety significance (Green) because the finding does not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available. Additionally, the finding does not increase the likelihood of a fire affecting mitigating systems or a fire of significant duration. Inspectors determined that the finding had a cross-cutting aspect in the area of Problem Identification and Resolution. Specifically, the inspectors determined that the licensee was aware of industry events involving the anaerobic production of methane gas in radwaste systems and had opportunities to incorporate relevant industry operating experience into recent revisions of radwaste operating procedures, but failed to implement this operating experience into station processes, procedures, and training programs for radwaste operations (P.2 (b)). The failure to establish and implement effective radwaste operating procedures to prevent the production of combustible gasses is not an activity affecting quality subject to 10 CFR Part 50, Appendix B, Criterion V. Therefore, while a performance deficiency was identified, no violation of NRC regulatory requirements occurred.

Inspection Report# : [2008005](#) (*pdf*)

Mitigating Systems

Significance:  Oct 24, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Use of Non-Conservative Inputs and Methodologies in Calculating Terminal Voltages to Safety-Related MOV Motors During Design Basis Events

A finding of very low safety significance (Green) involving a NCV of 10 CFR Part 50, Appendix B, Criterion III, Design Control, was identified by the inspectors for the failure to evaluate the effect of lower transient voltages that would exist for safety injection actuated motor-operated valves (MOVs) prior to voltage recovery on the upstream

4Kv buses. Specifically, the licensee used non-conservative inputs and methodologies in calculating terminal voltages to safety-related MOV motors. The licensee entered the issue into their corrective action program and performed an operability review of all safety injection actuated valves to verify they had sufficient margin to operate when considering transient voltage conditions.

The finding was more than minor because it was similar to IMC 0612, Appendix E, Example 3.j, in that there was a reasonable doubt on the operability of several low pressure coolant injection valves that would have to operate at voltages as low as 60 percent of rating. The inspectors determined the finding was of very low safety significance because it was a design deficiency that did not result in actual loss of safety function. This finding has a cross-cutting aspect in the area of Problem Identification and Resolution, Operating Experience because the licensee did not adequately evaluate a similar issue in an NRC Information Notice. (P.2(a)).

Inspection Report# : [2008007](#) (pdf)

Significance:  Oct 24, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Calculations/Analyses and Testing for Thermal Overload Relays (TOLs) on Safety-Related MOVs

A finding of very low safety significance (Green) and associated NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," was identified by the inspectors for the failure to assure that thermal overload relays (TOLs) on safety-related motor-operated valve (MOV) circuits were sized properly and periodically tested. The licensee entered this issue into its corrective action program and was able to demonstrate operability, in that the TOLs would not prevent any MOVs from performing their safety function.

The finding was more than minor because it was similar to IMC 0612, Appendix E, Example 3.j, in that failing to assure that TOLs on safety-related MOV circuits were sized properly and periodically tested led to there being a reasonable doubt as to the operability of the affected safety-related MOVs. The issue was of very low safety significance because the inspectors determined it was a design deficiency that did not result in actual loss of safety function. This finding has a cross-cutting aspect in the area of Problem Identification and Resolution, Self-Assessment because the licensee incorrectly evaluated this issue as not being a concern during a self-assessment. (P.3(a)).

Inspection Report# : [2008007](#) (pdf)

Significance:  Oct 24, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Seismic Qualification of 250 VDC Batteries

A finding of very low safety significance (Green) and associated NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," was identified by the inspectors for the failure to assure that 250VDC safety-related batteries were installed in accordance with their seismic qualification. The licensee entered this nonconformance into its corrective action program and initiated work orders to replace the intercell spacers with properly sized material. To establish a reasonable assurance of operability, the licensee reviewed seismic experience database reports from the Seismic Qualification Utility Group.

The finding was determined to be more than minor because the finding was conceptually similar to IMC 0612, Appendix E, Example 3a, in that rework (spacer replacement) was required to restore seismic qualification. The issue was of very low safety significance because the inspectors determined it was a qualification deficiency that did not result in actual loss of safety function. The inspectors determined there was no cross-cutting aspect associated with this finding.

Inspection Report# : [2008007](#) (pdf)

Significance:  Oct 24, 2008

Identified By: NRC

Item Type: FIN Finding

Inaccurate RCIC Instrument Setpoints

A finding of very low safety significance was identified by the inspectors for failure to accurately implement the design setpoint for reactor core isolation cooling turbine exhaust pressure switches 1(2)-1360-26A/B. The licensee entered this issue into its corrective action program and was able to demonstrate operability by determining that the setpoints would not be challenged for scenarios where reactor core isolation cooling was credited.

The finding was determined to be more than minor because the finding was conceptually similar to IMC 0612, Appendix E, Example 3a, in that rework (instrument recalibration) was required to restore conformance with the design. The issue was of very low safety significance because the inspectors determined it was a design deficiency that did not result in actual loss of safety function. This finding has a cross-cutting aspect in the area of Problem Identification and Resolution, Corrective Action Program because the licensee did not adequately evaluate the issue in 2004 such that it was properly classified and prioritized. (P.1(c))

Inspection Report# : [2008007](#) (*pdf*)

Significance:  Sep 30, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

2D Vault Door Work Order Instructions Not Followed

A self-revealing finding of very low safety significance and associated NCV of TS 5.4.1 was identified for failure to follow written work instructions resulting in a non-functional main control room alarm and degraded flood protection measures. Specifically, a contract electrician did not perform work instructions as written and lifted energized leads for the 2D residual heat removal service water (RHRSW) vault door limit switch without the appropriate work package documents as required by station procedures. This action resulted in an inoperable control room alarm that was not corrected for approximately three months. Further investigation revealed the licensee was performing a surveillance to verify the RHRSW vault doors closed once per day, contrary to the surveillance periodicity of once per shift credited in the licensee's flood protection analysis. The failure to follow the credited once-per-shift surveillance in combination with the non-functional supplemental control room alarm resulted in degraded flood protection measures associated with the 2D RHRSW vault. This finding has a cross-cutting aspect in the area of Human Performance, Resources Component, Documentation Aspect because the licensee failed to provide enough detail in the work package to ensure that the control room alarm was verified as functional during the post-maintenance testing following completion of the work activity (H.2(c)). Corrective actions included repair of the limit switch and correction of the operator rounds to verify the vault doors closed each shift.

The finding is determined to be more than minor because it is associated with the Mitigating Systems Cornerstone attribute of external factors, flood hazard, and affects the cornerstone objective of ensuring the availability and capability of systems that respond to initiating events to prevent undesirable consequences. 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 for the Mitigating Systems cornerstone because the finding is associated with the operability and availability of the 2D train of the RHRSW mitigating system. The finding is of very low safety significance, Green, because the degraded flood protection measures did not result in the loss of operability or functionality of the 2D RHRSW system

Inspection Report# : [2008004](#) (*pdf*)

Significance:  Sep 30, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Adequately Assess and Manage Risk Associated with Work on U1 SBO.

NRC inspectors identified a finding of very low safety significance and an associated NCV of 10 CFR 50.65(a) (4), "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," when the licensee failed to effectively evaluate the risk associated with work on the Unit 1 station blackout (SBO) diesel generator, which resulted in an unplanned risk condition for Unit 1 and Unit 2 without the appropriate risk management actions. Specifically, the Unit 2 SBO diesel generator was determined to be unavailable after inspectors found the oil level in the governor below the indicating sight glass level due to leakage from a loose connection. Concurrently, the Unit 1

SBO diesel generator was unavailable due to planned maintenance. When unavailability of the Unit 2 SBO diesel generator was factored into the on-line risk model with the Unit 1 SBO diesel generator unavailable, the risk profile changed from Green to Yellow. Since the Unit 2 SBO diesel generator was assumed to be available in the original risk evaluation, the underestimation of risk resulted in the station having no risk management actions in place as would have been required by procedure. Those actions include protecting pathways of safety-related equipment that could have a significant impact on the increase in risk, if unavailable. The inspectors also determined that the finding has a cross-cutting aspect in the area of Human Performance, Resources Component, Documentation Aspect because the licensee failed to provide timely and up-to-date procedures to check the engine governor oil sight glass level following the permanent modification to a different governor model that has an oil level sight glass (H.2(c)). Corrective actions included protecting the appropriate equipment and contacting mechanical maintenance to have the fitting tightened and the governor oil sump refilled to the proper level. The Operations Department initiated a process requiring a walkthrough verification of redundant equipment areas before removing equipment from service. Additionally, procedure revisions to operator rounds were made to include verification of sight glass level.

The finding is determined to be more than minor because the finding is based on incorrect assumptions that changed the outcome of the risk assessment and therefore crossed the risk threshold requiring additional actions to manage the risk. The inspectors evaluated this finding using the Appendix K, "Maintenance Risk Assessment and Risk Management Significance Determination Process," worksheets of IMC 0609 because the finding is a maintenance risk assessment issue. Flowchart 1, "Assessment of Risk Deficit," requires the inspectors to determine the risk deficit associated with this issue. This finding was determined to be of very low safety significance because the incremental core damage probability deficit was less than 1E 6.

Inspection Report# : [2008004](#) (pdf)



Significance: Mar 31, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

SAFE SHUTDOWN MAKEUP PUMP LOW DISCHARGE PRESSURE

A self-revealing finding of very low safety significance and a Non-Cited Violation of 10 CFR 50, Appendix B, Criterion V, was identified on December 17, 2007, for an inadequate pump fill and vent procedure that resulted in pump degradation to the safe shutdown makeup pump. QCOP 2900-01, "Safe Shutdown Makeup Pump System Preparation for Standby Lineup," was used to fill and vent the safe shutdown makeup pump following maintenance and, although the system passed surveillance testing, air was later identified in the system. Air migration within the system was later identified as the cause of safe shutdown makeup pump degradation which resulted in the subsequent failure to meet Technical Specification flow requirements. Corrective actions for this event included the installation of additional vents on the suction piping, an aggressive extent of condition evaluation of other susceptible systems, refurbishment of the safe shutdown makeup pump, briefing personnel on the trending failure, and a review of inservice test alert setpoints to ensure triggers are set appropriately to allow corrective actions to be planned for program components.

The inspectors determined that the failure to provide procedural direction that ensured adequate venting was more than minor because it impacted the Mitigating Systems cornerstone attribute of Equipment Performance and affected the availability and reliability of the system. This finding was determined to be of very low safety significance because although operability of the pump was impacted, the credited safety function was maintained. Contributing to the performance deficiency was that the monitoring program in place was not effective in identifying the gradual degradation before pump operability was impacted. Additionally, the alert threshold for the pump parameter in the monitoring program, which would trigger additional actions such as pump overhaul, was set below the Technical Specification allowable value and was thus an ineffective barrier to prevent loss of operability or function. The inspectors determined this failure to be cross-cutting in the area of Problem Identification and Resolution, Corrective Action Program, Corrective Actions due to the failure of the licensee to address the adverse trend in pump performance in a timely manner, commensurate with the safety significance of the components (P.1(b)).

Inspection Report# : [2008002](#) (pdf)



Significance: Mar 31, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

1/2 "A" DIESEL FIRE PUMP OIL LEAK AND FIRE

A self-revealing finding of very low safety significance and a Non-Cited Violation of Technical Specification 5.4.1 was identified due to the failure to establish, implement, and maintain procedures associated with the fire protection program. Work instructions, Work Order 787787-01, performed on the 1/2 "A" diesel fire pump in September 2007 did not specify the thread sealant to be used in the work activity and the mechanics used a material that subsequently resulted in an oil leak and subsequent fire on December 22, 2007, caused by oil-contaminated insulation. Corrective actions included revision of model work orders for the pump to include guidance for using high temperature thread sealant and performance expectations for work planners to include identification of thread sealant for similar tasks. Additionally, maintenance personnel were briefed on the issue of workers failing to identify and/or replace the oil-contaminated insulation pad replacing the turbocharger oil supply hose during a corrective maintenance activity. Inspectors determined the issue was more than minor because the procedural deficiencies were a precursor to an oil leak and subsequent insulation fire that impacted the reliability and availability of the 1/2 "A" fire pump. The finding was determined to be of very low safety significance because the 100% capacity "B" pump was not impacted and the operator actions after removing the combustibles could have made the "A" pump available shortly after the event. The inspectors determined this failure to be cross-cutting in the area of Problem Identification and Resolution, Identification, due to the failure of multiple individuals to investigate the condition of the insulation that was near the oil leak and thereby failing to identify the oil contamination of that insulation in time to prevent the impact to the diesel fire pump (P.1(a)).

Inspection Report# : [2008002](#) (*pdf*)

Barrier Integrity

Significance:  Jun 30, 2008

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Exceeded 50 Degree Differential Temperature Limit of TS 3.4.9 when starting Recirculation Pump

A Non-Cited violation of Technical Specification 3.4.9, "RCS Pressure and Temperature (P/T) Limits," was identified on March 31, 2008 when operators did not establish effective controls to ensure compliance with the Technical specification when they started the 2A reactor coolant recirculation pump with temperature in the 2A loop more than 50°F below the bulk temperature in the reactor vessel represented by the 2B loop temperature. The failure to implement effective controls to prevent exceeding the Technical Specification limit was more than minor because it was associated with the Barrier Integrity Cornerstone attribute of Human Performance and affected the cornerstone objective by challenging the physical design barriers intended to maintain the functionality of the Reactor Coolant System. This finding was determined to be of very low safety significance because the plant conditions were determined to be within the bounds of the existing analysis and therefore the issue did not result in degrading the reactor coolant system boundary. This finding has a cross-cutting aspect in the area of Human Performance for the Decision-Making component because the licensee failed to communicate the decisions and the basis for decisions to personnel who have a need to know the information in order to perform work safely, in a timely manner (H.1(c)). Specifically, planning decisions such as the compensatory actions for prompt restoration made during the dayshift for this repair were not effectively communicated to those individuals that were called upon to implement the plan in a safe and timely manner.

This finding was determined to be of very low safety significance because the plant conditions were determined to be within the bounds of the existing analysis and therefore the issue did not result in degrading the reactor coolant system boundary, in exceeding the Technical Specification Limit for any Reactor Coolant System Leakage, nor could it have likely affected other mitigation systems to result in a loss of their safety functions. This finding has a cross-cutting aspect in the area of Human Performance for the Decision-Making component because the licensee failed to communicate the decisions and the basis for decisions to personnel who have a need to know the information in order to perform work safely, in a timely manner (H.1(c)). Specifically, planning decisions such as the compensatory actions for prompt restoration made during the dayshift for this repair were not effectively communicated to those individuals that were called upon to implement the plan in a safe and timely manner.

Significance:  Mar 31, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

UNIT 2 ISOLATION OF REACTOR BUILDING VENTILATION AND AUTO START OF STANDBY GAS TREATMENT

A self-revealing finding of very low safety significance and a Non-Cited Violation of Technical Specification 5.4.1 was identified on March 14, 2008, when operators transferring power using procedure QCOP 6800-03, "Essential Service System," caused an unplanned isolation of the reactor building ventilation system and automatically started the standby gas treatment system. QOP 6800-03, "Essential Service System," implements the Technical Specification 5.4.1 as provided in Regulatory Guide 1.33. Procedural steps in QOP 6800-03 did not include adequate instruction to transfer power without impacting the safety systems in that the procedural instructions directed the operators to take the bypass switch for radiation instruments out of the bypass position, but did not direct them to verify that there was no isolation signal present. Corrective actions included revising the affected procedure and briefing operating crews on the circumstances surrounding the event.

The failure to implement adequate procedural directions for transferring electrical power without challenging safety-related equipment was more than minor because it impacts the Barrier Integrity cornerstone attribute of Structures, Systems and Components and Barrier Performance for Containment Isolation Structures, Systems, and Components reliability and, if the condition were to go uncorrected, the Containment isolation function could be impacted. This finding was determined to be of very low safety significance because the finding impacted only the radiological barrier function of the control room and standby gas treatment systems, and the systems functioned as designed. The inspectors also determined that the operators implementing the procedure had the opportunity to identify the procedural deficiency either during the job preparation activities or while executing the procedural steps if they had verified the trip signals were cleared prior to moving the switch. Properly executed self-checking and peer-checking would have identified the possible action and provided the operators with the opportunity to prevent the challenge to the safety-related system components. The inspectors identified the deficient use of Human Performance tools as a contributor to the event and therefore determined that the event was cross-cutting in Human Performance, Work Practices, Prevention (H.4(a)).

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Physical Protection

Although the NRC is actively overseeing the Security cornerstone, the Commission has decided that certain findings pertaining to security cornerstone will not be publicly available to ensure that potentially useful information is not provided to a possible adversary. Therefore, the [cover letters](#) to security inspection reports may be viewed.

Miscellaneous

Significance: N/A Aug 08, 2008

Identified By: NRC

Item Type: FIN Finding

PI&R Assessment

On the basis of the sample selected for review, the team concluded that implementation of the CAP was generally good. The licensee had a low threshold for identifying problems and entering them in the CAP. Items entered into the CAP were screened and prioritized in a timely manner using established criteria; were properly evaluated commensurate with their safety significance; and corrective actions were generally implemented in a timely manner, commensurate with the safety significance. The team noted that the licensee reviewed operating experience for applicability to station activities. Audits and self assessments were determined to be performed at an appropriate level to identify deficiencies. On the basis of licensee self-assessments and interviews conducted during the inspection, workers at the site expressed freedom to raise safety concerns. The team observed that some significant adverse trends in human performance and equipment clearances and tagging were not initially identified and aggressively addressed for effective results. Subsequent efforts were more effective.

Inspection Report# : [2008008](#) (*pdf*)

Last modified : April 07, 2009

Quad Cities 2

1Q/2009 Plant Inspection Findings

Initiating Events

Significance:  Dec 31, 2008

Identified By: NRC

Item Type: FIN Finding

EXPLOSION OF THE FDSgT VESTIBULE.

A self-revealed finding of very low safety significance was identified for inadequate procedures that resulted in an onsite explosion on October 27, 2008. Specifically, operating procedures for the floor drain surge tank did not include appropriate warnings, cautions, or notes to alert operators to potentially hazardous conditions or operating sequences that could result in localized elevated concentrations of methane gas. As a result, waste water transfer activities resulted in an accumulation of methane gas in the floor drain surge tank building vestibule that subsequently ignited, damaging the onsite structure and putting the station in an emergency plan Unusual Event. Corrective actions for the affected tank included purging the tank with nitrogen, repairing the installed tank ventilation, monitoring for methane gas buildup until the tank is cleaned, and processing the waste water stored in the tank. Restrictions on system operation are in place pending final procedure revisions.

The finding is more than minor because if left uncorrected this finding would become a more significant safety concern. In addition, it affected the Reactor Safety: Initiating Events Cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the Reactor Safety: Initiating Events Cornerstone attribute of protection against external factors relating to production and control of hazardous gasses. The finding is of very low safety significance (Green) because the finding does not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available. Additionally, the finding does not increase the likelihood of a fire affecting mitigating systems or a fire of significant duration. Inspectors determined that the finding had a cross-cutting aspect in the area of Problem Identification and Resolution. Specifically, the inspectors determined that the licensee was aware of industry events involving the anaerobic production of methane gas in radwaste systems and had opportunities to incorporate relevant industry operating experience into recent revisions of radwaste operating procedures, but failed to implement this operating experience into station processes, procedures, and training programs for radwaste operations (P.2 (b)). The failure to establish and implement effective radwaste operating procedures to prevent the production of combustible gasses is not an activity affecting quality subject to 10 CFR Part 50, Appendix B, Criterion V. Therefore, while a performance deficiency was identified, no violation of NRC regulatory requirements occurred.

Inspection Report# : [2008005](#) (*pdf*)

Mitigating Systems

Significance:  Mar 31, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

BROKEN LATCH ON FIRE DOOR 145

Inspectors identified a Non-Cited Violation of License Condition 3.F, having very low safety significance for failure to ensure that Fire Door 145 could be positively latched. Section 2-8.4.4 of the National Fire Protection Association (NFPA) 80-1975, "Fire Doors and Windows," required that closing mechanisms be adjusted to overcome the resistance of the latch mechanism so that positive latching is achieved on each door operation. As a result of the

discovery of the broken latch, that prevented the fire door from positively latching, the licensee initiated an action request report (AR 864090), and established the immediate actions to return Fire Door 145 to service. The licensee declared the fire door inoperable, issued fire impairment No. 1612 and established an hourly watch. Repairs to the door were completed and the fire door was declared operable the same day.

The finding was determined to be more than minor because a lack of positive latching could result in the door opening during a fire, thereby allowing a fire to affect additional equipment important to safety in the exposed fire zone. Based on screening under IMC 0609, Appendix F, "Fire Protection Significance Determination Process," the inspectors determined that a Phase 2 analysis was required. The inspectors determined that the change in core damage frequency associated with the finding was significantly less than 1×10^{-6} per year. As such, the finding was determined to be of very low safety significance (i.e., Green). This finding has a cross-cutting aspect in the area of Human Performance for the Resources component because the licensee did not provide adequate training to personnel. Specifically, as noted in the licensee's corrective action document, annual training on fire barriers was inadequate in that equipment operators (EOs) did not consistently challenge fire doors in accordance with training (H.2(b)).

Inspection Report# : [2009002](#) (pdf)

Significance:  Mar 31, 2009

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

FAILURE TO FOLLOW WORK INSTRUCTIONS FOR 2A CORE SPRAY CHECK VALVE

A self-revealed finding of very low safety significance (Green) and Non-Cited Violation of Technical Specification 5.4.1.a was identified by inspectors on January 15, 2009, when the 2A core spray pump discharge check valve, 2-1402-8A, failed to close. Specifically, the valve failed to close because mechanics did not follow work instructions and ensure the valve was assembled as required. Corrective actions for this event included repair of the valve, briefings with the licensee staff, reinforcement with the operating staff on the differences between operability and post-maintenance testing requirements, and revision of the steps in the "model" work order and the operation's department surveillance procedure to more clearly delineate the acceptance criteria.

The inspectors determined that the failure to follow the work instructions for the 2A core spray pump discharge check valve was more than minor because the non-conforming valve impacted the Mitigating Systems Cornerstone attribute of Equipment Performance to ensure the reliability and capability of the core spray system to respond to initiating events when returned to service. The inspectors concluded that the issue was of very low safety significance (Green) because the plant operators were able to manually perform the required function and thus maintain both functionality and operability of the system until the valve was repaired. The inspectors determined that failure to provide enough detail in the post-maintenance test acceptance criteria to ensure that the valve was able to perform as designed without operator assistance was a significant contributor to the valve's subsequent return to service in a degraded condition, and the inspectors concluded that this event is cross-cutting in Human Performance, Resources for failure to provide accurate procedures (H.2(c)).

Inspection Report# : [2009002](#) (pdf)

Significance:  Mar 31, 2009

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

FAILURE OF THE UNIT 2 EMERGENCY DIESEL GENERATOR COOLING WATER PUMP

A self-revealed finding of very low safety significance (Green) and NCV of 10 CFR 50, Appendix B, Criterion III, Design Control was identified by inspectors when the Unit 2 diesel generator cooling water pump failed on November 12, 2008, due to damage caused by inter-granular stress corrosion cracking (IGSCC). The licensee's staff failed to apply appropriate rigor during the design and procurement process for pump replacement parts resulting in installation of vendor-supplied components that were not suited to the application and operating methodology for the emergency diesel generator cooling water system. The pump was repaired and returned to service the next day. Additionally, the remaining pumps were started to demonstrate that they were functional at the time of Unit 2 pump failure.

The inspectors concluded that the failure to implement measures that assured the equipment was suitable for the process environment was of very low safety significance (Green) because only one pump of three subsystems was degraded to the point where operability and function was affected. Additionally, the licensee process did not validate the vendor's compliance with all procurement specifications, instead assuming that the vendor's communications

were complete even though details of wear ring material changes were not included. Inspectors have determined that this behavior is cross-cutting in Human Performance, Decisionmaking, for failure to use conservative assumptions in communications with the vendor and ensuring all of the vendor supplied parts were appropriate to support the pump function (H.1(b)).

Inspection Report# : [2009002](#) (pdf)

Significance:  Oct 24, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Use of Non-Conservative Inputs and Methodologies in Calculating Terminal Voltages to Safety-Related MOV Motors During Design Basis Events

A finding of very low safety significance (Green) involving a NCV of 10 CFR Part 50, Appendix B, Criterion III, Design Control, was identified by the inspectors for the failure to evaluate the effect of lower transient voltages that would exist for safety injection actuated motor-operated valves (MOVs) prior to voltage recovery on the upstream 4Kv buses. Specifically, the licensee used non-conservative inputs and methodologies in calculating terminal voltages to safety-related MOV motors. The licensee entered the issue into their corrective action program and performed an operability review of all safety injection actuated valves to verify they had sufficient margin to operate when considering transient voltage conditions.

The finding was more than minor because it was similar to IMC 0612, Appendix E, Example 3.j, in that there was a reasonable doubt on the operability of several low pressure coolant injection valves that would have to operate at voltages as low as 60 percent of rating. The inspectors determined the finding was of very low safety significance because it was a design deficiency that did not result in actual loss of safety function. This finding has a cross-cutting aspect in the area of Problem Identification and Resolution, Operating Experience because the licensee did not adequately evaluate a similar issue in an NRC Information Notice. (P.2(a)).

Inspection Report# : [2008007](#) (pdf)

Significance:  Oct 24, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Calculations/Analyses and Testing for Thermal Overload Relays (TOLs) on Safety-Related MOVs

A finding of very low safety significance (Green) and associated NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," was identified by the inspectors for the failure to assure that thermal overload relays (TOLs) on safety-related motor-operated valve (MOV) circuits were sized properly and periodically tested. The licensee entered this issue into its corrective action program and was able to demonstrate operability, in that the TOLs would not prevent any MOVs from performing their safety function.

The finding was more than minor because it was similar to IMC 0612, Appendix E, Example 3.j, in that failing to assure that TOLs on safety-related MOV circuits were sized properly and periodically tested led to there being a reasonable doubt as to the operability of the affected safety-related MOVs. The issue was of very low safety significance because the inspectors determined it was a design deficiency that did not result in actual loss of safety function. This finding has a cross-cutting aspect in the area of Problem Identification and Resolution, Self-Assessment because the licensee incorrectly evaluated this issue as not being a concern during a self-assessment. (P.3(a)).

Inspection Report# : [2008007](#) (pdf)

Significance:  Oct 24, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Seismic Qualification of 250 VDC Batteries

A finding of very low safety significance (Green) and associated NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," was identified by the inspectors for the failure to assure that 250VDC safety-related batteries were

installed in accordance with their seismic qualification. The licensee entered this nonconformance into its corrective action program and initiated work orders to replace the intercell spacers with properly sized material. To establish a reasonable assurance of operability, the licensee reviewed seismic experience database reports from the Seismic Qualification Utility Group.

The finding was determined to be more than minor because the finding was conceptually similar to IMC 0612, Appendix E, Example 3a, in that rework (spacer replacement) was required to restore seismic qualification. The issue was of very low safety significance because the inspectors determined it was a qualification deficiency that did not result in actual loss of safety function. The inspectors determined there was no cross-cutting aspect associated with this finding.

Inspection Report# : [2008007](#) (*pdf*)

Significance:  Oct 24, 2008

Identified By: NRC

Item Type: FIN Finding

Inaccurate RCIC Instrument Setpoints

A finding of very low safety significance was identified by the inspectors for failure to accurately implement the design setpoint for reactor core isolation cooling turbine exhaust pressure switches 1(2)-1360-26A/B. The licensee entered this issue into its corrective action program and was able to demonstrate operability by determining that the setpoints would not be challenged for scenarios where reactor core isolation cooling was credited.

The finding was determined to be more than minor because the finding was conceptually similar to IMC 0612, Appendix E, Example 3a, in that rework (instrument recalibration) was required to restore conformance with the design. The issue was of very low safety significance because the inspectors determined it was a design deficiency that did not result in actual loss of safety function. This finding has a cross-cutting aspect in the area of Problem Identification and Resolution, Corrective Action Program because the licensee did not adequately evaluate the issue in 2004 such that it was properly classified and prioritized. (P.1(c))

Inspection Report# : [2008007](#) (*pdf*)

Significance:  Sep 30, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

2D Vault Door Work Order Instructions Not Followed

A self-revealing finding of very low safety significance and associated NCV of TS 5.4.1 was identified for failure to follow written work instructions resulting in a non-functional main control room alarm and degraded flood protection measures. Specifically, a contract electrician did not perform work instructions as written and lifted energized leads for the 2D residual heat removal service water (RHRSW) vault door limit switch without the appropriate work package documents as required by station procedures. This action resulted in an inoperable control room alarm that was not corrected for approximately three months. Further investigation revealed the licensee was performing a surveillance to verify the RHRSW vault doors closed once per day, contrary to the surveillance periodicity of once per shift credited in the licensee's flood protection analysis. The failure to follow the credited once-per-shift surveillance in combination with the non-functional supplemental control room alarm resulted in degraded flood protection measures associated with the 2D RHRSW vault. This finding has a cross-cutting aspect in the area of Human Performance, Resources Component, Documentation Aspect because the licensee failed to provide enough detail in the work package to ensure that the control room alarm was verified as functional during the post-maintenance testing following completion of the work activity (H.2(c)). Corrective actions included repair of the limit switch and correction of the operator rounds to verify the vault doors closed each shift.

The finding is determined to be more than minor because it is associated with the Mitigating Systems Cornerstone attribute of external factors, flood hazard, and affects the cornerstone objective of ensuring the availability and capability of systems that respond to initiating events to prevent undesirable consequences. 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 for the Mitigating Systems cornerstone because the finding is associated with the operability and availability of the 2D train of the

RHRSW mitigating system. The finding is of very low safety significance, Green, because the degraded flood protection measures did not result in the loss of operability or functionality of the 2D RHRSW system

Inspection Report# : [2008004](#) (pdf)

G

Significance: Sep 30, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Adequately Assess and Manage Risk Associated with Work on U1 SBO.

NRC inspectors identified a finding of very low safety significance and an associated NCV of 10 CFR 50.65(a) (4), "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," when the licensee failed to effectively evaluate the risk associated with work on the Unit 1 station blackout (SBO) diesel generator, which resulted in an unplanned risk condition for Unit 1 and Unit 2 without the appropriate risk management actions. Specifically, the Unit 2 SBO diesel generator was determined to be unavailable after inspectors found the oil level in the governor below the indicating sight glass level due to leakage from a loose connection. Concurrently, the Unit 1 SBO diesel generator was unavailable due to planned maintenance. When unavailability of the Unit 2 SBO diesel generator was factored into the on-line risk model with the Unit 1 SBO diesel generator unavailable, the risk profile changed from Green to Yellow. Since the Unit 2 SBO diesel generator was assumed to be available in the original risk evaluation, the underestimation of risk resulted in the station having no risk management actions in place as would have been required by procedure. Those actions include protecting pathways of safety-related equipment that could have a significant impact on the increase in risk, if unavailable. The inspectors also determined that the finding has a cross-cutting aspect in the area of Human Performance, Resources Component, Documentation Aspect because the licensee failed to provide timely and up-to-date procedures to check the engine governor oil sight glass level following the permanent modification to a different governor model that has an oil level sight glass (H.2(c)). Corrective actions included protecting the appropriate equipment and contacting mechanical maintenance to have the fitting tightened and the governor oil sump refilled to the proper level. The Operations Department initiated a process requiring a walkthrough verification of redundant equipment areas before removing equipment from service. Additionally, procedure revisions to operator rounds were made to include verification of sight glass level.

The finding is determined to be more than minor because the finding is based on incorrect assumptions that changed the outcome of the risk assessment and therefore crossed the risk threshold requiring additional actions to manage the risk. The inspectors evaluated this finding using the Appendix K, "Maintenance Risk Assessment and Risk Management Significance Determination Process," worksheets of IMC 0609 because the finding is a maintenance risk assessment issue. Flowchart 1, "Assessment of Risk Deficit," requires the inspectors to determine the risk deficit associated with this issue. This finding was determined to be of very low safety significance because the incremental core damage probability deficit was less than 1E 6.

Inspection Report# : [2008004](#) (pdf)

Barrier Integrity

G

Significance: Jun 30, 2008

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Exceeded 50 Degree Differential Temperature Limit of TS 3.4.9 when starting Recirculation Pump

A Non-Cited violation of Technical Specification 3.4.9, "RCS Pressure and Temperature (P/T) Limits," was identified on March 31, 2008 when operators did not establish effective controls to ensure compliance with the Technical specification when they started the 2A reactor coolant recirculation pump with temperature in the 2A loop more than 50°F below the bulk temperature in the reactor vessel represented by the 2B loop temperature. The failure to implement effective controls to prevent exceeding the Technical Specification limit was more than minor because it was associated with the Barrier Integrity Cornerstone attribute of Human Performance and affected the cornerstone objective by challenging the physical design barriers intended to maintain the functionality of the Reactor Coolant System. This finding was determined to be of very low safety significance because the plant conditions were

determined to be within the bounds of the existing analysis and therefore the issue did not result in degrading the reactor coolant system boundary. This finding has a cross-cutting aspect in the area of Human Performance for the Decision-Making component because the licensee failed to communicate the decisions and the basis for decisions to personnel who have a need to know the information in order to perform work safely, in a timely manner (H.1(c)). Specifically, planning decisions such as the compensatory actions for prompt restoration made during the dayshift for this repair were not effectively communicated to those individuals that were called upon to implement the plan in a safe and timely manner.

This finding was determined to be of very low safety significance because the plant conditions were determined to be within the bounds of the existing analysis and therefore the issue did not result in degrading the reactor coolant system boundary, in exceeding the Technical Specification Limit for any Reactor Coolant System Leakage, nor could it have likely affected other mitigation systems to result in a loss of their safety functions. This finding has a cross-cutting aspect in the area of Human Performance for the Decision-Making component because the licensee failed to communicate the decisions and the basis for decisions to personnel who have a need to know the information in order to perform work safely, in a timely manner (H.1(c)). Specifically, planning decisions such as the compensatory actions for prompt restoration made during the dayshift for this repair were not effectively communicated to those individuals that were called upon to implement the plan in a safe and timely manner.

Inspection Report# : [2008003](#) (*pdf*)

Emergency Preparedness

Occupational Radiation Safety

Significance:  Mar 31, 2009

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

FAILURE TO COMPLY WITH TECHNICAL SPECIFICATION AND RADIATION WORK PERMIT REQUIREMENTS DURING WORK IN A LOCKED HIGH RADIATION AREA

A self-revealed finding of very low safety significance and an associated Non Cited Violation (NCV) of Technical Specification 5.7.1 was identified by inspectors for the failure to comply with the requirements of the radiation work permit during work activities in the radwaste basement, an area controlled as a locked high radiation area. Specifically, on January 13, 2009, an equipment operator failed to inform the radiation protection staff prior to access into overhead areas above 7 feet. Consequently, the worker entered areas which had not been surveyed, and, therefore, the radiological conditions were unknown. As a result, the worker encountered radiation levels greater than those anticipated for the work activity. The licensee's corrective actions included counseling of the involved individual and conducting a standdown with the operations department to reinforce radiological requirements along with communication expectations. The licensee was also in the process of completing an apparent cause evaluation to formulate additional actions to prevent recurrence.

The finding was more than minor because it impacted the program and process attribute of the Occupational Radiation Safety Cornerstone and affected the cornerstone objective of ensuring adequate protection of worker health and safety from exposure to radiation, in that, access into high radiation areas whose radiological conditions were unknown placed the worker at risk for unnecessary radiation exposure. The finding was determined to be of very low safety significance because it was not an as-low-as-is-reasonably-achievable (ALARA) planning issue, there was no overexposure or substantial potential for an overexposure, and the licensee's ability to assess worker dose was not compromised. The finding involved a cross-cutting aspect in the area of Human Performance related to Work Practices, in that, radiation work permit (RWP) compliance for access into overhead areas was not effectively communicated to the worker and the worker failed to follow the RWPs (H.4(b)).

Inspection Report# : [2009002](#) (*pdf*)

Public Radiation Safety

Physical Protection

Although the NRC is actively overseeing the Security cornerstone, the Commission has decided that certain findings pertaining to security cornerstone will not be publicly available to ensure that potentially useful information is not provided to a possible adversary. Therefore, the [cover letters](#) to security inspection reports may be viewed.

Miscellaneous

Significance: N/A Aug 08, 2008

Identified By: NRC

Item Type: FIN Finding

PI&R Assessment

On the basis of the sample selected for review, the team concluded that implementation of the CAP was generally good. The licensee had a low threshold for identifying problems and entering them in the CAP. Items entered into the CAP were screened and prioritized in a timely manner using established criteria; were properly evaluated commensurate with their safety significance; and corrective actions were generally implemented in a timely manner, commensurate with the safety significance. The team noted that the licensee reviewed operating experience for applicability to station activities. Audits and self assessments were determined to be performed at an appropriate level to identify deficiencies. On the basis of licensee self-assessments and interviews conducted during the inspection, workers at the site expressed freedom to raise safety concerns. The team observed that some significant adverse trends in human performance and equipment clearances and tagging were not initially identified and aggressively addressed for effective results. Subsequent efforts were more effective.

Inspection Report# : [2008008](#) (*pdf*)

Last modified : May 28, 2009

Quad Cities 2

2Q/2009 Plant Inspection Findings

Initiating Events

Significance:  Dec 31, 2008

Identified By: NRC

Item Type: FIN Finding

EXPLOSION OF THE FDSgT VESTIBULE.

A self-revealed finding of very low safety significance was identified for inadequate procedures that resulted in an onsite explosion on October 27, 2008. Specifically, operating procedures for the floor drain surge tank did not include appropriate warnings, cautions, or notes to alert operators to potentially hazardous conditions or operating sequences that could result in localized elevated concentrations of methane gas. As a result, waste water transfer activities resulted in an accumulation of methane gas in the floor drain surge tank building vestibule that subsequently ignited, damaging the onsite structure and putting the station in an emergency plan Unusual Event. Corrective actions for the affected tank included purging the tank with nitrogen, repairing the installed tank ventilation, monitoring for methane gas buildup until the tank is cleaned, and processing the waste water stored in the tank. Restrictions on system operation are in place pending final procedure revisions.

The finding is more than minor because if left uncorrected this finding would become a more significant safety concern. In addition, it affected the Reactor Safety: Initiating Events Cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the Reactor Safety: Initiating Events Cornerstone attribute of protection against external factors relating to production and control of hazardous gasses. The finding is of very low safety significance (Green) because the finding does not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available. Additionally, the finding does not increase the likelihood of a fire affecting mitigating systems or a fire of significant duration. Inspectors determined that the finding had a cross-cutting aspect in the area of Problem Identification and Resolution. Specifically, the inspectors determined that the licensee was aware of industry events involving the anaerobic production of methane gas in radwaste systems and had opportunities to incorporate relevant industry operating experience into recent revisions of radwaste operating procedures, but failed to implement this operating experience into station processes, procedures, and training programs for radwaste operations (P.2 (b)). The failure to establish and implement effective radwaste operating procedures to prevent the production of combustible gasses is not an activity affecting quality subject to 10 CFR Part 50, Appendix B, Criterion V. Therefore, while a performance deficiency was identified, no violation of NRC regulatory requirements occurred.

Inspection Report# : [2008005](#) (*pdf*)

Mitigating Systems

Significance:  Jun 30, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

INADEQUATE PROCEDURAL GUIDANCE FOR SHUTDOWN AFTER OPERATING BASIS EARTHQUAKE

A finding of very low safety significance and associated Non-Cited Violation was identified by NRC inspectors for an inadequate procedure, QCOA 0010-09 "Earthquake." This procedure did not direct a shutdown in response to an earthquake event in excess of the operating basis earthquake threshold. 10 CFR 100 Appendix A, Section V(a)(2)

states, "If vibratory ground motion exceeding that of the Operating Basis Earthquake occurs, shutdown of the nuclear power plant will be required." Upon discovery, the licensee implemented immediate changes to QCOA 0010-09. This finding was more than minor because this performance deficiency challenged the Reactor Safety - Mitigating Systems Cornerstone attribute of procedure quality. The inspectors performed a Phase 1 SDP screening using inspection manual chapter (IMC) 0609, Attachment 4, Table 4a for the Mitigating Systems Cornerstone. All questions were answered "no" and the issue screened as Green, or very low safety significance. The inspectors determined that this finding did not have a cross-cutting aspect because this procedure has been in place since initial operation and this deficiency was determined to be a latent issue not readily identified through the procedure revision process.

Inspection Report# : [2009003](#) (pdf)

Significance:  Jun 30, 2009

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

1/2 EDGCWP FAILED TO SWAP FEEDS

A finding of very low safety significance and a Non-Cited Violation of Quad Cities Unit 2 Renewed License No. DPR-30 condition 3.B was self-revealed on April 10, 2009, when a previously unidentified blown fuse on a 1/2 emergency diesel generator (EDG) control power transfer circuit resulted in failure of the power supply for associated diesel generator cooling water pump to transfer from Unit 1 to Unit 2. The fuse had apparently failed on March 25, 2009, when operators attempted to replace a burned out light bulb resulting in the diesel being inoperable for Unit 2 for 17 days. Although operators had indications that a circuit problem existed, timely actions were not initiated to ensure the unit continued to operate in accordance with Technical Specifications. Immediate corrective actions were accomplished on April 11, 2009, with replacement of the fuse and verification of circuit operability. Inspectors determined this finding to be cross-cutting in the area of Problem Identification and Resolution for the corrective action component because station personnel failed to investigate the non-conforming condition as directed by station procedures to adequately assess the impact on system operability and did not meet procedural requirements for evaluating operability (P.1(c)).

The inspectors determined the finding was more than minor because the finding is associated with Mitigating Systems cornerstone attribute of equipment reliability and affected the cornerstone objective by impacting availability, reliability and capability of the Unit 2 emergency electrical supplies. Specifically, allowing the non-conforming condition on the 1/2 EDG to linger while performing maintenance activities on the Unit 2 EDG challenged the availability of emergency AC power to Unit 2. The inspectors reviewed this finding in accordance with IMC 0609, Appendix A, "Determining the Significance of Reactor Inspections Findings for At-Power Situations." The postulated accident where the 1/2 EDG would have failed its safety function is a loss of offsite power to both units followed by a loss of coolant accident on Unit 2. Significance Determination Phase 2 performed by the residents and validated by the regional senior risk analyst show risk significance much lower than 1×10^{-6} threshold and therefore Green.

Inspection Report# : [2009003](#) (pdf)

Significance:  Jun 30, 2009

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

TRIP OF UNIT 2 FUEL POOL COOLING WATER PUMPS DURING SCORPION PLATFORM REMOVAL

A finding of very low safety significance and Non-Cited Violation of 10 CFR 50.65(a)(4) was self-revealed on May 11, 2009, when the licensee staff failed to manage water level in the spent fuel pool and associated skimmer surge tanks resulting in the Unit 2 fuel pool cooling pumps tripping off while removing the Scorpion platform from the Unit 1 reactor cavity. Immediate corrective actions for this event included refilling the skimmer surge tank and restarting the fuel pool cooling pumps to restore alternate decay heat removal. The inspectors determined that the failure to take adequate action to manage the risk associated with a maintenance activity with a potential to affect a key shutdown safety function was a performance deficiency and a finding. Inspectors determined that the finding was cross-cutting in the area of Human Performance – Work Control for failure to coordinate work activities by incorporating actions to adequately address the need for work groups to communicate, coordinate and cooperate with each other during activities in which interdepartmental coordination is necessary to assure plant and human performance (H.3(b)).

The inspectors determined the finding was more than minor because the failure to implement the management actions resulted in the critical safety function being degraded and is associated with 10 CFR 50.65(a)(4) risk management. The inspectors performed a Phase 1 SDP evaluation and determined that the issue is Green because the Unit 1 pumps remained running with no issues during the event and plant operators were able to recover the Unit 2 cooling pumps before any discernable change in temperature occurred (answer to all questions of Manual Chapter 0609, Attachment 4, Table 4a, Mitigating Systems Cornerstone and Barrier Cornerstone were “no” and the issue screened as Green). Since the finding concerned risk management actions, the inspectors verified the finding was Green using Manual Chapter 0609, Appendix K flowcharts and validated that there was no change in risk thresholds as a result of the event.

Inspection Report# : [2009003](#) (pdf)

Significance:  Mar 31, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

BROKEN LATCH ON FIRE DOOR 145

Inspectors identified a Non-Cited Violation of License Condition 3.F, having very low safety significance for failure to ensure that Fire Door 145 could be positively latched. Section 2-8.4.4 of the National Fire Protection Association (NFPA) 80-1975, “Fire Doors and Windows,” required that closing mechanisms be adjusted to overcome the resistance of the latch mechanism so that positive latching is achieved on each door operation. As a result of the discovery of the broken latch, that prevented the fire door from positively latching, the licensee initiated an action request report (AR 864090), and established the immediate actions to return Fire Door 145 to service. The licensee declared the fire door inoperable, issued fire impairment No. 1612 and established an hourly watch. Repairs to the door were completed and the fire door was declared operable the same day.

The finding was determined to be more than minor because a lack of positive latching could result in the door opening during a fire, thereby allowing a fire to affect additional equipment important to safety in the exposed fire zone. Based on screening under IMC 0609, Appendix F, “Fire Protection Significance Determination Process,” the inspectors determined that a Phase 2 analysis was required. The inspectors determined that the change in core damage frequency associated with the finding was significantly less than 1×10^{-6} per year. As such, the finding was determined to be of very low safety significance (i.e., Green). This finding has a cross-cutting aspect in the area of Human Performance for the Resources component because the licensee did not provide adequate training to personnel. Specifically, as noted in the licensee’s corrective action document, annual training on fire barriers was inadequate in that equipment operators (EOs) did not consistently challenge fire doors in accordance with training (H.2(b)).

Inspection Report# : [2009002](#) (pdf)

Significance:  Mar 31, 2009

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

FAILURE TO FOLLOW WORK INSTRUCTIONS FOR 2A CORE SPRAY CHECK VALVE

A self-revealed finding of very low safety significance (Green) and Non-Cited Violation of Technical Specification 5.4.1.a was identified by inspectors on January 15, 2009, when the 2A core spray pump discharge check valve, 2-1402-8A, failed to close. Specifically, the valve failed to close because mechanics did not follow work instructions and ensure the valve was assembled as required. Corrective actions for this event included repair of the valve, briefings with the licensee staff, reinforcement with the operating staff on the differences between operability and post-maintenance testing requirements, and revision of the steps in the “model” work order and the operation’s department surveillance procedure to more clearly delineate the acceptance criteria.

The inspectors determined that the failure to follow the work instructions for the 2A core spray pump discharge check valve was more than minor because the non-conforming valve impacted the Mitigating Systems Cornerstone attribute of Equipment Performance to ensure the reliability and capability of the core spray system to respond to initiating events when returned to service. The inspectors concluded that the issue was of very low safety significance (Green) because the plant operators were able to manually perform the required function and thus maintain both functionality and operability of the system until the valve was repaired. The inspectors determined that failure to provide enough detail in the post-maintenance test acceptance criteria to ensure that the valve was able to perform as designed without operator assistance was a significant contributor to the valve’s subsequent return to service in a degraded condition,

and the inspectors concluded that this event is cross-cutting in Human Performance, Resources for failure to provide accurate procedures (H.2(c)).

Inspection Report# : [2009002](#) (pdf)

Significance:  Mar 31, 2009

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

FAILURE OF THE UNIT 2 EMERGENCY DIESEL GENERATOR COOLING WATER PUMP

A self-revealed finding of very low safety significance (Green) and NCV of 10 CFR 50, Appendix B, Criterion III, Design Control was identified by inspectors when the Unit 2 diesel generator cooling water pump failed on November 12, 2008, due to damage caused by inter-granular stress corrosion cracking (IGSCC). The licensee's staff failed to apply appropriate rigor during the design and procurement process for pump replacement parts resulting in installation of vendor-supplied components that were not suited to the application and operating methodology for the emergency diesel generator cooling water system. The pump was repaired and returned to service the next day. Additionally, the remaining pumps were started to demonstrate that they were functional at the time of Unit 2 pump failure.

The inspectors concluded that the failure to implement measures that assured the equipment was suitable for the process environment was of very low safety significance (Green) because only one pump of three subsystems was degraded to the point where operability and function was affected. Additionally, the licensee process did not validate the vendor's compliance with all procurement specifications, instead assuming that the vendor's communications were complete even though details of wear ring material changes were not included. Inspectors have determined that this behavior is cross-cutting in Human Performance, Decisionmaking, for failure to use conservative assumptions in communications with the vendor and ensuring all of the vendor supplied parts were appropriate to support the pump function (H.1(b)).

Inspection Report# : [2009002](#) (pdf)

Significance:  Oct 24, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Use of Non-Conservative Inputs and Methodologies in Calculating Terminal Voltages to Safety-Related MOV Motors During Design Basis Events

A finding of very low safety significance (Green) involving a NCV of 10 CFR Part 50, Appendix B, Criterion III, Design Control, was identified by the inspectors for the failure to evaluate the effect of lower transient voltages that would exist for safety injection actuated motor-operated valves (MOVs) prior to voltage recovery on the upstream 4Kv buses. Specifically, the licensee used non-conservative inputs and methodologies in calculating terminal voltages to safety-related MOV motors. The licensee entered the issue into their corrective action program and performed an operability review of all safety injection actuated valves to verify they had sufficient margin to operate when considering transient voltage conditions.

The finding was more than minor because it was similar to IMC 0612, Appendix E, Example 3.j, in that there was a reasonable doubt on the operability of several low pressure coolant injection valves that would have to operate at voltages as low as 60 percent of rating. The inspectors determined the finding was of very low safety significance because it was a design deficiency that did not result in actual loss of safety function. This finding has a cross-cutting aspect in the area of Problem Identification and Resolution, Operating Experience because the licensee did not adequately evaluate a similar issue in an NRC Information Notice. (P.2(a)).

Inspection Report# : [2008007](#) (pdf)

Significance:  Oct 24, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Calculations/Analyses and Testing for Thermal Overload Relays (TOLs) on Safety-Related MOVs

A finding of very low safety significance (Green) and associated NCV of 10 CFR Part 50, Appendix B, Criterion III,

“Design Control,” was identified by the inspectors for the failure to assure that thermal overload relays (TOLs) on safety-related motor-operated valve (MOV) circuits were sized properly and periodically tested. The licensee entered this issue into its corrective action program and was able to demonstrate operability, in that the TOLs would not prevent any MOVs from performing their safety function.

The finding was more than minor because it was similar to IMC 0612, Appendix E, Example 3.j, in that failing to assure that TOLs on safety-related MOV circuits were sized properly and periodically tested led to there being a reasonable doubt as to the operability of the affected safety-related MOVs. The issue was of very low safety significance because the inspectors determined it was a design deficiency that did not result in actual loss of safety function. This finding has a cross-cutting aspect in the area of Problem Identification and Resolution, Self-Assessment because the licensee incorrectly evaluated this issue as not being a concern during a self-assessment. (P.3(a)).

Inspection Report# : [2008007](#) (pdf)

Significance:  Oct 24, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Seismic Qualification of 250 VDC Batteries

A finding of very low safety significance (Green) and associated NCV of 10 CFR Part 50, Appendix B, Criterion III, “Design Control,” was identified by the inspectors for the failure to assure that 250VDC safety-related batteries were installed in accordance with their seismic qualification. The licensee entered this nonconformance into its corrective action program and initiated work orders to replace the intercell spacers with properly sized material. To establish a reasonable assurance of operability, the licensee reviewed seismic experience database reports from the Seismic Qualification Utility Group.

The finding was determined to be more than minor because the finding was conceptually similar to IMC 0612, Appendix E, Example 3a, in that rework (spacer replacement) was required to restore seismic qualification. The issue was of very low safety significance because the inspectors determined it was a qualification deficiency that did not result in actual loss of safety function. The inspectors determined there was no cross-cutting aspect associated with this finding.

Inspection Report# : [2008007](#) (pdf)

Significance:  Oct 24, 2008

Identified By: NRC

Item Type: FIN Finding

Inaccurate RCIC Instrument Setpoints

A finding of very low safety significance was identified by the inspectors for failure to accurately implement the design setpoint for reactor core isolation cooling turbine exhaust pressure switches 1(2)-1360-26A/B. The licensee entered this issue into its corrective action program and was able to demonstrate operability by determining that the setpoints would not be challenged for scenarios where reactor core isolation cooling was credited.

The finding was determined to be more than minor because the finding was conceptually similar to IMC 0612, Appendix E, Example 3a, in that rework (instrument recalibration) was required to restore conformance with the design. The issue was of very low safety significance because the inspectors determined it was a design deficiency that did not result in actual loss of safety function. This finding has a cross-cutting aspect in the area of Problem Identification and Resolution, Corrective Action Program because the licensee did not adequately evaluate the issue in 2004 such that it was properly classified and prioritized. (P.1(c))

Inspection Report# : [2008007](#) (pdf)

Significance:  Sep 30, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

2D Vault Door Work Order Instructions Not Followed

A self-revealing finding of very low safety significance and associated NCV of TS 5.4.1 was identified for failure to follow written work instructions resulting in a non-functional main control room alarm and degraded flood protection measures. Specifically, a contract electrician did not perform work instructions as written and lifted energized leads for the 2D residual heat removal service water (RHRSW) vault door limit switch without the appropriate work package documents as required by station procedures. This action resulted in an inoperable control room alarm that was not corrected for approximately three months. Further investigation revealed the licensee was performing a surveillance to verify the RHRSW vault doors closed once per day, contrary to the surveillance periodicity of once per shift credited in the licensee's flood protection analysis. The failure to follow the credited once-per-shift surveillance in combination with the non-functional supplemental control room alarm resulted in degraded flood protection measures associated with the 2D RHRSW vault. This finding has a cross-cutting aspect in the area of Human Performance, Resources Component, Documentation Aspect because the licensee failed to provide enough detail in the work package to ensure that the control room alarm was verified as functional during the post-maintenance testing following completion of the work activity (H.2(c)). Corrective actions included repair of the limit switch and correction of the operator rounds to verify the vault doors closed each shift.

The finding is determined to be more than minor because it is associated with the Mitigating Systems Cornerstone attribute of external factors, flood hazard, and affects the cornerstone objective of ensuring the availability and capability of systems that respond to initiating events to prevent undesirable consequences. 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 for the Mitigating Systems cornerstone because the finding is associated with the operability and availability of the 2D train of the RHRSW mitigating system. The finding is of very low safety significance, Green, because the degraded flood protection measures did not result in the loss of operability or functionality of the 2D RHRSW system

Inspection Report# : [2008004](#) (pdf)

Significance:  Sep 30, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Adequately Assess and Manage Risk Associated with Work on U1 SBO.

NRC inspectors identified a finding of very low safety significance and an associated NCV of 10 CFR 50.65(a) (4), "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," when the licensee failed to effectively evaluate the risk associated with work on the Unit 1 station blackout (SBO) diesel generator, which resulted in an unplanned risk condition for Unit 1 and Unit 2 without the appropriate risk management actions. Specifically, the Unit 2 SBO diesel generator was determined to be unavailable after inspectors found the oil level in the governor below the indicating sight glass level due to leakage from a loose connection. Concurrently, the Unit 1 SBO diesel generator was unavailable due to planned maintenance. When unavailability of the Unit 2 SBO diesel generator was factored into the on-line risk model with the Unit 1 SBO diesel generator unavailable, the risk profile changed from Green to Yellow. Since the Unit 2 SBO diesel generator was assumed to be available in the original risk evaluation, the underestimation of risk resulted in the station having no risk management actions in place as would have been required by procedure. Those actions include protecting pathways of safety-related equipment that could have a significant impact on the increase in risk, if unavailable. The inspectors also determined that the finding has a cross-cutting aspect in the area of Human Performance, Resources Component, Documentation Aspect because the licensee failed to provide timely and up-to-date procedures to check the engine governor oil sight glass level following the permanent modification to a different governor model that has an oil level sight glass (H.2(c)). Corrective actions included protecting the appropriate equipment and contacting mechanical maintenance to have the fitting tightened and the governor oil sump refilled to the proper level. The Operations Department initiated a process requiring a walkthrough verification of redundant equipment areas before removing equipment from service. Additionally, procedure revisions to operator rounds were made to include verification of sight glass level.

The finding is determined to be more than minor because the finding is based on incorrect assumptions that changed the outcome of the risk assessment and therefore crossed the risk threshold requiring additional actions to manage the risk. The inspectors evaluated this finding using the Appendix K, "Maintenance Risk Assessment and Risk Management Significance Determination Process," worksheets of IMC 0609 because the finding is a maintenance risk assessment issue. Flowchart 1, "Assessment of Risk Deficit," requires the inspectors to determine the risk deficit

associated with this issue. This finding was determined to be of very low safety significance because the incremental core damage probability deficit was less than $1E-6$.

Inspection Report# : [2008004](#) (pdf)

Barrier Integrity

Emergency Preparedness

Occupational Radiation Safety

Significance:  Mar 31, 2009

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

FAILURE TO COMPLY WITH TECHNICAL SPECIFICATION AND RADIATION WORK PERMIT REQUIREMENTS DURING WORK IN A LOCKED HIGH RADIATION AREA

A self-revealed finding of very low safety significance and an associated Non Cited Violation (NCV) of Technical Specification 5.7.1 was identified by inspectors for the failure to comply with the requirements of the radiation work permit during work activities in the radwaste basement, an area controlled as a locked high radiation area. Specifically, on January 13, 2009, an equipment operator failed to inform the radiation protection staff prior to access into overhead areas above 7 feet. Consequently, the worker entered areas which had not been surveyed, and, therefore, the radiological conditions were unknown. As a result, the worker encountered radiation levels greater than those anticipated for the work activity. The licensee's corrective actions included counseling of the involved individual and conducting a standdown with the operations department to reinforce radiological requirements along with communication expectations. The licensee was also in the process of completing an apparent cause evaluation to formulate additional actions to prevent recurrence.

The finding was more than minor because it impacted the program and process attribute of the Occupational Radiation Safety Cornerstone and affected the cornerstone objective of ensuring adequate protection of worker health and safety from exposure to radiation, in that, access into high radiation areas whose radiological conditions were unknown placed the worker at risk for unnecessary radiation exposure. The finding was determined to be of very low safety significance because it was not an as-low-as-is-reasonably-achievable (ALARA) planning issue, there was no overexposure or substantial potential for an overexposure, and the licensee's ability to assess worker dose was not compromised. The finding involved a cross-cutting aspect in the area of Human Performance related to Work Practices, in that, radiation work permit (RWP) compliance for access into overhead areas was not effectively communicated to the worker and the worker failed to follow the RWPs (H.4(b)).

Inspection Report# : [2009002](#) (pdf)

Public Radiation Safety

Physical Protection

Although the NRC is actively overseeing the Security cornerstone, the Commission has decided that certain findings pertaining to security cornerstone will not be publicly available to ensure that potentially useful information is not

provided to a possible adversary. Therefore, the [cover letters](#) to security inspection reports may be viewed.

Miscellaneous

Significance: N/A Aug 08, 2008

Identified By: NRC

Item Type: FIN Finding

PI&R Assessment

On the basis of the sample selected for review, the team concluded that implementation of the CAP was generally good. The licensee had a low threshold for identifying problems and entering them in the CAP. Items entered into the CAP were screened and prioritized in a timely manner using established criteria; were properly evaluated commensurate with their safety significance; and corrective actions were generally implemented in a timely manner, commensurate with the safety significance. The team noted that the licensee reviewed operating experience for applicability to station activities. Audits and self assessments were determined to be performed at an appropriate level to identify deficiencies. On the basis of licensee self-assessments and interviews conducted during the inspection, workers at the site expressed freedom to raise safety concerns. The team observed that some significant adverse trends in human performance and equipment clearances and tagging were not initially identified and aggressively addressed for effective results. Subsequent efforts were more effective.

Inspection Report# : [2008008](#) (*pdf*)

Last modified : August 31, 2009

Quad Cities 2

3Q/2009 Plant Inspection Findings

Initiating Events

Significance:  Dec 31, 2008

Identified By: NRC

Item Type: FIN Finding

EXPLOSION OF THE FDSgT VESTIBULE.

A self-revealed finding of very low safety significance was identified for inadequate procedures that resulted in an onsite explosion on October 27, 2008. Specifically, operating procedures for the floor drain surge tank did not include appropriate warnings, cautions, or notes to alert operators to potentially hazardous conditions or operating sequences that could result in localized elevated concentrations of methane gas. As a result, waste water transfer activities resulted in an accumulation of methane gas in the floor drain surge tank building vestibule that subsequently ignited, damaging the onsite structure and putting the station in an emergency plan Unusual Event. Corrective actions for the affected tank included purging the tank with nitrogen, repairing the installed tank ventilation, monitoring for methane gas buildup until the tank is cleaned, and processing the waste water stored in the tank. Restrictions on system operation are in place pending final procedure revisions.

The finding is more than minor because if left uncorrected this finding would become a more significant safety concern. In addition, it affected the Reactor Safety: Initiating Events Cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the Reactor Safety: Initiating Events Cornerstone attribute of protection against external factors relating to production and control of hazardous gasses. The finding is of very low safety significance (Green) because the finding does not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available. Additionally, the finding does not increase the likelihood of a fire affecting mitigating systems or a fire of significant duration. Inspectors determined that the finding had a cross-cutting aspect in the area of Problem Identification and Resolution. Specifically, the inspectors determined that the licensee was aware of industry events involving the anaerobic production of methane gas in radwaste systems and had opportunities to incorporate relevant industry operating experience into recent revisions of radwaste operating procedures, but failed to implement this operating experience into station processes, procedures, and training programs for radwaste operations (P.2 (b)). The failure to establish and implement effective radwaste operating procedures to prevent the production of combustible gasses is not an activity affecting quality subject to 10 CFR Part 50, Appendix B, Criterion V. Therefore, while a performance deficiency was identified, no violation of NRC regulatory requirements occurred.

Inspection Report# : [2008005](#) (*pdf*)

Mitigating Systems

Significance:  Sep 30, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE OF LICENSEE TO PROPERLY TRANSLATE TS OPERABLE-OPERABILITY

The inspectors identified a finding of very low safety significance and an NCV of 10 CFR 50 Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for the failure to provide a procedure appropriate to the circumstances for an activity affecting quality. Specifically, the licensee failed to properly translate the Technical Specification (TS) Operable-Operability definition into procedures that established operability of systems affected by a hazard barrier that had been disabled for maintenance. This resulted in the operators disabling an internal flooding barrier without

identifying that the affected systems were inoperable. Corrective action included immediate restoration of the barrier and the issue was entered into the licensee's corrective action program. Subsequently, the procedure was revised to require operators to identify the system as inoperable or employ appropriate compensatory measures to maintain operability when a flooding barrier is impaired.

This issue is more than minor because, if left uncorrected, it could become a more significant safety concern, in that the unit could continue to operate at power for longer than allowed by TS with more than one required emergency core cooling system (ECCS) system exposed to internal flooding from a single failure from a non-Class 1 system and challenging safe shutdown assumptions. The inspectors performed a Phase 1 SDP evaluation and answered "No" to all of the Mitigating Systems questions in IMC 0609, Attachment 4, Table 4a. The issue, therefore, screened as Green or very low safety significance. The incorrect procedural guidance was the principal contributor to the operator's failure to identify that the affected systems were inoperable, and the inspectors determined that the event is cross-cutting in Human Performance, Resources, Procedures (H.2(c)).

Inspection Report# : [2009004](#) (pdf)

Significance:  Sep 10, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Evaluate Lack of Water Spray System Piping

A finding of very low safety-significance and associated non-cited violation (NCV) of license condition 3.F for Units 1 and 2 was identified by the inspectors for the licensee's failure to evaluate the lack of supports for a water spray system. Specifically, the licensee failed to evaluate a deviation from fire protection standards for the lack of supports on two sections of water spray system piping. Upon discovery of the unsupported piping, the licensee entered the issues into their corrective action program and performed an evaluation of the piping which subsequently demonstrated acceptability.

The finding was determined to be more than minor because there was reasonable doubt on the acceptability of the unsupported piping. The issue was of very low safety-significance because the piping was subsequently determined to be acceptable. No cross-cutting aspects were associated with this finding because the finding was not representative of current performance. (Section 1R05.4.b(1))

Inspection Report# : [2009006](#) (pdf)

Significance:  Sep 10, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Provide Adequate Electrical Coordination for Control Circuit

A finding of very low safety-significance and NCV of 10 CFR Part 50, Appendix R, Section III.L.3 was identified by the inspectors for the licensee's failure to ensure that the alternate shutdown capability was independent from the fire area of concern. Specifically, the licensee failed to provide adequate electrical coordination of protective devices to ensure that postulated fire-induced electrical faults would have not resulted in the loss of post-fire alternative safe shutdown equipment, i.e., safe shutdown makeup pump. The licensee subsequently entered the issue into their corrective action program, revised the affected safe shutdown procedure, and replaced the affected circuit breakers to improve electrical coordination.

The finding was determined to be more than minor because the failure to ensure adequate electrical coordination between the fuses and the upstream breaker for the safe shutdown makeup pump control circuit could have impacted the capability of achieving and maintaining safe shutdown condition following a postulated fire in the cable spreading room or auxiliary electric equipment room. The issue was of very low safety-significance because there was a high degree of confidence that a fire would be controlled prior to cable damage resulting from credible fire scenarios. No cross-cutting aspects were associated with this finding because the finding was not representative of current performance.

Inspection Report# : [2009006](#) (pdf)

Significance:  Jun 30, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

INADEQUATE PROCEDURAL GUIDANCE FOR SHUTDOWN AFTER OPERATING BASIS EARTHQUAKE

A finding of very low safety significance and associated Non-Cited Violation was identified by NRC inspectors for an inadequate procedure, QCOA 0010-09 "Earthquake." This procedure did not direct a shutdown in response to an earthquake event in excess of the operating basis earthquake threshold. 10 CFR 100 Appendix A, Section V(a)(2) states, "If vibratory ground motion exceeding that of the Operating Basis Earthquake occurs, shutdown of the nuclear power plant will be required." Upon discovery, the licensee implemented immediate changes to QCOA 0010-09. This finding was more than minor because this performance deficiency challenged the Reactor Safety - Mitigating Systems Cornerstone attribute of procedure quality. The inspectors performed a Phase 1 SDP screening using inspection manual chapter (IMC) 0609, Attachment 4, Table 4a for the Mitigating Systems Cornerstone. All questions were answered "no" and the issue screened as Green, or very low safety significance. The inspectors determined that this finding did not have a cross-cutting aspect because this procedure has been in place since initial operation and this deficiency was determined to be a latent issue not readily identified through the procedure revision process.

Inspection Report# : [2009003](#) (*pdf*)

Significance:  Jun 30, 2009

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

1/2 EDGCWP FAILED TO SWAP FEEDS

A finding of very low safety significance and a Non-Cited Violation of Quad Cities Unit 2 Renewed License No. DPR-30 condition 3.B was self-revealed on April 10, 2009, when a previously unidentified blown fuse on a 1/2 emergency diesel generator (EDG) control power transfer circuit resulted in failure of the power supply for associated diesel generator cooling water pump to transfer from Unit 1 to Unit 2. The fuse had apparently failed on March 25, 2009, when operators attempted to replace a burned out light bulb resulting in the diesel being inoperable for Unit 2 for 17 days. Although operators had indications that a circuit problem existed, timely actions were not initiated to ensure the unit continued to operate in accordance with Technical Specifications. Immediate corrective actions were accomplished on April 11, 2009, with replacement of the fuse and verification of circuit operability. Inspectors determined this finding to be cross-cutting in the area of Problem Identification and Resolution for the corrective action component because station personnel failed to investigate the non-conforming condition as directed by station procedures to adequately assess the impact on system operability and did not meet procedural requirements for evaluating operability (P.1(c)).

The inspectors determined the finding was more than minor because the finding is associated with Mitigating Systems cornerstone attribute of equipment reliability and affected the cornerstone objective by impacting availability, reliability and capability of the Unit 2 emergency electrical supplies. Specifically, allowing the non-conforming condition on the 1/2 EDG to linger while performing maintenance activities on the Unit 2 EDG challenged the availability of emergency AC power to Unit 2. The inspectors reviewed this finding in accordance with IMC 0609, Appendix A, "Determining the Significance of Reactor Inspections Findings for At-Power Situations." The postulated accident where the 1/2 EDG would have failed its safety function is a loss of offsite power to both units followed by a loss of coolant accident on Unit 2. Significance Determination Phase 2 performed by the residents and validated by the regional senior risk analyst show risk significance much lower than 1×10^{-6} threshold and therefore Green.

Inspection Report# : [2009003](#) (*pdf*)

Significance:  Jun 30, 2009

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

TRIP OF UNIT 2 FUEL POOL COOLING WATER PUMPS DURING SCORPION PLATFORM REMOVAL

A finding of very low safety significance and Non-Cited Violation of 10 CFR 50.65(a)(4) was self-revealed on May 11, 2009, when the licensee staff failed to manage water level in the spent fuel pool and associated skimmer surge

tanks resulting in the Unit 2 fuel pool cooling pumps tripping off while removing the Scorpion platform from the Unit 1 reactor cavity. Immediate corrective actions for this event included refilling the skimmer surge tank and restarting the fuel pool cooling pumps to restore alternate decay heat removal. The inspectors determined that the failure to take adequate action to manage the risk associated with a maintenance activity with a potential to affect a key shutdown safety function was a performance deficiency and a finding. Inspectors determined that the finding was cross-cutting in the area of Human Performance – Work Control for failure to coordinate work activities by incorporating actions to adequately address the need for work groups to communicate, coordinate and cooperate with each other during activities in which interdepartmental coordination is necessary to assure plant and human performance (H.3(b)). The inspectors determined the finding was more than minor because the failure to implement the management actions resulted in the critical safety function being degraded and is associated with 10 CFR 50.65(a)(4) risk management. The inspectors performed a Phase 1 SDP evaluation and determined that the issue is Green because the Unit 1 pumps remained running with no issues during the event and plant operators were able to recover the Unit 2 cooling pumps before any discernable change in temperature occurred (answer to all questions of Manual Chapter 0609, Attachment 4, Table 4a, Mitigating Systems Cornerstone and Barrier Cornerstone were “no” and the issue screened as Green). Since the finding concerned risk management actions, the inspectors verified the finding was Green using Manual Chapter 0609, Appendix K flowcharts and validated that there was no change in risk thresholds as a result of the event.

Inspection Report# : [2009003](#) (pdf)

Significance:  Mar 31, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

BROKEN LATCH ON FIRE DOOR 145

Inspectors identified a Non-Cited Violation of License Condition 3.F, having very low safety significance for failure to ensure that Fire Door 145 could be positively latched. Section 2-8.4.4 of the National Fire Protection Association (NFPA) 80-1975, “Fire Doors and Windows,” required that closing mechanisms be adjusted to overcome the resistance of the latch mechanism so that positive latching is achieved on each door operation. As a result of the discovery of the broken latch, that prevented the fire door from positively latching, the licensee initiated an action request report (AR 864090), and established the immediate actions to return Fire Door 145 to service. The licensee declared the fire door inoperable, issued fire impairment No. 1612 and established an hourly watch. Repairs to the door were completed and the fire door was declared operable the same day.

The finding was determined to be more than minor because a lack of positive latching could result in the door opening during a fire, thereby allowing a fire to affect additional equipment important to safety in the exposed fire zone. Based on screening under IMC 0609, Appendix F, “Fire Protection Significance Determination Process,” the inspectors determined that a Phase 2 analysis was required. The inspectors determined that the change in core damage frequency associated with the finding was significantly less than 1×10^{-6} per year. As such, the finding was determined to be of very low safety significance (i.e., Green). This finding has a cross-cutting aspect in the area of Human Performance for the Resources component because the licensee did not provide adequate training to personnel. Specifically, as noted in the licensee’s corrective action document, annual training on fire barriers was inadequate in that equipment operators (EOs) did not consistently challenge fire doors in accordance with training (H.2(b)).

Inspection Report# : [2009002](#) (pdf)

Significance:  Mar 31, 2009

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

FAILURE TO FOLLOW WORK INSTRUCTIONS FOR 2A CORE SPRAY CHECK VALVE

A self-revealed finding of very low safety significance (Green) and Non-Cited Violation of Technical Specification 5.4.1.a was identified by inspectors on January 15, 2009, when the 2A core spray pump discharge check valve, 2-1402-8A, failed to close. Specifically, the valve failed to close because mechanics did not follow work instructions and ensure the valve was assembled as required. Corrective actions for this event included repair of the valve, briefings with the licensee staff, reinforcement with the operating staff on the differences between operability and post-maintenance testing requirements, and revision of the steps in the “model” work order and the operation’s department surveillance procedure to more clearly delineate the acceptance criteria.

The inspectors determined that the failure to follow the work instructions for the 2A core spray pump discharge check

valve was more than minor because the non-conforming valve impacted the Mitigating Systems Cornerstone attribute of Equipment Performance to ensure the reliability and capability of the core spray system to respond to initiating events when returned to service. The inspectors concluded that the issue was of very low safety significance (Green) because the plant operators were able to manually perform the required function and thus maintain both functionality and operability of the system until the valve was repaired. The inspectors determined that failure to provide enough detail in the post-maintenance test acceptance criteria to ensure that the valve was able to perform as designed without operator assistance was a significant contributor to the valve's subsequent return to service in a degraded condition, and the inspectors concluded that this event is cross-cutting in Human Performance, Resources for failure to provide accurate procedures (H.2(c)).

Inspection Report# : [2009002](#) (pdf)

Significance:  Mar 31, 2009

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

FAILURE OF THE UNIT 2 EMERGENCY DIESEL GENERATOR COOLING WATER PUMP

A self-revealed finding of very low safety significance (Green) and NCV of 10 CFR 50, Appendix B, Criterion III, Design Control was identified by inspectors when the Unit 2 diesel generator cooling water pump failed on November 12, 2008, due to damage caused by inter-granular stress corrosion cracking (IGSCC). The licensee's staff failed to apply appropriate rigor during the design and procurement process for pump replacement parts resulting in installation of vendor-supplied components that were not suited to the application and operating methodology for the emergency diesel generator cooling water system. The pump was repaired and returned to service the next day. Additionally, the remaining pumps were started to demonstrate that they were functional at the time of Unit 2 pump failure.

The inspectors concluded that the failure to implement measures that assured the equipment was suitable for the process environment was of very low safety significance (Green) because only one pump of three subsystems was degraded to the point where operability and function was affected. Additionally, the licensee process did not validate the vendor's compliance with all procurement specifications, instead assuming that the vendor's communications were complete even though details of wear ring material changes were not included. Inspectors have determined that this behavior is cross-cutting in Human Performance, Decisionmaking, for failure to use conservative assumptions in communications with the vendor and ensuring all of the vendor supplied parts were appropriate to support the pump function (H.1(b)).

Inspection Report# : [2009002](#) (pdf)

Significance:  Oct 24, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Use of Non-Conservative Inputs and Methodologies in Calculating Terminal Voltages to Safety-Related MOV Motors During Design Basis Events

A finding of very low safety significance (Green) involving a NCV of 10 CFR Part 50, Appendix B, Criterion III, Design Control, was identified by the inspectors for the failure to evaluate the effect of lower transient voltages that would exist for safety injection actuated motor-operated valves (MOVs) prior to voltage recovery on the upstream 4Kv buses. Specifically, the licensee used non-conservative inputs and methodologies in calculating terminal voltages to safety-related MOV motors. The licensee entered the issue into their corrective action program and performed an operability review of all safety injection actuated valves to verify they had sufficient margin to operate when considering transient voltage conditions.

The finding was more than minor because it was similar to IMC 0612, Appendix E, Example 3.j, in that there was a reasonable doubt on the operability of several low pressure coolant injection valves that would have to operate at voltages as low as 60 percent of rating. The inspectors determined the finding was of very low safety significance because it was a design deficiency that did not result in actual loss of safety function. This finding has a cross-cutting aspect in the area of Problem Identification and Resolution, Operating Experience because the licensee did not adequately evaluate a similar issue in an NRC Information Notice. (P.2(a)).

Inspection Report# : [2008007](#) (pdf)

Significance:  Oct 24, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Calculations/Analyses and Testing for Thermal Overload Relays (TOLs) on Safety-Related MOVs

A finding of very low safety significance (Green) and associated NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," was identified by the inspectors for the failure to assure that thermal overload relays (TOLs) on safety-related motor-operated valve (MOV) circuits were sized properly and periodically tested. The licensee entered this issue into its corrective action program and was able to demonstrate operability, in that the TOLs would not prevent any MOVs from performing their safety function.

The finding was more than minor because it was similar to IMC 0612, Appendix E, Example 3.j, in that failing to assure that TOLs on safety-related MOV circuits were sized properly and periodically tested led to there being a reasonable doubt as to the operability of the affected safety-related MOVs. The issue was of very low safety significance because the inspectors determined it was a design deficiency that did not result in actual loss of safety function. This finding has a cross-cutting aspect in the area of Problem Identification and Resolution, Self-Assessment because the licensee incorrectly evaluated this issue as not being a concern during a self-assessment. (P.3(a)).

Inspection Report# : [2008007](#) (pdf)

Significance:  Oct 24, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Seismic Qualification of 250 VDC Batteries

A finding of very low safety significance (Green) and associated NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," was identified by the inspectors for the failure to assure that 250VDC safety-related batteries were installed in accordance with their seismic qualification. The licensee entered this nonconformance into its corrective action program and initiated work orders to replace the intercell spacers with properly sized material. To establish a reasonable assurance of operability, the licensee reviewed seismic experience database reports from the Seismic Qualification Utility Group.

The finding was determined to be more than minor because the finding was conceptually similar to IMC 0612, Appendix E, Example 3a, in that rework (spacer replacement) was required to restore seismic qualification. The issue was of very low safety significance because the inspectors determined it was a qualification deficiency that did not result in actual loss of safety function. The inspectors determined there was no cross-cutting aspect associated with this finding.

Inspection Report# : [2008007](#) (pdf)

Significance:  Oct 24, 2008

Identified By: NRC

Item Type: FIN Finding

Inaccurate RCIC Instrument Setpoints

A finding of very low safety significance was identified by the inspectors for failure to accurately implement the design setpoint for reactor core isolation cooling turbine exhaust pressure switches 1(2)-1360-26A/B. The licensee entered this issue into its corrective action program and was able to demonstrate operability by determining that the setpoints would not be challenged for scenarios where reactor core isolation cooling was credited.

The finding was determined to be more than minor because the finding was conceptually similar to IMC 0612, Appendix E, Example 3a, in that rework (instrument recalibration) was required to restore conformance with the design. The issue was of very low safety significance because the inspectors determined it was a design deficiency that did not result in actual loss of safety function. This finding has a cross-cutting aspect in the area of Problem Identification and Resolution, Corrective Action Program because the licensee did not adequately evaluate the issue in 2004 such that it was properly classified and prioritized. (P.1(c))

Inspection Report# : [2008007](#) (pdf)

Barrier Integrity

Emergency Preparedness

Occupational Radiation Safety

Significance:  Mar 31, 2009

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

FAILURE TO COMPLY WITH TECHNICAL SPECIFICATION AND RADIATION WORK PERMIT REQUIREMENTS DURING WORK IN A LOCKED HIGH RADIATION AREA

A self-revealed finding of very low safety significance and an associated Non Cited Violation (NCV) of Technical Specification 5.7.1 was identified by inspectors for the failure to comply with the requirements of the radiation work permit during work activities in the radwaste basement, an area controlled as a locked high radiation area. Specifically, on January 13, 2009, an equipment operator failed to inform the radiation protection staff prior to access into overhead areas above 7 feet. Consequently, the worker entered areas which had not been surveyed, and, therefore, the radiological conditions were unknown. As a result, the worker encountered radiation levels greater than those anticipated for the work activity. The licensee's corrective actions included counseling of the involved individual and conducting a standdown with the operations department to reinforce radiological requirements along with communication expectations. The licensee was also in the process of completing an apparent cause evaluation to formulate additional actions to prevent recurrence.

The finding was more than minor because it impacted the program and process attribute of the Occupational Radiation Safety Cornerstone and affected the cornerstone objective of ensuring adequate protection of worker health and safety from exposure to radiation, in that, access into high radiation areas whose radiological conditions were unknown placed the worker at risk for unnecessary radiation exposure. The finding was determined to be of very low safety significance because it was not an as-low-as-is-reasonably-achievable (ALARA) planning issue, there was no overexposure or substantial potential for an overexposure, and the licensee's ability to assess worker dose was not compromised. The finding involved a cross-cutting aspect in the area of Human Performance related to Work Practices, in that, radiation work permit (RWP) compliance for access into overhead areas was not effectively communicated to the worker and the worker failed to follow the RWPs (H.4(b)).

Inspection Report# : [2009002](#) (*pdf*)

Public Radiation Safety

Physical Protection

Although the NRC is actively overseeing the Security cornerstone, the Commission has decided that certain findings pertaining to security cornerstone will not be publicly available to ensure that potentially useful information is not provided to a possible adversary. Therefore, the [cover letters](#) to security inspection reports may be viewed.

Miscellaneous

Last modified : December 10, 2009

Quad Cities 2

4Q/2009 Plant Inspection Findings

Initiating Events

Mitigating Systems

Significance:  Dec 31, 2009

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

TEMPERATURE INDICATING PROBE FOUND BROKEN IN THE UNIT 2 DIESEL GENERATOR COOLANT SYSTEM

A finding of very low safety significance and an 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 probe of the TI 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 performance deficiency was identified and corrected through procedure and policy revisions in February 2008.

Inspection Report# : [2009005](#) (*pdf*)

Significance:  Sep 30, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE OF LICENSEE TO PROPERLY TRANSLATE TS OPERABLE-OPERABILITY

The inspectors identified a finding of very low safety significance and an NCV of 10 CFR 50 Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” for the failure to provide a procedure appropriate to the circumstances for an activity affecting quality. Specifically, the licensee failed to properly translate the Technical Specification (TS) Operable-Operability definition into procedures that established operability of systems affected by a hazard barrier that had been disabled for maintenance. This resulted in the operators disabling an internal flooding barrier without identifying that the affected systems were inoperable. Corrective action included immediate restoration of the barrier and the issue was entered into the licensee’s corrective action program. Subsequently, the procedure was revised to require operators to identify the system as inoperable or employ appropriate compensatory measures to maintain operability when a flooding barrier is impaired.

This issue is more than minor because, if left uncorrected, it could become a more significant safety concern, in that the unit could continue to operate at power for longer than allowed by TS with more than one required emergency core cooling system (ECCS) system exposed to internal flooding from a single failure from a non-Class 1 system and challenging safe shutdown assumptions. The inspectors performed a Phase 1 SDP evaluation and answered “No” to all of the Mitigating Systems questions in IMC 0609, Attachment 4, Table 4a. The issue, therefore, screened as Green or very low safety significance. The incorrect procedural guidance was the principal contributor to the operator’s failure to identify that the affected systems were inoperable, and the inspectors determined that the event is cross-

cutting in Human Performance, Resources, Procedures (H.2(c)).

Inspection Report# : [2009004](#) (pdf)

Significance:  Sep 10, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Evaluate Lack of Water Spray System Piping

A finding of very low safety-significance and associated non-cited violation (NCV) of license condition 3.F for Units 1 and 2 was identified by the inspectors for the licensee's failure to evaluate the lack of supports for a water spray system. Specifically, the licensee failed to evaluate a deviation from fire protection standards for the lack of supports on two sections of water spray system piping. Upon discovery of the unsupported piping, the licensee entered the issues into their corrective action program and performed an evaluation of the piping which subsequently demonstrated acceptability.

The finding was determined to be more than minor because there was reasonable doubt on the acceptability of the unsupported piping. The issue was of very low safety-significance because the piping was subsequently determined to be acceptable. No cross-cutting aspects were associated with this finding because the finding was not representative of current performance. (Section 1R05.4.b(1))

Inspection Report# : [2009006](#) (pdf)

Significance:  Sep 10, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Provide Adequate Electrical Coordination for Control Circuit

A finding of very low safety-significance and NCV of 10 CFR Part 50, Appendix R, Section III.L.3 was identified by the inspectors for the licensee's failure to ensure that the alternate shutdown capability was independent from the fire area of concern. Specifically, the licensee failed to provide adequate electrical coordination of protective devices to ensure that postulated fire-induced electrical faults would have not resulted in the loss of post-fire alternative safe shutdown equipment, i.e., safe shutdown makeup pump. The licensee subsequently entered the issue into their corrective action program, revised the affected safe shutdown procedure, and replaced the affected circuit breakers to improve electrical coordination.

The finding was determined to be more than minor because the failure to ensure adequate electrical coordination between the fuses and the upstream breaker for the safe shutdown makeup pump control circuit could have impacted the capability of achieving and maintaining safe shutdown condition following a postulated fire in the cable spreading room or auxiliary electric equipment room. The issue was of very low safety-significance because there was a high degree of confidence that a fire would be controlled prior to cable damage resulting from credible fire scenarios. No cross-cutting aspects were associated with this finding because the finding was not representative of current performance.

Inspection Report# : [2009006](#) (pdf)

Significance:  Jun 30, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

INADEQUATE PROCEDURAL GUIDANCE FOR SHUTDOWN AFTER OPERATING BASIS EARTHQUAKE

A finding of very low safety significance and associated Non-Cited Violation was identified by NRC inspectors for an inadequate procedure, QCOA 0010-09 "Earthquake." This procedure did not direct a shutdown in response to an earthquake event in excess of the operating basis earthquake threshold. 10 CFR 100 Appendix A, Section V(a)(2) states, "If vibratory ground motion exceeding that of the Operating Basis Earthquake occurs, shutdown of the nuclear power plant will be required." Upon discovery, the licensee implemented immediate changes to QCOA 0010-09.

This finding was more than minor because this performance deficiency challenged the Reactor Safety - Mitigating Systems Cornerstone attribute of procedure quality. The inspectors performed a Phase 1 SDP screening using inspection manual chapter (IMC) 0609, Attachment 4, Table 4a for the Mitigating Systems Cornerstone. All questions were answered “no” and the issue screened as Green, or very low safety significance. The inspectors determined that this finding did not have a cross-cutting aspect because this procedure has been in place since initial operation and this deficiency was determined to be a latent issue not readily identified through the procedure revision process.

Inspection Report# : [2009003](#) (pdf)

Significance:  Jun 30, 2009

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

1/2 EDGCWP FAILED TO SWAP FEEDS

A finding of very low safety significance and a Non-Cited Violation of Quad Cities Unit 2 Renewed License No. DPR-30 condition 3.B was self-revealed on April 10, 2009, when a previously unidentified blown fuse on a 1/2 emergency diesel generator (EDG) control power transfer circuit resulted in failure of the power supply for associated diesel generator cooling water pump to transfer from Unit 1 to Unit 2. The fuse had apparently failed on March 25, 2009, when operators attempted to replace a burned out light bulb resulting in the diesel being inoperable for Unit 2 for 17 days. Although operators had indications that a circuit problem existed, timely actions were not initiated to ensure the unit continued to operate in accordance with Technical Specifications. Immediate corrective actions were accomplished on April 11, 2009, with replacement of the fuse and verification of circuit operability. Inspectors determined this finding to be cross-cutting in the area of Problem Identification and Resolution for the corrective action component because station personnel failed to investigate the non-conforming condition as directed by station procedures to adequately assess the impact on system operability and did not meet procedural requirements for evaluating operability (P.1(c)).

The inspectors determined the finding was more than minor because the finding is associated with Mitigating Systems cornerstone attribute of equipment reliability and affected the cornerstone objective by impacting availability, reliability and capability of the Unit 2 emergency electrical supplies. Specifically, allowing the non-conforming condition on the 1/2 EDG to linger while performing maintenance activities on the Unit 2 EDG challenged the availability of emergency AC power to Unit 2. The inspectors reviewed this finding in accordance with IMC 0609, Appendix A, “Determining the Significance of Reactor Inspections Findings for At-Power Situations.” The postulated accident where the 1/2 EDG would have failed its safety function is a loss of offsite power to both units followed by a loss of coolant accident on Unit 2. Significance Determination Phase 2 performed by the residents and validated by the regional senior risk analyst show risk significance much lower than 1×10^{-6} threshold and therefore Green.

Inspection Report# : [2009003](#) (pdf)

Significance:  Jun 30, 2009

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

TRIP OF UNIT 2 FUEL POOL COOLING WATER PUMPS DURING SCORPION PLATFORM REMOVAL

A finding of very low safety significance and Non-Cited Violation of 10 CFR 50.65(a)(4) was self-revealed on May 11, 2009, when the licensee staff failed to manage water level in the spent fuel pool and associated skimmer surge tanks resulting in the Unit 2 fuel pool cooling pumps tripping off while removing the Scorpion platform from the Unit 1 reactor cavity. Immediate corrective actions for this event included refilling the skimmer surge tank and restarting the fuel pool cooling pumps to restore alternate decay heat removal. The inspectors determined that the failure to take adequate action to manage the risk associated with a maintenance activity with a potential to affect a key shutdown safety function was a performance deficiency and a finding. Inspectors determined that the finding was cross-cutting in the area of Human Performance – Work Control for failure to coordinate work activities by incorporating actions to adequately address the need for work groups to communicate, coordinate and cooperate with each other during activities in which interdepartmental coordination is necessary to assure plant and human performance (H.3(b)).

The inspectors determined the finding was more than minor because the failure to implement the management actions resulted in the critical safety function being degraded and is associated with 10 CFR 50.65(a)(4) risk management.

The inspectors performed a Phase 1 SDP evaluation and determined that the issue is Green because the Unit 1 pumps

remained running with no issues during the event and plant operators were able to recover the Unit 2 cooling pumps before any discernable change in temperature occurred (answer to all questions of Manual Chapter 0609, Attachment 4, Table 4a, Mitigating Systems Cornerstone and Barrier Cornerstone were “no” and the issue screened as Green). Since the finding concerned risk management actions, the inspectors verified the finding was Green using Manual Chapter 0609, Appendix K flowcharts and validated that there was no change in risk thresholds as a result of the event.

Inspection Report# : [2009003](#) (pdf)

Significance:  Mar 31, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

BROKEN LATCH ON FIRE DOOR 145

Inspectors identified a Non-Cited Violation of License Condition 3.F, having very low safety significance for failure to ensure that Fire Door 145 could be positively latched. Section 2-8.4.4 of the National Fire Protection Association (NFPA) 80-1975, “Fire Doors and Windows,” required that closing mechanisms be adjusted to overcome the resistance of the latch mechanism so that positive latching is achieved on each door operation. As a result of the discovery of the broken latch, that prevented the fire door from positively latching, the licensee initiated an action request report (AR 864090), and established the immediate actions to return Fire Door 145 to service. The licensee declared the fire door inoperable, issued fire impairment No. 1612 and established an hourly watch. Repairs to the door were completed and the fire door was declared operable the same day.

The finding was determined to be more than minor because a lack of positive latching could result in the door opening during a fire, thereby allowing a fire to affect additional equipment important to safety in the exposed fire zone. Based on screening under IMC 0609, Appendix F, “Fire Protection Significance Determination Process,” the inspectors determined that a Phase 2 analysis was required. The inspectors determined that the change in core damage frequency associated with the finding was significantly less than 1×10^{-6} per year. As such, the finding was determined to be of very low safety significance (i.e., Green). This finding has a cross-cutting aspect in the area of Human Performance for the Resources component because the licensee did not provide adequate training to personnel. Specifically, as noted in the licensee’s corrective action document, annual training on fire barriers was inadequate in that equipment operators (EOs) did not consistently challenge fire doors in accordance with training (H.2(b)).

Inspection Report# : [2009002](#) (pdf)

Significance:  Mar 31, 2009

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

FAILURE TO FOLLOW WORK INSTRUCTIONS FOR 2A CORE SPRAY CHECK VALVE

A self-revealed finding of very low safety significance (Green) and Non-Cited Violation of Technical Specification 5.4.1.a was identified by inspectors on January 15, 2009, when the 2A core spray pump discharge check valve, 2-1402-8A, failed to close. Specifically, the valve failed to close because mechanics did not follow work instructions and ensure the valve was assembled as required. Corrective actions for this event included repair of the valve, briefings with the licensee staff, reinforcement with the operating staff on the differences between operability and post-maintenance testing requirements, and revision of the steps in the “model” work order and the operation’s department surveillance procedure to more clearly delineate the acceptance criteria.

The inspectors determined that the failure to follow the work instructions for the 2A core spray pump discharge check valve was more than minor because the non-conforming valve impacted the Mitigating Systems Cornerstone attribute of Equipment Performance to ensure the reliability and capability of the core spray system to respond to initiating events when returned to service. The inspectors concluded that the issue was of very low safety significance (Green) because the plant operators were able to manually perform the required function and thus maintain both functionality and operability of the system until the valve was repaired. The inspectors determined that failure to provide enough detail in the post-maintenance test acceptance criteria to ensure that the valve was able to perform as designed without operator assistance was a significant contributor to the valve’s subsequent return to service in a degraded condition, and the inspectors concluded that this event is cross-cutting in Human Performance, Resources for failure to provide accurate procedures (H.2(c)).

Inspection Report# : [2009002](#) (pdf)

Significance: **G** Mar 31, 2009

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

FAILURE OF THE UNIT 2 EMERGENCY DIESEL GENERATOR COOLING WATER PUMP

A self-revealed finding of very low safety significance (Green) and NCV of 10 CFR 50, Appendix B, Criterion III, Design Control was identified by inspectors when the Unit 2 diesel generator cooling water pump failed on November 12, 2008, due to damage caused by inter-granular stress corrosion cracking (IGSCC). The licensee's staff failed to apply appropriate rigor during the design and procurement process for pump replacement parts resulting in installation of vendor-supplied components that were not suited to the application and operating methodology for the emergency diesel generator cooling water system. The pump was repaired and returned to service the next day. Additionally, the remaining pumps were started to demonstrate that they were functional at the time of Unit 2 pump failure.

The inspectors concluded that the failure to implement measures that assured the equipment was suitable for the process environment was of very low safety significance (Green) because only one pump of three subsystems was degraded to the point where operability and function was affected. Additionally, the licensee process did not validate the vendor's compliance with all procurement specifications, instead assuming that the vendor's communications were complete even though details of wear ring material changes were not included. Inspectors have determined that this behavior is cross-cutting in Human Performance, Decisionmaking, for failure to use conservative assumptions in communications with the vendor and ensuring all of the vendor supplied parts were appropriate to support the pump function (H.1(b)).

Inspection Report# : [2009002](#) (*pdf*)

Barrier Integrity

Significance: **G** Dec 31, 2009

Identified By: Self-Revealing

Item Type: FIN Finding

DARLEY PUMP LEAKING GASOLINE FROM THE FUEL PUMP

A finding of very low safety significance was self-revealed for 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, "Flood Emergency Procedure." 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 a program owner of the pump and support equipment.

This issue was more than minor because it was associated with the Structures, Systems, and Component (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.

Inspection Report# : [2009005](#) (*pdf*)

Emergency Preparedness

Occupational Radiation Safety

Significance:  Mar 31, 2009

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

FAILURE TO COMPLY WITH TECHNICAL SPECIFICATION AND RADIATION WORK PERMIT REQUIREMENTS DURING WORK IN A LOCKED HIGH RADIATION AREA

A self-revealed finding of very low safety significance and an associated Non Cited Violation (NCV) of Technical Specification 5.7.1 was identified by inspectors for the failure to comply with the requirements of the radiation work permit during work activities in the radwaste basement, an area controlled as a locked high radiation area. Specifically, on January 13, 2009, an equipment operator failed to inform the radiation protection staff prior to access into overhead areas above 7 feet. Consequently, the worker entered areas which had not been surveyed, and, therefore, the radiological conditions were unknown. As a result, the worker encountered radiation levels greater than those anticipated for the work activity. The licensee's corrective actions included counseling of the involved individual and conducting a standdown with the operations department to reinforce radiological requirements along with communication expectations. The licensee was also in the process of completing an apparent cause evaluation to formulate additional actions to prevent recurrence.

The finding was more than minor because it impacted the program and process attribute of the Occupational Radiation Safety Cornerstone and affected the cornerstone objective of ensuring adequate protection of worker health and safety from exposure to radiation, in that, access into high radiation areas whose radiological conditions were unknown placed the worker at risk for unnecessary radiation exposure. The finding was determined to be of very low safety significance because it was not an as-low-as-is-reasonably-achievable (ALARA) planning issue, there was no overexposure or substantial potential for an overexposure, and the licensee's ability to assess worker dose was not compromised. The finding involved a cross-cutting aspect in the area of Human Performance related to Work Practices, in that, radiation work permit (RWP) compliance for access into overhead areas was not effectively communicated to the worker and the worker failed to follow the RWPs (H.4(b)).

Inspection Report# : [2009002](#) (*pdf*)

Public Radiation Safety

Physical Protection

Although the NRC is actively overseeing the Security cornerstone, the Commission has decided that certain findings pertaining to security cornerstone will not be publicly available to ensure that potentially useful information is not provided to a possible adversary. Therefore, the [cover letters](#) to security inspection reports may be viewed.

Miscellaneous

Last modified : March 01, 2010

Quad Cities 2

1Q/2010 Plant Inspection Findings

Initiating Events

Mitigating Systems

Significance:  Dec 31, 2009

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

TEMPERATURE INDICATING PROBE FOUND BROKEN IN THE UNIT 2 DIESEL GENERATOR COOLANT SYSTEM

A finding of very low safety significance and an 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 probe of the TI 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 performance deficiency was identified and corrected through procedure and policy revisions in February 2008.

Inspection Report# : [2009005](#) (*pdf*)

Significance:  Sep 30, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE OF LICENSEE TO PROPERLY TRANSLATE TS OPERABLE-OPERABILITY

The inspectors identified a finding of very low safety significance and an NCV of 10 CFR 50 Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” for the failure to provide a procedure appropriate to the circumstances for an activity affecting quality. Specifically, the licensee failed to properly translate the Technical Specification (TS) Operable-Operability definition into procedures that established operability of systems affected by a hazard barrier that had been disabled for maintenance. This resulted in the operators disabling an internal flooding barrier without identifying that the affected systems were inoperable. Corrective action included immediate restoration of the barrier and the issue was entered into the licensee’s corrective action program. Subsequently, the procedure was revised to require operators to identify the system as inoperable or employ appropriate compensatory measures to maintain operability when a flooding barrier is impaired.

This issue is more than minor because, if left uncorrected, it could become a more significant safety concern, in that the unit could continue to operate at power for longer than allowed by TS with more than one required emergency core cooling system (ECCS) system exposed to internal flooding from a single failure from a non-Class 1 system and challenging safe shutdown assumptions. The inspectors performed a Phase 1 SDP evaluation and answered “No” to all of the Mitigating Systems questions in IMC 0609, Attachment 4, Table 4a. The issue, therefore, screened as Green or very low safety significance. The incorrect procedural guidance was the principal contributor to the operator’s failure to identify that the affected systems were inoperable, and the inspectors determined that the event is cross-

cutting in Human Performance, Resources, Procedures (H.2(c)).

Inspection Report# : [2009004](#) (pdf)

Significance:  Sep 10, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Evaluate Lack of Water Spray System Piping

A finding of very low safety-significance and associated non-cited violation (NCV) of license condition 3.F for Units 1 and 2 was identified by the inspectors for the licensee's failure to evaluate the lack of supports for a water spray system. Specifically, the licensee failed to evaluate a deviation from fire protection standards for the lack of supports on two sections of water spray system piping. Upon discovery of the unsupported piping, the licensee entered the issues into their corrective action program and performed an evaluation of the piping which subsequently demonstrated acceptability.

The finding was determined to be more than minor because there was reasonable doubt on the acceptability of the unsupported piping. The issue was of very low safety-significance because the piping was subsequently determined to be acceptable. No cross-cutting aspects were associated with this finding because the finding was not representative of current performance. (Section 1R05.4.b(1))

Inspection Report# : [2009006](#) (pdf)

Significance:  Sep 10, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Provide Adequate Electrical Coordination for Control Circuit

A finding of very low safety-significance and NCV of 10 CFR Part 50, Appendix R, Section III.L.3 was identified by the inspectors for the licensee's failure to ensure that the alternate shutdown capability was independent from the fire area of concern. Specifically, the licensee failed to provide adequate electrical coordination of protective devices to ensure that postulated fire-induced electrical faults would have not resulted in the loss of post-fire alternative safe shutdown equipment, i.e., safe shutdown makeup pump. The licensee subsequently entered the issue into their corrective action program, revised the affected safe shutdown procedure, and replaced the affected circuit breakers to improve electrical coordination.

The finding was determined to be more than minor because the failure to ensure adequate electrical coordination between the fuses and the upstream breaker for the safe shutdown makeup pump control circuit could have impacted the capability of achieving and maintaining safe shutdown condition following a postulated fire in the cable spreading room or auxiliary electric equipment room. The issue was of very low safety-significance because there was a high degree of confidence that a fire would be controlled prior to cable damage resulting from credible fire scenarios. No cross-cutting aspects were associated with this finding because the finding was not representative of current performance.

Inspection Report# : [2009006](#) (pdf)

Significance:  Jun 30, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

INADEQUATE PROCEDURAL GUIDANCE FOR SHUTDOWN AFTER OPERATING BASIS EARTHQUAKE

A finding of very low safety significance and associated Non-Cited Violation was identified by NRC inspectors for an inadequate procedure, QCOA 0010-09 "Earthquake." This procedure did not direct a shutdown in response to an earthquake event in excess of the operating basis earthquake threshold. 10 CFR 100 Appendix A, Section V(a)(2) states, "If vibratory ground motion exceeding that of the Operating Basis Earthquake occurs, shutdown of the nuclear power plant will be required." Upon discovery, the licensee implemented immediate changes to QCOA 0010-09.

This finding was more than minor because this performance deficiency challenged the Reactor Safety - Mitigating Systems Cornerstone attribute of procedure quality. The inspectors performed a Phase 1 SDP screening using inspection manual chapter (IMC) 0609, Attachment 4, Table 4a for the Mitigating Systems Cornerstone. All questions were answered “no” and the issue screened as Green, or very low safety significance. The inspectors determined that this finding did not have a cross-cutting aspect because this procedure has been in place since initial operation and this deficiency was determined to be a latent issue not readily identified through the procedure revision process.

Inspection Report# : [2009003](#) (pdf)

Significance:  Jun 30, 2009

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

1/2 EDGCWP FAILED TO SWAP FEEDS

A finding of very low safety significance and a Non-Cited Violation of Quad Cities Unit 2 Renewed License No. DPR-30 condition 3.B was self-revealed on April 10, 2009, when a previously unidentified blown fuse on a 1/2 emergency diesel generator (EDG) control power transfer circuit resulted in failure of the power supply for associated diesel generator cooling water pump to transfer from Unit 1 to Unit 2. The fuse had apparently failed on March 25, 2009, when operators attempted to replace a burned out light bulb resulting in the diesel being inoperable for Unit 2 for 17 days. Although operators had indications that a circuit problem existed, timely actions were not initiated to ensure the unit continued to operate in accordance with Technical Specifications. Immediate corrective actions were accomplished on April 11, 2009, with replacement of the fuse and verification of circuit operability. Inspectors determined this finding to be cross-cutting in the area of Problem Identification and Resolution for the corrective action component because station personnel failed to investigate the non-conforming condition as directed by station procedures to adequately assess the impact on system operability and did not meet procedural requirements for evaluating operability (P.1(c)).

The inspectors determined the finding was more than minor because the finding is associated with Mitigating Systems cornerstone attribute of equipment reliability and affected the cornerstone objective by impacting availability, reliability and capability of the Unit 2 emergency electrical supplies. Specifically, allowing the non-conforming condition on the 1/2 EDG to linger while performing maintenance activities on the Unit 2 EDG challenged the availability of emergency AC power to Unit 2. The inspectors reviewed this finding in accordance with IMC 0609, Appendix A, “Determining the Significance of Reactor Inspections Findings for At-Power Situations.” The postulated accident where the 1/2 EDG would have failed its safety function is a loss of offsite power to both units followed by a loss of coolant accident on Unit 2. Significance Determination Phase 2 performed by the residents and validated by the regional senior risk analyst show risk significance much lower than 1×10^{-6} threshold and therefore Green.

Inspection Report# : [2009003](#) (pdf)

Significance:  Jun 30, 2009

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

TRIP OF UNIT 2 FUEL POOL COOLING WATER PUMPS DURING SCORPION PLATFORM REMOVAL

A finding of very low safety significance and Non-Cited Violation of 10 CFR 50.65(a)(4) was self-revealed on May 11, 2009, when the licensee staff failed to manage water level in the spent fuel pool and associated skimmer surge tanks resulting in the Unit 2 fuel pool cooling pumps tripping off while removing the Scorpion platform from the Unit 1 reactor cavity. Immediate corrective actions for this event included refilling the skimmer surge tank and restarting the fuel pool cooling pumps to restore alternate decay heat removal. The inspectors determined that the failure to take adequate action to manage the risk associated with a maintenance activity with a potential to affect a key shutdown safety function was a performance deficiency and a finding. Inspectors determined that the finding was cross-cutting in the area of Human Performance – Work Control for failure to coordinate work activities by incorporating actions to adequately address the need for work groups to communicate, coordinate and cooperate with each other during activities in which interdepartmental coordination is necessary to assure plant and human performance (H.3(b)).

The inspectors determined the finding was more than minor because the failure to implement the management actions resulted in the critical safety function being degraded and is associated with 10 CFR 50.65(a)(4) risk management.

The inspectors performed a Phase 1 SDP evaluation and determined that the issue is Green because the Unit 1 pumps

remained running with no issues during the event and plant operators were able to recover the Unit 2 cooling pumps before any discernable change in temperature occurred (answer to all questions of Manual Chapter 0609, Attachment 4, Table 4a, Mitigating Systems Cornerstone and Barrier Cornerstone were “no” and the issue screened as Green). Since the finding concerned risk management actions, the inspectors verified the finding was Green using Manual Chapter 0609, Appendix K flowcharts and validated that there was no change in risk thresholds as a result of the event.

Inspection Report# : [2009003](#) (*pdf*)

Barrier Integrity

Significance:  Dec 31, 2009

Identified By: Self-Revealing

Item Type: FIN Finding

DARLEY PUMP LEAKING GASOLINE FROM THE FUEL PUMP

A finding of very low safety significance was self-revealed for 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, “Flood Emergency Procedure.” 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 a program owner of the pump and support equipment.

This issue was more than minor because it was associated with the Structures, Systems, and Component (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.

Inspection Report# : [2009005](#) (*pdf*)

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Physical Protection

Although the NRC is actively overseeing the Security cornerstone, the Commission has decided that certain findings pertaining to security cornerstone will not be publicly available to ensure that potentially useful information is not provided to a possible adversary. Therefore, the [cover letters](#) to security inspection reports may be viewed.

Miscellaneous

Last modified : May 26, 2010

Quad Cities 2

2Q/2010 Plant Inspection Findings

Initiating Events

Mitigating Systems

Significance:  Jun 30, 2010

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

PCIS RELAY COMMON NEUTRAL BROKEN

A self revealed finding of very low safety significance and a NCV of Technical Specification (TS) 5.4.1 was identified on April 8, 2010, when a Unit 2 Group III containment isolation signal was received during replacement of a primary containment isolation system (PCIS) relay as a result of a disconnected common neutral wire. Immediate corrective actions for this event included restoration of the reactor water cleanup system and rewiring for the PCIS relay to the proper configuration. The inspectors determined that the licensee's failure to identify and provide instructions to mitigate the common neutral during the work planning process was a performance deficiency. The inspectors determined that this finding was cross cutting in the area of Human Performance, Work Control, because the licensee failed to assess the impact of changes to the work scope during the maintenance activity when plant operating conditions had changed (H.3(b)).

The inspectors determined the finding was more than minor because the performance deficiency impacted the Mitigating Systems Cornerstone attribute of Configuration Control for Operating Equipment Lineup to ensure the availability, reliability and capability of safety systems to respond to initiating events to prevent undesirable consequences. The inspectors performed a Phase 1 SDP evaluation. Using IMC 0609, Attachment 4, Table 4a, Mitigating Systems Cornerstone, all questions were answered "No," and this finding screened as Green, or having a very low safety significance.

Inspection Report# : [2010003](#) (*pdf*)

Significance:  Jun 30, 2010

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

MODE CHANGE WITHOUT REQUIRED RPS INSTRUMENT

A self revealed finding of very low safety significance and a NCV of TS 3.0.4 was identified on April 14, 2010, when operators changed operating modes from MODE 2 to MODE 1 without having all required channels of the reactor protection system (RPS) turbine condenser vacuum low scram function available prior to entering MODE 1. Immediate corrective actions for this event included restoration of the RPS channel. The inspectors determined that performing a MODE change from MODE 2 to MODE 1, without meeting the conditions of the limiting condition for operation (LCO) 3.0.4 or ensuring all required channels of the RPS turbine condenser vacuum low scram function were available prior to entering MODE 1, was a performance deficiency. The inspectors determined that this finding was cross cutting in the area of Problem Identification and Resolution Evaluation, because the licensee failed to properly classify, prioritize, and evaluate the RPS functional operability of the degraded condenser vacuum indication (P.1(c)).

The inspectors determined the finding was more than minor because the performance deficiency impacted the Mitigating Systems Cornerstone attribute of Configuration Control for Operating Equipment Lineup to ensure the availability, reliability, and capability of safety systems to respond to initiating events to prevent undesirable consequences. The inspectors performed a Phase 1 SDP evaluation. Using IMC 0609, Attachment 4, Table 4a, Mitigating Systems Cornerstone, all questions were answered "No," and this finding screened as Green, or having a very low safety significance.

Significance:  Dec 31, 2009

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

TEMPERATURE INDICATING PROBE FOUND BROKEN IN THE UNIT 2 DIESEL GENERATOR COOLANT SYSTEM

A finding of very low safety significance and an 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 probe of the TI 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 performance deficiency was identified and corrected through procedure and policy revisions in February 2008.

Inspection Report# : [2009005](#) (pdf)

Significance:  Sep 30, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE OF LICENSEE TO PROPERLY TRANSLATE TS OPERABLE-OPERABILITY

The inspectors identified a finding of very low safety significance and an NCV of 10 CFR 50 Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for the failure to provide a procedure appropriate to the circumstances for an activity affecting quality. Specifically, the licensee failed to properly translate the Technical Specification (TS) Operable-Operability definition into procedures that established operability of systems affected by a hazard barrier that had been disabled for maintenance. This resulted in the operators disabling an internal flooding barrier without identifying that the affected systems were inoperable. Corrective action included immediate restoration of the barrier and the issue was entered into the licensee's corrective action program. Subsequently, the procedure was revised to require operators to identify the system as inoperable or employ appropriate compensatory measures to maintain operability when a flooding barrier is impaired.

This issue is more than minor because, if left uncorrected, it could become a more significant safety concern, in that the unit could continue to operate at power for longer than allowed by TS with more than one required emergency core cooling system (ECCS) system exposed to internal flooding from a single failure from a non-Class 1 system and challenging safe shutdown assumptions. The inspectors performed a Phase 1 SDP evaluation and answered "No" to all of the Mitigating Systems questions in IMC 0609, Attachment 4, Table 4a. The issue, therefore, screened as Green or very low safety significance. The incorrect procedural guidance was the principal contributor to the operator's failure to identify that the affected systems were inoperable, and the inspectors determined that the event is cross-cutting in Human Performance, Resources, Procedures (H.2(c)).

Inspection Report# : [2009004](#) (pdf)

Significance:  Sep 10, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Evaluate Lack of Water Spray System Piping

A finding of very low safety-significance and associated non-cited violation (NCV) of license condition 3.F for Units 1 and 2 was identified by the inspectors for the licensee's failure to evaluate the lack of supports for a water spray

system. Specifically, the licensee failed to evaluate a deviation from fire protection standards for the lack of supports on two sections of water spray system piping. Upon discovery of the unsupported piping, the licensee entered the issues into their corrective action program and performed an evaluation of the piping which subsequently demonstrated acceptability.

The finding was determined to be more than minor because there was reasonable doubt on the acceptability of the unsupported piping. The issue was of very low safety-significance because the piping was subsequently determined to be acceptable. No cross-cutting aspects were associated with this finding because the finding was not representative of current performance. (Section 1R05.4.b(1))

Inspection Report# : [2009006](#) (pdf)

Significance:  Sep 10, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Provide Adequate Electrical Coordination for Control Circuit

A finding of very low safety-significance and NCV of 10 CFR Part 50, Appendix R, Section III.L.3 was identified by the inspectors for the licensee's failure to ensure that the alternate shutdown capability was independent from the fire area of concern. Specifically, the licensee failed to provide adequate electrical coordination of protective devices to ensure that postulated fire-induced electrical faults would have not resulted in the loss of post-fire alternative safe shutdown equipment, i.e., safe shutdown makeup pump. The licensee subsequently entered the issue into their corrective action program, revised the affected safe shutdown procedure, and replaced the affected circuit breakers to improve electrical coordination.

The finding was determined to be more than minor because the failure to ensure adequate electrical coordination between the fuses and the upstream breaker for the safe shutdown makeup pump control circuit could have impacted the capability of achieving and maintaining safe shutdown condition following a postulated fire in the cable spreading room or auxiliary electric equipment room. The issue was of very low safety-significance because there was a high degree of confidence that a fire would be controlled prior to cable damage resulting from credible fire scenarios. No cross-cutting aspects were associated with this finding because the finding was not representative of current performance.

Inspection Report# : [2009006](#) (pdf)

Barrier Integrity

Significance:  Jun 30, 2010

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

LOSS OF POWER TO FREEZE SEAL MACHINE DURING OPDRV

A finding of very low safety significance and a NCV of 10 CFR Part 50.65(a)(4) was self revealed on March 25, 2010, when operators turned off the electrical power to one of the two electrical freeze seal machines being used to apply a reactor coolant system boundary freeze seal. Specifically, plant staff did not identify the interrelation between the mechanical freeze seal activity and the operations electrical power switching activity during risk assessment activities, and, therefore, did not manage the work activities to prevent loss of power to the freeze seal machines providing the credited boundary to prevent draining the reactor vessel. Immediate corrective actions included restoration of power to the machine and reestablishment of freeze seal temperature.

The finding was determined to be more than minor because required risk management actions were not implemented. These risk management actions were associated with the Barrier Integrity Cornerstone attribute of Configuration Control and affected the cornerstone objective of providing reasonable assurance that the reactor coolant system boundary protects the public from radionuclide releases caused by accidents of events. The inspectors used IMC 0609, "Significance Determination Process," Appendix G, "Shutdown Operations Significance Determination Process," Attachment 1, "Shutdown Operations Significance Determination Process: Phase 1 Operational Checklist for Both

PWRs and BWRs,” and determined that since key safety functions were maintained, the issue screened as Green. The inspectors identified a cross cutting aspect associated with this finding in Human Performance Resources, Procedures (H.2(c)). Although the engineering documentation evaluating the risk in using the electric freeze seal machine recommended the power supplies be protected by operations, this information was not translated into the freeze seal procedure, MA AA 736 610, or the applicable work package.

Inspection Report# : [2010003](#) (pdf)

Significance:  Dec 31, 2009

Identified By: Self-Revealing

Item Type: FIN Finding

DARLEY PUMP LEAKING GASOLINE FROM THE FUEL PUMP

A finding of very low safety significance was self-revealed for 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, “Flood Emergency Procedure.” 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 a program owner of the pump and support equipment.

This issue was more than minor because it was associated with the Structures, Systems, and Component (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.

Inspection Report# : [2009005](#) (pdf)

Emergency Preparedness

Significance:  Jun 30, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

INCORRECT WIND DIRECTION ON NARS FORM

A NRC-identified finding of very low safety significance and associated NCV of 10 CFR 50.47(b)(9) was identified for delayed corrective action without appropriate compensatory actions for a defective computer point that sends wind direction data to the plant parameter display system (PPDS). This defective computer point resulted in incorrect wind direction on a Nuclear Accident Reporting System (NARS) form transmitted to the State of Illinois as part of the declaration of an Unusual Event on May 19, 2010. Corrective actions included the restoration of the computer point for PPDS. Inspectors identified this performance deficiency had a cross cutting aspect in Problem Identification and Reporting Evaluation because although the non functional computer point, R234, was identified in December 2009, the licensee failed to thoroughly evaluate, classify, and prioritize the condition of bad data from a computer point and assess how the condition affected PPDS (P.1(c)).

This finding is more than minor because the performance deficiency matches an example of a Green finding from IMC 0609, Appendix B, Section 4.9, page B 20, “Equipment or systems necessary for dose projection are not functional for longer than 24 hours from the TIME OF DISCOVERY without compensatory measures, or corrective actions are inadequate or delayed.” Using IMC 0609, Appendix B, Sheet 1, “Failure to Comply Flowchart,” the

performance deficiency screened as very low safety significance, or Green.

Inspection Report# : [2010003](#) (*pdf*)

Occupational Radiation Safety

Public Radiation Safety

Physical Protection

Although the NRC is actively overseeing the Security cornerstone, the Commission has decided that certain findings pertaining to security cornerstone will not be publicly available to ensure that potentially useful information is not provided to a possible adversary. Therefore, the [cover letters](#) to security inspection reports may be viewed.

Miscellaneous

Last modified : September 02, 2010

Quad Cities 2

3Q/2010 Plant Inspection Findings

Initiating Events

Mitigating Systems

Significance:  Jun 30, 2010

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

PCIS RELAY COMMON NEUTRAL BROKEN

A self revealed finding of very low safety significance and a NCV of Technical Specification (TS) 5.4.1 was identified on April 8, 2010, when a Unit 2 Group III containment isolation signal was received during replacement of a primary containment isolation system (PCIS) relay as a result of a disconnected common neutral wire. Immediate corrective actions for this event included restoration of the reactor water cleanup system and rewiring for the PCIS relay to the proper configuration. The inspectors determined that the licensee's failure to identify and provide instructions to mitigate the common neutral during the work planning process was a performance deficiency. The inspectors determined that this finding was cross cutting in the area of Human Performance, Work Control, because the licensee failed to assess the impact of changes to the work scope during the maintenance activity when plant operating conditions had changed (H.3(b)).

The inspectors determined the finding was more than minor because the performance deficiency impacted the Mitigating Systems Cornerstone attribute of Configuration Control for Operating Equipment Lineup to ensure the availability, reliability and capability of safety systems to respond to initiating events to prevent undesirable consequences. The inspectors performed a Phase 1 SDP evaluation. Using IMC 0609, Attachment 4, Table 4a, Mitigating Systems Cornerstone, all questions were answered "No," and this finding screened as Green, or having a very low safety significance.

Inspection Report# : [2010003](#) (*pdf*)

Significance:  Jun 30, 2010

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

MODE CHANGE WITHOUT REQUIRED RPS INSTRUMENT

A self revealed finding of very low safety significance and a NCV of TS 3.0.4 was identified on April 14, 2010, when operators changed operating modes from MODE 2 to MODE 1 without having all required channels of the reactor protection system (RPS) turbine condenser vacuum low scram function available prior to entering MODE 1. Immediate corrective actions for this event included restoration of the RPS channel. The inspectors determined that performing a MODE change from MODE 2 to MODE 1, without meeting the conditions of the limiting condition for operation (LCO) 3.0.4 or ensuring all required channels of the RPS turbine condenser vacuum low scram function were available prior to entering MODE 1, was a performance deficiency. The inspectors determined that this finding was cross cutting in the area of Problem Identification and Resolution Evaluation, because the licensee failed to properly classify, prioritize, and evaluate the RPS functional operability of the degraded condenser vacuum indication (P.1(c)).

The inspectors determined the finding was more than minor because the performance deficiency impacted the Mitigating Systems Cornerstone attribute of Configuration Control for Operating Equipment Lineup to ensure the availability, reliability, and capability of safety systems to respond to initiating events to prevent undesirable consequences. The inspectors performed a Phase 1 SDP evaluation. Using IMC 0609, Attachment 4, Table 4a, Mitigating Systems Cornerstone, all questions were answered "No," and this finding screened as Green, or having a very low safety significance.

Significance:  Dec 31, 2009

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

TEMPERATURE INDICATING PROBE FOUND BROKEN IN THE UNIT 2 DIESEL GENERATOR COOLANT SYSTEM

A finding of very low safety significance and an 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 probe of the TI 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 performance deficiency was identified and corrected through procedure and policy revisions in February 2008.

Inspection Report# : [2009005](#) (pdf)

Barrier Integrity

Significance:  Jun 30, 2010

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

LOSS OF POWER TO FREEZE SEAL MACHINE DURING OPDRV

A finding of very low safety significance and a NCV of 10 CFR Part 50.65(a)(4) was self revealed on March 25, 2010, when operators turned off the electrical power to one of the two electrical freeze seal machines being used to apply a reactor coolant system boundary freeze seal. Specifically, plant staff did not identify the interrelation between the mechanical freeze seal activity and the operations electrical power switching activity during risk assessment activities, and, therefore, did not manage the work activities to prevent loss of power to the freeze seal machines providing the credited boundary to prevent draining the reactor vessel. Immediate corrective actions included restoration of power to the machine and reestablishment of freeze seal temperature.

The finding was determined to be more than minor because required risk management actions were not implemented. These risk management actions were associated with the Barrier Integrity Cornerstone attribute of Configuration Control and affected the cornerstone objective of providing reasonable assurance that the reactor coolant system boundary protects the public from radionuclide releases caused by accidents of events. The inspectors used IMC 0609, "Significance Determination Process," Appendix G, "Shutdown Operations Significance Determination Process," Attachment 1, "Shutdown Operations Significance Determination Process: Phase 1 Operational Checklist for Both PWRs and BWRs," and determined that since key safety functions were maintained, the issue screened as Green. The inspectors identified a cross cutting aspect associated with this finding in Human Performance Resources, Procedures (H.2(c)). Although the engineering documentation evaluating the risk in using the electric freeze seal machine recommended the power supplies be protected by operations, this information was not translated into the freeze seal procedure, MA AA 736 610, or the applicable work package.

Inspection Report# : [2010003](#) (pdf)

Significance:  Dec 31, 2009

Identified By: Self-Revealing

Item Type: FIN Finding

DARLEY PUMP LEAKING GASOLINE FROM THE FUEL PUMP

A finding of very low safety significance was self-revealed for 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, "Flood Emergency Procedure." 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 a program owner of the pump and support equipment.

This issue was more than minor because it was associated with the Structures, Systems, and Component (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.

Inspection Report# : [2009005](#) (*pdf*)

Emergency Preparedness

Significance:  Jun 30, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

INCORRECT WIND DIRECTION ON NARS FORM

A NRC-identified finding of very low safety significance and associated NCV of 10 CFR 50.47(b)(9) was identified for delayed corrective action without appropriate compensatory actions for a defective computer point that sends wind direction data to the plant parameter display system (PPDS). This defective computer point resulted in incorrect wind direction on a Nuclear Accident Reporting System (NARS) form transmitted to the State of Illinois as part of the declaration of an Unusual Event on May 19, 2010. Corrective actions included the restoration of the computer point for PPDS. Inspectors identified this performance deficiency had a cross cutting aspect in Problem Identification and Reporting Evaluation because although the non functional computer point, R234, was identified in December 2009, the licensee failed to thoroughly evaluate, classify, and prioritize the condition of bad data from a computer point and assess how the condition affected PPDS (P.1(c)).

This finding is more than minor because the performance deficiency matches an example of a Green finding from IMC 0609, Appendix B, Section 4.9, page B 20, "Equipment or systems necessary for dose projection are not functional for longer than 24 hours from the TIME OF DISCOVERY without compensatory measures, or corrective actions are inadequate or delayed." Using IMC 0609, Appendix B, Sheet 1, "Failure to Comply Flowchart," the performance deficiency screened as very low safety significance, or Green.

Inspection Report# : [2010003](#) (*pdf*)

Occupational Radiation Safety

Public Radiation Safety

Physical Protection

Although the NRC is actively overseeing the Security cornerstone, the Commission has decided that certain findings pertaining to security cornerstone will not be publicly available to ensure that potentially useful information is not provided to a possible adversary. Therefore, the [cover letters](#) to security inspection reports may be viewed.

Miscellaneous

Last modified : November 29, 2010

Quad Cities 2

4Q/2010 Plant Inspection Findings

Initiating Events

Significance:  Sep 30, 2010

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to assess and manage maintenance risks resulting in a Unit 2 Manual Reactor SCRAM

A self-revealed finding of very low safety significance (Green) and associated NCV of 10 CFR 50.65(a)(4) was identified for failure to assess and manage risks associated with maintenance activities. The applicable maintenance activities occurred between July 1, 2010 and August 17, 2010 on Unit 2. The inspectors determined that the licensee's actions to assess and manage the risks associated with maintenance activities did not prevent a transient that upset plant stability, and was identified as a performance deficiency. The inspectors identified that this finding has a cross cutting aspect because the licensee failed to verify the validity of the underlying assumptions supporting the work activity and identify possible unintended consequences (H.1(b)).

The inspectors determined the finding was more than minor because the performance deficiency adversely affected the Initiating Events Cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during power operations. Using IMC 0609, Table 4a, Initiating Events Cornerstone column, Transient Initiators subsection; the question: "Does the finding contribute to both the likelihood of a reactor trip AND that mitigation equipment or functions will not be available?" was answered, "No" by the inspectors because all mitigating functions were available after the event. Therefore, this finding screens as Green, or very low safety significance.

Inspection Report# : [2010004](#) (*pdf*)

Mitigating Systems

Significance:  Jun 30, 2010

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

PCIS RELAY COMMON NEUTRAL BROKEN

A self revealed finding of very low safety significance and a NCV of Technical Specification (TS) 5.4.1 was identified on April 8, 2010, when a Unit 2 Group III containment isolation signal was received during replacement of a primary containment isolation system (PCIS) relay as a result of a disconnected common neutral wire. Immediate corrective actions for this event included restoration of the reactor water cleanup system and rewiring for the PCIS relay to the proper configuration. The inspectors determined that the licensee's failure to identify and provide instructions to mitigate the common neutral during the work planning process was a performance deficiency. The inspectors determined that this finding was cross cutting in the area of Human Performance, Work Control, because the licensee failed to assess the impact of changes to the work scope during the maintenance activity when plant operating conditions had changed (H.3(b)).

The inspectors determined the finding was more than minor because the performance deficiency impacted the Mitigating Systems Cornerstone attribute of Configuration Control for Operating Equipment Lineup to ensure the availability, reliability and capability of safety systems to respond to initiating events to prevent undesirable consequences. The inspectors performed a Phase 1 SDP evaluation. Using IMC 0609, Attachment 4, Table 4a, Mitigating Systems Cornerstone, all questions were answered "No," and this finding screened as Green, or having a very low safety significance.

Inspection Report# : [2010003](#) (*pdf*)

Significance: **G** Jun 30, 2010

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

MODE CHANGE WITHOUT REQUIRED RPS INSTRUMENT

A self revealed finding of very low safety significance and a NCV of TS 3.0.4 was identified on April 14, 2010, when operators changed operating modes from MODE 2 to MODE 1 without having all required channels of the reactor protection system (RPS) turbine condenser vacuum low scram function available prior to entering MODE 1.

Immediate corrective actions for this event included restoration of the RPS channel. The inspectors determined that performing a MODE change from MODE 2 to MODE 1, without meeting the conditions of the limiting condition for operation (LCO) 3.0.4 or ensuring all required channels of the RPS turbine condenser vacuum low scram function were available prior to entering MODE 1, was a performance deficiency. The inspectors determined that this finding was cross cutting in the area of Problem Identification and Resolution Evaluation, because the licensee failed to properly classify, prioritize, and evaluate the RPS functional operability of the degraded condenser vacuum indication (P.1(c)).

The inspectors determined the finding was more than minor because the performance deficiency impacted the Mitigating Systems Cornerstone attribute of Configuration Control for Operating Equipment Lineup to ensure the availability, reliability, and capability of safety systems to respond to initiating events to prevent undesirable consequences. The inspectors performed a Phase 1 SDP evaluation. Using IMC 0609, Attachment 4, Table 4a, Mitigating Systems Cornerstone, all questions were answered “No,” and this finding screened as Green, or having a very low safety significance.

Inspection Report# : [2010003](#) (*pdf*)

Barrier Integrity

Significance: **G** Jun 30, 2010

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

LOSS OF POWER TO FREEZE SEAL MACHINE DURING OPDRV

A finding of very low safety significance and a NCV of 10 CFR Part 50.65(a)(4) was self revealed on March 25, 2010, when operators turned off the electrical power to one of the two electrical freeze seal machines being used to apply a reactor coolant system boundary freeze seal. Specifically, plant staff did not identify the interrelation between the mechanical freeze seal activity and the operations electrical power switching activity during risk assessment activities, and, therefore, did not manage the work activities to prevent loss of power to the freeze seal machines providing the credited boundary to prevent draining the reactor vessel. Immediate corrective actions included restoration of power to the machine and reestablishment of freeze seal temperature.

The finding was determined to be more than minor because required risk management actions were not implemented. These risk management actions were associated with the Barrier Integrity Cornerstone attribute of Configuration Control and affected the cornerstone objective of providing reasonable assurance that the reactor coolant system boundary protects the public from radionuclide releases caused by accidents of events. The inspectors used IMC 0609, “Significance Determination Process,” Appendix G, “Shutdown Operations Significance Determination Process,” Attachment 1, “Shutdown Operations Significance Determination Process: Phase 1 Operational Checklist for Both PWRs and BWRs,” and determined that since key safety functions were maintained, the issue screened as Green. The inspectors identified a cross cutting aspect associated with this finding in Human Performance Resources, Procedures (H.2(c)). Although the engineering documentation evaluating the risk in using the electric freeze seal machine recommended the power supplies be protected by operations, this information was not translated into the freeze seal procedure, MA AA 736 610, or the applicable work package.

Inspection Report# : [2010003](#) (*pdf*)

Emergency Preparedness

Significance: **G** Jun 30, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

INCORRECT WIND DIRECTION ON NARS FORM

A NRC-identified finding of very low safety significance and associated NCV of 10 CFR 50.47(b)(9) was identified for delayed corrective action without appropriate compensatory actions for a defective computer point that sends wind direction data to the plant parameter display system (PPDS). This defective computer point resulted in incorrect wind direction on a Nuclear Accident Reporting System (NARS) form transmitted to the State of Illinois as part of the declaration of an Unusual Event on May 19, 2010. Corrective actions included the restoration of the computer point for PPDS. Inspectors identified this performance deficiency had a cross cutting aspect in Problem Identification and Reporting Evaluation because although the non functional computer point, R234, was identified in December 2009, the licensee failed to thoroughly evaluate, classify, and prioritize the condition of bad data from a computer point and assess how the condition affected PPDS (P.1(c)).

This finding is more than minor because the performance deficiency matches an example of a Green finding from IMC 0609, Appendix B, Section 4.9, page B 20, "Equipment or systems necessary for dose projection are not functional for longer than 24 hours from the TIME OF DISCOVERY without compensatory measures, or corrective actions are inadequate or delayed." Using IMC 0609, Appendix B, Sheet 1, "Failure to Comply Flowchart," the performance deficiency screened as very low safety significance, or Green.

Inspection Report# : [2010003](#) (*pdf*)

Occupational Radiation Safety

Public Radiation Safety

Significance: SL-IV Dec 31, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO UPDATE THE UFSAR FOR FIRE PROTECTION DOCUMENTS

A Severity Level IV NCV of 10 CFR 50.71(e), "Periodic Update of the Final Safety Analysis Report," and an accompanying Green finding were identified by the inspectors for the failure to update documents incorporated by reference in the Updated Final Safety Analysis Report (UFSAR) and provided to the NRC in UFSAR updates. Specifically, the licensee did not update dose consequence calculations for a fire in the intermediate radwaste storage facility (IRSF) to reflect changes in packaging methods of solid radioactive waste material stored in the IRSF and used to provide a basis for determining if the increase in event consequences to offsite dose resulting from a fire in the facility was not more than minimal. Corrective actions included revision of the calculations and implementation of procedural controls to limit activity stored in the building to ensure offsite dose limits were not challenged in the event of a fire.

This finding was determined to be more than minor using IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," because if left uncorrected the performance deficiency could have led to a more significant safety concern. Specifically, failure to update the UFSAR or associated licensing basis documents impacts the licensee's ability to adequately evaluate plant changes under the 10 CFR 50.59 processes and could lead to the licensee erroneously making unacceptable changes to the facility. The phase 1 SDP screening performed by the inspectors concluded that, since no actual release had occurred, no dose was received as a result of the issue, and the probability of the initiating design basis fire for the IRSF was extremely low, both the Radioactive Material Control and the Effluent Release Program flowcharts of IMC 0609 Appendix D, "Public Radiation Safety Significance Determination Program," determine the finding was of very low safety significance (Green). The inspectors determined that this finding did not reflect present performance because it is a legacy issue with changes made to the facility more than 10 years previously; therefore, there was no cross-cutting aspect associated with this finding.

The associated Performance Deficiency is tracked as item 2010-005-02.

Significance:  Dec 31, 2010

Identified By: NRC

Item Type: FIN Finding

FAILURE TO UPDATE THE UFSAR FOR FIRE PROTECTION DOCUMENTS

A Severity Level IV NCV of 10 CFR 50.71(e), "Periodic Update of the Final Safety Analysis Report," and an accompanying Green finding were identified by the inspectors for the failure to update documents incorporated by reference in the Updated Final Safety Analysis Report (UFSAR) and provided to the NRC in UFSAR updates. Specifically, the licensee did not update dose consequence calculations for a fire in the intermediate radwaste storage facility (IRSF) to reflect changes in packaging methods of solid radioactive waste material stored in the IRSF and used to provide a basis for determining if the increase in event consequences to offsite dose resulting from a fire in the facility was not more than minimal. Corrective actions included revision of the calculations and implementation of procedural controls to limit activity stored in the building to ensure offsite dose limits were not challenged in the event of a fire.

This finding was determined to be more than minor using IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," because if left uncorrected the performance deficiency could have led to a more significant safety concern. Specifically, failure to update the UFSAR or associated licensing basis documents impacts the licensee's ability to adequately evaluate plant changes under the 10 CFR 50.59 processes and could lead to the licensee erroneously making unacceptable changes to the facility. The phase 1 SDP screening performed by the inspectors concluded that, since no actual release had occurred, no dose was received as a result of the issue, and the probability of the initiating design basis fire for the IRSF was extremely low, both the Radioactive Material Control and the Effluent Release Program flowcharts of IMC 0609 Appendix D, "Public Radiation Safety Significance Determination Program," determine the finding was of very low safety significance (Green). The inspectors determined that this finding did not reflect present performance because it is a legacy issue with changes made to the facility more than 10 years previously; therefore, there was no cross-cutting aspect associated with this finding.

The associated traditional enforcement violation is tracked as item 2010-005-01.

Inspection Report# : [2010005](#) (pdf)

Physical Protection

Although the NRC is actively overseeing the Security cornerstone, the Commission has decided that certain findings pertaining to security cornerstone will not be publicly available to ensure that potentially useful information is not provided to a possible adversary. Therefore, the [cover letters](#) to security inspection reports may be viewed.

Miscellaneous

Last modified : March 03, 2011

Quad Cities 2

1Q/2011 Plant Inspection Findings

Initiating Events

Significance:  Sep 30, 2010

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to assess and manage maintenance risks resulting in a Unit 2 Manual Reactor SCRAM

A self-revealed finding of very low safety significance (Green) and associated NCV of 10 CFR 50.65(a)(4) was identified for failure to assess and manage risks associated with maintenance activities. The applicable maintenance activities occurred between July 1, 2010 and August 17, 2010 on Unit 2. The inspectors determined that the licensee's actions to assess and manage the risks associated with maintenance activities did not prevent a transient that upset plant stability, and was identified as a performance deficiency. The inspectors identified that this finding has a cross cutting aspect because the licensee failed to verify the validity of the underlying assumptions supporting the work activity and identify possible unintended consequences (H.1(b)).

The inspectors determined the finding was more than minor because the performance deficiency adversely affected the Initiating Events Cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during power operations. Using IMC 0609, Table 4a, Initiating Events Cornerstone column, Transient Initiators subsection; the question: "Does the finding contribute to both the likelihood of a reactor trip AND that mitigation equipment or functions will not be available?" was answered, "No" by the inspectors because all mitigating functions were available after the event. Therefore, this finding screens as Green, or very low safety significance.

Inspection Report# : [2010004](#) (*pdf*)

Mitigating Systems

Significance:  Mar 31, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

MSIV RPS LIMIT SWITCH PRECONDITIONING

NRC inspectors identified a finding of very low safety significance (Green) and an associated NCV of 10 CFR 50, Appendix B, Criterion V on December 21, 2010. While observing performance of QCOS 0250-01, "MSIV [Main Steam Isolation Valve] Scram Sensor Channel Functional Test," inspectors identified that the licensee's surveillance procedure unacceptably preconditioned the reactor protection system (RPS) 'B' limit switches during testing of the RPS 'A' switches. The licensee had not previously evaluated the pre-conditioning to determine potential impact to the test and subsequently validated the inspectors' assessment that the test methodology did unacceptably precondition the 'B' RPS limit switches. The issue was documented in the corrective action program as Issue Report 1155212. The procedure was revised and subsequent retesting on March 26 and 27, 2011, demonstrated that all MSIV RPS limit switches were operable.

This issue was more than minor because, if left uncorrected, the performance deficiency would have the potential to lead to a more significant safety concern in that preconditioning could mask a condition which would prevent an automatic actuation of RPS on MSIV closure. Inspectors performed the SDP phase 1 screening using IMC 0609, Attachment 4, Table 4a, Mitigating Systems Cornerstone column, and answered all questions "No." Therefore, this finding is Green, or very low safety significance. The issue was considered a legacy issue and no cross-cutting aspect was assigned.

Inspection Report# : [2011002](#) (*pdf*)

Significance: **G** Mar 31, 2011

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

UNIT 1/2 EDG OUTPUT BREAKER FAILURE TO UNIT 2

A self-revealed finding of very low safety significance (Green) and associated NCV of Technical Specification 5.4.1.a was identified on March 7, 2011, when a broken wire lug prevented closure of the 1/2 emergency diesel generator (EDG) output supply breaker to Unit 2 during core spray system logic testing. The failure to identify or correct wire routing deficiencies during cubicle inspections was a performance deficiency and a finding. The inspectors identified that work instructions did not contain sufficient detail to ensure that breaker wiring was configured correctly and the ability to perform safety functions was not adversely impacted. The broken lug was repaired and the 1/2 EDG was declared operable to Unit 2 on March 8, 2011. The issue was documented in the corrective action program as Issue Report 1184304.

This issue was more than minor because, if left uncorrected, the performance deficiency would have the potential to lead to a more significant safety concern in that similar failures could result in a loss of safety function. Inspectors performed the SDP phase 1 screening using IMC 0609, Attachment 4, Table 4a, Mitigating Systems Cornerstone column, and answered all questions "No." Therefore, this finding screens as Green, or very low safety significance. The inspectors identified that this finding has a cross-cutting aspect in the Problem Identification and Resolution - Operating Experience Component. Specifically, the licensee failed to implement and institutionalize internal operating experience concerning the improper routing of cubicle wiring through appropriate changes to the station preventative maintenance program (P.2(b)).

Inspection Report# : [2011002](#) (pdf)

Significance: **G** Jun 30, 2010

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

PCIS RELAY COMMON NEUTRAL BROKEN

A self revealed finding of very low safety significance and a NCV of Technical Specification (TS) 5.4.1 was identified on April 8, 2010, when a Unit 2 Group III containment isolation signal was received during replacement of a primary containment isolation system (PCIS) relay as a result of a disconnected common neutral wire. Immediate corrective actions for this event included restoration of the reactor water cleanup system and rewiring for the PCIS relay to the proper configuration. The inspectors determined that the licensee's failure to identify and provide instructions to mitigate the common neutral during the work planning process was a performance deficiency. The inspectors determined that this finding was cross cutting in the area of Human Performance, Work Control, because the licensee failed to assess the impact of changes to the work scope during the maintenance activity when plant operating conditions had changed (H.3(b)).

The inspectors determined the finding was more than minor because the performance deficiency impacted the Mitigating Systems Cornerstone attribute of Configuration Control for Operating Equipment Lineup to ensure the availability, reliability and capability of safety systems to respond to initiating events to prevent undesirable consequences. The inspectors performed a Phase 1 SDP evaluation. Using IMC 0609, Attachment 4, Table 4a, Mitigating Systems Cornerstone, all questions were answered "No," and this finding screened as Green, or having a very low safety significance.

Inspection Report# : [2010003](#) (pdf)

Significance: **G** Jun 30, 2010

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

MODE CHANGE WITHOUT REQUIRED RPS INSTRUMENT

A self revealed finding of very low safety significance and a NCV of TS 3.0.4 was identified on April 14, 2010, when operators changed operating modes from MODE 2 to MODE 1 without having all required channels of the reactor protection system (RPS) turbine condenser vacuum low scram function available prior to entering MODE 1.

Immediate corrective actions for this event included restoration of the RPS channel. The inspectors determined that performing a MODE change from MODE 2 to MODE 1, without meeting the conditions of the limiting condition for operation (LCO) 3.0.4 or ensuring all required channels of the RPS turbine condenser vacuum low scram function

were available prior to entering MODE 1, was a performance deficiency. The inspectors determined that this finding was cross cutting in the area of Problem Identification and Resolution Evaluation, because the licensee failed to properly classify, prioritize, and evaluate the RPS functional operability of the degraded condenser vacuum indication (P.1(c)).

The inspectors determined the finding was more than minor because the performance deficiency impacted the Mitigating Systems Cornerstone attribute of Configuration Control for Operating Equipment Lineup to ensure the availability, reliability, and capability of safety systems to respond to initiating events to prevent undesirable consequences. The inspectors performed a Phase 1 SDP evaluation. Using IMC 0609, Attachment 4, Table 4a, Mitigating Systems Cornerstone, all questions were answered “No,” and this finding screened as Green, or having a very low safety significance.

Inspection Report# : [2010003](#) (*pdf*)

Barrier Integrity

Significance:  Jun 30, 2010

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

LOSS OF POWER TO FREEZE SEAL MACHINE DURING OPDRV

A finding of very low safety significance and a NCV of 10 CFR Part 50.65(a)(4) was self revealed on March 25, 2010, when operators turned off the electrical power to one of the two electrical freeze seal machines being used to apply a reactor coolant system boundary freeze seal. Specifically, plant staff did not identify the interrelation between the mechanical freeze seal activity and the operations electrical power switching activity during risk assessment activities, and, therefore, did not manage the work activities to prevent loss of power to the freeze seal machines providing the credited boundary to prevent draining the reactor vessel. Immediate corrective actions included restoration of power to the machine and reestablishment of freeze seal temperature.

The finding was determined to be more than minor because required risk management actions were not implemented. These risk management actions were associated with the Barrier Integrity Cornerstone attribute of Configuration Control and affected the cornerstone objective of providing reasonable assurance that the reactor coolant system boundary protects the public from radionuclide releases caused by accidents of events. The inspectors used IMC 0609, “Significance Determination Process,” Appendix G, “Shutdown Operations Significance Determination Process,” Attachment 1, “Shutdown Operations Significance Determination Process: Phase 1 Operational Checklist for Both PWRs and BWRs,” and determined that since key safety functions were maintained, the issue screened as Green. The inspectors identified a cross cutting aspect associated with this finding in Human Performance Resources, Procedures (H.2(c)). Although the engineering documentation evaluating the risk in using the electric freeze seal machine recommended the power supplies be protected by operations, this information was not translated into the freeze seal procedure, MA AA 736 610, or the applicable work package.

Inspection Report# : [2010003](#) (*pdf*)

Emergency Preparedness

Significance:  Jun 30, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

INCORRECT WIND DIRECTION ON NARS FORM

A NRC-identified finding of very low safety significance and associated NCV of 10 CFR 50.47(b)(9) was identified for delayed corrective action without appropriate compensatory actions for a defective computer point that sends wind direction data to the plant parameter display system (PPDS). This defective computer point resulted in incorrect wind direction on a Nuclear Accident Reporting System (NARS) form transmitted to the State of Illinois as part of the declaration of an Unusual Event on May 19, 2010. Corrective actions included the restoration of the computer point

for PPDS. Inspectors identified this performance deficiency had a cross cutting aspect in Problem Identification and Reporting Evaluation because although the non functional computer point, R234, was identified in December 2009, the licensee failed to thoroughly evaluate, classify, and prioritize the condition of bad data from a computer point and assess how the condition affected PPDS (P.1(c)).

This finding is more than minor because the performance deficiency matches an example of a Green finding from IMC 0609, Appendix B, Section 4.9, page B 20, "Equipment or systems necessary for dose projection are not functional for longer than 24 hours from the TIME OF DISCOVERY without compensatory measures, or corrective actions are inadequate or delayed." Using IMC 0609, Appendix B, Sheet 1, "Failure to Comply Flowchart," the performance deficiency screened as very low safety significance, or Green.

Inspection Report# : [2010003](#) (pdf)

Occupational Radiation Safety

Public Radiation Safety

Significance: SL-IV Dec 31, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO UPDATE THE UFSAR FOR FIRE PROTECTION DOCUMENTS

A Severity Level IV NCV of 10 CFR 50.71(e), "Periodic Update of the Final Safety Analysis Report," and an accompanying Green finding were identified by the inspectors for the failure to update documents incorporated by reference in the Updated Final Safety Analysis Report (UFSAR) and provided to the NRC in UFSAR updates. Specifically, the licensee did not update dose consequence calculations for a fire in the intermediate radwaste storage facility (IRSF) to reflect changes in packaging methods of solid radioactive waste material stored in the IRSF and used to provide a basis for determining if the increase in event consequences to offsite dose resulting from a fire in the facility was not more than minimal. Corrective actions included revision of the calculations and implementation of procedural controls to limit activity stored in the building to ensure offsite dose limits were not challenged in the event of a fire.

This finding was determined to be more than minor using IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," because if left uncorrected the performance deficiency could have led to a more significant safety concern. Specifically, failure to update the UFSAR or associated licensing basis documents impacts the licensee's ability to adequately evaluate plant changes under the 10 CFR 50.59 processes and could lead to the licensee erroneously making unacceptable changes to the facility. The phase 1 SDP screening performed by the inspectors concluded that, since no actual release had occurred, no dose was received as a result of the issue, and the probability of the initiating design basis fire for the IRSF was extremely low, both the Radioactive Material Control and the Effluent Release Program flowcharts of IMC 0609 Appendix D, "Public Radiation Safety Significance Determination Program," determine the finding was of very low safety significance (Green). The inspectors determined that this finding did not reflect present performance because it is a legacy issue with changes made to the facility more than 10 years previously; therefore, there was no cross-cutting aspect associated with this finding.

The associated Performance Deficiency is tracked as item 2010-005-02.

Inspection Report# : [2010005](#) (pdf)

Significance:  Dec 31, 2010

Identified By: NRC

Item Type: FIN Finding

FAILURE TO UPDATE THE UFSAR FOR FIRE PROTECTION DOCUMENTS

A Severity Level IV NCV of 10 CFR 50.71(e), "Periodic Update of the Final Safety Analysis Report," and an accompanying Green finding were identified by the inspectors for the failure to update documents incorporated by

reference in the Updated Final Safety Analysis Report (UFSAR) and provided to the NRC in UFSAR updates. Specifically, the licensee did not update dose consequence calculations for a fire in the intermediate radwaste storage facility (IRSF) to reflect changes in packaging methods of solid radioactive waste material stored in the IRSF and used to provide a basis for determining if the increase in event consequences to offsite dose resulting from a fire in the facility was not more than minimal. Corrective actions included revision of the calculations and implementation of procedural controls to limit activity stored in the building to ensure offsite dose limits were not challenged in the event of a fire.

This finding was determined to be more than minor using IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," because if left uncorrected the performance deficiency could have led to a more significant safety concern. Specifically, failure to update the UFSAR or associated licensing basis documents impacts the licensee's ability to adequately evaluate plant changes under the 10 CFR 50.59 processes and could lead to the licensee erroneously making unacceptable changes to the facility. The phase 1 SDP screening performed by the inspectors concluded that, since no actual release had occurred, no dose was received as a result of the issue, and the probability of the initiating design basis fire for the IRSF was extremely low, both the Radioactive Material Control and the Effluent Release Program flowcharts of IMC 0609 Appendix D, "Public Radiation Safety Significance Determination Program," determine the finding was of very low safety significance (Green). The inspectors determined that this finding did not reflect present performance because it is a legacy issue with changes made to the facility more than 10 years previously; therefore, there was no cross-cutting aspect associated with this finding.

The associated traditional enforcement violation is tracked as item 2010-005-01.

Inspection Report# : [2010005](#) (*pdf*)

Physical Protection

Although the NRC is actively overseeing the Security cornerstone, the Commission has decided that certain findings pertaining to security cornerstone will not be publicly available to ensure that potentially useful information is not provided to a possible adversary. Therefore, the [cover letters](#) to security inspection reports may be viewed.

Miscellaneous

Last modified : June 07, 2011

Quad Cities 2

2Q/2011 Plant Inspection Findings

Initiating Events

Significance:  Jun 30, 2011

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

WRONG LIMIT ERROR DURING SURVEILLANCE

A self-revealed finding of very low safety significance and associated NCV of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was identified on May 4, 2011, when instrument technicians caused a control room alarm on Unit 2 after receiving permission from the Unit 1 unit supervisor to perform the test on Unit 1. Immediate actions included termination of the surveillance and restoration of the equipment to the correct lineup for plant conditions. The issue was entered into the corrective action program as IR 1211933.

Inspectors determined that the licensee's failure to follow the procedure as written resulted in Unit 2 surveillance procedure steps being performed on Unit 1 safety-related equipment; therefore, this was a performance deficiency. The inspectors answered the more than minor screening questions of IMC 0612, Appendix B, Figure 2, Block 9, question 2.a, indicating the performance deficiency could be viewed as a precursor to a significant event, and the finding was, therefore, more-than-minor. Inspectors determined that performing procedural action on the wrong unit would impact the Initiating Event Cornerstone objective of limiting the likelihood of upsetting plant stability and challenging critical safety functions during power operations. Specifically, the objective attributes of configuration control equipment performance were negatively impacted. Inspectors performed the SDP phase I screening using IMC 0609, Attachment 4, Table 4a for transient initiators in the Initiating Events Cornerstone column and answered the question "No." The issue was screened as Green or very low safety significance. Inspectors concluded that the finding had a cross-cutting aspect in Human Performance-Work Practices, in that, licensee staff involved in the event failed to utilize human performance error prevention techniques commensurate with the risk of the assigned task to prevent impact to the station (H.4(a)).

Inspection Report# : [2011003](#) (*pdf*)

Significance:  Sep 30, 2010

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to assess and manage maintenance risks resulting in a Unit 2 Manual Reactor SCRAM

A self-revealed finding of very low safety significance (Green) and associated NCV of 10 CFR 50.65(a)(4) was identified for failure to assess and manage risks associated with maintenance activities. The applicable maintenance activities occurred between July 1, 2010 and August 17, 2010 on Unit 2. The inspectors determined that the licensee's actions to assess and manage the risks associated with maintenance activities did not prevent a transient that upset plant stability, and was identified as a performance deficiency. The inspectors identified that this finding has a cross cutting aspect because the licensee failed to verify the validity of the underlying assumptions supporting the work activity and identify possible unintended consequences (H.1(b)).

The inspectors determined the finding was more than minor because the performance deficiency adversely affected the Initiating Events Cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during power operations. Using IMC 0609, Table 4a, Initiating Events Cornerstone column, Transient Initiators subsection; the question: "Does the finding contribute to both the likelihood of a reactor trip AND that mitigation equipment or functions will not be available?" was answered, "No" by the inspectors because all mitigating functions were available after the event. Therefore, this finding screens as Green, or very low safety significance.

Inspection Report# : [2010004](#) (*pdf*)

Mitigating Systems

Significance:  Mar 31, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

MSIV RPS LIMIT SWITCH PRECONDITIONING

NRC inspectors identified a finding of very low safety significance (Green) and an associated NCV of 10 CFR 50, Appendix B, Criterion V on December 21, 2010. While observing performance of QCOS 0250-01, "MSIV [Main Steam Isolation Valve] Scram Sensor Channel Functional Test," inspectors identified that the licensee's surveillance procedure unacceptably preconditioned the reactor protection system (RPS) 'B' limit switches during testing of the RPS 'A' switches. The licensee had not previously evaluated the pre-conditioning to determine potential impact to the test and subsequently validated the inspectors' assessment that the test methodology did unacceptably precondition the 'B' RPS limit switches. The issue was documented in the corrective action program as Issue Report 1155212. The procedure was revised and subsequent retesting on March 26 and 27, 2011, demonstrated that all MSIV RPS limit switches were operable.

This issue was more than minor because, if left uncorrected, the performance deficiency would have the potential to lead to a more significant safety concern in that preconditioning could mask a condition which would prevent an automatic actuation of RPS on MSIV closure. Inspectors performed the SDP phase 1 screening using IMC 0609, Attachment 4, Table 4a, Mitigating Systems Cornerstone column, and answered all questions "No." Therefore, this finding is Green, or very low safety significance. The issue was considered a legacy issue and no cross-cutting aspect was assigned.

Inspection Report# : [2011002](#) (*pdf*)

Significance:  Mar 31, 2011

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

UNIT 1/2 EDG OUTPUT BREAKER FAILURE TO UNIT 2

A self-revealed finding of very low safety significance (Green) and associated NCV of Technical Specification 5.4.1.a was identified on March 7, 2011, when a broken wire lug prevented closure of the 1/2 emergency diesel generator (EDG) output supply breaker to Unit 2 during core spray system logic testing. The failure to identify or correct wire routing deficiencies during cubicle inspections was a performance deficiency and a finding. The inspectors identified that work instructions did not contain sufficient detail to ensure that breaker wiring was configured correctly and the ability to perform safety functions was not adversely impacted. The broken lug was repaired and the 1/2 EDG was declared operable to Unit 2 on March 8, 2011. The issue was documented in the corrective action program as Issue Report 1184304.

This issue was more than minor because, if left uncorrected, the performance deficiency would have the potential to lead to a more significant safety concern in that similar failures could result in a loss of safety function. Inspectors performed the SDP phase 1 screening using IMC 0609, Attachment 4, Table 4a, Mitigating Systems Cornerstone column, and answered all questions "No." Therefore, this finding screens as Green, or very low safety significance. The inspectors identified that this finding has a cross-cutting aspect in the Problem Identification and Resolution - Operating Experience Component. Specifically, the licensee failed to implement and institutionalize internal operating experience concerning the improper routing of cubicle wiring through appropriate changes to the station preventative maintenance program (P.2(b)).

Inspection Report# : [2011002](#) (*pdf*)

Barrier Integrity

Emergency Preparedness

Significance: SL-IV Jun 23, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

Changes to EAL Basis Decreased the Effectiveness of the Plan without Prior NRC Approval.

The inspector identified a violation of very low safety significance involving a Severity Level IV NCV of 10 CFR 50.54(q) for failing to obtain prior approval for an emergency plan change which decreased the effectiveness of the plan. Specifically, the licensee modified the Emergency Action Level (EAL) Basis in EAL HU6, Revision 22, which indefinitely extended the start of the 15 minute emergency classification clock beyond a credible notification that a fire is occurring or indication of a valid fire detection system alarm. This change decreased the effectiveness of the emergency plan by reducing the capability to perform a risk significant planning function in a timely manner.

The violation affected the NRC's ability to perform its regulatory function because it involved implementing a change that decreased the effectiveness of the emergency plan without NRC approval. Therefore, this issue was evaluated using Traditional Enforcement. The NRC determined that a Severity Level IV violation was appropriate due to the reduction of the capability to perform a risk significant planning standard function in a timely manner. The licensee entered this issue into its corrective action program and revised the EAL basis to restore compliance. (1EP4)

The associated performance deficiency is tracked as item 2011-503-02.

Inspection Report# : [2010503](#) (pdf)

Significance:  Jun 23, 2011

Identified By: NRC

Item Type: FIN Finding

Changes to EAL Basis Decreased the Effectiveness of the Plan without Prior NRC Approval.

The inspector identified a finding of very low safety significance involving a Severity Level IV NCV of 10 CFR 50.54 (q) for failing to obtain prior approval for an emergency plan change which decreased the effectiveness of the plan. Specifically, the licensee modified the Emergency Action Level (EAL) Basis in EAL HU6, Revision 22, which indefinitely extended the start of the 15 minute emergency classification clock beyond a credible notification that a fire is occurring or indication of a valid fire detection system alarm. This change decreased the effectiveness of the emergency plan by reducing the capability to perform a risk significant planning function in a timely manner.

The finding was more than minor using IMC 0612, because it is associated with the emergency preparedness cornerstone attribute of procedure quality for EAL and emergency plan changes, and it adversely affected the cornerstone objective of ensuring that the licensee is capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. Therefore, the performance deficiency was a finding. Using IMC 0609, Appendix B, the inspector determined that the finding had a very low safety significance because the finding is a failure to comply with 10 CFR 50.54(q) involving the risk significant planning standard 50.47(b)(4), which, in this case, met the example of a Green finding because it involved one Unusual Event classification (EAL HU6).

Due to the age of this issue, it was not determined to be reflective of current licensee performance and therefore a cross-cutting aspect was not assigned to this finding. (Section 1EP4)

The associated traditional enforcement item is tracked as item 2011-503-01.

Inspection Report# : [2010503](#) (pdf)

Occupational Radiation Safety

Public Radiation Safety

Significance: SL-IV Dec 31, 2010

Identified By: NRC

Item Type: FIN Finding

FAILURE TO UPDATE THE UFSAR FOR FIRE PROTECTION DOCUMENTS

A Severity Level IV NCV of 10 CFR 50.71(e), "Periodic Update of the Final Safety Analysis Report," and an accompanying Green finding were identified by the inspectors for the failure to update documents incorporated by reference in the Updated Final Safety Analysis Report (UFSAR) and provided to the NRC in UFSAR updates. Specifically, the licensee did not update dose consequence calculations for a fire in the intermediate radwaste storage facility (IRSF) to reflect changes in packaging methods of solid radioactive waste material stored in the IRSF and used to provide a basis for determining if the increase in event consequences to offsite dose resulting from a fire in the facility was not more than minimal. Corrective actions included revision of the calculations and implementation of procedural controls to limit activity stored in the building to ensure offsite dose limits were not challenged in the event of a fire.

This finding was determined to be more than minor using IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," because if left uncorrected the performance deficiency could have led to a more significant safety concern. Specifically, failure to update the UFSAR or associated licensing basis documents impacts the licensee's ability to adequately evaluate plant changes under the 10 CFR 50.59 processes and could lead to the licensee erroneously making unacceptable changes to the facility. The phase 1 SDP screening performed by the inspectors concluded that, since no actual release had occurred, no dose was received as a result of the issue, and the probability of the initiating design basis fire for the IRSF was extremely low, both the Radioactive Material Control and the Effluent Release Program flowcharts of IMC 0609 Appendix D, "Public Radiation Safety Significance Determination Program," determine the finding was of very low safety significance (Green). The inspectors determined that this finding did not reflect present performance because it is a legacy issue with changes made to the facility more than 10 years previously; therefore, there was no cross-cutting aspect associated with this finding.

The associated Performance Deficiency is tracked as item 2010-005-02.

Inspection Report# : [2010005](#) (pdf)

Significance:  Dec 31, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO UPDATE THE UFSAR FOR FIRE PROTECTION DOCUMENTS

A Severity Level IV NCV of 10 CFR 50.71(e), "Periodic Update of the Final Safety Analysis Report," and an accompanying Green finding were identified by the inspectors for the failure to update documents incorporated by reference in the Updated Final Safety Analysis Report (UFSAR) and provided to the NRC in UFSAR updates. Specifically, the licensee did not update dose consequence calculations for a fire in the intermediate radwaste storage facility (IRSF) to reflect changes in packaging methods of solid radioactive waste material stored in the IRSF and used to provide a basis for determining if the increase in event consequences to offsite dose resulting from a fire in the facility was not more than minimal. Corrective actions included revision of the calculations and implementation of procedural controls to limit activity stored in the building to ensure offsite dose limits were not challenged in the event of a fire.

This finding was determined to be more than minor using IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," because if left uncorrected the performance deficiency could have led to a more significant safety concern. Specifically, failure to update the UFSAR or associated licensing basis documents impacts the licensee's ability to adequately evaluate plant changes under the 10 CFR 50.59 processes and could lead to the licensee erroneously making unacceptable changes to the facility. The phase 1 SDP screening performed by the inspectors concluded that, since no actual release had occurred, no dose was received as a result of the issue, and the probability of the initiating design basis fire for the IRSF was extremely low, both the Radioactive Material Control and the Effluent Release Program flowcharts of IMC 0609 Appendix D, "Public Radiation Safety Significance Determination Program," determine the finding was of very low safety significance (Green). The inspectors determined that this finding did not reflect present performance because it is a legacy issue with changes made to the facility more than 10 years previously; therefore, there was no cross-cutting aspect associated with this finding.

The associated traditional enforcement violation is tracked as item 2010-005-01.

Inspection Report# : [2010005](#) (pdf)

Physical Protection

Although the NRC is actively overseeing the Security cornerstone, the Commission has decided that certain findings pertaining to security cornerstone will not be publicly available to ensure that potentially useful information is not provided to a possible adversary. Therefore, the [cover letters](#) to security inspection reports may be viewed.

Miscellaneous

Last modified : October 14, 2011

Quad Cities 2

3Q/2011 Plant Inspection Findings

Initiating Events

Significance:  Sep 30, 2011

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

VALVE OUT OF POSITION IN RADWASTE

A self revealed finding of very low safety significance with an associated NCV of Technical Specification (TS) 5.4.1.a was identified for failure to properly track the abnormal position of the waste sample tanks or floor drain sample tanks to waste collector tank valve, 1/2 2001 54. On August 12, 2011, an operator failed to position the valve in accordance with the operating procedure and did not follow station administrative procedures for tracking components that deviate from expected position. On August 17, a second operator transferred contaminated water to an unintended tank because of this deviation. This issue has been entered into the licensee's corrective action program as Issue Report (IR) 1252370. The 1/2 2001 54 valve was shut immediately on discovery to stop water transfer.

The performance deficiency was more than minor since it can reasonably be viewed as a precursor to a more significant event because mispositioned components could reasonably be expected to result in liquid spills or significant personnel exposure. This performance deficiency also adversely affected the Initiating Events Cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions in that a large, uncontrolled spread of contamination as a result of a mispositioned valve in the liquid radioactive waste system would impact access to plant areas and would complicate operator response. Using IMC 0609, Table 4a, under the Initiating Events Cornerstone, all questions were answered "No." This issue was screened as Green, or very low safety significance. Inspectors concluded that this issue had a cross cutting aspect in the area of Human Performance Decision Making. The operator made a decision outside his authority, in that, senior reactor operator approval is required to leave the 1/2 2001 54 valve open and the operator did not engage supervision to obtain that authorization (H.1(a)). (Section 1R04.1.b(2))

Inspection Report# : [2011004](#) (pdf)

Significance:  Jun 30, 2011

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

WRONG LIMIT ERROR DURING SURVEILLANCE

A self-revealed finding of very low safety significance and associated NCV of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was identified on May 4, 2011, when instrument technicians caused a control room alarm on Unit 2 after receiving permission from the Unit 1 unit supervisor to perform the test on Unit 1. Immediate actions included termination of the surveillance and restoration of the equipment to the correct lineup for plant conditions. The issue was entered into the corrective action program as IR 1211933.

Inspectors determined that the licensee's failure to follow the procedure as written resulted in Unit 2 surveillance procedure steps being performed on Unit 1 safety-related equipment; therefore, this was a performance deficiency. The inspectors answered the more than minor screening questions of IMC 0612, Appendix B, Figure 2, Block 9, question 2.a, indicating the performance deficiency could be viewed as a precursor to a significant event, and the finding was, therefore, more-than-minor. Inspectors determined that performing procedural action on the wrong unit would impact the Initiating Event Cornerstone objective of limiting the likelihood of upsetting plant stability and challenging critical safety functions during power operations. Specifically, the objective attributes of configuration control equipment performance were negatively impacted. Inspectors performed the SDP phase I screening using IMC 0609, Attachment 4, Table 4a for transient initiators in the Initiating Events Cornerstone column and answered the question "No." The issue was screened as Green or very low safety significance. Inspectors concluded that the finding had a cross-cutting aspect in Human Performance-Work Practices, in that, licensee staff involved in the event failed to utilize human performance error prevention techniques commensurate with the risk of the assigned task to prevent

impact to the station (H.4(a)).

Inspection Report# : [2011003](#) (pdf)

Mitigating Systems

Significance:  Mar 31, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

MSIV RPS LIMIT SWITCH PRECONDITIONING

NRC inspectors identified a finding of very low safety significance (Green) and an associated NCV of 10 CFR 50, Appendix B, Criterion V on December 21, 2010. While observing performance of QCOS 0250-01, "MSIV [Main Steam Isolation Valve] Scram Sensor Channel Functional Test," inspectors identified that the licensee's surveillance procedure unacceptably preconditioned the reactor protection system (RPS) 'B' limit switches during testing of the RPS 'A' switches. The licensee had not previously evaluated the pre-conditioning to determine potential impact to the test and subsequently validated the inspectors' assessment that the test methodology did unacceptably precondition the 'B' RPS limit switches. The issue was documented in the corrective action program as Issue Report 1155212. The procedure was revised and subsequent retesting on March 26 and 27, 2011, demonstrated that all MSIV RPS limit switches were operable.

This issue was more than minor because, if left uncorrected, the performance deficiency would have the potential to lead to a more significant safety concern in that preconditioning could mask a condition which would prevent an automatic actuation of RPS on MSIV closure. Inspectors performed the SDP phase 1 screening using IMC 0609, Attachment 4, Table 4a, Mitigating Systems Cornerstone column, and answered all questions "No." Therefore, this finding is Green, or very low safety significance. The issue was considered a legacy issue and no cross-cutting aspect was assigned.

Inspection Report# : [2011002](#) (pdf)

Significance:  Mar 31, 2011

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

UNIT 1/2 EDG OUTPUT BREAKER FAILURE TO UNIT 2

A self-revealed finding of very low safety significance (Green) and associated NCV of Technical Specification 5.4.1.a was identified on March 7, 2011, when a broken wire lug prevented closure of the 1/2 emergency diesel generator (EDG) output supply breaker to Unit 2 during core spray system logic testing. The failure to identify or correct wire routing deficiencies during cubicle inspections was a performance deficiency and a finding. The inspectors identified that work instructions did not contain sufficient detail to ensure that breaker wiring was configured correctly and the ability to perform safety functions was not adversely impacted. The broken lug was repaired and the 1/2 EDG was declared operable to Unit 2 on March 8, 2011. The issue was documented in the corrective action program as Issue Report 1184304.

This issue was more than minor because, if left uncorrected, the performance deficiency would have the potential to lead to a more significant safety concern in that similar failures could result in a loss of safety function. Inspectors performed the SDP phase 1 screening using IMC 0609, Attachment 4, Table 4a, Mitigating Systems Cornerstone column, and answered all questions "No." Therefore, this finding screens as Green, or very low safety significance. The inspectors identified that this finding has a cross-cutting aspect in the Problem Identification and Resolution - Operating Experience Component. Specifically, the licensee failed to implement and institutionalize internal operating experience concerning the improper routing of cubicle wiring through appropriate changes to the station preventative maintenance program (P.2(b)).

Inspection Report# : [2011002](#) (pdf)

Barrier Integrity

Emergency Preparedness

Significance: SL-IV Jun 23, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

Changes to EAL Basis Decreased the Effectiveness of the Plan without Prior NRC Approval.

The inspector identified a violation of very low safety significance involving a Severity Level IV NCV of 10 CFR 50.54(q) for failing to obtain prior approval for an emergency plan change which decreased the effectiveness of the plan. Specifically, the licensee modified the Emergency Action Level (EAL) Basis in EAL HU6, Revision 22, which indefinitely extended the start of the 15 minute emergency classification clock beyond a credible notification that a fire is occurring or indication of a valid fire detection system alarm. This change decreased the effectiveness of the emergency plan by reducing the capability to perform a risk significant planning function in a timely manner.

The violation affected the NRC's ability to perform its regulatory function because it involved implementing a change that decreased the effectiveness of the emergency plan without NRC approval. Therefore, this issue was evaluated using Traditional Enforcement. The NRC determined that a Severity Level IV violation was appropriate due to the reduction of the capability to perform a risk significant planning standard function in a timely manner. The licensee entered this issue into its corrective action program and revised the EAL basis to restore compliance. (1EP4)

The associated performance deficiency is tracked as item 2011-503-02.

Inspection Report# : [2010503](#) (pdf)

Significance:  Jun 23, 2011

Identified By: NRC

Item Type: FIN Finding

Changes to EAL Basis Decreased the Effectiveness of the Plan without Prior NRC Approval.

The inspector identified a finding of very low safety significance involving a Severity Level IV NCV of 10 CFR 50.54 (q) for failing to obtain prior approval for an emergency plan change which decreased the effectiveness of the plan. Specifically, the licensee modified the Emergency Action Level (EAL) Basis in EAL HU6, Revision 22, which indefinitely extended the start of the 15 minute emergency classification clock beyond a credible notification that a fire is occurring or indication of a valid fire detection system alarm. This change decreased the effectiveness of the emergency plan by reducing the capability to perform a risk significant planning function in a timely manner.

The finding was more than minor using IMC 0612, because it is associated with the emergency preparedness cornerstone attribute of procedure quality for EAL and emergency plan changes, and it adversely affected the cornerstone objective of ensuring that the licensee is capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. Therefore, the performance deficiency was a finding. Using IMC 0609, Appendix B, the inspector determined that the finding had a very low safety significance because the finding is a failure to comply with 10 CFR 50.54(q) involving the risk significant planning standard 50.47(b)(4), which, in this case, met the example of a Green finding because it involved one Unusual Event classification (EAL HU6).

Due to the age of this issue, it was not determined to be reflective of current licensee performance and therefore a cross-cutting aspect was not assigned to this finding. (Section 1EP4)

The associated traditional enforcement item is tracked as item 2011-503-01.

Inspection Report# : [2010503](#) (pdf)

Occupational Radiation Safety

Public Radiation Safety

Significance:  Sep 30, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

TURBINE BUILDING DIFFERENTIAL PRESSURE INDICATING POSITIVE

An NRC identified finding of very low safety significance with an associated NCV of 10 CFR 20.1302 was identified for failure to take action to prevent a potential unmonitored release on August 3, 2011, when the turbine building differential pressure indicated positive on the building differential pressure indication in the main control room. This issue was entered into the licensee's corrective action program as IR 1247501. Immediate corrective action included determination that the turbine building was still at a negative differential pressure and no unmonitored release path existed.

The performance deficiency was more than minor because it adversely affected the Public Radiation Safety Cornerstone objective to ensure adequate protection of public health and safety from exposure to radioactive materials released into the public domain as a result of routine civilian nuclear reactor operation. Failure to perform surveys when indicated conditions warrant increases the possibility that an unmonitored release could occur. Using IMC 0609, Appendix D, "Public Radiation Safety Significance Determination Process," radioactive material control program flowchart, there was no public exposure, and this finding was screened as Green, or very low safety significance. The inspectors identified that this finding had a cross cutting aspect in the area of Human Performance Work Practices because operators failed to follow the steps of the annunciator response procedure (H.4(b)). (Section 1R04.1.b(1))
Inspection Report# : [2011004](#) (*pdf*)

Significance: SL-IV Dec 31, 2010

Identified By: NRC

Item Type: FIN Finding

FAILURE TO UPDATE THE UFSAR FOR FIRE PROTECTION DOCUMENTS

A Severity Level IV NCV of 10 CFR 50.71(e), "Periodic Update of the Final Safety Analysis Report," and an accompanying Green finding were identified by the inspectors for the failure to update documents incorporated by reference in the Updated Final Safety Analysis Report (UFSAR) and provided to the NRC in UFSAR updates. Specifically, the licensee did not update dose consequence calculations for a fire in the intermediate radwaste storage facility (IRSF) to reflect changes in packaging methods of solid radioactive waste material stored in the IRSF and used to provide a basis for determining if the increase in event consequences to offsite dose resulting from a fire in the facility was not more than minimal. Corrective actions included revision of the calculations and implementation of procedural controls to limit activity stored in the building to ensure offsite dose limits were not challenged in the event of a fire.

This finding was determined to be more than minor using IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," because if left uncorrected the performance deficiency could have led to a more significant safety concern. Specifically, failure to update the UFSAR or associated licensing basis documents impacts the licensee's ability to adequately evaluate plant changes under the 10 CFR 50.59 processes and could lead to the licensee erroneously making unacceptable changes to the facility. The phase 1 SDP screening performed by the inspectors concluded that, since no actual release had occurred, no dose was received as a result of the issue, and the probability of the initiating design basis fire for the IRSF was extremely low, both the Radioactive Material Control and the Effluent Release Program flowcharts of IMC 0609 Appendix D, "Public Radiation Safety Significance Determination Program," determine the finding was of very low safety significance (Green). The inspectors determined that this finding did not reflect present performance because it is a legacy issue with changes made to the facility more than 10 years previously; therefore, there was no cross-cutting aspect associated with this finding.

The associated Performance Deficiency is tracked as item 2010-005-02.

Inspection Report# : [2010005](#) (*pdf*)

Significance: G Dec 31, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO UPDATE THE UFSAR FOR FIRE PROTECTION DOCUMENTS

A Severity Level IV NCV of 10 CFR 50.71(e), "Periodic Update of the Final Safety Analysis Report," and an accompanying Green finding were identified by the inspectors for the failure to update documents incorporated by reference in the Updated Final Safety Analysis Report (UFSAR) and provided to the NRC in UFSAR updates. Specifically, the licensee did not update dose consequence calculations for a fire in the intermediate radwaste storage facility (IRSF) to reflect changes in packaging methods of solid radioactive waste material stored in the IRSF and used to provide a basis for determining if the increase in event consequences to offsite dose resulting from a fire in the facility was not more than minimal. Corrective actions included revision of the calculations and implementation of procedural controls to limit activity stored in the building to ensure offsite dose limits were not challenged in the event of a fire.

This finding was determined to be more than minor using IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," because if left uncorrected the performance deficiency could have led to a more significant safety concern. Specifically, failure to update the UFSAR or associated licensing basis documents impacts the licensee's ability to adequately evaluate plant changes under the 10 CFR 50.59 processes and could lead to the licensee erroneously making unacceptable changes to the facility. The phase 1 SDP screening performed by the inspectors concluded that, since no actual release had occurred, no dose was received as a result of the issue, and the probability of the initiating design basis fire for the IRSF was extremely low, both the Radioactive Material Control and the Effluent Release Program flowcharts of IMC 0609 Appendix D, "Public Radiation Safety Significance Determination Program," determine the finding was of very low safety significance (Green). The inspectors determined that this finding did not reflect present performance because it is a legacy issue with changes made to the facility more than 10 years previously; therefore, there was no cross-cutting aspect associated with this finding.

The associated traditional enforcement violation is tracked as item 2010-005-01.

Inspection Report# : [2010005](#) (*pdf*)

Physical Protection

Although the NRC is actively overseeing the Security cornerstone, the Commission has decided that certain findings pertaining to security cornerstone will not be publicly available to ensure that potentially useful information is not provided to a possible adversary. Therefore, the [cover letters](#) to security inspection reports may be viewed.

Miscellaneous

Last modified : January 04, 2012

Quad Cities 2

4Q/2011 Plant Inspection Findings

Initiating Events

Significance:  Sep 30, 2011

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

VALVE OUT OF POSITION IN RADWASTE

A self revealed finding of very low safety significance with an associated NCV of Technical Specification (TS) 5.4.1.a was identified for failure to properly track the abnormal position of the waste sample tanks or floor drain sample tanks to waste collector tank valve, 1/2 2001 54. On August 12, 2011, an operator failed to position the valve in accordance with the operating procedure and did not follow station administrative procedures for tracking components that deviate from expected position. On August 17, a second operator transferred contaminated water to an unintended tank because of this deviation. This issue has been entered into the licensee's corrective action program as Issue Report (IR) 1252370. The 1/2 2001 54 valve was shut immediately on discovery to stop water transfer.

The performance deficiency was more than minor since it can reasonably be viewed as a precursor to a more significant event because mispositioned components could reasonably be expected to result in liquid spills or significant personnel exposure. This performance deficiency also adversely affected the Initiating Events Cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions in that a large, uncontrolled spread of contamination as a result of a mispositioned valve in the liquid radioactive waste system would impact access to plant areas and would complicate operator response. Using IMC 0609, Table 4a, under the Initiating Events Cornerstone, all questions were answered "No." This issue was screened as Green, or very low safety significance. Inspectors concluded that this issue had a cross cutting aspect in the area of Human Performance Decision Making. The operator made a decision outside his authority, in that, senior reactor operator approval is required to leave the 1/2 2001 54 valve open and the operator did not engage supervision to obtain that authorization (H.1(a)). (Section 1R04.1.b(2))

Inspection Report# : [2011004](#) (pdf)

Significance:  Jun 30, 2011

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

WRONG LIMIT ERROR DURING SURVEILLANCE

A self-revealed finding of very low safety significance and associated NCV of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was identified on May 4, 2011, when instrument technicians caused a control room alarm on Unit 2 after receiving permission from the Unit 1 unit supervisor to perform the test on Unit 1. Immediate actions included termination of the surveillance and restoration of the equipment to the correct lineup for plant conditions. The issue was entered into the corrective action program as IR 1211933.

Inspectors determined that the licensee's failure to follow the procedure as written resulted in Unit 2 surveillance procedure steps being performed on Unit 1 safety-related equipment; therefore, this was a performance deficiency. The inspectors answered the more than minor screening questions of IMC 0612, Appendix B, Figure 2, Block 9, question 2.a, indicating the performance deficiency could be viewed as a precursor to a significant event, and the finding was, therefore, more-than-minor. Inspectors determined that performing procedural action on the wrong unit would impact the Initiating Event Cornerstone objective of limiting the likelihood of upsetting plant stability and challenging critical safety functions during power operations. Specifically, the objective attributes of configuration control equipment performance were negatively impacted. Inspectors performed the SDP phase I screening using IMC 0609, Attachment 4, Table 4a for transient initiators in the Initiating Events Cornerstone column and answered the question "No." The issue was screened as Green or very low safety significance. Inspectors concluded that the finding had a cross-cutting aspect in Human Performance-Work Practices, in that, licensee staff involved in the event failed to utilize human performance error prevention techniques commensurate with the risk of the assigned task to prevent

impact to the station (H.4(a)).

Inspection Report# : [2011003](#) (pdf)

Mitigating Systems

Significance:  Oct 21, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

Non-Conservative Calibration Tolerance Limits for Electrical Relay Settings

The inspectors identified a finding of very low safety significance (Green) and associated Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," involving the licensee's failure to specify in a design calculation the allowable relay setpoint calibration tolerances. Specifically, the acceptance criteria used in relay setting calibration procedures was not bounded by the relay setting design calculations. The licensee entered this finding into their corrective action program and verified the calibrated relay settings would still provide adequate electrical protection coordination capability. The inspectors reviewed the licensee's analysis and had no concerns.

The performance deficiency was determined to be more than minor because it was associated with the Mitigating Systems Cornerstone attribute of Equipment Performance, and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to adequately evaluate the design requirements of the relay settings could have resulted in a loss-of-relay coordination and could allow a fault on one piece of equipment to propagate to other safety-related equipment outside the designed isolation boundary. The finding screened as very low safety significance (Green) because the finding was design deficiency confirmed not to result in a loss of safety function of a system or a train. There was no cross-cutting aspect associated with this finding because it did not reflect current performance.

Inspection Report# : [2011009](#) (pdf)

Significance:  Oct 21, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Perform Required In-Service Testing of Shutdown Cooling Suction Valves

The inspectors identified a finding of very low safety significance (Green) and associated Non-Cited Violation of Technical Specification 5.5.6, "Inservice Testing Program," for the failure to perform required testing in accordance with the American Society of Mechanical Engineers Code for eight valves that had active safety functions. Specifically, the licensee failed to test eight valves which were required to operate in Mode 3 to return the residual heat removal system from the shutdown cooling mode to the low pressure coolant injection mode of operation. The licensee entered this finding into their corrective action program and verified the valves were operable based on recent exercising of the valves during the last refueling outages.

The performance deficiency was determined to be more than minor because it was associated with the Mitigating Systems Cornerstone attribute of Equipment Performance, and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, degraded valve performance could go undetected without periodic testing and trending. The finding screened as very low safety significance (Green) because the finding was not a design or qualification deficiency, did not represent a loss of system safety function, and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. The finding had no cross-cutting aspect because the incorrect valve classification was not indicative of current performance.

Inspection Report# : [2011009](#) (pdf)

Significance:  Oct 21, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

Safety-Related Battery Charger Testing and Maintenance Procedures Did Not Include Steps for Electrolytic

Capacitor Replacement

The inspectors identified a finding of very low safety significance (Green) and associated Non-Cited Violation of Technical Specification 5.5.6, "Inservice Testing Program," for the failure to perform required testing in accordance with the American Society of Mechanical Engineers Code for eight valves that had active safety functions. Specifically, the licensee failed to test eight valves which were required to operate in Mode 3 to return the residual heat removal system from the shutdown cooling mode to the low pressure coolant injection mode of operation. The licensee entered this finding into their corrective action program and verified the valves were operable based on recent exercising of the valves during the last refueling outages.

The performance deficiency was determined to be more than minor because it was associated with the Mitigating Systems Cornerstone attribute of Equipment Performance, and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, degraded valve performance could go undetected without periodic testing and trending. The finding screened as very low safety significance (Green) because the finding was not a design or qualification deficiency, did not represent a loss of system safety function, and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. The finding had no cross-cutting aspect because the incorrect valve classification was not indicative of current performance. (Section 1R21.3.b.(2))

Inspection Report# : [2011009](#) (pdf)

Significance: SL-IV Oct 21, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Update the FSAR With the Safety Analysis Performed In Response to GL 2008-01

On January 11, 2008, the NRC requested each addressee of GL 2008 01 to evaluate its ECCS, DHR, and containment spray systems licensing basis, design, testing, and corrective actions to ensure that gas accumulation was maintained less than the amount that would challenge the operability of these systems, and take appropriate actions when conditions adverse to quality were identified. As a consequence, the licensee performed analyses that resulted, in part, in the development of void acceptance criteria, identification of gas susceptible locations in piping, development of periodic gas monitoring procedures for these newly identified locations, and the acceptance of some locations that could potentially accumulate voids that were determined to be benign. However, on September 4, 2011, the inspectors noted the licensee had not updated the UFSAR to reflect these analyses.

Inspection Report# : [2011009](#) (pdf)

Significance:  Oct 21, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Ensure that RHR Would Be Capable to Respond to a LOCA at Mode 3

The inspectors identified a finding of very low safety significance and associated Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the failure to ensure the emergency core cooling system mode of operation of the residual heat removal system would be capable of performing its mitigating function at Mode 3. Specifically, the residual heat removal system would experience flash evaporation during a rapid system depressurization while in Mode 3 and this condition was not analyzed. This finding was entered into the licensee's corrective action program.

The performance deficiency was determined to be minor per the IMC-0612 significance determination process. Because it was associated with the Mitigating System Cornerstone attribute of Equipment Performance and affected the cornerstone objective of ensuring the capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the design of the residual heat removal system did not ensure that its emergency core cooling mode of operation would be capable of performing its mitigating function at Mode 3. Steam voids would form when transitioning from decay heat removal to emergency core cooling mode of operation in Mode 3 and this condition was not analyzed. The finding screened as very low safety significance (Green) using a Significance Determination Process Phase II evaluation. This finding had a cross-cutting aspect in the area of problem identification and resolution because the licensee did not thoroughly evaluate relevant external operating experience. Specifically, the licensee's evaluation of similar operating experience such as Information Notice 2010-11 incorrectly concluded the station was not vulnerable to the operating experience described therein. [P.2(a)] (Section 4OA5.1c(2))

Inspection Report# : [2011009](#) (pdf)

Significance: G Mar 31, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

MSIV RPS LIMIT SWITCH PRECONDITIONING

NRC inspectors identified a finding of very low safety significance (Green) and an associated NCV of 10 CFR 50, Appendix B, Criterion V on December 21, 2010. While observing performance of QCOS 0250-01, "MSIV [Main Steam Isolation Valve] Scram Sensor Channel Functional Test," inspectors identified that the licensee's surveillance procedure unacceptably preconditioned the reactor protection system (RPS) 'B' limit switches during testing of the RPS 'A' switches. The licensee had not previously evaluated the pre-conditioning to determine potential impact to the test and subsequently validated the inspectors' assessment that the test methodology did unacceptably precondition the 'B' RPS limit switches. The issue was documented in the corrective action program as Issue Report 1155212. The procedure was revised and subsequent retesting on March 26 and 27, 2011, demonstrated that all MSIV RPS limit switches were operable.

This issue was more than minor because, if left uncorrected, the performance deficiency would have the potential to lead to a more significant safety concern in that preconditioning could mask a condition which would prevent an automatic actuation of RPS on MSIV closure. Inspectors performed the SDP phase 1 screening using IMC 0609, Attachment 4, Table 4a, Mitigating Systems Cornerstone column, and answered all questions "No." Therefore, this finding is Green, or very low safety significance. The issue was considered a legacy issue and no cross-cutting aspect was assigned.

Inspection Report# : [2011002](#) (*pdf*)

Significance: G Mar 31, 2011

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

UNIT 1/2 EDG OUTPUT BREAKER FAILURE TO UNIT 2

A self-revealed finding of very low safety significance (Green) and associated NCV of Technical Specification 5.4.1.a was identified on March 7, 2011, when a broken wire lug prevented closure of the 1/2 emergency diesel generator (EDG) output supply breaker to Unit 2 during core spray system logic testing. The failure to identify or correct wire routing deficiencies during cubicle inspections was a performance deficiency and a finding. The inspectors identified that work instructions did not contain sufficient detail to ensure that breaker wiring was configured correctly and the ability to perform safety functions was not adversely impacted. The broken lug was repaired and the 1/2 EDG was declared operable to Unit 2 on March 8, 2011. The issue was documented in the corrective action program as Issue Report 1184304.

This issue was more than minor because, if left uncorrected, the performance deficiency would have the potential to lead to a more significant safety concern in that similar failures could result in a loss of safety function. Inspectors performed the SDP phase 1 screening using IMC 0609, Attachment 4, Table 4a, Mitigating Systems Cornerstone column, and answered all questions "No." Therefore, this finding screens as Green, or very low safety significance. The inspectors identified that this finding has a cross-cutting aspect in the Problem Identification and Resolution - Operating Experience Component. Specifically, the licensee failed to implement and institutionalize internal operating experience concerning the improper routing of cubicle wiring through appropriate changes to the station preventative maintenance program (P.2(b)).

Inspection Report# : [2011002](#) (*pdf*)

Barrier Integrity

Emergency Preparedness

Significance: SL-IV Jun 23, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

Changes to EAL Basis Decreased the Effectiveness of the Plan without Prior NRC Approval.

The inspector identified a violation of very low safety significance involving a Severity Level IV NCV of 10 CFR 50.54(q) for failing to obtain prior approval for an emergency plan change which decreased the effectiveness of the plan. Specifically, the licensee modified the Emergency Action Level (EAL) Basis in EAL HU6, Revision 22, which indefinitely extended the start of the 15 minute emergency classification clock beyond a credible notification that a fire is occurring or indication of a valid fire detection system alarm. This change decreased the effectiveness of the emergency plan by reducing the capability to perform a risk significant planning function in a timely manner.

The violation affected the NRC's ability to perform its regulatory function because it involved implementing a change that decreased the effectiveness of the emergency plan without NRC approval. Therefore, this issue was evaluated using Traditional Enforcement. The NRC determined that a Severity Level IV violation was appropriate due to the reduction of the capability to perform a risk significant planning standard function in a timely manner. The licensee entered this issue into its corrective action program and revised the EAL basis to restore compliance. (1EP4)

The associated performance deficiency is tracked as item 2011-503-02.

Inspection Report# : [2010503](#) (pdf)

Significance:  Jun 23, 2011

Identified By: NRC

Item Type: FIN Finding

Changes to EAL Basis Decreased the Effectiveness of the Plan without Prior NRC Approval.

The inspector identified a finding of very low safety significance involving a Severity Level IV NCV of 10 CFR 50.54 (q) for failing to obtain prior approval for an emergency plan change which decreased the effectiveness of the plan. Specifically, the licensee modified the Emergency Action Level (EAL) Basis in EAL HU6, Revision 22, which indefinitely extended the start of the 15 minute emergency classification clock beyond a credible notification that a fire is occurring or indication of a valid fire detection system alarm. This change decreased the effectiveness of the emergency plan by reducing the capability to perform a risk significant planning function in a timely manner.

The finding was more than minor using IMC 0612, because it is associated with the emergency preparedness cornerstone attribute of procedure quality for EAL and emergency plan changes, and it adversely affected the cornerstone objective of ensuring that the licensee is capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. Therefore, the performance deficiency was a finding. Using IMC 0609, Appendix B, the inspector determined that the finding had a very low safety significance because the finding is a failure to comply with 10 CFR 50.54(q) involving the risk significant planning standard 50.47(b)(4), which, in this case, met the example of a Green finding because it involved one Unusual Event classification (EAL HU6).

Due to the age of this issue, it was not determined to be reflective of current licensee performance and therefore a cross-cutting aspect was not assigned to this finding. (Section 1EP4)

The associated traditional enforcement item is tracked as item 2011-503-01.

Inspection Report# : [2010503](#) (pdf)

Occupational Radiation Safety

Public Radiation Safety

Significance: **G** Sep 30, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

TURBINE BUILDING DIFFERENTIAL PRESSURE INDICATING POSITIVE

An NRC identified finding of very low safety significance with an associated NCV of 10 CFR 20.1302 was identified for failure to take action to prevent a potential unmonitored release on August 3, 2011, when the turbine building differential pressure indicated positive on the building differential pressure indication in the main control room. This issue was entered into the licensee's corrective action program as IR 1247501. Immediate corrective action included determination that the turbine building was still at a negative differential pressure and no unmonitored release path existed.

The performance deficiency was more than minor because it adversely affected the Public Radiation Safety Cornerstone objective to ensure adequate protection of public health and safety from exposure to radioactive materials released into the public domain as a result of routine civilian nuclear reactor operation. Failure to perform surveys when indicated conditions warrant increases the possibility that an unmonitored release could occur. Using IMC 0609, Appendix D, "Public Radiation Safety Significance Determination Process," radioactive material control program flowchart, there was no public exposure, and this finding was screened as Green, or very low safety significance. The inspectors identified that this finding had a cross cutting aspect in the area of Human Performance Work Practices because operators failed to follow the steps of the annunciator response procedure (H.4(b)). (Section 1R04.1.b(1))
Inspection Report# : [2011004](#) (*pdf*)

Physical Protection

Although the NRC is actively overseeing the Security cornerstone, the Commission has decided that certain findings pertaining to security cornerstone will not be publicly available to ensure that potentially useful information is not provided to a possible adversary. Therefore, the [cover letters](#) to security inspection reports may be viewed.

Miscellaneous

Last modified : March 02, 2012

Quad Cities 2

1Q/2012 Plant Inspection Findings

Initiating Events

Significance:  Sep 30, 2011

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

VALVE OUT OF POSITION IN RADWASTE

A self revealed finding of very low safety significance with an associated NCV of Technical Specification (TS) 5.4.1.a was identified for failure to properly track the abnormal position of the waste sample tanks or floor drain sample tanks to waste collector tank valve, 1/2 2001 54. On August 12, 2011, an operator failed to position the valve in accordance with the operating procedure and did not follow station administrative procedures for tracking components that deviate from expected position. On August 17, a second operator transferred contaminated water to an unintended tank because of this deviation. This issue has been entered into the licensee's corrective action program as Issue Report (IR) 1252370. The 1/2 2001 54 valve was shut immediately on discovery to stop water transfer.

The performance deficiency was more than minor since it can reasonably be viewed as a precursor to a more significant event because mispositioned components could reasonably be expected to result in liquid spills or significant personnel exposure. This performance deficiency also adversely affected the Initiating Events Cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions in that a large, uncontrolled spread of contamination as a result of a mispositioned valve in the liquid radioactive waste system would impact access to plant areas and would complicate operator response. Using IMC 0609, Table 4a, under the Initiating Events Cornerstone, all questions were answered "No." This issue was screened as Green, or very low safety significance. Inspectors concluded that this issue had a cross cutting aspect in the area of Human Performance Decision Making. The operator made a decision outside his authority, in that, senior reactor operator approval is required to leave the 1/2 2001 54 valve open and the operator did not engage supervision to obtain that authorization (H.1(a)). (Section 1R04.1.b(2))

Inspection Report# : [2011004](#) (pdf)

Significance:  Jun 30, 2011

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

WRONG LIMIT ERROR DURING SURVEILLANCE

A self-revealed finding of very low safety significance and associated NCV of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was identified on May 4, 2011, when instrument technicians caused a control room alarm on Unit 2 after receiving permission from the Unit 1 unit supervisor to perform the test on Unit 1. Immediate actions included termination of the surveillance and restoration of the equipment to the correct lineup for plant conditions. The issue was entered into the corrective action program as IR 1211933.

Inspectors determined that the licensee's failure to follow the procedure as written resulted in Unit 2 surveillance procedure steps being performed on Unit 1 safety-related equipment; therefore, this was a performance deficiency. The inspectors answered the more than minor screening questions of IMC 0612, Appendix B, Figure 2, Block 9, question 2.a, indicating the performance deficiency could be viewed as a precursor to a significant event, and the finding was, therefore, more-than-minor. Inspectors determined that performing procedural action on the wrong unit would impact the Initiating Event Cornerstone objective of limiting the likelihood of upsetting plant stability and challenging critical safety functions during power operations. Specifically, the objective attributes of configuration control equipment performance were negatively impacted. Inspectors performed the SDP phase I screening using IMC 0609, Attachment 4, Table 4a for transient initiators in the Initiating Events Cornerstone column and answered the question "No." The issue was screened as Green or very low safety significance. Inspectors concluded that the finding had a cross-cutting aspect in Human Performance-Work Practices, in that, licensee staff involved in the event failed to utilize human performance error prevention techniques commensurate with the risk of the assigned task to prevent

impact to the station (H.4(a)).

Inspection Report# : [2011003](#) (pdf)

Mitigating Systems

Significance:  Oct 21, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

Non-Conservative Calibration Tolerance Limits for Electrical Relay Settings

The inspectors identified a finding of very low safety significance (Green) and associated Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," involving the licensee's failure to specify in a design calculation the allowable relay setpoint calibration tolerances. Specifically, the acceptance criteria used in relay setting calibration procedures was not bounded by the relay setting design calculations. The licensee entered this finding into their corrective action program and verified the calibrated relay settings would still provide adequate electrical protection coordination capability. The inspectors reviewed the licensee's analysis and had no concerns.

The performance deficiency was determined to be more than minor because it was associated with the Mitigating Systems Cornerstone attribute of Equipment Performance, and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to adequately evaluate the design requirements of the relay settings could have resulted in a loss-of-relay coordination and could allow a fault on one piece of equipment to propagate to other safety-related equipment outside the designed isolation boundary. The finding screened as very low safety significance (Green) because the finding was design deficiency confirmed not to result in a loss of safety function of a system or a train. There was no cross-cutting aspect associated with this finding because it did not reflect current performance.

Inspection Report# : [2011009](#) (pdf)

Significance:  Oct 21, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Perform Required In-Service Testing of Shutdown Cooling Suction Valves

The inspectors identified a finding of very low safety significance (Green) and associated Non-Cited Violation of Technical Specification 5.5.6, "Inservice Testing Program," for the failure to perform required testing in accordance with the American Society of Mechanical Engineers Code for eight valves that had active safety functions. Specifically, the licensee failed to test eight valves which were required to operate in Mode 3 to return the residual heat removal system from the shutdown cooling mode to the low pressure coolant injection mode of operation. The licensee entered this finding into their corrective action program and verified the valves were operable based on recent exercising of the valves during the last refueling outages.

The performance deficiency was determined to be more than minor because it was associated with the Mitigating Systems Cornerstone attribute of Equipment Performance, and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, degraded valve performance could go undetected without periodic testing and trending. The finding screened as very low safety significance (Green) because the finding was not a design or qualification deficiency, did not represent a loss of system safety function, and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. The finding had no cross-cutting aspect because the incorrect valve classification was not indicative of current performance.

Inspection Report# : [2011009](#) (pdf)

Significance:  Oct 21, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

Safety-Related Battery Charger Testing and Maintenance Procedures Did Not Include Steps for Electrolytic

Capacitor Replacement

The inspectors identified a finding of very low safety significance (Green) and associated Non-Cited Violation of Technical Specification 5.5.6, "Inservice Testing Program," for the failure to perform required testing in accordance with the American Society of Mechanical Engineers Code for eight valves that had active safety functions. Specifically, the licensee failed to test eight valves which were required to operate in Mode 3 to return the residual heat removal system from the shutdown cooling mode to the low pressure coolant injection mode of operation. The licensee entered this finding into their corrective action program and verified the valves were operable based on recent exercising of the valves during the last refueling outages.

The performance deficiency was determined to be more than minor because it was associated with the Mitigating Systems Cornerstone attribute of Equipment Performance, and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, degraded valve performance could go undetected without periodic testing and trending. The finding screened as very low safety significance (Green) because the finding was not a design or qualification deficiency, did not represent a loss of system safety function, and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. The finding had no cross-cutting aspect because the incorrect valve classification was not indicative of current performance. (Section 1R21.3.b.(2))
Inspection Report# : [2011009](#) (pdf)

Significance: SL-IV Oct 21, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Update the FSAR With the Safety Analysis Performed In Response to GL 2008-01

On January 11, 2008, the NRC requested each addressee of GL 2008 01 to evaluate its ECCS, DHR, and containment spray systems licensing basis, design, testing, and corrective actions to ensure that gas accumulation was maintained less than the amount that would challenge the operability of these systems, and take appropriate actions when conditions adverse to quality were identified. As a consequence, the licensee performed analyses that resulted, in part, in the development of void acceptance criteria, identification of gas susceptible locations in piping, development of periodic gas monitoring procedures for these newly identified locations, and the acceptance of some locations that could potentially accumulate voids that were determined to be benign. However, on September 4, 2011, the inspectors noted the licensee had not updated the UFSAR to reflect these analyses.

Inspection Report# : [2011009](#) (pdf)

Significance:  Oct 21, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Ensure that RHR Would Be Capable to Respond to a LOCA at Mode 3

The inspectors identified a finding of very low safety significance and associated Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the failure to ensure the emergency core cooling system mode of operation of the residual heat removal system would be capable of performing its mitigating function at Mode 3. Specifically, the residual heat removal system would experience flash evaporation during a rapid system depressurization while in Mode 3 and this condition was not analyzed. This finding was entered into the licensee's corrective action program.

The performance deficiency was determined to be minor per the IMC-0612 significance determination process. Because it was associated with the Mitigating System Cornerstone attribute of Equipment Performance and affected the cornerstone objective of ensuring the capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the design of the residual heat removal system did not ensure that its emergency core cooling mode of operation would be capable of performing its mitigating function at Mode 3. Steam voids would form when transitioning from decay heat removal to emergency core cooling mode of operation in Mode 3 and this condition was not analyzed. The finding screened as very low safety significance (Green) using a Significance Determination Process Phase II evaluation. This finding had a cross-cutting aspect in the area of problem identification and resolution because the licensee did not thoroughly evaluate relevant external operating experience. Specifically, the licensee's evaluation of similar operating experience such as Information Notice 2010-11 incorrectly concluded the station was not vulnerable to the operating experience described therein. [P.2(a)] (Section 4OA5.1c(2))
Inspection Report# : [2011009](#) (pdf)

Barrier Integrity

Emergency Preparedness

Significance: SL-IV Jun 23, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

Changes to EAL Basis Decreased the Effectiveness of the Plan without Prior NRC Approval.

The inspector identified a violation of very low safety significance involving a Severity Level IV NCV of 10 CFR 50.54(q) for failing to obtain prior approval for an emergency plan change which decreased the effectiveness of the plan. Specifically, the licensee modified the Emergency Action Level (EAL) Basis in EAL HU6, Revision 22, which indefinitely extended the start of the 15 minute emergency classification clock beyond a credible notification that a fire is occurring or indication of a valid fire detection system alarm. This change decreased the effectiveness of the emergency plan by reducing the capability to perform a risk significant planning function in a timely manner.

The violation affected the NRC's ability to perform its regulatory function because it involved implementing a change that decreased the effectiveness of the emergency plan without NRC approval. Therefore, this issue was evaluated using Traditional Enforcement. The NRC determined that a Severity Level IV violation was appropriate due to the reduction of the capability to perform a risk significant planning standard function in a timely manner. The licensee entered this issue into its corrective action program and revised the EAL basis to restore compliance. (1EP4)

The associated performance deficiency is tracked as item 2011-503-02.

Inspection Report# : [2010503](#) (*pdf*)

Significance:  Jun 23, 2011

Identified By: NRC

Item Type: FIN Finding

Changes to EAL Basis Decreased the Effectiveness of the Plan without Prior NRC Approval.

The inspector identified a finding of very low safety significance involving a Severity Level IV NCV of 10 CFR 50.54 (q) for failing to obtain prior approval for an emergency plan change which decreased the effectiveness of the plan. Specifically, the licensee modified the Emergency Action Level (EAL) Basis in EAL HU6, Revision 22, which indefinitely extended the start of the 15 minute emergency classification clock beyond a credible notification that a fire is occurring or indication of a valid fire detection system alarm. This change decreased the effectiveness of the emergency plan by reducing the capability to perform a risk significant planning function in a timely manner.

The finding was more than minor using IMC 0612, because it is associated with the emergency preparedness cornerstone attribute of procedure quality for EAL and emergency plan changes, and it adversely affected the cornerstone objective of ensuring that the licensee is capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. Therefore, the performance deficiency was a finding. Using IMC 0609, Appendix B, the inspector determined that the finding had a very low safety significance because the finding is a failure to comply with 10 CFR 50.54(q) involving the risk significant planning standard 50.47(b)(4), which, in this case, met the example of a Green finding because it involved one Unusual Event classification (EAL HU6).

Due to the age of this issue, it was not determined to be reflective of current licensee performance and therefore a cross-cutting aspect was not assigned to this finding. (Section 1EP4)

The associated traditional enforcement item is tracked as item 2011-503-01.

Occupational Radiation Safety

Public Radiation Safety

Significance:  Sep 30, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

TURBINE BUILDING DIFFERENTIAL PRESSURE INDICATING POSITIVE

An NRC identified finding of very low safety significance with an associated NCV of 10 CFR 20.1302 was identified for failure to take action to prevent a potential unmonitored release on August 3, 2011, when the turbine building differential pressure indicated positive on the building differential pressure indication in the main control room. This issue was entered into the licensee's corrective action program as IR 1247501. Immediate corrective action included determination that the turbine building was still at a negative differential pressure and no unmonitored release path existed.

The performance deficiency was more than minor because it adversely affected the Public Radiation Safety Cornerstone objective to ensure adequate protection of public health and safety from exposure to radioactive materials released into the public domain as a result of routine civilian nuclear reactor operation. Failure to perform surveys when indicated conditions warrant increases the possibility that an unmonitored release could occur. Using IMC 0609, Appendix D, "Public Radiation Safety Significance Determination Process," radioactive material control program flowchart, there was no public exposure, and this finding was screened as Green, or very low safety significance. The inspectors identified that this finding had a cross cutting aspect in the area of Human Performance Work Practices because operators failed to follow the steps of the annunciator response procedure (H.4(b)). (Section 1R04.1.b(1))

Inspection Report# : [2011004](#) (pdf)

Physical Protection

Although the NRC is actively overseeing the Security cornerstone, the Commission has decided that certain findings pertaining to security cornerstone will not be publicly available to ensure that potentially useful information is not provided to a possible adversary. Therefore, the [cover letters](#) to security inspection reports may be viewed.

Miscellaneous

Last modified : May 29, 2012

Quad Cities 2

2Q/2012 Plant Inspection Findings

Initiating Events

Significance: **G** Jun 30, 2012

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

BUS ENERGIZED WITH GROUNDING DEVICE INSTALLED

A finding of very low safety significance with an associated NCV of TS 5.4.1.a, "Procedures," was self-revealed on March 24, 2012, when operators energized an electrical bus in the switchyard with a grounding device still installed on that bus. Failure of a transmission maintenance supervisor to implement the requirements of OP-AA-109-101, "Clearance and Tagging," and have operations place a danger tag on a grounding strap installed on 345 kV Bus 9 resulted in a significant voltage perturbation and operating transient on Unit 1. The licensee entered the issue in the CAP as IR 1345302 and immediate actions included clearing the fault and restoring plant equipment. Individual qualifications were removed for parties involved in the event, and a root cause evaluation was performed.

The finding was determined to be more than minor because it impacted the Human Performance attribute of the Initiating Events Cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the Human Performance attribute was challenged because the human error resulted in a voltage transient that produced an operational transient on Unit 1 and could have resulted in a more severe challenge to both units. The inspectors performed a SDP Phase 1 screening for the finding using IMC 0609, Table 4a, for the Initiation Events Transient Initiators and determined that the finding did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions will not be available. The duration of the event, separation of divisional and emergency power supplies, and redundancy of equipment supplying safety functions were considered for this determination. Therefore, the finding screened as Green, or very low safety significance. The inspectors identified that this finding has a cross-cutting aspect in the area of Human Performance - Decision Making because both the station supervisor overseeing the electrical bus realignment and the clearance holder took action based on non-conservative assumptions that could easily have been validated before placing the electrical system at risk (H.1(b)).

Inspection Report# : [2012003](#) (*pdf*)

Significance: **G** Jun 30, 2012

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

FAILURE TO IDENTIFY DESIGN DEFICIENCY IN VENDOR PRODUCT

A self-revealed finding of very low safety significance with an associated NCV of Technical Specification (TS) 3.7.7, "Main Turbine Bypass Valves System," was identified on April 18, 2012, when an unplanned reactor scram occurred during generator voltage regulator testing. Inspectors subsequently determined the licensee had failed to identify elimination of a time delay that changed how the system responded to a load reject with no turbine trip during vendor design documentation review for the digital electro-hydraulic control (DEHC) system modification implemented in 2006. Failure to perform the review with the rigor required by CC-AA-103-1003, "Owner's Acceptance Review of External Engineering Technical Products," is a performance deficiency entered into the licensee's corrective action program (CAP) as Issue Report (IR) 1355763. This finding resulted in exceeding the allowed out-of-service time for TS 3.7.7, "Main Turbine Bypass System," on at least eleven occasions between the two units since the modifications were installed.

The finding was determined to be more than minor because the performance deficiency adversely affected the Reactor Safety - Initiating Events Cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions. In this circumstance, the Design Control attribute of the cornerstone was adversely impacted when unintended consequences were introduced during a modification. Using IMC 0609, Attachment 4, Table 4a, Initiating Events Cornerstone, Transient Initiators, inspectors determined that the performance deficiency

did not contribute to the likelihood of both a reactor trip and unavailability of mitigation equipment since the main steam safety and relief valves are the credited pressure mitigation equipment and were unaffected by the event. Therefore, this finding screens as Green, or very low safety significance. The inspectors did not identify a cross-cutting aspect for this performance deficiency since it occurred during the DEHC modification review in 2006 and was considered a legacy issue.

Inspection Report# : [2012003](#) (*pdf*)

Significance:  Sep 30, 2011

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

VALVE OUT OF POSITION IN RADWASTE

A self revealed finding of very low safety significance with an associated NCV of Technical Specification (TS) 5.4.1.a was identified for failure to properly track the abnormal position of the waste sample tanks or floor drain sample tanks to waste collector tank valve, 1/2 2001 54. On August 12, 2011, an operator failed to position the valve in accordance with the operating procedure and did not follow station administrative procedures for tracking components that deviate from expected position. On August 17, a second operator transferred contaminated water to an unintended tank because of this deviation. This issue has been entered into the licensee's corrective action program as Issue Report (IR) 1252370. The 1/2 2001 54 valve was shut immediately on discovery to stop water transfer.

The performance deficiency was more than minor since it can reasonably be viewed as a precursor to a more significant event because mispositioned components could reasonably be expected to result in liquid spills or significant personnel exposure. This performance deficiency also adversely affected the Initiating Events Cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions in that a large, uncontrolled spread of contamination as a result of a mispositioned valve in the liquid radioactive waste system would impact access to plant areas and would complicate operator response. Using IMC 0609, Table 4a, under the Initiating Events Cornerstone, all questions were answered "No." This issue was screened as Green, or very low safety significance. Inspectors concluded that this issue had a cross cutting aspect in the area of Human Performance Decision Making. The operator made a decision outside his authority, in that, senior reactor operator approval is required to leave the 1/2 2001 54 valve open and the operator did not engage supervision to obtain that authorization (H.1(a)). (Section 1R04.1.b(2))

Inspection Report# : [2011004](#) (*pdf*)

Mitigating Systems

Significance:  Oct 21, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

Non-Conservative Calibration Tolerance Limits for Electrical Relay Settings

The inspectors identified a finding of very low safety significance (Green) and associated Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," involving the licensee's failure to specify in a design calculation the allowable relay setpoint calibration tolerances. Specifically, the acceptance criteria used in relay setting calibration procedures was not bounded by the relay setting design calculations. The licensee entered this finding into their corrective action program and verified the calibrated relay settings would still provide adequate electrical protection coordination capability. The inspectors reviewed the licensee's analysis and had no concerns.

The performance deficiency was determined to be more than minor because it was associated with the Mitigating Systems Cornerstone attribute of Equipment Performance, and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to adequately evaluate the design requirements of the relay settings could have resulted in a loss-of-relay coordination and could allow a fault on one piece of equipment to propagate to other safety-related equipment outside the designed isolation boundary. The finding screened as very low safety significance

(Green) because the finding was design deficiency confirmed not to result in a loss of safety function of a system or a train. There was no cross-cutting aspect associated with this finding because it did not reflect current performance.
Inspection Report# : [2011009](#) (*pdf*)

G

Significance: Oct 21, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Perform Required In-Service Testing of Shutdown Cooling Suction Valves

The inspectors identified a finding of very low safety significance (Green) and associated Non-Cited Violation of Technical Specification 5.5.6, "Inservice Testing Program," for the failure to perform required testing in accordance with the American Society of Mechanical Engineers Code for eight valves that had active safety functions. Specifically, the licensee failed to test eight valves which were required to operate in Mode 3 to return the residual heat removal system from the shutdown cooling mode to the low pressure coolant injection mode of operation. The licensee entered this finding into their corrective action program and verified the valves were operable based on recent exercising of the valves during the last refueling outages.

The performance deficiency was determined to be more than minor because it was associated with the Mitigating Systems Cornerstone attribute of Equipment Performance, and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, degraded valve performance could go undetected without periodic testing and trending. The finding screened as very low safety significance (Green) because the finding was not a design or qualification deficiency, did not represent a loss of system safety function, and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. The finding had no cross-cutting aspect because the incorrect valve classification was not indicative of current performance.

Inspection Report# : [2011009](#) (*pdf*)

G

Significance: Oct 21, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

Safety-Related Battery Charger Testing and Maintenance Procedures Did Not Include Steps for Electrolytic Capacitor Replacement

The inspectors identified a finding of very low safety significance (Green) and associated Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion V, Instructions, Procedures, and Drawings, for the licensee's failure to have appropriate maintenance procedures instructions in place for periodic replacement of the electrolytic capacitors in the 125Vdc and 250Vdc safety-related battery chargers. Specifically, the licensee failed to specify steps or requirements in battery chargers maintenance procedures for a periodic replacement every ten years, within the design service life of the electrolytic capacitors. The licensee entered this finding into their Corrective Action Program and initiated actions to address the non-conformance.

The performance deficiency was determined to be more than minor because it was associated with the Mitigating Systems Cornerstone attribute of Equipment Performance, and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, failing to periodically replace the electrolytic capacitors in the battery chargers as required by the vendor and the PCM program could result in the failure of the battery chargers to perform their safety function and respond to initiating events. The finding screened as very low safety significance (Green) because the finding was design deficiency confirmed not to result in a loss of safety function of a system or a train. There was no cross-cutting aspect associated with this finding because it did not reflect current performance. (Section 1R21.3.b.(3))

Inspection Report# : [2011009](#) (*pdf*)

Significance: SL-IV Oct 21, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Update the FSAR With the Safety Analysis Performed In Response to GL 2008-01

On January 11, 2008, the NRC requested each addressee of GL 2008 01 to evaluate its ECCS, DHR, and containment spray systems licensing basis, design, testing, and corrective actions to ensure that gas accumulation was maintained less than the amount that would challenge the operability of these systems, and take appropriate actions when conditions adverse to quality were identified. As a consequence, the licensee performed analyses that resulted, in part, in the development of void acceptance criteria, identification of gas susceptible locations in piping, development of periodic gas monitoring procedures for these newly identified locations, and the acceptance of some locations that could potentially accumulate voids that were determined to be benign. However, on September 4, 2011, the inspectors noted the licensee had not updated the UFSAR to reflect these analyses.

Inspection Report# : [2011009](#) (*pdf*)

Significance:  Oct 21, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Ensure that RHR Would Be Capable to Respond to a LOCA at Mode 3

The inspectors identified a finding of very low safety significance and associated Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the failure to ensure the emergency core cooling system mode of operation of the residual heat removal system would be capable of performing its mitigating function at Mode 3. Specifically, the residual heat removal system would experience flash evaporation during a rapid system depressurization while in Mode 3 and this condition was not analyzed. This finding was entered into the licensee's corrective action program.

The performance deficiency was determined to be minor per the IMC-0612 significance determination process. Because it was associated with the Mitigating System Cornerstone attribute of Equipment Performance and affected the cornerstone objective of ensuring the capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the design of the residual heat removal system did not ensure that its emergency core cooling mode of operation would be capable of performing its mitigating function at Mode 3. Steam voids would form when transitioning from decay heat removal to emergency core cooling mode of operation in Mode 3 and this condition was not analyzed. The finding screened as very low safety significance (Green) using a Significance Determination Process Phase II evaluation. This finding had a cross-cutting aspect in the area of problem identification and resolution because the licensee did not thoroughly evaluate relevant external operating experience. Specifically, the licensee's evaluation of similar operating experience such as Information Notice 2010-11 incorrectly concluded the station was not vulnerable to the operating experience described therein. [P.2(a)] (Section 40A5.1c(2))
Inspection Report# : [2011009](#) (*pdf*)

Barrier Integrity

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Significance: **G** Sep 30, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

TURBINE BUILDING DIFFERENTIAL PRESSURE INDICATING POSITIVE

An NRC identified finding of very low safety significance with an associated NCV of 10 CFR 20.1302 was identified for failure to take action to prevent a potential unmonitored release on August 3, 2011, when the turbine building differential pressure indicated positive on the building differential pressure indication in the main control room. This issue was entered into the licensee's corrective action program as IR 1247501. Immediate corrective action included determination that the turbine building was still at a negative differential pressure and no unmonitored release path existed.

The performance deficiency was more than minor because it adversely affected the Public Radiation Safety Cornerstone objective to ensure adequate protection of public health and safety from exposure to radioactive materials released into the public domain as a result of routine civilian nuclear reactor operation. Failure to perform surveys when indicated conditions warrant increases the possibility that an unmonitored release could occur. Using IMC 0609, Appendix D, "Public Radiation Safety Significance Determination Process," radioactive material control program flowchart, there was no public exposure, and this finding was screened as Green, or very low safety significance. The inspectors identified that this finding had a cross cutting aspect in the area of Human Performance Work Practices because operators failed to follow the steps of the annunciator response procedure (H.4(b)). (Section 1R04.1.b(1))
Inspection Report# : [2011004](#) (*pdf*)

Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the [cover letters](#) to security inspection reports may be viewed.

Miscellaneous

Last modified : September 12, 2012

Quad Cities 2

3Q/2012 Plant Inspection Findings

Initiating Events

Significance:  Aug 31, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

CAPR NOT COMPLETED

A finding of very low safety significance (Green) and associated NCV of 10 CFR 50, Appendix B, Criterion II, "Quality Assurance Program" was identified by the inspectors when they determined that a licensee-specified corrective action to prevent recurrence (CAPR) of a significant event was not completed as required by a quality assurance program implementing procedure, LS-AA-125, "Corrective Action Program (CAP) Procedure." Inspectors determined that the failure to complete the CAPR and install auxiliary contactors that had undergone enhanced testing (designated PQI testing in the licensee's documentation) before installation was a performance deficiency entered into the licensee's CAP as IR 1409378. Immediate corrective actions included performing a functional evaluation of installed components and quarantine of remaining spare parts.

This finding was more than minor because the CAPR established criteria that should have prevented installation of the parts until testing was performed, but the parts were installed in the plant and the components were returned to service, thus impacting the reactor safety, initiating events cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations.

Inspectors performed a SDP Phase 1 screening using

IMC 0609 Attachment 4 and Appendix A Exhibit 1, Initiating Events Screening Questions," and answered all of the questions, "No." Therefore, the finding screened as very low safety significance or Green. The inspectors identified that this finding has a cross-cutting aspect in the area of Human Performance – Work Practices, in that, licensee personnel did not follow procedures (H.4(b)). Inspectors determined that the primary contributor to this finding was that procurement personnel did not follow procedure SM-AC-3019, "Parts Quality Process," which stated in Attachment 6 that "the station shall inform the test facility of any unique or special test requirements for the equipment. Otherwise, Exelon PowerLabs will apply standard PQI testing criteria for the item." Procurement personnel did not identify the enhanced PQI testing requirement to PowerLabs when the part was sent for testing.

Inspection Report# : [2012007](#) (*pdf*)

Significance:  Jun 30, 2012

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

BUS ENERGIZED WITH GROUNDING DEVICE INSTALLED

A finding of very low safety significance with an associated NCV of TS 5.4.1.a, "Procedures," was self-revealed on March 24, 2012, when operators energized an electrical bus in the switchyard with a grounding device still installed on that bus. Failure of a transmission maintenance supervisor to implement the requirements of OP-AA-109-101, "Clearance and Tagging," and have operations place a danger tag on a grounding strap installed on 345 kV Bus 9 resulted in a significant voltage perturbation and operating transient on Unit 1. The licensee entered the issue in the CAP as IR 1345302 and immediate actions included clearing the fault and restoring plant equipment. Individual qualifications were removed for parties involved in the event, and a root cause evaluation was performed.

The finding was determined to be more than minor because it impacted the Human Performance attribute of the Initiating Events Cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the Human Performance attribute was challenged because the human error resulted in a voltage transient that produced an operational transient on Unit 1 and could have resulted in a more severe challenge to both units. The inspectors performed a SDP Phase 1 screening for the finding using IMC 0609, Table 4a, for the Initiation Events Transient Initiators and determined that the finding did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions will not be available. The duration of the event, separation of divisional and emergency power supplies, and redundancy of equipment supplying safety functions were considered for this determination. Therefore, the finding screened as Green, or very low safety significance. The inspectors identified that this finding has a cross-cutting aspect in the area of Human Performance - Decision Making because both the station supervisor overseeing the electrical bus realignment and the clearance holder took action based on non-conservative assumptions that could easily have been validated before placing the electrical system at risk (H.1(b)).

Inspection Report# : [2012003](#) (*pdf*)

Significance:  Jun 30, 2012

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

FAILURE TO IDENTIFY DESIGN DEFICIENCY IN VENDOR PRODUCT

A self-revealed finding of very low safety significance with an associated NCV of Technical Specification (TS) 3.7.7, "Main Turbine Bypass Valves System," was identified on April 18, 2012, when an unplanned reactor scram occurred during generator voltage regulator testing. Inspectors subsequently determined the licensee had failed to identify elimination of a time delay that changed how the system responded to a load reject with no turbine trip during vendor design documentation review for the digital electro-hydraulic control (DEHC) system modification implemented in 2006. Failure to perform the review with the rigor required by CC-AA-103-1003, "Owner's Acceptance Review of External Engineering Technical Products," is a performance deficiency entered into the licensee's corrective action program (CAP) as Issue Report (IR) 1355763. This finding resulted in exceeding the allowed out-of-service time for TS 3.7.7, "Main Turbine Bypass System," on at least eleven occasions between the two units since the modifications were installed.

The finding was determined to be more than minor because the performance deficiency adversely affected the Reactor Safety - Initiating Events Cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions. In this circumstance, the Design Control attribute of the cornerstone was adversely impacted when unintended consequences were introduced during a modification. Using IMC 0609, Attachment 4, Table 4a, Initiating Events Cornerstone, Transient Initiators, inspectors determined that the performance deficiency did not contribute to the likelihood of both a reactor trip and unavailability of mitigation equipment since the main steam safety and relief valves are the credited pressure mitigation equipment and were unaffected by the event. Therefore, this finding screens as Green, or very low safety significance. The inspectors did not identify a cross-cutting aspect for this performance deficiency since it occurred during the DEHC modification review in 2006 and was considered a legacy issue.

Inspection Report# : [2012003](#) (*pdf*)

Mitigating Systems

Significance:  Sep 30, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

CONTROL ROOM HVAC RCU HEAD BOLTS NOT TORQUED

A self-revealed finding of very low safety significance (Green) and associated NCV of TS 5.4.1.a was identified for the licensee's failure to specify torque values for the control room ventilation refrigeration condensing unit condenser head in the work instructions performed on January 19, 2012. The inspectors identified that this issue had a cross-cutting aspect in the area of Human Performance - Decision Making (H.1(b)). Inspectors determined that a contributor to this finding was that the Maintenance and Engineering Departments did not verify the assumptions or identify unintended consequences with possible variance in the interpretation and implementation of work instructions stating, "tighten bolts using a crisscross pattern and good mechanical judgment," vice specifying a torque value from MA-MW-736-600. Although this work practice had been in place for years, mechanics questioned the lack of a torque value during the post leak repair to restore operability. Engineering replied with "mechanical judgment" rather than specifying a torque value indicating that the practice was indicative of current performance. The heat exchanger leak was repaired and the head reassembled with nominal torque values.

The performance deficiency was more than minor because the performance deficiency, if left uncorrected, had the potential to lead to a more significant event. The inspectors performed an SDP Phase 1 screening for the finding using IMC 0609, Attachment 04, "Initial Characterization of Findings," and IMC 0609, Appendix A, Exhibit 2, "Mitigating Systems Screening Questions," and answered the first four questions "No." Therefore, the finding screened as very low safety significance, or Green.

Inspection Report# : [2012004](#) (*pdf*)

Significance: G Aug 03, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Procedure to Energize Bus 23-1 to Provide Torus Cooling for Unit 1

The inspectors identified a finding of very low safety significance (Green) and associated NCV of 10 CFR Part 50, Appendix R, Section III.L.3 for the licensee's failure to have an adequate procedure used to implement an alternative shutdown capability in the event of a fire in fire area TB-III. Specifically, the licensee failed to provide adequate steps to ensure the successful energization of Bus 23-1 from the Unit 2 Station Blackout (SBO) Diesel Generator (DG) in the event of a fire in fire area TB-III (Turbine Building Southern Zone Group). The licensee entered the issue into their corrective action program and added a step to close the Bus 23-1 and Bus 71 Tie Breaker.

The inspectors determined that the finding was more than minor because the procedure deficiency did not ensure the successful energization of Bus 23-1 from the Unit 2 SBO DG in the event of a fire in fire area TB-III, which was required to provide Torus cooling for Unit 1. The finding was screened as having very low safety significance in Task 1.3.1 of IMC 0609, Appendix F. This finding did not have a cross-cutting aspect because the finding was not representative of current performance.

Inspection Report# : [2012011](#) (*pdf*)

Significance: G Aug 03, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Procedure for Cold Shutdown Repair of 1A Recirculation Pump Discharge Valve MO 1-202-5A

The inspectors identified a finding of very low safety significance (Green) and associated NCV of 10 CFR Part 50, Appendix R, Section III.L.5 for the licensee's failure to have a procedure in effect that would provide adequate cold shutdown repairs for the 1A Recirculation Pump Discharge Valve MO 1-202-5A. Specifically, a procedure deficiency in Quad Cities Annunciator Response Procedure (ARP) 0030-01, Attachment D, provided an incorrect terminal point and cubicle location on MCC 18/19-5 for the cable wire to be lifted for cold shutdown repair in the event of a fire in

fire area TB-III. The licensee entered the issue into their corrective action program revised the procedure and corrected the deficiency.

The inspectors determined that the finding was more than minor because the procedure deficiency could have resulted in operational complications and could have delayed reaching cold shutdown in the event of a fire in fire area TB-III. The finding was screened as having very low safety significance in Task 1.3.1 of IMC 0609, Appendix F. This finding did not have a cross-cutting aspect because the finding was not representative of current performance.

Inspection Report# : [2012011](#) (*pdf*)

Significance:  Oct 21, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

Non-Conservative Calibration Tolerance Limits for Electrical Relay Settings

The inspectors identified a finding of very low safety significance (Green) and associated Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," involving the licensee's failure to specify in a design calculation the allowable relay setpoint calibration tolerances. Specifically, the acceptance criteria used in relay setting calibration procedures was not bounded by the relay setting design calculations. The licensee entered this finding into their corrective action program and verified the calibrated relay settings would still provide adequate electrical protection coordination capability. The inspectors reviewed the licensee's analysis and had no concerns.

The performance deficiency was determined to be more than minor because it was associated with the Mitigating Systems Cornerstone attribute of Equipment Performance, and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to adequately evaluate the design requirements of the relay settings could have resulted in a loss-of-relay coordination and could allow a fault on one piece of equipment to propagate to other safety-related equipment outside the designed isolation boundary. The finding screened as very low safety significance (Green) because the finding was design deficiency confirmed not to result in a loss of safety function of a system or a train. There was no cross-cutting aspect associated with this finding because it did not reflect current performance.

Inspection Report# : [2011009](#) (*pdf*)

Significance:  Oct 21, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Perform Required In-Service Testing of Shutdown Cooling Suction Valves

The inspectors identified a finding of very low safety significance (Green) and associated Non-Cited Violation of Technical Specification 5.5.6, "Inservice Testing Program," for the failure to perform required testing in accordance with the American Society of Mechanical Engineers Code for eight valves that had active safety functions. Specifically, the licensee failed to test eight valves which were required to operate in Mode 3 to return the residual heat removal system from the shutdown cooling mode to the low pressure coolant injection mode of operation. The licensee entered this finding into their corrective action program and verified the valves were operable based on recent exercising of the valves during the last refueling outages.

The performance deficiency was determined to be more than minor because it was associated with the Mitigating Systems Cornerstone attribute of Equipment Performance, and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, degraded valve performance could go undetected without periodic testing and trending. The finding screened as very low safety significance (Green) because the finding was not a design or qualification deficiency, did not represent a loss of system safety function, and did not screen as potentially risk significant due to a

seismic, flooding, or severe weather initiating event. The finding had no cross-cutting aspect because the incorrect valve classification was not indicative of current performance.

Inspection Report# : [2011009](#) (*pdf*)

Significance:  Oct 21, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

Safety-Related Battery Charger Testing and Maintenance Procedures Did Not Include Steps for Electrolytic Capacitor Replacement

The inspectors identified a finding of very low safety significance (Green) and associated Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion V, Instructions, Procedures, and Drawings, for the licensee's failure to have appropriate maintenance procedures instructions in place for periodic replacement of the electrolytic capacitors in the 125Vdc and 250Vdc safety-related battery chargers. Specifically, the licensee failed to specify steps or requirements in battery chargers maintenance procedures for a periodic replacement every ten years, within the design service life of the electrolytic capacitors. The licensee entered this finding into their Corrective Action Program and initiated actions to address the non-conformance.

The performance deficiency was determined to be more than minor because it was associated with the Mitigating Systems Cornerstone attribute of Equipment Performance, and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, failing to periodically replace the electrolytic capacitors in the battery chargers as required by the vendor and the PCM program could result in the failure of the battery chargers to perform their safety function and respond to initiating events. The finding screened as very low safety significance (Green) because the finding was design deficiency confirmed not to result in a loss of safety function of a system or a train. There was no cross-cutting aspect associated with this finding because it did not reflect current performance. (Section 1R21.3.b.(3))

Inspection Report# : [2011009](#) (*pdf*)

Significance: SL-IV Oct 21, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Update the FSAR With the Safety Analysis Performed In Response to GL 2008-01

On January 11, 2008, the NRC requested each addressee of GL 2008 01 to evaluate its ECCS, DHR, and containment spray systems licensing basis, design, testing, and corrective actions to ensure that gas accumulation was maintained less than the amount that would challenge the operability of these systems, and take appropriate actions when conditions adverse to quality were identified. As a consequence, the licensee performed analyses that resulted, in part, in the development of void acceptance criteria, identification of gas susceptible locations in piping, development of periodic gas monitoring procedures for these newly identified locations, and the acceptance of some locations that could potentially accumulate voids that were determined to be benign. However, on September 4, 2011, the inspectors noted the licensee had not updated the UFSAR to reflect these analyses.

Inspection Report# : [2011009](#) (*pdf*)

Significance:  Oct 21, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Ensure that RHR Would Be Capable to Respond to a LOCA at Mode 3

The inspectors identified a finding of very low safety significance and associated Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the failure to ensure the emergency core cooling system mode of operation of the residual heat removal system would be capable of performing its mitigating function at Mode 3. Specifically, the residual heat removal system would experience flash evaporation during a rapid system depressurization while in Mode 3 and this condition was not analyzed. This finding was entered into the licensee's corrective action program.

The performance deficiency was determined to be minor per the IMC-0612 significance determination process. Because it was associated with the Mitigating System Cornerstone attribute of Equipment Performance and affected the cornerstone objective of ensuring the capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the design of the residual heat removal system did not ensure that its emergency core cooling mode of operation would be capable of performing its mitigating function at Mode 3. Steam voids would form when transitioning from decay heat removal to emergency core cooling mode of operation in Mode 3 and this condition was not analyzed. The finding screened as very low safety significance (Green) using a Significance Determination Process Phase II evaluation. This finding had a cross-cutting aspect in the area of problem identification and resolution because the licensee did not thoroughly evaluate relevant external operating experience. Specifically, the licensee's evaluation of similar operating experience such as Information Notice 2010-11 incorrectly concluded the station was not vulnerable to the operating experience described therein. [P.2(a)] (Section 40A5.1c(2))
Inspection Report# : [2011009](#) (*pdf*)

Barrier Integrity

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the [cover letters](#) to security inspection reports may be viewed.

Miscellaneous

Last modified : November 30, 2012

Quad Cities 2

4Q/2012 Plant Inspection Findings

Initiating Events

Significance: G Aug 31, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

CAPR NOT COMPLETED

A finding of very low safety significance (Green) and associated NCV of 10 CFR 50, Appendix B, Criterion II, "Quality Assurance Program" was identified by the inspectors when they determined that a licensee-specified corrective action to prevent recurrence (CAPR) of a significant event was not completed as required by a quality assurance program implementing procedure, LS-AA-125, "Corrective Action Program (CAP) Procedure." Inspectors determined that the failure to complete the CAPR and install auxiliary contactors that had undergone enhanced testing (designated PQI testing in the licensee's documentation) before installation was a performance deficiency entered into the licensee's CAP as IR 1409378. Immediate corrective actions included performing a functional evaluation of installed components and quarantine of remaining spare parts.

This finding was more than minor because the CAPR established criteria that should have prevented installation of the parts until testing was performed, but the parts were installed in the plant and the components were returned to service, thus impacting the reactor safety, initiating events cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations.

Inspectors performed a SDP Phase 1 screening using

IMC 0609 Attachment 4 and Appendix A Exhibit 1, Initiating Events Screening Questions," and answered all of the questions, "No." Therefore, the finding screened as very low safety significance or Green. The inspectors identified that this finding has a cross-cutting aspect in the area of Human Performance – Work Practices, in that, licensee personnel did not follow procedures (H.4(b)). Inspectors determined that the primary contributor to this finding was that procurement personnel did not follow procedure SM-AC-3019, "Parts Quality Process," which stated in Attachment 6 that "the station shall inform the test facility of any unique or special test requirements for the equipment. Otherwise, Exelon PowerLabs will apply standard PQI testing criteria for the item." Procurement personnel did not identify the enhanced PQI testing requirement to PowerLabs when the part was sent for testing.

Inspection Report# : [2012007](#) (*pdf*)

Significance: G Jun 30, 2012

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

BUS ENERGIZED WITH GROUNDING DEVICE INSTALLED

A finding of very low safety significance with an associated NCV of TS 5.4.1.a, "Procedures," was self-revealed on March 24, 2012, when operators energized an electrical bus in the switchyard with a grounding device still installed on that bus. Failure of a transmission maintenance supervisor to implement the requirements of OP-AA-109-101, "Clearance and Tagging," and have operations place a danger tag on a grounding strap installed on 345 kV Bus 9 resulted in a significant voltage perturbation and operating transient on Unit 1. The licensee entered the issue in the CAP as IR 1345302 and immediate actions included clearing the fault and restoring plant equipment. Individual qualifications were removed for parties involved in the event, and a root cause evaluation was performed.

The finding was determined to be more than minor because it impacted the Human Performance attribute of the Initiating Events Cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the Human Performance attribute was challenged because the human error resulted in a voltage transient that produced an operational transient on Unit 1 and could have resulted in a more severe challenge to both units. The inspectors performed a SDP Phase 1 screening for the finding using IMC 0609, Table 4a, for the Initiation Events Transient Initiators and determined that the finding did

not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions will not be available. The duration of the event, separation of divisional and emergency power supplies, and redundancy of equipment supplying safety functions were considered for this determination. Therefore, the finding screened as Green, or very low safety significance. The inspectors identified that this finding has a cross-cutting aspect in the area of Human Performance - Decision Making because both the station supervisor overseeing the electrical bus realignment and the clearance holder took action based on non-conservative assumptions that could easily have been validated before placing the electrical system at risk (H.1(b)).

Inspection Report# : [2012003](#) (pdf)

Significance:  Jun 30, 2012

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

FAILURE TO IDENTIFY DESIGN DEFICIENCY IN VENDOR PRODUCT

A self-revealed finding of very low safety significance with an associated NCV of Technical Specification (TS) 3.7.7, “Main Turbine Bypass Valves System,” was identified on April 18, 2012, when an unplanned reactor scram occurred during generator voltage regulator testing. Inspectors subsequently determined the licensee had failed to identify elimination of a time delay that changed how the system responded to a load reject with no turbine trip during vendor design documentation review for the digital electro-hydraulic control (DEHC) system modification implemented in 2006. Failure to perform the review with the rigor required by CC-AA-103-1003, “Owner’s Acceptance Review of External Engineering Technical Products,” is a performance deficiency entered into the licensee’s corrective action program (CAP) as Issue Report (IR) 1355763. This finding resulted in exceeding the allowed out-of-service time for TS 3.7.7, “Main Turbine Bypass System,” on at least eleven occasions between the two units since the modifications were installed.

The finding was determined to be more than minor because the performance deficiency adversely affected the Reactor Safety - Initiating Events Cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions. In this circumstance, the Design Control attribute of the cornerstone was adversely impacted when unintended consequences were introduced during a modification. Using IMC 0609, Attachment 4, Table 4a, Initiating Events Cornerstone, Transient Initiators, inspectors determined that the performance deficiency did not contribute to the likelihood of both a reactor trip and unavailability of mitigation equipment since the main steam safety and relief valves are the credited pressure mitigation equipment and were unaffected by the event. Therefore, this finding screens as Green, or very low safety significance. The inspectors did not identify a cross-cutting aspect for this performance deficiency since it occurred during the DEHC modification review in 2006 and was considered a legacy issue.

Inspection Report# : [2012003](#) (pdf)

Mitigating Systems

Significance:  Dec 31, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

DIESEL GENERATOR TECHNICAL SPECIFICATION FREQUENCY AND VOLTAGE VARIATION NOT CONSIDERED IN LOADING CALCULATIONS

The inspectors identified a finding of very low safety significance (Green) and an associated NCV of 10 CFR Part 50, Appendix B, Criterion III, “Design Control,” for the failure to verify and ensure that operating the emergency diesel generators (EDGs) at the limits of voltage and frequency, allowed by Technical Specification (TS) 3.8.1.2, would not affect the safety related components. Specifically, the license failed to ensure the EDGs, operating under any combination of allowed voltage and frequency, would not be loaded in excess of the licensed limit and would not cause supplied components to become inoperable. The licensee entered the issue into the corrective action program (CAP) as Issue Report (IR) 01288784, “CDBI – Technical Specification Limits for EDG,” and restricted EDG operation to near the midpoint of the allowed TS range during any potential event until the licensee demonstrates operability over the full TS range.

The finding was more than minor because it affected the Mitigating Systems Cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the design control attribute was adversely affected because the licensee failed to ensure the TS allowed operating band for EDG frequency and voltage could not affect the operability and reliability of mitigating system components. Based on a Phase 3 internal events SDP evaluation performed by a regional senior reactor analyst, the inspectors determined the finding was of very low safety significance (Green). No cross-cutting aspect was assigned since the analysis was last performed in May of 2007 and is not necessarily reflective of current performance.

Inspection Report# : [2012005](#) (*pdf*)

Significance:  Dec 31, 2012

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

FAILURE TO FOLLOW SURVEILLANCE PROCEDURE

A self-revealed finding of very low safety significance (Green) and an associated NCV of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedure, and Drawings," were identified on October 25, 2012, when the operator performing the Unit 2 EDG surveillance test failed to follow procedural direction when applying load to the machine resulting in the Unit 2 diesel generator being inoperable for approximately seven hours while troubleshooting activities were conducted. The operator did not perform the diesel loading in accordance with the procedure in that real load was applied in a manner that changed reactive load significantly in the opposite polarity from real load and resulted in a "loss of field" trip of the diesel generator output breaker. After troubleshooting, the surveillance was completed to ensure no impact to the voltage regulating circuit and restore operability for prior work activities. This issue was entered into the licensee's CAP as IR 1431240. Immediate corrective actions included revision of procedures that operated the diesel generator in parallel with another source to include information reminding operators that the Unit 2 EDG responded differently to load adjustments, and care should be used when making adjustments to prevent a "loss of field" trip.

The finding was more than minor because it affected the Mitigating Systems Cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The deficiency impacted the Equipment Performance attribute for reliability in that the performance deficiency challenged the voltage regulator protective feature and could have damaged the excitation circuit for the diesel generator. Inspectors performed the Phase 1 screening of the finding using the SDP and determined that the issue was of very low safety significance, or Green. The questions in IMC 0609, Attachment 4, Appendix A, Exhibit 2, Section A were answered "No" by inspectors because the diesel was quickly made available for emergency response following the breaker trip, and the remaining diesel generator and both offsite power sources were operable. Inspectors determined this finding to be cross-cutting in Human Performance-Resources in that the licensee ensures that appropriate training is provided to assure nuclear safety (H.2(b)) because a contributor to this finding was that a post-maintenance change in voltage regulator performance was not systematically communicated to the operating staff through training.

Inspection Report# : [2012005](#) (*pdf*)

Significance:  Sep 30, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

CONTROL ROOM HVAC RCU HEAD BOLTS NOT TORQUED

A self-revealed finding of very low safety significance (Green) and associated NCV of TS 5.4.1.a was identified for the licensee's failure to specify torque values for the control room ventilation refrigeration condensing unit condenser head in the work instructions performed on January 19, 2012. The inspectors identified that this issue had a cross-cutting aspect in the area of Human Performance - Decision Making (H.1(b)). Inspectors determined that a contributor to this finding was that the Maintenance and Engineering Departments did not verify the assumptions or identify unintended consequences with possible variance in the interpretation and implementation of work instructions stating, "tighten bolts using a crisscross pattern and good mechanical judgment," vice specifying a torque value from MA-MW-736-600. Although this work practice had been in place for years, mechanics questioned the lack of a torque

value during the post leak repair to restore operability. Engineering replied with “mechanical judgment” rather than specifying a torque value indicating that the practice was indicative of current performance. The heat exchanger leak was repaired and the head reassembled with nominal torque values.

The performance deficiency was more than minor because the performance deficiency, if left uncorrected, had the potential to lead to a more significant event. The inspectors performed an SDP Phase 1 screening for the finding using IMC 0609, Attachment 04, “Initial Characterization of Findings,” and IMC 0609, Appendix A, Exhibit 2, “Mitigating Systems Screening Questions,” and answered the first four questions “No.” Therefore, the finding screened as very low safety significance, or Green.

Inspection Report# : [2012004](#) (*pdf*)

Significance:  Aug 03, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Procedure to Energize Bus 23-1 to Provide Torus Cooling for Unit 1

The inspectors identified a finding of very low safety significance (Green) and associated NCV of 10 CFR Part 50, Appendix R, Section III.L.3 for the licensee’s failure to have an adequate procedure used to implement an alternative shutdown capability in the event of a fire in fire area TB-III. Specifically, the licensee failed to provide adequate steps to ensure the successful energization of Bus 23-1 from the Unit 2 Station Blackout (SBO) Diesel Generator (DG) in the event of a fire in fire area TB-III (Turbine Building Southern Zone Group). The licensee entered the issue into their corrective action program and added a step to close the Bus 23-1 and Bus 71 Tie Breaker.

The inspectors determined that the finding was more than minor because the procedure deficiency did not ensure the successful energization of Bus 23-1 from the Unit 2 SBO DG in the event of a fire in fire area TB-III, which was required to provide Torus cooling for Unit 1. The finding was screened as having very low safety significance in Task 1.3.1 of IMC 0609, Appendix F. This finding did not have a cross-cutting aspect because the finding was not representative of current performance.

Inspection Report# : [2012011](#) (*pdf*)

Significance:  Aug 03, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Procedure for Cold Shutdown Repair of 1A Recirculation Pump Discharge Valve MO 1-202-5A

The inspectors identified a finding of very low safety significance (Green) and associated NCV of 10 CFR Part 50, Appendix R, Section III.L.5 for the licensee’s failure to have a procedure in effect that would provide adequate cold shutdown repairs for the 1A Recirculation Pump Discharge Valve MO 1-202-5A. Specifically, a procedure deficiency in Quad Cities Annunciator Response Procedure (ARP) 0030-01, Attachment D, provided an incorrect terminal point and cubicle location on MCC 18/19-5 for the cable wire to be lifted for cold shutdown repair in the event of a fire in fire area TB-III. The licensee entered the issue into their corrective action program revised the procedure and corrected the deficiency.

The inspectors determined that the finding was more than minor because the procedure deficiency could have resulted in operational complications and could have delayed reaching cold shutdown in the event of a fire in fire area TB-III. The finding was screened as having very low safety significance in Task 1.3.1 of IMC 0609, Appendix F. This finding did not have a cross-cutting aspect because the finding was not representative of current performance.

Inspection Report# : [2012011](#) (*pdf*)

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the [cover letters](#) to security inspection reports may be viewed.

Miscellaneous

Last modified : February 28, 2013

Quad Cities 2

1Q/2013 Plant Inspection Findings

Initiating Events

Significance:  Aug 31, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

CAPR NOT COMPLETED

A finding of very low safety significance (Green) and associated NCV of 10 CFR 50, Appendix B, Criterion II, “Quality Assurance Program” was identified by the inspectors when they determined that a licensee-specified corrective action to prevent recurrence (CAPR) of a significant event was not completed as required by a quality assurance program implementing procedure, LS-AA-125, “Corrective Action Program (CAP) Procedure.” Inspectors determined that the failure to complete the CAPR and install auxiliary contactors that had undergone enhanced testing (designated PQI testing in the licensee’s documentation) before installation was a performance deficiency entered into the licensee’s CAP as IR 1409378. Immediate corrective actions included performing a functional evaluation of installed components and quarantine of remaining spare parts.

This finding was more than minor because the CAPR established criteria that should have prevented installation of the parts until testing was performed, but the parts were installed in the plant and the components were returned to service, thus impacting the reactor safety, initiating events cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations.

Inspectors performed a SDP Phase 1 screening using

IMC 0609 Attachment 4 and Appendix A Exhibit 1, Initiating Events Screening Questions,” and answered all of the questions, “No.” Therefore, the finding screened as very low safety significance or Green. The inspectors identified that this finding has a cross-cutting aspect in the area of Human Performance – Work Practices, in that, licensee personnel did not follow procedures (H.4(b)). Inspectors determined that the primary contributor to this finding was that procurement personnel did not follow procedure SM-AC-3019, “Parts Quality Process,” which stated in Attachment 6 that “the station shall inform the test facility of any unique or special test requirements for the equipment. Otherwise, Exelon PowerLabs will apply standard PQI testing criteria for the item.” Procurement personnel did not identify the enhanced PQI testing requirement to PowerLabs when the part was sent for testing.

Inspection Report# : [2012007](#) (*pdf*)

Significance:  Jun 30, 2012

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

BUS ENERGIZED WITH GROUNDING DEVICE INSTALLED

A finding of very low safety significance with an associated NCV of TS 5.4.1.a, “Procedures,” was self-revealed on March 24, 2012, when operators energized an electrical bus in the switchyard with a grounding device still installed on that bus. Failure of a transmission maintenance supervisor to implement the requirements of OP-AA-109-101, “Clearance and Tagging,” and have operations place a danger tag on a grounding strap installed on 345 kV Bus 9 resulted in a significant voltage perturbation and operating transient on Unit 1. The licensee entered the issue in the CAP as IR 1345302 and immediate actions included clearing the fault and restoring plant equipment. Individual qualifications were removed for parties involved in the event, and a root cause evaluation was performed.

The finding was determined to be more than minor because it impacted the Human Performance attribute of the Initiating Events Cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the Human Performance attribute was challenged because the human error resulted in a voltage transient that produced an operational transient on Unit 1 and could have resulted in a more severe challenge to both units. The inspectors performed a SDP Phase 1 screening for the finding using IMC 0609, Table 4a, for the Initiation Events Transient Initiators and determined that the finding did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions will not be available. The duration of the event, separation of divisional and emergency power supplies, and redundancy of equipment supplying safety functions were considered for this determination. Therefore, the finding screened as Green, or very low safety significance. The inspectors identified that this finding has a cross-cutting aspect in the area of Human Performance - Decision Making because both the station supervisor overseeing the electrical bus realignment and the clearance holder took action based on non-conservative assumptions that could easily have been validated before placing the electrical system at risk (H.1(b)).

Inspection Report# : [2012003](#) (*pdf*)

Significance:  Jun 30, 2012

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

FAILURE TO IDENTIFY DESIGN DEFICIENCY IN VENDOR PRODUCT

A self-revealed finding of very low safety significance with an associated NCV of Technical Specification (TS) 3.7.7, "Main Turbine Bypass Valves System," was identified on April 18, 2012, when an unplanned reactor scram occurred during generator voltage regulator testing. Inspectors subsequently determined the licensee had failed to identify elimination of a time delay that changed how the system responded to a load reject with no turbine trip during vendor design documentation review for the digital electro-hydraulic control (DEHC) system modification implemented in 2006. Failure to perform the review with the rigor required by CC-AA-103-1003, "Owner's Acceptance Review of External Engineering Technical Products," is a performance deficiency entered into the licensee's corrective action program (CAP) as Issue Report (IR) 1355763. This finding resulted in exceeding the allowed out-of-service time for TS 3.7.7, "Main Turbine Bypass System," on at least eleven occasions between the two units since the modifications were installed.

The finding was determined to be more than minor because the performance deficiency adversely affected the Reactor Safety - Initiating Events Cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions. In this circumstance, the Design Control attribute of the cornerstone was adversely impacted when unintended consequences were introduced during a modification. Using IMC 0609, Attachment 4, Table 4a, Initiating Events Cornerstone, Transient Initiators, inspectors determined that the performance deficiency did not contribute to the likelihood of both a reactor trip and unavailability of mitigation equipment since the main steam safety and relief valves are the credited pressure mitigation equipment and were unaffected by the event. Therefore, this finding screens as Green, or very low safety significance. The inspectors did not identify a cross-cutting aspect for this performance deficiency since it occurred during the DEHC modification review in 2006 and was considered a legacy issue.

Inspection Report# : [2012003](#) (*pdf*)

Mitigating Systems

Significance:  Dec 31, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

DIESEL GENERATOR TECHNICAL SPECIFICATION FREQUENCY AND VOLTAGE VARIATION NOT CONSIDERED IN LOADING CALCULATIONS

The inspectors identified a finding of very low safety significance (Green) and an associated NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the failure to verify and ensure that operating the emergency diesel generators (EDGs) at the limits of voltage and frequency, allowed by Technical Specification (TS) 3.8.1.2, would not affect the safety related components. Specifically, the license failed to ensure the EDGs, operating under any combination of allowed voltage and frequency, would not be loaded in excess of the licensed limit and would not cause supplied components to become inoperable. The licensee entered the issue into the corrective action program (CAP) as Issue Report (IR) 01288784, "CDBI – Technical Specification Limits for EDG," and restricted EDG operation to near the midpoint of the allowed TS range during any potential event until the licensee demonstrates operability over the full TS range.

The finding was more than minor because it affected the Mitigating Systems Cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the design control attribute was adversely affected because the licensee failed to ensure the TS allowed operating band for EDG frequency and voltage could not affect the operability and reliability of mitigating system components. Based on a Phase 3 internal events SDP evaluation performed by a regional senior reactor analyst, the inspectors determined the finding was of very low safety significance (Green). No cross-cutting aspect was assigned since the analysis was last performed in May of 2007 and is not necessarily reflective of current performance.

Inspection Report# : [2012005](#) (*pdf*)

Significance:  Dec 31, 2012

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

FAILURE TO FOLLOW SURVEILLANCE PROCEDURE

A self-revealed finding of very low safety significance (Green) and an associated NCV of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedure, and Drawings," were identified on October 25, 2012, when the operator performing the Unit 2 EDG surveillance test failed to follow procedural direction when applying load to the machine resulting in the Unit 2 diesel generator being inoperable for approximately seven hours while troubleshooting activities were conducted. The operator did not perform the diesel loading in accordance with the procedure in that real load was applied in a manner that changed reactive load significantly in the opposite polarity from real load and resulted in a "loss of field" trip of the diesel generator output breaker. After troubleshooting, the surveillance was completed to ensure no impact to the voltage regulating circuit and restore operability for prior work activities. This issue was entered into the licensee's CAP as IR 1431240. Immediate corrective actions included revision of procedures that operated the diesel generator in parallel with another source to include information reminding operators that the Unit 2 EDG responded differently to load adjustments, and care should be used when making adjustments to prevent a "loss of field" trip.

The finding was more than minor because it affected the Mitigating Systems Cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The deficiency impacted the Equipment Performance attribute for reliability in that the performance deficiency challenged the voltage regulator protective feature and could have damaged the excitation circuit for the diesel generator. Inspectors performed the Phase 1 screening of the finding using the SDP and determined that the issue was of very low safety significance, or Green. The questions in IMC 0609, Attachment 4, Appendix A, Exhibit 2, Section A were answered "No" by inspectors because the diesel was quickly made available for emergency response following the breaker trip, and the remaining diesel generator and both offsite power sources were operable. Inspectors determined this finding to be cross-cutting in Human Performance-Resources in that the licensee ensures that appropriate training is provided to assure nuclear safety (H.2(b)) because a contributor to this finding was that a post-maintenance change in voltage regulator performance was not systematically communicated to the operating staff

through training.

Inspection Report# : [2012005](#) (pdf)

Significance:  Sep 30, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

CONTROL ROOM HVAC RCU HEAD BOLTS NOT TORQUED

A self-revealed finding of very low safety significance (Green) and associated NCV of TS 5.4.1.a was identified for the licensee's failure to specify torque values for the control room ventilation refrigeration condensing unit condenser head in the work instructions performed on January 19, 2012. The inspectors identified that this issue had a cross-cutting aspect in the area of Human Performance - Decision Making (H.1(b)). Inspectors determined that a contributor to this finding was that the Maintenance and Engineering Departments did not verify the assumptions or identify unintended consequences with possible variance in the interpretation and implementation of work instructions stating, "tighten bolts using a crisscross pattern and good mechanical judgment," vice specifying a torque value from MA-MW-736-600. Although this work practice had been in place for years, mechanics questioned the lack of a torque value during the post leak repair to restore operability. Engineering replied with "mechanical judgment" rather than specifying a torque value indicating that the practice was indicative of current performance. The heat exchanger leak was repaired and the head reassembled with nominal torque values.

The performance deficiency was more than minor because the performance deficiency, if left uncorrected, had the potential to lead to a more significant event. The inspectors performed an SDP Phase 1 screening for the finding using IMC 0609, Attachment 04, "Initial Characterization of Findings," and IMC 0609, Appendix A, Exhibit 2, "Mitigating Systems Screening Questions," and answered the first four questions "No." Therefore, the finding screened as very low safety significance, or Green.

Inspection Report# : [2012004](#) (pdf)

Significance:  Aug 03, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Procedure to Energize Bus 23-1 to Provide Torus Cooling for Unit 1

The inspectors identified a finding of very low safety significance (Green) and associated NCV of 10 CFR Part 50, Appendix R, Section III.L.3 for the licensee's failure to have an adequate procedure used to implement an alternative shutdown capability in the event of a fire in fire area TB-III. Specifically, the licensee failed to provide adequate steps to ensure the successful energization of Bus 23-1 from the Unit 2 Station Blackout (SBO) Diesel Generator (DG) in the event of a fire in fire area TB-III (Turbine Building Southern Zone Group). The licensee entered the issue into their corrective action program and added a step to close the Bus 23-1 and Bus 71 Tie Breaker.

The inspectors determined that the finding was more than minor because the procedure deficiency did not ensure the successful energization of Bus 23-1 from the Unit 2 SBO DG in the event of a fire in fire area TB-III, which was required to provide Torus cooling for Unit 1. The finding was screened as having very low safety significance in Task 1.3.1 of IMC 0609, Appendix F. This finding did not have a cross-cutting aspect because the finding was not representative of current performance.

Inspection Report# : [2012011](#) (pdf)

Significance:  Aug 03, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Procedure for Cold Shutdown Repair of 1A Recirculation Pump Discharge Valve MO 1-202-5A

The inspectors identified a finding of very low safety significance (Green) and associated NCV of 10 CFR Part 50, Appendix R, Section III.L.5 for the licensee's failure to have a procedure in effect that would provide adequate cold shutdown repairs for the 1A Recirculation Pump Discharge Valve MO 1-202-5A. Specifically, a procedure deficiency in Quad Cities Annunciator Response Procedure (ARP) 0030-01, Attachment D, provided an incorrect terminal point and cubicle location on MCC 18/19-5 for the cable wire to be lifted for cold shutdown repair in the event of a fire in fire area TB-III. The licensee entered the issue into their corrective action program revised the procedure and corrected the deficiency.

The inspectors determined that the finding was more than minor because the procedure deficiency could have resulted in operational complications and could have delayed reaching cold shutdown in the event of a fire in fire area TB-III. The finding was screened as having very low safety significance in Task 1.3.1 of IMC 0609, Appendix F. This finding did not have a cross-cutting aspect because the finding was not representative of current performance.

Inspection Report# : [2012011](#) (*pdf*)

Barrier Integrity

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the [cover letters](#) to security inspection reports may be viewed.

Miscellaneous

Last modified : June 04, 2013

Quad Cities 2

2Q/2013 Plant Inspection Findings

Initiating Events

Significance:  Mar 31, 2013

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

FAILURE TO FOLLOW CLEARANCE ORDER INSTRUCTIONS

A finding of very low safety significance and associated non-cited violation of Technical Specifications 5.4.1.a, "Procedures," was self-revealed on March 13, 2013, when operators placing a clearance on the Unit 1 analog trip system de-energized the Unit 2 analog trip system resulting in a Unit 2 half-scam. The operators that opened the wrong breaker did not follow the instructions in the clearance order brief as required by OP AA 109-101, "Clearance and Tagging," and misidentified the inverter on the south wall of the cable spreading room as the Unit 1 analog trip system inverter when it was actually the Unit 2 inverter. The operators did not use the concurrent verification techniques specified in the pre-job briefing for ensuring that the inverter was the correct component to be manipulated, and did not implement the clearance order as written. Immediate actions taken were removal of the implementing operators' qualifications and briefing to all operating personnel.

Inspectors determined that the issue was more than minor because it adversely affected the Reactor Safety Initiating Events Cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during power operations. The performance deficiency challenged the configuration control attribute of the objective for operating equipment lineups. The inspectors determined the finding could be evaluated using the Significance Determination Process (SDP) in accordance with IMC 0609, Appendix A, "The Significance Determination Process For Findings At-Power." The inspectors answered all questions of Exhibit 1, "Initiating Events Screening Questions," for transient initiators and support system initiators. Questions in both categories were answered "No," and the finding screened as very low safety significance, or Green. Inspectors determined that a significant contributor to this finding was the failure of the operator performing breaker manipulation to verify the component label matched the clearance checklist and card in accordance with the site standard, HU-AA-101, Human Performance Tools and Verification Practices. As a result, inspectors identified that this issue had a cross-cutting aspect in the area of Human Performance - Work Practices for failure to use the human performance techniques to ensure that the work tasks are performed safely and individuals do not proceed in the face of uncertainty (H.4(a)).

Inspection Report# : [2013002](#) (*pdf*)

Significance:  Aug 31, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

CAPR NOT COMPLETED

A finding of very low safety significance (Green) and associated NCV of 10 CFR 50, Appendix B, Criterion II, "Quality Assurance Program" was identified by the inspectors when they determined that a licensee-specified corrective action to prevent recurrence (CAPR) of a significant event was not completed as required by a quality assurance program implementing procedure, LS-AA-125, "Corrective Action Program (CAP) Procedure." Inspectors determined that the failure to complete the CAPR and install auxiliary contactors that had undergone enhanced testing (designated PQI testing in the licensee's documentation) before installation was a performance deficiency entered into the licensee's CAP as IR 1409378. Immediate corrective actions included performing a functional evaluation of

installed components and quarantine of remaining spare parts.

This finding was more than minor because the CAPR established criteria that should have prevented installation of the parts until testing was performed, but the parts were installed in the plant and the components were returned to service, thus impacting the reactor safety, initiating events cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations.

Inspectors performed a SDP Phase 1 screening using

IMC 0609 Attachment 4 and Appendix A Exhibit 1, Initiating Events Screening Questions,” and answered all of the questions, “No.” Therefore, the finding screened as very low safety significance or Green. The inspectors identified that this finding has a cross-cutting aspect in the area of Human Performance – Work Practices, in that, licensee personnel did not follow procedures (H.4(b)). Inspectors determined that the primary contributor to this finding was that procurement personnel did not follow procedure SM-AC-3019, “Parts Quality Process,” which stated in Attachment 6 that “the station shall inform the test facility of any unique or special test requirements for the equipment. Otherwise, Exelon PowerLabs will apply standard PQI testing criteria for the item.” Procurement personnel did not identify the enhanced PQI testing requirement to PowerLabs when the part was sent for testing.

Inspection Report# : [2012007](#) (*pdf*)

Mitigating Systems

Significance:  Jun 30, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

CALCULATION ASSUMPTIONS NOT TRANSLATED IN TO OPERATING PROCEDURES

A finding of very low safety significance and associated non-cited violation (NCV) of 10 CFR Appendix B, Criterion III, “Design Control,” was identified by the inspectors for the licensee’s failure to translate design requirements into procedures to ensure availability of the ultimate heat sink (UHS) in a loss of lock event. Specifically, the licensee failed to translate the need to minimize diesel generator cooling water (DGCW) flow as assumed in the design calculation into station operating procedures. In response to the inspectors’ concerns, the licensee initiated actions to verify the required flow of the DGCW system and assessed operability. Because the existing river temperature was significantly lower than 95°F (the assumed initial temperature), the licensee concluded the UHS was capable of performing its function. This violation was entered into the licensee’s corrective action program as issue report 1416634.

The inspectors determined the performance deficiency was more than minor because operating procedures did not require throttling of the DGCW flow or guidance if an emergency diesel generator was operating following a lock failure resulting from a barge colliding into the lock structure. The lack of guidance resulted in an increased heat load and resulted in reasonable doubt the UHS would remain below 108°F. The inspectors evaluated the finding using IMC 0609, Exhibit 4, “External Events Screening Questions,” and answered “no” to all of the applicable questions. Subsequent calculations by the licensee indicated the maximum flow would not challenge the maximum design temperature limits for the UHS. Therefore, the finding screened as of very low safety significance (Green). The inspectors determined the cause of this finding did not represent current licensee performance and, thus, no cross-cutting aspect was assigned.

Inspection Report# : [2013003](#) (*pdf*)

Significance:  May 17, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Translate Design Basis Into Toxic Chemical Response Procedures

A finding of very low safety significance and associated NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," was identified by the inspectors for the licensee's failure to translate the design basis correctly into procedures and instructions for the operators. Specifically, the licensee did not update procedures and instructions to ensure that operators would don respirators within two minutes of detection of a toxic chemical, ammonia, as determined in a calculation. The licensee entered the issue into their corrective action program and planned to revise the calculation using detection of odor as an entry condition for donning of respirator protection and update the operating procedures accordingly.

The finding was determined to be more than minor because the failure to provide procedures or instructions to operators to don respirators could result in the operators becoming incapacitated and not being able to respond to an accident or event that had a possibility of radionuclide releases. The finding was determined to be of very low safety significance (Green) due to the low probability of an ammonia release associated with a barge accident. The finding had a cross-cutting aspect in the area of human performance, work control, because the licensee's engineering organization did not coordinate with the operations organization on the need to don respirators within two minutes of detection of ammonia gas following a postulated toxic chemical accident.

Inspection Report# : [2013007](#) (*pdf*)

Significance:  Mar 31, 2013

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

DIESEL GENERATOR COOLING WATER PUMP ALIGNED TO WRONG UNIT

A finding of very low safety significance and associated non-cited violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was self-revealed on March 1, 2013, during restoration from the 1B core spray logic test, when the 1/2 diesel generator cooling water pump (DGCWP) was discovered to have been lined up to Unit 2 emergency core cooling system room coolers instead of Unit 1 coolers as expected. The operators that had performed the initial valve manipulations on February 28, 2013, did not complete the alignment as required by QCOP 6600-15, "1/2 Diesel Generator Cooling Water Pump Cross Connect Alignment." Specifically, the operators executing QCOP 6600-15 did not follow the procedure for aligning the Unit 1/2 DGCWP to supply the Unit 1 emergency core cooling system room coolers. The issue was entered into the licensee's CAP as Issue Report 1486754, and the licensee restored operability of the Unit 1 DGCW pump to restore compliance. Standdown briefings were conducted for all station operators to discuss the event lesson learned, and performance management actions were implemented for the operators involved in the event.

This issue was more than minor because it adversely affected the Reactor Safety Mitigating Systems Cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences in that failure to align cooling water per the procedure adversely impacted the cornerstone attribute of Configuration Control for operating plant equipment lineups. Specifically, the as-left equipment lineup was different than that reported to the main control room when the activity was completed. The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609 Appendix A, "The Significance Determination Process For Findings At-Power." The inspectors answered all questions of Exhibit 2, "Mitigating Systems Screening Questions," Section A - Mitigating SSCs and Functionality (Except Reactivity Control Systems) "No," and therefore, the finding screened as Green or very low safety significance. This finding has a cross-cutting aspect in the area of Human Performance - Work Practices because the licensee personnel did not use human performance tools and techniques to ensure proper execution of the task (H.4(a)).

Inspection Report# : [2013002](#) (*pdf*)

Significance:  Dec 31, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

DIESEL GENERATOR TECHNICAL SPECIFICATION FREQUENCY AND VOLTAGE VARIATION NOT CONSIDERED IN LOADING CALCULATIONS

The inspectors identified a finding of very low safety significance (Green) and an associated NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the failure to verify and ensure that operating the emergency diesel generators (EDGs) at the limits of voltage and frequency, allowed by Technical Specification (TS) 3.8.1.2, would not affect the safety related components. Specifically, the license failed to ensure the EDGs, operating under any combination of allowed voltage and frequency, would not be loaded in excess of the licensed limit and would not cause supplied components to become inoperable. The licensee entered the issue into the corrective action program (CAP) as Issue Report (IR) 01288784, "CDBI – Technical Specification Limits for EDG," and restricted EDG operation to near the midpoint of the allowed TS range during any potential event until the licensee demonstrates operability over the full TS range.

The finding was more than minor because it affected the Mitigating Systems Cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the design control attribute was adversely affected because the licensee failed to ensure the TS allowed operating band for EDG frequency and voltage could not affect the operability and reliability of mitigating system components. Based on a Phase 3 internal events SDP evaluation performed by a regional senior reactor analyst, the inspectors determined the finding was of very low safety significance (Green). No cross-cutting aspect was assigned since the analysis was last performed in May of 2007 and is not necessarily reflective of current performance.

Inspection Report# : [2012005](#) (*pdf*)

Significance:  Dec 31, 2012

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

FAILURE TO FOLLOW SURVEILLANCE PROCEDURE

A self-revealed finding of very low safety significance (Green) and an associated NCV of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedure, and Drawings," were identified on October 25, 2012, when the operator performing the Unit 2 EDG surveillance test failed to follow procedural direction when applying load to the machine resulting in the Unit 2 diesel generator being inoperable for approximately seven hours while troubleshooting activities were conducted. The operator did not perform the diesel loading in accordance with the procedure in that real load was applied in a manner that changed reactive load significantly in the opposite polarity from real load and resulted in a "loss of field" trip of the diesel generator output breaker. After troubleshooting, the surveillance was completed to ensure no impact to the voltage regulating circuit and restore operability for prior work activities. This issue was entered into the licensee's CAP as IR 1431240. Immediate corrective actions included revision of procedures that operated the diesel generator in parallel with another source to include information reminding operators that the Unit 2 EDG responded differently to load adjustments, and care should be used when making adjustments to prevent a "loss of field" trip.

The finding was more than minor because it affected the Mitigating Systems Cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The deficiency impacted the Equipment Performance attribute for reliability in that the performance deficiency challenged the voltage regulator protective feature and could have damaged the excitation circuit for the diesel generator. Inspectors performed the Phase 1 screening of the finding using the SDP and determined that the issue was of very low safety significance, or Green. The questions in IMC 0609, Attachment 4, Appendix A, Exhibit 2, Section A were answered "No" by inspectors because the diesel was quickly made available for emergency response following the breaker trip, and the remaining diesel generator and both offsite power sources were operable. Inspectors determined this finding to be cross-cutting in Human Performance-Resources in that the licensee ensures that appropriate training is provided to assure nuclear safety (H.2(b)) because a contributor to this finding was that a post-maintenance change in voltage regulator performance was not systematically communicated to the operating staff

through training.

Inspection Report# : [2012005](#) (pdf)

Significance:  Sep 30, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

CONTROL ROOM HVAC RCU HEAD BOLTS NOT TORQUED

A self-revealed finding of very low safety significance (Green) and associated NCV of TS 5.4.1.a was identified for the licensee's failure to specify torque values for the control room ventilation refrigeration condensing unit condenser head in the work instructions performed on January 19, 2012. The inspectors identified that this issue had a cross-cutting aspect in the area of Human Performance - Decision Making (H.1(b)). Inspectors determined that a contributor to this finding was that the Maintenance and Engineering Departments did not verify the assumptions or identify unintended consequences with possible variance in the interpretation and implementation of work instructions stating, "tighten bolts using a crisscross pattern and good mechanical judgment," vice specifying a torque value from MA-MW-736-600. Although this work practice had been in place for years, mechanics questioned the lack of a torque value during the post leak repair to restore operability. Engineering replied with "mechanical judgment" rather than specifying a torque value indicating that the practice was indicative of current performance. The heat exchanger leak was repaired and the head reassembled with nominal torque values.

The performance deficiency was more than minor because the performance deficiency, if left uncorrected, had the potential to lead to a more significant event. The inspectors performed an SDP Phase 1 screening for the finding using IMC 0609, Attachment 04, "Initial Characterization of Findings," and IMC 0609, Appendix A, Exhibit 2, "Mitigating Systems Screening Questions," and answered the first four questions "No." Therefore, the finding screened as very low safety significance, or Green.

Inspection Report# : [2012004](#) (pdf)

Significance:  Aug 03, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Procedure to Energize Bus 23-1 to Provide Torus Cooling for Unit 1

The inspectors identified a finding of very low safety significance (Green) and associated NCV of 10 CFR Part 50, Appendix R, Section III.L.3 for the licensee's failure to have an adequate procedure used to implement an alternative shutdown capability in the event of a fire in fire area TB-III. Specifically, the licensee failed to provide adequate steps to ensure the successful energization of Bus 23-1 from the Unit 2 Station Blackout (SBO) Diesel Generator (DG) in the event of a fire in fire area TB-III (Turbine Building Southern Zone Group). The licensee entered the issue into their corrective action program and added a step to close the Bus 23-1 and Bus 71 Tie Breaker.

The inspectors determined that the finding was more than minor because the procedure deficiency did not ensure the successful energization of Bus 23-1 from the Unit 2 SBO DG in the event of a fire in fire area TB-III, which was required to provide Torus cooling for Unit 1. The finding was screened as having very low safety significance in Task 1.3.1 of IMC 0609, Appendix F. This finding did not have a cross-cutting aspect because the finding was not representative of current performance.

Inspection Report# : [2012011](#) (pdf)

Significance:  Aug 03, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Procedure for Cold Shutdown Repair of 1A Recirculation Pump Discharge Valve MO 1-202-5A

The inspectors identified a finding of very low safety significance (Green) and associated NCV of 10 CFR Part 50, Appendix R, Section III.L.5 for the licensee's failure to have a procedure in effect that would provide adequate cold shutdown repairs for the 1A Recirculation Pump Discharge Valve MO 1-202-5A. Specifically, a procedure deficiency in Quad Cities Annunciator Response Procedure (ARP) 0030-01, Attachment D, provided an incorrect terminal point and cubicle location on MCC 18/19-5 for the cable wire to be lifted for cold shutdown repair in the event of a fire in fire area TB-III. The licensee entered the issue into their corrective action program revised the procedure and corrected the deficiency.

The inspectors determined that the finding was more than minor because the procedure deficiency could have resulted in operational complications and could have delayed reaching cold shutdown in the event of a fire in fire area TB-III. The finding was screened as having very low safety significance in Task 1.3.1 of IMC 0609, Appendix F. This finding did not have a cross-cutting aspect because the finding was not representative of current performance.

Inspection Report# : [2012011](#) (*pdf*)

Barrier Integrity

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the [cover letters](#) to security inspection reports may be viewed.

Miscellaneous

Last modified : September 03, 2013

Quad Cities 2

3Q/2013 Plant Inspection Findings

Initiating Events

Significance: G Mar 31, 2013

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

FAILURE TO FOLLOW CLEARANCE ORDER INSTRUCTIONS

A finding of very low safety significance and associated non-cited violation of Technical Specifications 5.4.1.a, "Procedures," was self-revealed on March 13, 2013, when operators placing a clearance on the Unit 1 analog trip system de-energized the Unit 2 analog trip system resulting in a Unit 2 half-scam. The operators that opened the wrong breaker did not follow the instructions in the clearance order brief as required by OP AA 109-101, "Clearance and Tagging," and misidentified the inverter on the south wall of the cable spreading room as the Unit 1 analog trip system inverter when it was actually the Unit 2 inverter. The operators did not use the concurrent verification techniques specified in the pre-job briefing for ensuring that the inverter was the correct component to be manipulated, and did not implement the clearance order as written. Immediate actions taken were removal of the implementing operators' qualifications and briefing to all operating personnel.

Inspectors determined that the issue was more than minor because it adversely affected the Reactor Safety Initiating Events Cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during power operations. The performance deficiency challenged the configuration control attribute of the objective for operating equipment lineups. The inspectors determined the finding could be evaluated using the Significance Determination Process (SDP) in accordance with IMC 0609, Appendix A, "The Significance Determination Process For Findings At-Power." The inspectors answered all questions of Exhibit 1, "Initiating Events Screening Questions," for transient initiators and support system initiators. Questions in both categories were answered "No," and the finding screened as very low safety significance, or Green. Inspectors determined that a significant contributor to this finding was the failure of the operator performing breaker manipulation to verify the component label matched the clearance checklist and card in accordance with the site standard, HU-AA-101, Human Performance Tools and Verification Practices. As a result, inspectors identified that this issue had a cross-cutting aspect in the area of Human Performance - Work Practices for failure to use the human performance techniques to ensure that the work tasks are performed safely and individuals do not proceed in the face of uncertainty (H.4(a)).

Inspection Report# : [2013002](#) (*pdf*)

Mitigating Systems

Significance: G Sep 30, 2013

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

WRONG PARTS INSTALLED FOR CRD HCU

A finding of very low safety significance (Green) and associated non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings," was self-revealed through repetitive low pressure alarms on a recently overhauled control rod drive (CRD) hydraulic control unit (HCU) accumulator. Specifically, the work

instructions for overhaul of the HCU for CRD 2-0305-34-59 were not appropriate to the circumstances in that the wrong part number for the bottom O-ring was listed and as a result, the wrong sized O-ring was installed in the safety related application. The wrong O-ring allowed nitrogen pressure to leak out of the HCU accumulator after the HCU was returned to service. After the part discrepancy was identified, the licensee stopped all work on the HCU until the parts list was corrected and the procedure was updated to add the catalogue identification number for each part to the applicable steps. The HCU overhaul was completed and retested satisfactorily. An extent of condition review was performed to identify and evaluate other potential instances where the parts list may have been used. The inspectors determined that the development and implementation of an informal parts list was a significant contributor to the performance deficiency and identified that this issue had a cross-cutting aspect in the area of Human Performance – Work Control in that the licensee did not plan the activity with sufficient rigor to support long-term equipment reliability without reliance on manual actions (H.3(b)).

This performance deficiency was determined to be more than minor because it adversely affected the Mitigating Systems Cornerstone objective to ensure availability, reliability, and capability of mitigating systems for the Equipment Performance attribute because frequent manual operator actions were required to be taken to maintain reliability of the affected accumulator. The inspectors determined the finding could be evaluated using the Significance Determination Process in accordance with IMC 0609, Appendix A, “The Significance Determination Process (SDP) For Findings At-Power.” The inspectors answered “No” to all questions of Exhibit 2, “Mitigating Systems Screening Questions,” Section C – “Reactivity Control Systems,” and therefore, the finding screened as Green or very low safety significance.

Inspection Report# : [2013004](#) (*pdf*)

Significance:  Jun 30, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

CALCULATION ASSUMPTIONS NOT TRANSLATED IN TO OPERATING PROCEDURES

A finding of very low safety significance and associated non-cited violation (NCV) of 10 CFR Appendix B, Criterion III, “Design Control,” was identified by the inspectors for the licensee’s failure to translate design requirements into procedures to ensure availability of the ultimate heat sink (UHS) in a loss of lock event. Specifically, the licensee failed to translate the need to minimize diesel generator cooling water (DGCW) flow as assumed in the design calculation into station operating procedures. In response to the inspectors’ concerns, the licensee initiated actions to verify the required flow of the DGCW system and assessed operability. Because the existing river temperature was significantly lower than 95°F (the assumed initial temperature), the licensee concluded the UHS was capable of performing its function. This violation was entered into the licensee’s corrective action program as issue report 1416634.

The inspectors determined the performance deficiency was more than minor because operating procedures did not require throttling of the DGCW flow or guidance if an emergency diesel generator was operating following a lock failure resulting from a barge colliding into the lock structure. The lack of guidance resulted in an increased heat load and resulted in reasonable doubt the UHS would remain below 108°F. The inspectors evaluated the finding using IMC 0609, Exhibit 4, “External Events Screening Questions,” and answered “no” to all of the applicable questions. Subsequent calculations by the licensee indicated the maximum flow would not challenge the maximum design temperature limits for the UHS. Therefore, the finding screened as of very low safety significance (Green). The inspectors determined the cause of this finding did not represent current licensee performance and, thus, no cross-cutting aspect was assigned.

Inspection Report# : [2013003](#) (*pdf*)

Significance:  May 17, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Translate Design Basis Into Toxic Chemical Response Procedures

A finding of very low safety significance and associated NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," was identified by the inspectors for the licensee's failure to translate the design basis correctly into procedures and instructions for the operators. Specifically, the licensee did not update procedures and instructions to ensure that operators would don respirators within two minutes of detection of a toxic chemical, ammonia, as determined in a calculation. The licensee entered the issue into their corrective action program and planned to revise the calculation using detection of odor as an entry condition for donning of respirator protection and update the operating procedures accordingly.

The finding was determined to be more than minor because the failure to provide procedures or instructions to operators to don respirators could result in the operators becoming incapacitated and not being able to respond to an accident or event that had a possibility of radionuclide releases. The finding was determined to be of very low safety significance (Green) due to the low probability of an ammonia release associated with a barge accident. The finding had a cross-cutting aspect in the area of human performance, work control, because the licensee's engineering organization did not coordinate with the operations organization on the need to don respirators within two minutes of detection of ammonia gas following a postulated toxic chemical accident.

Inspection Report# : [2013007](#) (pdf)

Significance: G Mar 31, 2013

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

DIESEL GENERATOR COOLING WATER PUMP ALIGNED TO WRONG UNIT

A finding of very low safety significance and associated non-cited violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was self-revealed on March 1, 2013, during restoration from the 1B core spray logic test, when the 1/2 diesel generator cooling water pump (DGCWP) was discovered to have been lined up to Unit 2 emergency core cooling system room coolers instead of Unit 1 coolers as expected. The operators that had performed the initial valve manipulations on February 28, 2013, did not complete the alignment as required by QCOP 6600-15, "1/2 Diesel Generator Cooling Water Pump Cross Connect Alignment." Specifically, the operators executing QCOP 6600-15 did not follow the procedure for aligning the Unit 1/2 DGCWP to supply the Unit 1 emergency core cooling system room coolers. The issue was entered into the licensee's CAP as Issue Report 1486754, and the licensee restored operability of the Unit 1 DGCW pump to restore compliance. Standdown briefings were conducted for all station operators to discuss the event lesson learned, and performance management actions were implemented for the operators involved in the event.

This issue was more than minor because it adversely affected the Reactor Safety Mitigating Systems Cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences in that failure to align cooling water per the procedure adversely impacted the cornerstone attribute of Configuration Control for operating plant equipment lineups. Specifically, the as-left equipment lineup was different than that reported to the main control room when the activity was completed. The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609 Appendix A, "The Significance Determination Process For Findings At-Power." The inspectors answered all questions of Exhibit 2, "Mitigating Systems Screening Questions," Section A - Mitigating SSCs and Functionality (Except Reactivity Control Systems) "No," and therefore, the finding screened as Green or very low safety significance. This finding has a cross-cutting aspect in the area of Human Performance - Work Practices because the licensee personnel did not use human performance tools and techniques to ensure proper execution of the task (H.4(a)).

Inspection Report# : [2013002](#) (pdf)

Significance: G Dec 31, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

DIESEL GENERATOR TECHNICAL SPECIFICATION FREQUENCY AND VOLTAGE VARIATION NOT CONSIDERED IN LOADING CALCULATIONS

The inspectors identified a finding of very low safety significance (Green) and an associated NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the failure to verify and ensure that operating the emergency diesel generators (EDGs) at the limits of voltage and frequency, allowed by Technical Specification (TS) 3.8.1.2, would not affect the safety related components. Specifically, the license failed to ensure the EDGs, operating under any combination of allowed voltage and frequency, would not be loaded in excess of the licensed limit and would not cause supplied components to become inoperable. The licensee entered the issue into the corrective action program (CAP) as Issue Report (IR) 01288784, "CDBI – Technical Specification Limits for EDG," and restricted EDG operation to near the midpoint of the allowed TS range during any potential event until the licensee demonstrates operability over the full TS range.

The finding was more than minor because it affected the Mitigating Systems Cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the design control attribute was adversely affected because the licensee failed to ensure the TS allowed operating band for EDG frequency and voltage could not affect the operability and reliability of mitigating system components. Based on a Phase 3 internal events SDP evaluation performed by a regional senior reactor analyst, the inspectors determined the finding was of very low safety significance (Green). No cross-cutting aspect was assigned since the analysis was last performed in May of 2007 and is not necessarily reflective of current performance.

Inspection Report# : [2012005](#) (pdf)

Significance:  Dec 31, 2012

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

FAILURE TO FOLLOW SURVEILLANCE PROCEDURE

A self-revealed finding of very low safety significance (Green) and an associated NCV of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedure, and Drawings," were identified on October 25, 2012, when the operator performing the Unit 2 EDG surveillance test failed to follow procedural direction when applying load to the machine resulting in the Unit 2 diesel generator being inoperable for approximately seven hours while troubleshooting activities were conducted. The operator did not perform the diesel loading in accordance with the procedure in that real load was applied in a manner that changed reactive load significantly in the opposite polarity from real load and resulted in a "loss of field" trip of the diesel generator output breaker. After troubleshooting, the surveillance was completed to ensure no impact to the voltage regulating circuit and restore operability for prior work activities. This issue was entered into the licensee's CAP as IR 1431240. Immediate corrective actions included revision of procedures that operated the diesel generator in parallel with another source to include information reminding operators that the Unit 2 EDG responded differently to load adjustments, and care should be used when making adjustments to prevent a "loss of field" trip.

The finding was more than minor because it affected the Mitigating Systems Cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The deficiency impacted the Equipment Performance attribute for reliability in that the performance deficiency challenged the voltage regulator protective feature and could have damaged the excitation circuit for the diesel generator. Inspectors performed the Phase 1 screening of the finding using the SDP and determined that the issue was of very low safety significance, or Green. The questions in IMC 0609, Attachment 4, Appendix A, Exhibit 2, Section A were answered "No" by inspectors because the diesel was quickly made available for emergency response following the breaker trip, and the remaining diesel generator and both offsite power sources were operable. Inspectors determined this finding to be cross-cutting in Human Performance-Resources in that the licensee ensures that appropriate training is provided to assure nuclear safety (H.2(b)) because a contributor to this finding was that a

post-maintenance change in voltage regulator performance was not systematically communicated to the operating staff through training.

Inspection Report# : [2012005](#) (*pdf*)

Barrier Integrity

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the [cover letters](#) to security inspection reports may be viewed.

Miscellaneous

Last modified : December 03, 2013

Quad Cities 2

4Q/2013 Plant Inspection Findings

Initiating Events

Significance:  Mar 31, 2013

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

FAILURE TO FOLLOW CLEARANCE ORDER INSTRUCTIONS

A finding of very low safety significance and associated non-cited violation of Technical Specifications 5.4.1.a, "Procedures," was self-revealed on March 13, 2013, when operators placing a clearance on the Unit 1 analog trip system de-energized the Unit 2 analog trip system resulting in a Unit 2 half-scam. The operators that opened the wrong breaker did not follow the instructions in the clearance order brief as required by OP AA 109-101, "Clearance and Tagging," and misidentified the inverter on the south wall of the cable spreading room as the Unit 1 analog trip system inverter when it was actually the Unit 2 inverter. The operators did not use the concurrent verification techniques specified in the pre-job briefing for ensuring that the inverter was the correct component to be manipulated, and did not implement the clearance order as written. Immediate actions taken were removal of the implementing operators' qualifications and briefing to all operating personnel.

Inspectors determined that the issue was more than minor because it adversely affected the Reactor Safety Initiating Events Cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during power operations. The performance deficiency challenged the configuration control attribute of the objective for operating equipment lineups. The inspectors determined the finding could be evaluated using the Significance Determination Process (SDP) in accordance with IMC 0609, Appendix A, "The Significance Determination Process For Findings At-Power." The inspectors answered all questions of Exhibit 1, "Initiating Events Screening Questions," for transient initiators and support system initiators. Questions in both categories were answered "No," and the finding screened as very low safety significance, or Green. Inspectors determined that a significant contributor to this finding was the failure of the operator performing breaker manipulation to verify the component label matched the clearance checklist and card in accordance with the site standard, HU-AA-101, Human Performance Tools and Verification Practices. As a result, inspectors identified that this issue had a cross-cutting aspect in the area of Human Performance - Work Practices for failure to use the human performance techniques to ensure that the work tasks are performed safely and individuals do not proceed in the face of uncertainty (H.4(a)).

Inspection Report# : [2013002](#) (*pdf*)

Mitigating Systems

Significance:  Sep 30, 2013

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

WRONG PARTS INSTALLED FOR CRD HCU

A finding of very low safety significance (Green) and associated non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings," was self-revealed through repetitive low pressure alarms on a recently overhauled control rod drive (CRD) hydraulic control unit (HCU) accumulator. Specifically, the work

instructions for overhaul of the HCU for CRD 2-0305-34-59 were not appropriate to the circumstances in that the wrong part number for the bottom O-ring was listed and as a result, the wrong sized O-ring was installed in the safety related application. The wrong O-ring allowed nitrogen pressure to leak out of the HCU accumulator after the HCU was returned to service. After the part discrepancy was identified, the licensee stopped all work on the HCU until the parts list was corrected and the procedure was updated to add the catalogue identification number for each part to the applicable steps. The HCU overhaul was completed and retested satisfactorily. An extent of condition review was performed to identify and evaluate other potential instances where the parts list may have been used. The inspectors determined that the development and implementation of an informal parts list was a significant contributor to the performance deficiency and identified that this issue had a cross-cutting aspect in the area of Human Performance – Work Control in that the licensee did not plan the activity with sufficient rigor to support long-term equipment reliability without reliance on manual actions (H.3(b)).

This performance deficiency was determined to be more than minor because it adversely affected the Mitigating Systems Cornerstone objective to ensure availability, reliability, and capability of mitigating systems for the Equipment Performance attribute because frequent manual operator actions were required to be taken to maintain reliability of the affected accumulator. The inspectors determined the finding could be evaluated using the Significance Determination Process in accordance with IMC 0609, Appendix A, “The Significance Determination Process (SDP) For Findings At-Power.” The inspectors answered “No” to all questions of Exhibit 2, “Mitigating Systems Screening Questions,” Section C – “Reactivity Control Systems,” and therefore, the finding screened as Green or very low safety significance.

Inspection Report# : [2013004](#) (pdf)

Significance:  Jun 30, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

CALCULATION ASSUMPTIONS NOT TRANSLATED IN TO OPERATING PROCEDURES

A finding of very low safety significance and associated non-cited violation (NCV) of 10 CFR Appendix B, Criterion III, “Design Control,” was identified by the inspectors for the licensee’s failure to translate design requirements into procedures to ensure availability of the ultimate heat sink (UHS) in a loss of lock event. Specifically, the licensee failed to translate the need to minimize diesel generator cooling water (DGCW) flow as assumed in the design calculation into station operating procedures. In response to the inspectors’ concerns, the licensee initiated actions to verify the required flow of the DGCW system and assessed operability. Because the existing river temperature was significantly lower than 95°F (the assumed initial temperature), the licensee concluded the UHS was capable of performing its function. This violation was entered into the licensee’s corrective action program as issue report 1416634.

The inspectors determined the performance deficiency was more than minor because operating procedures did not require throttling of the DGCW flow or guidance if an emergency diesel generator was operating following a lock failure resulting from a barge colliding into the lock structure. The lack of guidance resulted in an increased heat load and resulted in reasonable doubt the UHS would remain below 108°F. The inspectors evaluated the finding using IMC 0609, Exhibit 4, “External Events Screening Questions,” and answered “no” to all of the applicable questions. Subsequent calculations by the licensee indicated the maximum flow would not challenge the maximum design temperature limits for the UHS. Therefore, the finding screened as of very low safety significance (Green). The inspectors determined the cause of this finding did not represent current licensee performance and, thus, no cross-cutting aspect was assigned.

Inspection Report# : [2013003](#) (pdf)

Significance:  May 17, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Translate Design Basis Into Toxic Chemical Response Procedures

A finding of very low safety significance and associated NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," was identified by the inspectors for the licensee's failure to translate the design basis correctly into procedures and instructions for the operators. Specifically, the licensee did not update procedures and instructions to ensure that operators would don respirators within two minutes of detection of a toxic chemical, ammonia, as determined in a calculation. The licensee entered the issue into their corrective action program and planned to revise the calculation using detection of odor as an entry condition for donning of respirator protection and update the operating procedures accordingly.

The finding was determined to be more than minor because the failure to provide procedures or instructions to operators to don respirators could result in the operators becoming incapacitated and not being able to respond to an accident or event that had a possibility of radionuclide releases. The finding was determined to be of very low safety significance (Green) due to the low probability of an ammonia release associated with a barge accident. The finding had a cross-cutting aspect in the area of human performance, work control, because the licensee's engineering organization did not coordinate with the operations organization on the need to don respirators within two minutes of detection of ammonia gas following a postulated toxic chemical accident.

Inspection Report# : [2013007](#) (*pdf*)

Significance: G Mar 31, 2013

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

DIESEL GENERATOR COOLING WATER PUMP ALIGNED TO WRONG UNIT

A finding of very low safety significance and associated non-cited violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was self-revealed on March 1, 2013, during restoration from the 1B core spray logic test, when the 1/2 diesel generator cooling water pump (DGCWP) was discovered to have been lined up to Unit 2 emergency core cooling system room coolers instead of Unit 1 coolers as expected. The operators that had performed the initial valve manipulations on February 28, 2013, did not complete the alignment as required by QCOP 6600-15, "1/2 Diesel Generator Cooling Water Pump Cross Connect Alignment." Specifically, the operators executing QCOP 6600-15 did not follow the procedure for aligning the Unit 1/2 DGCWP to supply the Unit 1 emergency core cooling system room coolers. The issue was entered into the licensee's CAP as Issue Report 1486754, and the licensee restored operability of the Unit 1 DGCW pump to restore compliance. Standdown briefings were conducted for all station operators to discuss the event lesson learned, and performance management actions were implemented for the operators involved in the event.

This issue was more than minor because it adversely affected the Reactor Safety Mitigating Systems Cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences in that failure to align cooling water per the procedure adversely impacted the cornerstone attribute of Configuration Control for operating plant equipment lineups. Specifically, the as-left equipment lineup was different than that reported to the main control room when the activity was completed. The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609 Appendix A, "The Significance Determination Process For Findings At-Power." The inspectors answered all questions of Exhibit 2, "Mitigating Systems Screening Questions," Section A - Mitigating SSCs and Functionality (Except Reactivity Control Systems) "No," and therefore, the finding screened as Green or very low safety significance. This finding has a cross-cutting aspect in the area of Human Performance - Work Practices because the licensee personnel did not use human performance tools and techniques to ensure proper execution of the task (H.4(a)).

Inspection Report# : [2013002](#) (*pdf*)

Barrier Integrity

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the [cover letters](#) to security inspection reports may be viewed.

Miscellaneous

Last modified : February 24, 2014

Quad Cities 2

1Q/2014 Plant Inspection Findings

Initiating Events

Significance:  Mar 31, 2014

Identified By: NRC

Item Type: FIN Finding

STEAM DRYER/STEAM SEPARATOR LIFTING DEVICE FAILURE TO MEET AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI) N14.6

The inspectors identified a finding of very low safety significance (Green) involving the licensee's failure to demonstrate compliance with American National Standards Institute (ANSI) N14.6-1978, Section 3.2.1.1. Specifically, the licensee did not establish the design stress factors based on the fracture toughness characteristics of the socket pins, lock pins, and hook pins for the steam dryer/steam separator lifting device. This issue was entered into the licensee's corrective action program (CAP) as Action Request (AR) 1517114, "Dryer/Separator Strongback Calculation Discrepancies," dated May 23, 2013, and AR 1578475, "Dryer/Separator Strongback Pin Inspection Criteria," dated October 30, 2013.

The inspectors determined the finding to be more than minor because the finding was associated with the Initiating Events Cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown. Specifically, compliance with ANSI N14.6-1978, Section 3.2.1.1 is to ensure safe load handling of heavy loads over the reactor core, spent fuel, and/or safety-related systems through establishing the design based on the fracture toughness characteristics of the material. The inspectors determined the finding could be evaluated using the Significance Determination Process in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase I -- Initial Screening and Characterization of Findings," Table 3. Since the finding was associated with shutdown conditions, the inspectors used IMC 0609, Appendix G, "Shutdown Operations Significance Determination Process." The inspectors determined that none of the conditions constituting a loss of control were met as described in Appendix G, Attachment 1, "Phase I Operational Checklists for Both PWRS and BWRS," for this finding and no Phase II or Phase III analysis was required. Specifically, the licensee provided information to inspectors that prior nondestructive examinations and inspections of the lifting device found no prior material defects. In addition, the licensee had not experienced any load drop events since placing the steam dryer/steam separator lifting device into service. The lifting device was also load tested successfully in accordance with the applicable requirements of ANSI N14.6. Therefore, the inspectors determined that this finding was of very low safety significance (Green). The inspectors did not identify a cross-cutting aspect associated with this finding because the concern was related to a design calculation from 2005, and thus was not necessarily indicative of current licensee performance.

No violation of regulatory requirements is associated with this finding based on the steam dryer/steam separator lifting device being a non-safety-related structural component.

Inspection Report# : [2014002](#) (*pdf*)

Mitigating Systems

Significance:  Sep 30, 2013

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

WRONG PARTS INSTALLED FOR CRD HCU

A finding of very low safety significance (Green) and associated non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings," was self-revealed through repetitive low pressure alarms on a recently overhauled control rod drive (CRD) hydraulic control unit (HCU) accumulator. Specifically, the work instructions for overhaul of the HCU for CRD 2-0305-34-59 were not appropriate to the circumstances in that the wrong part number for the bottom O-ring was listed and as a result, the wrong sized O-ring was installed in the safety related application. The wrong O-ring allowed nitrogen pressure to leak out of the HCU accumulator after the HCU was returned to service. After the part discrepancy was identified, the licensee stopped all work on the HCU until the parts list was corrected and the procedure was updated to add the catalogue identification number for each part to the applicable steps. The HCU overhaul was completed and retested satisfactorily. An extent of condition review was performed to identify and evaluate other potential instances where the parts list may have been used. The inspectors determined that the development and implementation of an informal parts list was a significant contributor to the performance deficiency and identified that this issue had a cross-cutting aspect in the area of Human Performance – Work Control in that the licensee did not plan the activity with sufficient rigor to support long-term equipment reliability without reliance on manual actions (H.3(b)).

This performance deficiency was determined to be more than minor because it adversely affected the Mitigating Systems Cornerstone objective to ensure availability, reliability, and capability of mitigating systems for the Equipment Performance attribute because frequent manual operator actions were required to be taken to maintain reliability of the affected accumulator. The inspectors determined the finding could be evaluated using the Significance Determination Process in accordance with IMC 0609, Appendix A, "The Significance Determination Process (SDP) For Findings At-Power." The inspectors answered "No" to all questions of Exhibit 2, "Mitigating Systems Screening Questions," Section C – "Reactivity Control Systems," and therefore, the finding screened as Green or very low safety significance.

Inspection Report# : [2013004](#) (*pdf*)

Significance:  Jun 30, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

CALCULATION ASSUMPTIONS NOT TRANSLATED IN TO OPERATING PROCEDURES

A finding of very low safety significance and associated non-cited violation (NCV) of 10 CFR Appendix B, Criterion III, "Design Control," was identified by the inspectors for the licensee's failure to translate design requirements into procedures to ensure availability of the ultimate heat sink (UHS) in a loss of lock event. Specifically, the licensee failed to translate the need to minimize diesel generator cooling water (DGCW) flow as assumed in the design calculation into station operating procedures. In response to the inspectors' concerns, the licensee initiated actions to verify the required flow of the DGCW system and assessed operability. Because the existing river temperature was significantly lower than 95°F (the assumed initial temperature), the licensee concluded the UHS was capable of performing its function. This violation was entered into the licensee's corrective action program as issue report 1416634.

The inspectors determined the performance deficiency was more than minor because operating procedures did not require throttling of the DGCW flow or guidance if an emergency diesel generator was operating following a lock failure resulting from a barge colliding into the lock structure. The lack of guidance resulted in an increased heat load and resulted in reasonable doubt the UHS would remain below 108°F. The inspectors evaluated the finding using IMC 0609, Exhibit 4, "External Events Screening Questions," and answered "no" to all of the applicable questions. Subsequent calculations by the licensee indicated the maximum flow would not challenge the maximum design temperature limits for the UHS. Therefore, the finding screened as of very low safety significance (Green). The inspectors determined the cause of this finding did not represent current licensee performance and, thus, no cross-cutting aspect was assigned.

Inspection Report# : [2013003](#) (pdf)

Significance: G May 17, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Translate Design Basis Into Toxic Chemical Response Procedures

A finding of very low safety significance and associated NCV of 10 CFR Part 50, Appendix B, Criterion III, “Design Control,” was identified by the inspectors for the licensee’s failure to translate the design basis correctly into procedures and instructions for the operators. Specifically, the licensee did not update procedures and instructions to ensure that operators would don respirators within two minutes of detection of a toxic chemical, ammonia, as determined in a calculation. The licensee entered the issue into their corrective action program and planned to revise the calculation using detection of odor as an entry condition for donning of respirator protection and update the operating procedures accordingly.

The finding was determined to be more than minor because the failure to provide procedures or instructions to operators to don respirators could result in the operators becoming incapacitated and not being able to respond to an accident or event that had a possibility of radionuclide releases. The finding was determined to be of very low safety significance (Green) due to the low probability of an ammonia release associated with a barge accident. The finding had a cross-cutting aspect in the area of human performance, work control, because the licensee’s engineering organization did not coordinate with the operations organization on the need to don respirators within two minutes of detection of ammonia gas following a postulated toxic chemical accident.

Inspection Report# : [2013007](#) (pdf)

Barrier Integrity

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related

information will not be displayed on the public web page. Therefore, the [cover letters](#) to security inspection reports may be viewed.

Miscellaneous

Significance: N/A Mar 31, 2009

Identified By: NRC

Item Type: AV Apparent Violation

Apparent Violation for Exelon Plants - 1 (2009 Findings)

For apparent violation #1:

Contrary to the above, on March 31, 2009 Exelon Generation Company, LLC (Exelon) provided incomplete and inaccurate information on the status of its decommissioning funding, as required by 10 CFR 50.75 when it submitted the decommissioning funding status report. Specifically, the March 31, 2009, decommissioning funding status (DFS) report contained inaccurate and incomplete information regarding Exelon's compliance with the requirements of 10 CFR 50.75. The report stated that the amount listed for each of the reactors was determined in accordance with 10 CFR 50.75(b) and the applicable formulas of 10 CFR 50.75(c). However, for each of the 23 reactors, the amount reported was a discounted value that was less than the minimum required amount specified by 10 CFR 50.75(b) and (c). The report was material to the NRC because Exelon under-reported its certified decommissioning amounts by approximately \$4 billion, and the NRC staff evaluated the status of Exelon's decommissioning funds based on the inaccurate reports. After identifying the inaccurate information, the NRC required parent company guarantees before the staff could make its determination that there was reasonable assurance that funds will be available for the decommissioning process.

Inspection Report# : [2012012](#) (*pdf*)

Inspection Report# : [2013201](#) (*pdf*)

Significance: N/A Mar 31, 2009

Identified By: NRC

Item Type: AV Apparent Violation

Apparent Violation for Exelon Plants - 2 (2009 Findings)

For apparent violation #2:

Contrary to the above, on March 31, 2007, and March 31, 2005, Exelon Generation Company, LLC (Exelon) provided incomplete and inaccurate information on the status of its decommissioning funding, as required by 10 CFR 50.75 when it submitted the decommissioning funding status reports. Specifically, the March 31, 2007, and March 31, 2005, decommissioning funding status (DFS) reports contained inaccurate and incomplete information regarding Exelon's compliance with the requirements of 10 CFR 50.75. The reports stated that the amount listed for each of the reactors was determined in accordance with 10 CFR 50.75(b) and the applicable formulas of 10 CFR 50.75(c). However, in multiple instances, the amount reported was a discounted value that was less than the minimum required amount specified by 10 CFR 50.75(b) and (c). The reports were material to the NRC because Exelon under-reported its certified decommissioning amounts, and the NRC staff evaluated the status of Exelon's decommissioning funds based on the inaccurate reports. After identifying the inaccurate information, the NRC required parent company guarantees before the staff could make its determination that there was reasonable assurance that funds will be available for the decommissioning process.

Inspection Report# : [2012012](#) (*pdf*)

Inspection Report# : [2013201](#) (*pdf*)

Last modified : May 30, 2014

Quad Cities 2 2Q/2014 Plant Inspection Findings

Initiating Events

Significance: G Jun 30, 2014

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

FAILURE TO MEET DESIGN REQUIREMENT FOR SAFETY-RELATED CABLES IN 'D' HEATER BAY

A finding of very low safety significance (Green) with an associated non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," was self-revealed for the licensee's failure to demonstrate compliance with ComEd Standard N-EM-0035 for safety-related cables within the Unit 2 'D' Heater Bay. Specifically, the licensee failed to route the Instrument Bus and Essential Service (ESS) Bus cables with minimum cable static bend radius requirements in a manner consistent with N-EM-0035. This resulted in an event that caused a fire in the turbine building, smoke in various motor control center (MCC) cubicles due to overheated control power transformers (CPTs) (including one safety-related MCC), a manual scram and main steam isolation, and an Alert emergency declaration. The licensee's corrective actions for this event included repairing cables damaged in the fire, replacement of the expansion joint; and revision to the steam seal operating procedures. The licensee documented this issue in the corrective action program (CAP) as Issue Report (IR) 1642409.

The finding was determined to be more than minor per IMC 0612, Appendix B, "Issue Screening," because it was a precursor to a significant event. Specifically, failure to install Instrument bus and ESS cables in accordance with the requirements of

N-EM-0035 resulted in the initiation of an electrical fault and cable fire. The fire resulted in a manual reactor scram and the loss of safety-related equipment. The performance deficiency was associated with the Reactor Safety - Initiating Events Cornerstone attribute of Design Control, and affected the cornerstone objective of ensuring the capability of equipment relying on the power supply from Instrument and ESS Buses, both during shutdown as well as power operations. A detailed risk evaluation was performed by the regional senior reactor analysts (SRAs), and the finding was determined to be of very low safety significance. The finding does not have a cross-cutting aspect, because it is associated with a performance deficiency from the timeframe of the plant's original construction and is not representative of the licensee's current performance.

Inspection Report# : [2014003](#) (*pdf*)

Significance: G Jun 30, 2014

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

FAILURE TO OPERATE THE GLAND SEAL SYSTEM AS DESIGNED

A finding of very low safety significance (Green) and associated non-cited violation of Technical Specification (TS) Section 5.4.1 was self-revealed on April 2, 2014 for the licensee's failure to establish a procedure in accordance with the requirements of Regulatory Guide 1.33. Specifically, the licensee established procedure QOP 5600-01, "Gland Seal System Operation," for use during startup of the Main Steam and Turbine-Generator systems. However, the procedure failed to include provisions to ensure that the steam seal regulator bypass valve, 2-3099-S2 (S2) was closed prior to lifting the steam seal bypass relief valve and exceeding the bypass line design pressure. That resulted in a failure of the piping and a significant steam leak in the 'D' heater bay. Immediate corrective actions taken by the

licensee included revising their procedures for operation of the Gland Seal system and conducting just-in-time training on Gland Seal system operation for operators prior to the subsequent startup on Unit 2. In addition, the licensee planned to review and revise their operator training program for the Gland Seal system. The licensee documented this issue in CAP as IR 1642409.

The performance deficiency was determined to be more than minor and a finding because it was a precursor to a significant event. Specifically, the Gland Seal System steam seal regulator bypass valve was opened at pressures that the bypass line was not designed to withstand. This led to a significant steam leak in the 'D' heater bay, and the resulting fire caused by a degraded cable fault. The inspectors concluded this finding was associated with the Initiating Events Cornerstone and a Detailed Risk Evaluation was required. The finding was determined to be of very low risk significance by the SRAs. The inspectors determined that a principal contributor to the finding was that the licensee did not stop when faced with uncertain conditions and risks were not evaluated and managed before proceeding. Specifically, when the licensee identified a steam packing leak in the S1 valve in June 2013 and decided to close the valve when leakage increased to an unacceptable level in October 2013, they failed to recognize the risk and prioritize the repair of the valve prior to the reactor startup on April 2, 2014. In addition, when operators faced unexpected system response during the startup of the Gland Seal system and conflicting procedural guidance, the cause of the problem was not thoroughly understood and evaluated prior to continuing the system startup. As a result, the inspectors assigned a cross-cutting aspect of challenging the unknown in the area of human performance (H.11).

Inspection Report# : [2014003](#) (*pdf*)

Significance:  Mar 31, 2014

Identified By: NRC

Item Type: FIN Finding

STEAM DRYER/STEAM SEPARATOR LIFTING DEVICE FAILURE TO MEET AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI) N14.6

The inspectors identified a finding of very low safety significance (Green) involving the licensee's failure to demonstrate compliance with American National Standards Institute (ANSI) N14.6-1978, Section 3.2.1.1.

Specifically, the licensee did not establish the design stress factors based on the fracture toughness characteristics of the socket pins, lock pins, and hook pins for the steam dryer/steam separator lifting device. This issue was entered into the licensee's corrective action program (CAP) as Action Request (AR) 1517114, "Dryer/Separator Strongback Calculation Discrepancies," dated May 23, 2013, and AR 1578475, "Dryer/Separator Strongback Pin Inspection Criteria," dated October 30, 2013.

The inspectors determined the finding to be more than minor because the finding was associated with the Initiating Events Cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown. Specifically, compliance with ANSI N14.6-1978, Section 3.2.1.1 is to ensure safe load handling of heavy loads over the reactor core, spent fuel, and/or safety-related systems through establishing the design based on the fracture toughness characteristics of the material. The inspectors determined the finding could be evaluated using the Significance Determination Process in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase I -- Initial Screening and Characterization of Findings," Table 3. Since the finding was associated with shutdown conditions, the inspectors used IMC 0609, Appendix G, "Shutdown Operations Significance Determination Process." The inspectors determined that none of the conditions constituting a loss of control were met as described in Appendix G, Attachment 1, "Phase I Operational Checklists for Both PWRs and BWRs," for this finding and no Phase II or Phase III analysis was required. Specifically, the licensee provided information to inspectors that prior nondestructive examinations and inspections of the lifting device found no prior material defects. In addition, the licensee had not experienced any load drop events since placing the steam dryer/steam separator lifting device into service. The lifting device was also load tested successfully in accordance with the applicable requirements of ANSI N14.6. Therefore, the inspectors determined that this finding was of very low safety significance (Green). The inspectors did not identify a cross-cutting aspect associated with this finding because the concern was related to a design calculation from 2005, and thus was not necessarily indicative of current licensee performance.

No violation of regulatory requirements is associated with this finding based on the steam dryer/steam separator lifting device being a non-safety-related structural component.

Inspection Report# : [2014002](#) (pdf)

Mitigating Systems

Significance:  Jun 30, 2014

Identified By: NRC

Item Type: NCV NonCited Violation

SEISMIC SCAFFOLD IN CONTACT WITH SAFETY-RELATED EQUIPMENT

A finding of very low safety significance and associated non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was identified by the inspectors for the licensee's failure to meet the requirements of procedure MA-AA-796-024, "Scaffold Installation, Inspection, and Removal," when scaffold Q0178 was built with one of its supports in rigid contact with the operable Unit 2 torus. Immediate corrective actions included modifying the scaffold such that it was no longer in contact with the Unit 2 torus. This issue was captured in the licensee's CAP as IR 1639356.

The finding was determined to be more than minor because the finding was associated with the Mitigating Systems Cornerstone attribute of protection against external factors and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, a scaffold built in contact with safety related equipment could damage the equipment and affect its availability and reliability. The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," Appendix A, "The Significance Determination Process (SDP) for Findings At-Power." The inspectors answered, "No," to all of the Exhibit 2, "Mitigating Systems Screening Questions," in section A and determined the finding was of very low safety significance. This finding has a cross-cutting aspect of documentation in the area of human performance because the licensee did not create and maintain complete, accurate and, up-to-date documentation. Specifically, the licensee did not completely and accurately evaluate the acceptability of a scaffold that was in contact with safety related equipment (H.7).

Inspection Report# : [2014003](#) (pdf)

Significance:  Sep 30, 2013

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

WRONG PARTS INSTALLED FOR CRD HCU

A finding of very low safety significance (Green) and associated non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings," was self-revealed through repetitive low pressure alarms on a recently overhauled control rod drive (CRD) hydraulic control unit (HCU) accumulator. Specifically, the work instructions for overhaul of the HCU for CRD 2-0305-34-59 were not appropriate to the circumstances in that the wrong part number for the bottom O-ring was listed and as a result, the wrong sized O-ring was installed in the safety related application. The wrong O-ring allowed nitrogen pressure to leak out of the HCU accumulator after the HCU was returned to service. After the part discrepancy was identified, the licensee stopped all work on the HCU until the parts list was corrected and the procedure was updated to add the catalogue identification number for each part to the applicable steps. The HCU overhaul was completed and retested satisfactorily. An extent of condition review was performed to identify and evaluate other potential instances where the parts list may have been used. The inspectors determined that the development and implementation of an informal parts list was a significant contributor to the

performance deficiency and identified that this issue had a cross-cutting aspect in the area of Human Performance – Work Control in that the licensee did not plan the activity with sufficient rigor to support long-term equipment reliability without reliance on manual actions (H.3(b)).

This performance deficiency was determined to be more than minor because it adversely affected the Mitigating Systems Cornerstone objective to ensure availability, reliability, and capability of mitigating systems for the Equipment Performance attribute because frequent manual operator actions were required to be taken to maintain reliability of the affected accumulator. The inspectors determined the finding could be evaluated using the Significance Determination Process in accordance with IMC 0609, Appendix A, “The Significance Determination Process (SDP) For Findings At-Power.” The inspectors answered “No” to all questions of Exhibit 2, “Mitigating Systems Screening Questions,” Section C – “Reactivity Control Systems,” and therefore, the finding screened as Green or very low safety significance.

Inspection Report# : [2013004](#) (*pdf*)

Barrier Integrity

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the [cover letters](#) to security inspection reports may be viewed.

Miscellaneous

Last modified : August 29, 2014

Quad Cities 2

3Q/2014 Plant Inspection Findings

Initiating Events

Significance: G Jun 30, 2014

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

FAILURE TO MEET DESIGN REQUIREMENT FOR SAFETY-RELATED CABLES IN 'D' HEATER BAY

A finding of very low safety significance (Green) with an associated non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," was self-revealed for the licensee's failure to demonstrate compliance with ComEd Standard N-EM-0035 for safety-related cables within the Unit 2 'D' Heater Bay. Specifically, the licensee failed to route the Instrument Bus and Essential Service (ESS) Bus cables with minimum cable static bend radius requirements in a manner consistent with N-EM-0035. This resulted in an event that caused a fire in the turbine building, smoke in various motor control center (MCC) cubicles due to overheated control power transformers (CPTs) (including one safety-related MCC), a manual scram and main steam isolation, and an Alert emergency declaration. The licensee's corrective actions for this event included repairing cables damaged in the fire, replacement of the expansion joint; and revision to the steam seal operating procedures. The licensee documented this issue in the corrective action program (CAP) as Issue Report (IR) 1642409.

The finding was determined to be more than minor per IMC 0612, Appendix B, "Issue Screening," because it was a precursor to a significant event. Specifically, failure to install Instrument bus and ESS cables in accordance with the requirements of

N-EM-0035 resulted in the initiation of an electrical fault and cable fire. The fire resulted in a manual reactor scram and the loss of safety-related equipment. The performance deficiency was associated with the Reactor Safety - Initiating Events Cornerstone attribute of Design Control, and affected the cornerstone objective of ensuring the capability of equipment relying on the power supply from Instrument and ESS Buses, both during shutdown as well as power operations. A detailed risk evaluation was performed by the regional senior reactor analysts (SRAs), and the finding was determined to be of very low safety significance. The finding does not have a cross-cutting aspect, because it is associated with a performance deficiency from the timeframe of the plant's original construction and is not representative of the licensee's current performance.

Inspection Report# : [2014003](#) (*pdf*)

Significance: G Jun 30, 2014

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

FAILURE TO OPERATE THE GLAND SEAL SYSTEM AS DESIGNED

A finding of very low safety significance (Green) and associated non-cited violation of Technical Specification (TS) Section 5.4.1 was self-revealed on April 2, 2014 for the licensee's failure to establish a procedure in accordance with the requirements of Regulatory Guide 1.33. Specifically, the licensee established procedure QOP 5600-01, "Gland Seal System Operation," for use during startup of the Main Steam and Turbine-Generator systems. However, the procedure failed to include provisions to ensure that the steam seal regulator bypass valve, 2-3099-S2 (S2) was closed prior to lifting the steam seal bypass relief valve and exceeding the bypass line design pressure. That resulted in a failure of the piping and a significant steam leak in the 'D' heater bay. Immediate corrective actions taken by the

licensee included revising their procedures for operation of the Gland Seal system and conducting just-in-time training on Gland Seal system operation for operators prior to the subsequent startup on Unit 2. In addition, the licensee planned to review and revise their operator training program for the Gland Seal system. The licensee documented this issue in CAP as IR 1642409.

The performance deficiency was determined to be more than minor and a finding because it was a precursor to a significant event. Specifically, the Gland Seal System steam seal regulator bypass valve was opened at pressures that the bypass line was not designed to withstand. This led to a significant steam leak in the 'D' heater bay, and the resulting fire caused by a degraded cable fault. The inspectors concluded this finding was associated with the Initiating Events Cornerstone and a Detailed Risk Evaluation was required. The finding was determined to be of very low risk significance by the SRAs. The inspectors determined that a principal contributor to the finding was that the licensee did not stop when faced with uncertain conditions and risks were not evaluated and managed before proceeding. Specifically, when the licensee identified a steam packing leak in the S1 valve in June 2013 and decided to close the valve when leakage increased to an unacceptable level in October 2013, they failed to recognize the risk and prioritize the repair of the valve prior to the reactor startup on April 2, 2014. In addition, when operators faced unexpected system response during the startup of the Gland Seal system and conflicting procedural guidance, the cause of the problem was not thoroughly understood and evaluated prior to continuing the system startup. As a result, the inspectors assigned a cross-cutting aspect of challenging the unknown in the area of human performance (H.11).

Inspection Report# : [2014003](#) (*pdf*)

Significance:  Mar 31, 2014

Identified By: NRC

Item Type: FIN Finding

STEAM DRYER/STEAM SEPARATOR LIFTING DEVICE FAILURE TO MEET AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI) N14.6

The inspectors identified a finding of very low safety significance (Green) involving the licensee's failure to demonstrate compliance with American National Standards Institute (ANSI) N14.6-1978, Section 3.2.1.1.

Specifically, the licensee did not establish the design stress factors based on the fracture toughness characteristics of the socket pins, lock pins, and hook pins for the steam dryer/steam separator lifting device. This issue was entered into the licensee's corrective action program (CAP) as Action Request (AR) 1517114, "Dryer/Separator Strongback Calculation Discrepancies," dated May 23, 2013, and AR 1578475, "Dryer/Separator Strongback Pin Inspection Criteria," dated October 30, 2013.

The inspectors determined the finding to be more than minor because the finding was associated with the Initiating Events Cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown. Specifically, compliance with ANSI N14.6-1978, Section 3.2.1.1 is to ensure safe load handling of heavy loads over the reactor core, spent fuel, and/or safety-related systems through establishing the design based on the fracture toughness characteristics of the material. The inspectors determined the finding could be evaluated using the Significance Determination Process in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase I -- Initial Screening and Characterization of Findings," Table 3. Since the finding was associated with shutdown conditions, the inspectors used IMC 0609, Appendix G, "Shutdown Operations Significance Determination Process." The inspectors determined that none of the conditions constituting a loss of control were met as described in Appendix G, Attachment 1, "Phase I Operational Checklists for Both PWRs and BWRs," for this finding and no Phase II or Phase III analysis was required. Specifically, the licensee provided information to inspectors that prior nondestructive examinations and inspections of the lifting device found no prior material defects. In addition, the licensee had not experienced any load drop events since placing the steam dryer/steam separator lifting device into service. The lifting device was also load tested successfully in accordance with the applicable requirements of ANSI N14.6. Therefore, the inspectors determined that this finding was of very low safety significance (Green). The inspectors did not identify a cross-cutting aspect associated with this finding because the concern was related to a design calculation from 2005, and thus was not necessarily indicative of current licensee performance.

No violation of regulatory requirements is associated with this finding based on the steam dryer/steam separator lifting device being a non-safety-related structural component.

Inspection Report# : [2014002](#) (*pdf*)

Mitigating Systems

Significance:  Sep 30, 2014

Identified By: NRC

Item Type: NCV NonCited Violation

ANGLE IRON SUPPORT INSTALLED WITH MINIMAL CLEARANCE TO UNIT 2 TORUS SHELL

A finding of very low safety significance (Green) and associated non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," was identified by the inspectors for the licensee's failure to evaluate the impact of a conduit support installed in close proximity of the Unit 2 torus shell. Specifically, during installation of the conduit support, the licensee failed to provide instructions to ensure that sufficient clearance from the torus shell was provided to accommodate the torus wall movements predicted in the Updated Final Safety Analysis Report (UFSAR) torus design basis load cases. Immediate corrective actions included performing an operability evaluation under Issue Report (IR) 1672301 that determined the torus remained operable under all design basis events. The licensee has also corrected the condition by cutting the conduit support to ensure sufficient clearance to the torus wall is maintained.

The performance deficiency was determined to be more than minor because the finding was associated with the design control attribute of both the Mitigating Systems and Barrier Integrity Cornerstones. The finding adversely affected the Mitigating Systems cornerstone attribute of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The finding also adversely affected the Barrier Integrity Cornerstone objective of providing reasonable assurance that physical design barriers (containment) protect the public from radionuclide releases caused by accidents or events. The inspectors determined the finding screened as very low safety significance (Green) because the licensee's operability evaluation determined the torus remained operable under all design basis conditions. The inspectors did not identify a cross-cutting aspect associated with this finding because the finding was not representative of current performance because it was associated with a modification that occurred in the 1980s.

Inspection Report# : [2014004](#) (*pdf*)

Significance:  Sep 26, 2014

Identified By: NRC

Item Type: FIN Finding

INADEQUATE ROUNDS PACKAGE ACCEPTANCE CRITERIA

A finding of very low safety significance (Green) was identified by the inspectors when they determined that non-licensed operator general area rounds and field checks were inadequate for the circumstances. The inspectors determined that the failure to have non-licensed operator rounds package acceptance criteria that met procedural requirements was a performance deficiency. The licensee entered this issue into the CAP as Issue Report (IR) 02385609, "PIR – Operator Rounds For HPCI Bearing Oil Lvl Differ between Units." The licensee had not had time to determine corrective actions before the end of the inspection.

The performance deficiency was more than minor because it was associated with the procedure quality attribute of the mitigating systems cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability and capability to response to initiating events to prevent undesirable consequences and is therefore a finding. Using Manual Chapter 0609, Attachment 0609.04 "Initial Characterization of Findings," and Appendix A "The Significance

Determination Process for Findings at Power,” the

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finding was screened against the mitigating systems cornerstone and determined to be of very low safety significance (Green) because the finding was/did not: 1) a deficiency affecting the design or qualification of a mitigating structure, system or component, 2) represent a loss of system and/or function, 3) represent an actual loss of function of a single train for greater than its technical specification allowed outage time, 4) represent an actual loss of function of one or more non-technical specification trains of equipment designated as high safety-significant for greater than 24 hours and 5) did not involve the loss or degradation of equipment or function specifically designed to mitigate a seismic, flooding or severe weather event. The inspectors determined this finding affected the cross-cutting area of Human Performance in the aspect of Training. Specifically, the non-licensed operators should have been trained that an oil level not between the marked bands on the oil level indicator was an issue regardless of the rounds acceptance criteria for that parameter. (IMC 0310 H.9)

Inspection Report# : [2014007](#) (*pdf*)

Significance:  Sep 26, 2014

Identified By: NRC

Item Type: NCV NonCited Violation

INADEQUATE ADMINISTRATIVE CONTROLS

A finding of very low safety significance (Green) and an associated non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” was identified by the inspectors when they determined that Technical Specification (TS) surveillance procedures contained inadequate acceptance criteria. The failure to have TS surveillance procedure acceptance criteria that ensured the Emergency Diesel Generator (EDG) loading would not exceed the maximum licensed limit was a performance deficiency. The issue was entered into the licensee’s CAP as IR 02389102, “PIR Admin Controls For Allowed EDG Frequency Tolerance.” The licensee had not had time to determine corrective actions before the end of the inspection.

The performance deficiency was determined to be more than minor because it was associated with the design control attribute of the Mitigating Systems Cornerstone, and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences and is therefore a finding. Specifically, the licensee failed to ensure the acceptance criteria for EDG frequency and voltage would not affect the operability and reliability of the engine and safety related structures, systems or components. Using Manual Chapter 0609, Attachment 0609.04 “Initial Characterization of Findings,” and Appendix A, “The Significance Determination Process for Findings at Power,” dated June 19, 2012, the finding was screened against the mitigating systems cornerstone and determined to be of very low safety significance (Green) because the finding was a deficiency affecting the design or qualification of a mitigating structure, system or component. This finding has a cross-cutting aspect of resolution in the area of problem identification because the licensee did not take effective corrective actions to address issues in a timely manner commensurate with their safety significance. Specifically, the licensee did not implement adequate administrative controls to their EDG testing procedures to ensure that the procedures adequately addressed the non-conservative TS. (IMC 0310 P.3)

Inspection Report# : [2014007](#) (*pdf*)

Significance:  Jun 30, 2014

Identified By: NRC

Item Type: NCV NonCited Violation

SEISMIC SCAFFOLD IN CONTACT WITH SAFETY-RELATED EQUIPMENT

A finding of very low safety significance and associated non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” was identified by the inspectors for the licensee’s failure to meet the requirements of procedure MA-AA-796-024, “Scaffold Installation, Inspection, and Removal,” when scaffold Q0178 was built with one of its supports in rigid contact with the operable Unit 2 torus. Immediate corrective actions included modifying the scaffold such that it was no longer in contact with

the Unit 2 torus. This issue was captured in the licensee's CAP as IR 1639356.

The finding was determined to be more than minor because the finding was associated with the Mitigating Systems Cornerstone attribute of protection against external factors and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, a scaffold built in contact with safety related equipment could damage the equipment and affect its availability and reliability. The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," Appendix A, "The Significance Determination Process (SDP) for Findings At-Power." The inspectors answered, "No," to all of the Exhibit 2, "Mitigating Systems Screening Questions," in section A and determined the finding was of very low safety significance. This finding has a cross-cutting aspect of documentation in the area of human performance because the licensee did not create and maintain complete, accurate and, up-to-date documentation. Specifically, the licensee did not completely and accurately evaluate the acceptability of a scaffold that was in contact with safety related equipment (H.7).

Inspection Report# : [2014003](#) (pdf)

Barrier Integrity

Emergency Preparedness

Significance:  Sep 30, 2014

Identified By: NRC

Item Type: NCV NonCited Violation

INADEQUATE EVACUATION TIME ESTIMATE SUBMITTALS

The inspectors identified a finding of very low safety significance (Green) with an associated non-cited violation of 10 CFR 50.54(q)(2) as required by 10 CFR 50.47(b)(10) and 10 CFR Part 50, Appendix E, Section IV.4, for failing to maintain the effectiveness of the Quad Cities Nuclear Power Station Emergency Plan, as a result of failing to provide the station evacuation time estimate (ETE) to the responsible offsite response organizations by the required date.

Exelon submitted the Quad Cities Nuclear Power Station ETE to the NRC on December 12, 2012, prior to the required due date of December 22, 2012. The NRC completeness review found the ETEs to be incomplete due to Exelon fleet common and site-specific deficiencies, thereby preventing Exelon from providing the ETEs to responsible offsite response organizations and from updating site-specific protective action strategies as necessary. The NRC discussed its concerns regarding the completeness of the ETE, in a teleconference with Exelon on June 10, 2013, and on September 5, 2013, Exelon resubmitted the ETEs for its sites. The NRC again found the ETEs to be incomplete. The issue is a performance deficiency because it involves a failure to comply with a regulation that was under Exelon's control to identify and prevent. The finding is more than minor because it is associated with the Emergency Preparedness Cornerstone attribute of procedure quality and because it adversely affected the cornerstone objective of ensuring that the licensee is capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. The finding is of very low safety significance (Green) because it was a failure to comply with a non-risk significant portion of 10 CFR 50.47(b)(10). The licensee had entered this issue into their corrective action program (CAP) and re-submitted a new revision of the Quad Cities Nuclear Power Station ETE to the NRC on April 30, 2014. The cause of the finding is related to cross-cutting element of Human Performance, Documentation [H.7].

Inspection Report# : [2014004](#) (*pdf*)

Occupational Radiation Safety

Public Radiation Safety

Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the [cover letters](#) to security inspection reports may be viewed.

Miscellaneous

Last modified : November 26, 2014

Quad Cities 2

4Q/2014 Plant Inspection Findings

Initiating Events

Significance: G Jun 30, 2014

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

FAILURE TO MEET DESIGN REQUIREMENT FOR SAFETY-RELATED CABLES IN 'D' HEATER BAY

A finding of very low safety significance (Green) with an associated non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," was self-revealed for the licensee's failure to demonstrate compliance with ComEd Standard N-EM-0035 for safety-related cables within the Unit 2 'D' Heater Bay. Specifically, the licensee failed to route the Instrument Bus and Essential Service (ESS) Bus cables with minimum cable static bend radius requirements in a manner consistent with N-EM-0035. This resulted in an event that caused a fire in the turbine building, smoke in various motor control center (MCC) cubicles due to overheated control power transformers (CPTs) (including one safety-related MCC), a manual scram and main steam isolation, and an Alert emergency declaration. The licensee's corrective actions for this event included repairing cables damaged in the fire, replacement of the expansion joint; and revision to the steam seal operating procedures. The licensee documented this issue in the corrective action program (CAP) as Issue Report (IR) 1642409.

The finding was determined to be more than minor per IMC 0612, Appendix B, "Issue Screening," because it was a precursor to a significant event. Specifically, failure to install Instrument bus and ESS cables in accordance with the requirements of

N-EM-0035 resulted in the initiation of an electrical fault and cable fire. The fire resulted in a manual reactor scram and the loss of safety-related equipment. The performance deficiency was associated with the Reactor Safety - Initiating Events Cornerstone attribute of Design Control, and affected the cornerstone objective of ensuring the capability of equipment relying on the power supply from Instrument and ESS Buses, both during shutdown as well as power operations. A detailed risk evaluation was performed by the regional senior reactor analysts (SRAs), and the finding was determined to be of very low safety significance. The finding does not have a cross-cutting aspect, because it is associated with a performance deficiency from the timeframe of the plant's original construction and is not representative of the licensee's current performance.

Inspection Report# : [2014003](#) (*pdf*)

Significance: G Jun 30, 2014

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

FAILURE TO OPERATE THE GLAND SEAL SYSTEM AS DESIGNED

A finding of very low safety significance (Green) and associated non-cited violation of Technical Specification (TS) Section 5.4.1 was self-revealed on April 2, 2014 for the licensee's failure to establish a procedure in accordance with the requirements of Regulatory Guide 1.33. Specifically, the licensee established procedure QOP 5600-01, "Gland Seal System Operation," for use during startup of the Main Steam and Turbine-Generator systems. However, the procedure failed to include provisions to ensure that the steam seal regulator bypass valve, 2-3099-S2 (S2) was closed prior to lifting the steam seal bypass relief valve and exceeding the bypass line design pressure. That resulted in a failure of the piping and a significant steam leak in the 'D' heater bay. Immediate corrective actions taken by the

licensee included revising their procedures for operation of the Gland Seal system and conducting just-in-time training on Gland Seal system operation for operators prior to the subsequent startup on Unit 2. In addition, the licensee planned to review and revise their operator training program for the Gland Seal system. The licensee documented this issue in CAP as IR 1642409.

The performance deficiency was determined to be more than minor and a finding because it was a precursor to a significant event. Specifically, the Gland Seal System steam seal regulator bypass valve was opened at pressures that the bypass line was not designed to withstand. This led to a significant steam leak in the 'D' heater bay, and the resulting fire caused by a degraded cable fault. The inspectors concluded this finding was associated with the Initiating Events Cornerstone and a Detailed Risk Evaluation was required. The finding was determined to be of very low risk significance by the SRAs. The inspectors determined that a principal contributor to the finding was that the licensee did not stop when faced with uncertain conditions and risks were not evaluated and managed before proceeding. Specifically, when the licensee identified a steam packing leak in the S1 valve in June 2013 and decided to close the valve when leakage increased to an unacceptable level in October 2013, they failed to recognize the risk and prioritize the repair of the valve prior to the reactor startup on April 2, 2014. In addition, when operators faced unexpected system response during the startup of the Gland Seal system and conflicting procedural guidance, the cause of the problem was not thoroughly understood and evaluated prior to continuing the system startup. As a result, the inspectors assigned a cross-cutting aspect of challenging the unknown in the area of human performance (H.11).

Inspection Report# : [2014003](#) (*pdf*)

Significance:  Mar 31, 2014

Identified By: NRC

Item Type: FIN Finding

STEAM DRYER/STEAM SEPARATOR LIFTING DEVICE FAILURE TO MEET AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI) N14.6

The inspectors identified a finding of very low safety significance (Green) involving the licensee's failure to demonstrate compliance with American National Standards Institute (ANSI) N14.6-1978, Section 3.2.1.1.

Specifically, the licensee did not establish the design stress factors based on the fracture toughness characteristics of the socket pins, lock pins, and hook pins for the steam dryer/steam separator lifting device. This issue was entered into the licensee's corrective action program (CAP) as Action Request (AR) 1517114, "Dryer/Separator Strongback Calculation Discrepancies," dated May 23, 2013, and AR 1578475, "Dryer/Separator Strongback Pin Inspection Criteria," dated October 30, 2013.

The inspectors determined the finding to be more than minor because the finding was associated with the Initiating Events Cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown. Specifically, compliance with ANSI N14.6-1978, Section 3.2.1.1 is to ensure safe load handling of heavy loads over the reactor core, spent fuel, and/or safety-related systems through establishing the design based on the fracture toughness characteristics of the material. The inspectors determined the finding could be evaluated using the Significance Determination Process in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase I -- Initial Screening and Characterization of Findings," Table 3. Since the finding was associated with shutdown conditions, the inspectors used IMC 0609, Appendix G, "Shutdown Operations Significance Determination Process." The inspectors determined that none of the conditions constituting a loss of control were met as described in Appendix G, Attachment 1, "Phase I Operational Checklists for Both PWRs and BWRs," for this finding and no Phase II or Phase III analysis was required. Specifically, the licensee provided information to inspectors that prior nondestructive examinations and inspections of the lifting device found no prior material defects. In addition, the licensee had not experienced any load drop events since placing the steam dryer/steam separator lifting device into service. The lifting device was also load tested successfully in accordance with the applicable requirements of ANSI N14.6. Therefore, the inspectors determined that this finding was of very low safety significance (Green). The inspectors did not identify a cross-cutting aspect associated with this finding because the concern was related to a design calculation from 2005, and thus was not necessarily indicative of current licensee performance.

No violation of regulatory requirements is associated with this finding based on the steam dryer/steam separator lifting device being a non-safety-related structural component.

Inspection Report# : [2014002](#) (*pdf*)

Mitigating Systems

Significance:  Dec 05, 2014

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Identify Aging Effects on Plant Equipment and Structures

The inspectors identified a finding of very low safety significance and associated NCV of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for the licensee's failure to effectively identify, evaluate, and document aging effects on plant equipment and structures as part of the licensee's Aging Management Programs for a plant within its period of extended operation. The inspectors identified two corroded pipe supports and associated base plates in the Unit 1 high pressure coolant injection (HPCI) room as well as a severely corroded nut and stud on the 1/2 diesel generator cooling water pump outboard mechanical seal. These conditions had not been previously identified, evaluated, or documented. The licensee entered this finding into their Corrective Action Program.

The performance deficiency was determined to be more than minor and a finding in accordance with IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," because if left uncorrected, the performance deficiency would have the potential to lead to a more significant safety concern. The finding screened as very low safety significance (Green) because the inspectors were able to answer "No" to each screening question, because the conditions had not yet affected structural integrity or operability of the systems. Specifically, the licensee confirmed the HPCI supports would be capable to perform their function and the remaining bolts on the mechanical seal were sufficient to prevent excessive leakage. The inspectors identified a cross-cutting aspect associated with this finding in the area of Human Performance, Resources component, because the licensee did not ensure that personnel, equipment, procedures, and other resources are adequate to assure nuclear safety by maintaining long term plant safety.

Inspection Report# : [2014008](#) (*pdf*)

Significance:  Sep 30, 2014

Identified By: NRC

Item Type: NCV NonCited Violation

ANGLE IRON SUPPORT INSTALLED WITH MINIMAL CLEARANCE TO UNIT 2 TORUS SHELL

A finding of very low safety significance (Green) and associated non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," was identified by the inspectors for the licensee's failure to evaluate the impact of a conduit support installed in close proximity of the Unit 2 torus shell. Specifically, during installation of the conduit support, the licensee failed to provide instructions to ensure that sufficient clearance from the torus shell was provided to accommodate the torus wall movements predicted in the Updated Final Safety Analysis Report (UFSAR) torus design basis load cases. Immediate corrective actions included performing an operability evaluation under Issue Report (IR) 1672301 that determined the torus remained operable under all design basis events. The licensee has also corrected the condition by cutting the conduit support to ensure sufficient clearance to the torus wall is maintained.

The performance deficiency was determined to be more than minor because the finding was associated with the design control attribute of both the Mitigating Systems and Barrier Integrity Cornerstones. The finding adversely affected the Mitigating Systems cornerstone attribute of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The finding also adversely affected the Barrier

Integrity Cornerstone objective of providing reasonable assurance that physical design barriers (containment) protect the public from radionuclide releases caused by accidents or events. The inspectors determined the finding screened as very low safety significance (Green) because the licensee's operability evaluation determined the torus remained operable under all design basis conditions. The inspectors did not identify a cross-cutting aspect associated with this finding because the finding was not representative of current performance because it was associated with a modification that occurred in the 1980s.

Inspection Report# : [2014004](#) (*pdf*)

Significance:  Sep 26, 2014

Identified By: NRC

Item Type: FIN Finding

INADEQUATE ROUNDS PACKAGE ACCEPTANCE CRITERIA

A finding of very low safety significance (Green) was identified by the inspectors when they determined that non-licensed operator general area rounds and field checks were inadequate for the circumstances. The inspectors determined that the failure to have non-licensed operator rounds package acceptance criteria that met procedural requirements was a performance deficiency. The licensee entered this issue into the CAP as Issue Report (IR) 02385609, "PIR – Operator Rounds For HPCI Bearing Oil Lvl Differ between Units." The licensee had not had time to determine corrective actions before the end of the inspection.

The performance deficiency was more than minor because it was associated with the procedure quality attribute of the mitigating systems cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability and capability to respond to initiating events to prevent undesirable consequences and is therefore a finding. Using Manual Chapter 0609, Attachment 0609.04 "Initial Characterization of Findings," and Appendix A "The Significance Determination Process for Findings at Power," the

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finding was screened against the mitigating systems cornerstone and determined to be of very low safety significance (Green) because the finding was/did not: 1) a deficiency affecting the design or qualification of a mitigating structure, system or component, 2) represent a loss of system and/or function, 3) represent an actual loss of function of a single train for greater than its technical specification allowed outage time, 4) represent an actual loss of function of one or more non-technical specification trains of equipment designated as high safety-significant for greater than 24 hours and 5) did not involve the loss or degradation of equipment or function specifically designed to mitigate a seismic, flooding or severe weather event. The inspectors determined this finding affected the cross-cutting area of Human Performance in the aspect of Training. Specifically, the non-licensed operators should have been trained that an oil level not between the marked bands on the oil level indicator was an issue regardless of the rounds acceptance criteria for that parameter. (IMC 0310 H.9)

Inspection Report# : [2014007](#) (*pdf*)

Significance:  Sep 26, 2014

Identified By: NRC

Item Type: NCV NonCited Violation

INADEQUATE ADMINISTRATIVE CONTROLS

A finding of very low safety significance (Green) and an associated non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was identified by the inspectors when they determined that Technical Specification (TS) surveillance procedures contained inadequate acceptance criteria. The failure to have TS surveillance procedure acceptance criteria that ensured the Emergency Diesel Generator (EDG) loading would not exceed the maximum licensed limit was a performance deficiency. The issue was entered into the licensee's CAP as IR 02389102, "PIR Admin Controls For Allowed EDG Frequency Tolerance." The licensee had not had time to determine corrective actions before the end of the inspection.

The performance deficiency was determined to be more than minor because it was associated with the design control

attribute of the Mitigating Systems Cornerstone, and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences and is therefore a finding. Specifically, the licensee failed to ensure the acceptance criteria for EDG frequency and voltage would not affect the operability and reliability of the engine and safety related structures, systems or components. Using Manual Chapter 0609, Attachment 0609.04 "Initial Characterization of Findings," and Appendix A, "The Significance Determination Process for Findings at Power," dated June 19, 2012, the finding was screened against the mitigating systems cornerstone and determined to be of very low safety significance (Green) because the finding was a deficiency affecting the design or qualification of a mitigating structure, system or component. This finding has a cross-cutting aspect of resolution in the area of problem identification because the licensee did not take effective corrective actions to address issues in a timely manner commensurate with their safety significance. Specifically, the licensee did not implement adequate administrative controls to their EDG testing procedures to ensure that the procedures adequately addressed the non-conservative TS. (IMC 0310 P.3)
Inspection Report# : [2014007](#) (*pdf*)

Significance:  Jun 30, 2014

Identified By: NRC

Item Type: NCV NonCited Violation

SEISMIC SCAFFOLD IN CONTACT WITH SAFETY-RELATED EQUIPMENT

A finding of very low safety significance and associated non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was identified by the inspectors for the licensee's failure to meet the requirements of procedure MA-AA-796-024, "Scaffold Installation, Inspection, and Removal," when scaffold Q0178 was built with one of its supports in rigid contact with the operable Unit 2 torus. Immediate corrective actions included modifying the scaffold such that it was no longer in contact with the Unit 2 torus. This issue was captured in the licensee's CAP as IR 1639356.

The finding was determined to be more than minor because the finding was associated with the Mitigating Systems Cornerstone attribute of protection against external factors and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, a scaffold built in contact with safety related equipment could damage the equipment and affect its availability and reliability. The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," Appendix A, "The Significance Determination Process (SDP) for Findings At-Power." The inspectors answered, "No," to all of the Exhibit 2, "Mitigating Systems Screening Questions," in section A and determined the finding was of very low safety significance. This finding has a cross-cutting aspect of documentation in the area of human performance because the licensee did not create and maintain complete, accurate and, up-to-date documentation. Specifically, the licensee did not completely and accurately evaluate the acceptability of a scaffold that was in contact with safety related equipment (H.7).

Inspection Report# : [2014003](#) (*pdf*)

Barrier Integrity

Emergency Preparedness

Significance:  Sep 30, 2014

Identified By: NRC

Item Type: NCV NonCited Violation

INADEQUATE EVACUATION TIME ESTIMATE SUBMITTALS

The inspectors identified a finding of very low safety significance (Green) with an associated non-cited violation of 10 CFR 50.54(q)(2) as required by 10 CFR 50.47(b)(10) and 10 CFR Part 50, Appendix E, Section IV.4, for failing to maintain the effectiveness of the Quad Cities Nuclear Power Station Emergency Plan, as a result of failing to provide the station evacuation time estimate (ETE) to the responsible offsite response organizations by the required date.

Exelon submitted the Quad Cities Nuclear Power Station ETE to the NRC on December 12, 2012, prior to the required due date of December 22, 2012. The NRC completeness review found the ETEs to be incomplete due to Exelon fleet common and site-specific deficiencies, thereby preventing Exelon from providing the ETEs to responsible offsite response organizations and from updating site-specific protective action strategies as necessary. The NRC discussed its concerns regarding the completeness of the ETE, in a teleconference with Exelon on June 10, 2013, and on September 5, 2013, Exelon resubmitted the ETEs for its sites. The NRC again found the ETEs to be incomplete. The issue is a performance deficiency because it involves a failure to comply with a regulation that was under Exelon's control to identify and prevent. The finding is more than minor because it is associated with the Emergency Preparedness Cornerstone attribute of procedure quality and because it adversely affected the cornerstone objective of ensuring that the licensee is capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. The finding is of very low safety significance (Green) because it was a failure to comply with a non-risk significant portion of 10 CFR 50.47(b)(10). The licensee had entered this issue into their corrective action program (CAP) and re-submitted a new revision of the Quad Cities Nuclear Power Station ETE to the NRC on April 30, 2014. The cause of the finding is related to cross-cutting element of Human Performance, Documentation [H.7].

Inspection Report# : [2014004](#) (*pdf*)

Occupational Radiation Safety

Public Radiation Safety

Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the [cover letters](#) to security inspection reports may be viewed.

Miscellaneous

Last modified : February 26, 2015

Quad Cities 2

1Q/2015 Plant Inspection Findings

Initiating Events

Significance: G Jun 30, 2014

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

FAILURE TO MEET DESIGN REQUIREMENT FOR SAFETY-RELATED CABLES IN 'D' HEATER BAY

A finding of very low safety significance (Green) with an associated non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," was self-revealed for the licensee's failure to demonstrate compliance with ComEd Standard N-EM-0035 for safety-related cables within the Unit 2 'D' Heater Bay. Specifically, the licensee failed to route the Instrument Bus and Essential Service (ESS) Bus cables with minimum cable static bend radius requirements in a manner consistent with N-EM-0035. This resulted in an event that caused a fire in the turbine building, smoke in various motor control center (MCC) cubicles due to overheated control power transformers (CPTs) (including one safety-related MCC), a manual scram and main steam isolation, and an Alert emergency declaration. The licensee's corrective actions for this event included repairing cables damaged in the fire, replacement of the expansion joint; and revision to the steam seal operating procedures. The licensee documented this issue in the corrective action program (CAP) as Issue Report (IR) 1642409.

The finding was determined to be more than minor per IMC 0612, Appendix B, "Issue Screening," because it was a precursor to a significant event. Specifically, failure to install Instrument bus and ESS cables in accordance with the requirements of

N-EM-0035 resulted in the initiation of an electrical fault and cable fire. The fire resulted in a manual reactor scram and the loss of safety-related equipment. The performance deficiency was associated with the Reactor Safety - Initiating Events Cornerstone attribute of Design Control, and affected the cornerstone objective of ensuring the capability of equipment relying on the power supply from Instrument and ESS Buses, both during shutdown as well as power operations. A detailed risk evaluation was performed by the regional senior reactor analysts (SRAs), and the finding was determined to be of very low safety significance. The finding does not have a cross-cutting aspect, because it is associated with a performance deficiency from the timeframe of the plant's original construction and is not representative of the licensee's current performance.

Inspection Report# : [2014003](#) (*pdf*)

Significance: G Jun 30, 2014

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

FAILURE TO OPERATE THE GLAND SEAL SYSTEM AS DESIGNED

A finding of very low safety significance (Green) and associated non-cited violation of Technical Specification (TS) Section 5.4.1 was self-revealed on April 2, 2014 for the licensee's failure to establish a procedure in accordance with the requirements of Regulatory Guide 1.33. Specifically, the licensee established procedure QOP 5600-01, "Gland Seal System Operation," for use during startup of the Main Steam and Turbine-Generator systems. However, the procedure failed to include provisions to ensure that the steam seal regulator bypass valve, 2-3099-S2 (S2) was closed prior to lifting the steam seal bypass relief valve and exceeding the bypass line design pressure. That resulted in a failure of the piping and a significant steam leak in the 'D' heater bay. Immediate corrective actions taken by the

licensee included revising their procedures for operation of the Gland Seal system and conducting just-in-time training on Gland Seal system operation for operators prior to the subsequent startup on Unit 2. In addition, the licensee planned to review and revise their operator training program for the Gland Seal system. The licensee documented this issue in CAP as IR 1642409.

The performance deficiency was determined to be more than minor and a finding because it was a precursor to a significant event. Specifically, the Gland Seal System steam seal regulator bypass valve was opened at pressures that the bypass line was not designed to withstand. This led to a significant steam leak in the 'D' heater bay, and the resulting fire caused by a degraded cable fault. The inspectors concluded this finding was associated with the Initiating Events Cornerstone and a Detailed Risk Evaluation was required. The finding was determined to be of very low risk significance by the SRAs. The inspectors determined that a principal contributor to the finding was that the licensee did not stop when faced with uncertain conditions and risks were not evaluated and managed before proceeding. Specifically, when the licensee identified a steam packing leak in the S1 valve in June 2013 and decided to close the valve when leakage increased to an unacceptable level in October 2013, they failed to recognize the risk and prioritize the repair of the valve prior to the reactor startup on April 2, 2014. In addition, when operators faced unexpected system response during the startup of the Gland Seal system and conflicting procedural guidance, the cause of the problem was not thoroughly understood and evaluated prior to continuing the system startup. As a result, the inspectors assigned a cross-cutting aspect of challenging the unknown in the area of human performance (H.11).

Inspection Report# : [2014003](#) (*pdf*)

Mitigating Systems

Significance:  Mar 31, 2015

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

FAILURE TO ESTABLISH AND MAINTAIN SERVICE LIFE FOR SAFETY-RELATED RELAY RESULTS IN FAILURE AND INOPERABILITY

A finding of very low safety significance (Green) and associated NCV of 10 CFR 50, Appendix B, Criterion III, "Design Control," was self-revealed on January 6, 2015, when an electrical maintenance worker found a tripped breaker in motor control center (MCC) 28-1, for the Unit 2 power feed to the common unit (Unit 0) fuel oil transfer pump (FOTP). The licensee determined that an HGA relay in the FOTP power transfer circuit had failed due to aging and not having any associated preventive maintenance task. The inspectors determined the licensee failed to establish and maintain the service life for the FOTP

HGA relay, which was a performance deficiency. This also resulted in the inoperability of the Unit 0 emergency diesel generator (EDG) for longer than its technical

specification allowed outage time, which was a violation of Technical Specification 3.8.1, "AC Sources—Operating." The immediate corrective actions included replacing the failed relay and declaring the EDG operable following post-maintenance testing. The licensee captured the issue in their corrective action program (CAP) as Issue Report (IR) 2433389.

The performance deficiency was determined to be more than minor and a finding because it was associated with the equipment performance attribute of the Mitigating Systems Cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the performance deficiency caused an unplanned inoperable condition for the Unit 0 EDG. The inspectors evaluated the finding using IMC 0609, Appendix A, "The SDP for Findings At-Power," issued June 19, 2012. The issue resulted in the EDG being inoperable for longer than the Technical Specification (TS) allowed outage time. A detailed risk analysis was performed and determined the finding was of very low safety significance. This finding had a cross-cutting aspect in the area of Problem Identification and Resolution, Evaluation,

because the licensee did not thoroughly evaluate issues to ensure that the resolution addressed causes and extent of conditions commensurate with their safety significance. Specifically, the licensee identified other EDG electrical component failures that occurred at the station where the causes were identified as failure to have associated preventive maintenance for the affected components and equipment. The extent of condition evaluations for those events failed to identify additional safety related components that did not have any associated preventive maintenance tasks or documented service life, including replacement schedules [P.2].

Inspection Report# : [2015001](#) (*pdf*)

Significance:  Dec 05, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to Identify Aging Effects on Plant Equipment and Structures

The inspectors identified a finding of very low safety significance and associated NCV of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for the licensee's failure to effectively identify, evaluate, and document aging effects on plant equipment and structures as part of the licensee's Aging Management Programs for a plant within its period of extended operation. The inspectors identified two corroded pipe supports and associated base plates in the Unit 1 high pressure coolant injection (HPCI) room as well as a severely corroded nut and stud on the 1/2 diesel generator cooling water pump outboard mechanical seal. These conditions had not been previously identified, evaluated, or documented. The licensee entered this finding into their Corrective Action Program.

The performance deficiency was determined to be more than minor and a finding in accordance with IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," because if left uncorrected, the performance deficiency would have the potential to lead to a more significant safety concern. The finding screened as very low safety significance (Green) because the inspectors were able to answer "No" to each screening question, because the conditions had not yet affected structural integrity or operability of the systems. Specifically, the licensee confirmed the HPCI supports would be capable to perform their function and the remaining bolts on the mechanical seal were sufficient to prevent excessive leakage. The inspectors identified a cross-cutting aspect associated with this finding in the area of Human Performance, Resources component, because the licensee did not ensure that personnel, equipment, procedures, and other resources are adequate to assure nuclear safety by maintaining long term plant safety.

Inspection Report# : [2014008](#) (*pdf*)

Significance:  Sep 30, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

ANGLE IRON SUPPORT INSTALLED WITH MINIMAL CLEARANCE TO UNIT 2 TORUS SHELL

A finding of very low safety significance (Green) and associated non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," was identified by the inspectors for the licensee's failure to evaluate the impact of a conduit support installed in close proximity of the Unit 2 torus shell. Specifically, during installation of the conduit support, the licensee failed to provide instructions to ensure that sufficient clearance from the torus shell was provided to accommodate the torus wall movements predicted in the Updated Final Safety Analysis Report (UFSAR) torus design basis load cases. Immediate corrective actions included performing an operability evaluation under Issue Report (IR) 1672301 that determined the torus remained operable under all design basis events. The licensee has also corrected the condition by cutting the conduit support to ensure sufficient clearance to the torus wall is maintained.

The performance deficiency was determined to be more than minor because the finding was associated with the design control attribute of both the Mitigating Systems and Barrier Integrity Cornerstones. The finding adversely affected the Mitigating Systems cornerstone attribute of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The finding also adversely affected the Barrier

Integrity Cornerstone objective of providing reasonable assurance that physical design barriers (containment) protect the public from radionuclide releases caused by accidents or events. The inspectors determined the finding screened as very low safety significance (Green) because the licensee's operability evaluation determined the torus remained operable under all design basis conditions. The inspectors did not identify a cross-cutting aspect associated with this finding because the finding was not representative of current performance because it was associated with a modification that occurred in the 1980s.

Inspection Report# : [2014004](#) (*pdf*)

Significance:  Sep 26, 2014

Identified By: NRC

Item Type: FIN Finding

INADEQUATE ROUNDS PACKAGE ACCEPTANCE CRITERIA

A finding of very low safety significance (Green) was identified by the inspectors when they determined that non-licensed operator general area rounds and field checks were inadequate for the circumstances. The inspectors determined that the failure to have non-licensed operator rounds package acceptance criteria that met procedural requirements was a performance deficiency. The licensee entered this issue into the CAP as Issue Report (IR) 02385609, "PIR – Operator Rounds For HPCI Bearing Oil Lvl Differ between Units." The licensee had not had time to determine corrective actions before the end of the inspection.

The performance deficiency was more than minor because it was associated with the procedure quality attribute of the mitigating systems cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability and capability to respond to initiating events to prevent undesirable consequences and is therefore a finding. Using Manual Chapter 0609, Attachment 0609.04 "Initial Characterization of Findings," and Appendix A "The Significance Determination Process for Findings at Power," the

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finding was screened against the mitigating systems cornerstone and determined to be of very low safety significance (Green) because the finding was/did not: 1) a deficiency affecting the design or qualification of a mitigating structure, system or component, 2) represent a loss of system and/or function, 3) represent an actual loss of function of a single train for greater than its technical specification allowed outage time, 4) represent an actual loss of function of one or more non-technical specification trains of equipment designated as high safety-significant for greater than 24 hours and 5) did not involve the loss or degradation of equipment or function specifically designed to mitigate a seismic, flooding or severe weather event. The inspectors determined this finding affected the cross-cutting area of Human Performance in the aspect of Training. Specifically, the non-licensed operators should have been trained that an oil level not between the marked bands on the oil level indicator was an issue regardless of the rounds acceptance criteria for that parameter. (IMC 0310 H.9)

Inspection Report# : [2014007](#) (*pdf*)

Significance:  Sep 26, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

INADEQUATE ADMINISTRATIVE CONTROLS

A finding of very low safety significance (Green) and an associated non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was identified by the inspectors when they determined that Technical Specification (TS) surveillance procedures contained inadequate acceptance criteria. The failure to have TS surveillance procedure acceptance criteria that ensured the Emergency Diesel Generator (EDG) loading would not exceed the maximum licensed limit was a performance deficiency. The issue was entered into the licensee's CAP as IR 02389102, "PIR Admin Controls For Allowed EDG Frequency Tolerance." The licensee had not had time to determine corrective actions before the end of the inspection.

The performance deficiency was determined to be more than minor because it was associated with the design control

attribute of the Mitigating Systems Cornerstone, and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences and is therefore a finding. Specifically, the licensee failed to ensure the acceptance criteria for EDG frequency and voltage would not affect the operability and reliability of the engine and safety related structures, systems or components. Using Manual Chapter 0609, Attachment 0609.04 "Initial Characterization of Findings," and Appendix A, "The Significance Determination Process for Findings at Power," dated June 19, 2012, the finding was screened against the mitigating systems cornerstone and determined to be of very low safety significance (Green) because the finding was a deficiency affecting the design or qualification of a mitigating structure, system or component. This finding has a cross-cutting aspect of resolution in the area of problem identification because the licensee did not take effective corrective actions to address issues in a timely manner commensurate with their safety significance. Specifically, the licensee did not implement adequate administrative controls to their EDG testing procedures to ensure that the procedures adequately addressed the non-conservative TS. (IMC 0310 P.3)
Inspection Report# : [2014007](#) (*pdf*)

Significance:  Jun 30, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

SEISMIC SCAFFOLD IN CONTACT WITH SAFETY-RELATED EQUIPMENT

A finding of very low safety significance and associated non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was identified by the inspectors for the licensee's failure to meet the requirements of procedure MA-AA-796-024, "Scaffold Installation, Inspection, and Removal," when scaffold Q0178 was built with one of its supports in rigid contact with the operable Unit 2 torus. Immediate corrective actions included modifying the scaffold such that it was no longer in contact with the Unit 2 torus. This issue was captured in the licensee's CAP as IR 1639356.

The finding was determined to be more than minor because the finding was associated with the Mitigating Systems Cornerstone attribute of protection against external factors and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, a scaffold built in contact with safety related equipment could damage the equipment and affect its availability and reliability. The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," Appendix A, "The Significance Determination Process (SDP) for Findings At-Power." The inspectors answered, "No," to all of the Exhibit 2, "Mitigating Systems Screening Questions," in section A and determined the finding was of very low safety significance. This finding has a cross-cutting aspect of documentation in the area of human performance because the licensee did not create and maintain complete, accurate and, up-to-date documentation. Specifically, the licensee did not completely and accurately evaluate the acceptability of a scaffold that was in contact with safety related equipment (H.7).

Inspection Report# : [2014003](#) (*pdf*)

Barrier Integrity

Emergency Preparedness

Significance:  Sep 30, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

INADEQUATE EVACUATION TIME ESTIMATE SUBMITTALS

The inspectors identified a finding of very low safety significance (Green) with an associated non-cited violation of 10 CFR 50.54(q)(2) as required by 10 CFR 50.47(b)(10) and 10 CFR Part 50, Appendix E, Section IV.4, for failing to maintain the effectiveness of the Quad Cities Nuclear Power Station Emergency Plan, as a result of failing to provide the station evacuation time estimate (ETE) to the responsible offsite response organizations by the required date.

Exelon submitted the Quad Cities Nuclear Power Station ETE to the NRC on December 12, 2012, prior to the required due date of December 22, 2012. The NRC completeness review found the ETEs to be incomplete due to Exelon fleet common and site-specific deficiencies, thereby preventing Exelon from providing the ETEs to responsible offsite response organizations and from updating site-specific protective action strategies as necessary. The NRC discussed its concerns regarding the completeness of the ETE, in a teleconference with Exelon on June 10, 2013, and on September 5, 2013, Exelon resubmitted the ETEs for its sites. The NRC again found the ETEs to be incomplete. The issue is a performance deficiency because it involves a failure to comply with a regulation that was under Exelon's control to identify and prevent. The finding is more than minor because it is associated with the Emergency Preparedness Cornerstone attribute of procedure quality and because it adversely affected the cornerstone objective of ensuring that the licensee is capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. The finding is of very low safety significance (Green) because it was a failure to comply with a non-risk significant portion of 10 CFR 50.47(b)(10). The licensee had entered this issue into their corrective action program (CAP) and re-submitted a new revision of the Quad Cities Nuclear Power Station ETE to the NRC on April 30, 2014. The cause of the finding is related to cross-cutting element of Human Performance, Documentation [H.7].

Inspection Report# : [2014004](#) (*pdf*)

Occupational Radiation Safety

Public Radiation Safety

Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the [cover letters](#) to security inspection reports may be viewed.

Miscellaneous

Last modified : June 16, 2015

Quad Cities 2 2Q/2015 Plant Inspection Findings

Initiating Events

Mitigating Systems

Significance: G Mar 31, 2015

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

FAILURE TO ESTABLISH AND MAINTAIN SERVICE LIFE FOR SAFETY-RELATED RELAY RESULTS IN FAILURE AND INOPERABILITY

A finding of very low safety significance (Green) and associated NCV of 10 CFR 50, Appendix B, Criterion III, “Design Control,” was self-revealed on January 6, 2015, when an electrical maintenance worker found a tripped breaker in motor control center (MCC) 28–1, for the Unit 2 power feed to the common unit (Unit 0) fuel oil transfer pump (FOTP). The licensee determined that an HGA relay in the FOTP power transfer circuit had failed due to aging and not having any associated preventive maintenance task. The inspectors determined the licensee failed to establish and maintain the service life for the FOTP

HGA relay, which was a performance deficiency. This also resulted in the inoperability of the Unit 0 emergency diesel generator (EDG) for longer than its technical

specification allowed outage time, which was a violation of Technical Specification 3.8.1, “AC Sources–Operating.” The immediate corrective actions included replacing the failed relay and declaring the EDG operable following post-maintenance testing. The licensee captured the issue in their corrective action program (CAP) as Issue Report (IR) 2433389.

The performance deficiency was determined to be more than minor and a finding because it was associated with the equipment performance attribute of the Mitigating Systems Cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the performance deficiency caused an unplanned inoperable condition for the Unit 0 EDG. The inspectors evaluated the finding using IMC 0609, Appendix A, “The SDP for Findings At-Power,” issued June 19, 2012. The issue resulted in the EDG being inoperable for longer than the Technical Specification (TS) allowed outage time. A detailed risk analysis was performed and determined the finding was of very low safety significance. This finding had a cross-cutting aspect in the area of Problem Identification and Resolution, Evaluation, because the licensee did not thoroughly evaluate issues to ensure that the resolution addressed causes and extent of conditions commensurate with their safety significance. Specifically, the licensee identified other EDG electrical component failures that occurred at the station where the causes were identified as failure to have associated preventive maintenance for the affected components and equipment. The extent of condition evaluations for those events failed to identify additional safety related components that did not have any associated preventive maintenance tasks or documented service life, including replacement schedules [P.2].

Inspection Report# : [2015001](#) (*pdf*)

Significance: G Dec 05, 2014
Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to Identify Aging Effects on Plant Equipment and Structures

The inspectors identified a finding of very low safety significance and associated NCV of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for the licensee's failure to effectively identify, evaluate, and document aging effects on plant equipment and structures as part of the licensee's Aging Management Programs for a plant within its period of extended operation. The inspectors identified two corroded pipe supports and associated base plates in the Unit 1 high pressure coolant injection (HPCI) room as well as a severely corroded nut and stud on the 1/2 diesel generator cooling water pump outboard mechanical seal. These conditions had not been previously identified, evaluated, or documented. The licensee entered this finding into their Corrective Action Program.

The performance deficiency was determined to be more than minor and a finding in accordance with IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," because if left uncorrected, the performance deficiency would have the potential to lead to a more significant safety concern. The finding screened as very low safety significance (Green) because the inspectors were able to answer "No" to each screening question, because the conditions had not yet affected structural integrity or operability of the systems. Specifically, the licensee confirmed the HPCI supports would be capable to perform their function and the remaining bolts on the mechanical seal were sufficient to prevent excessive leakage. The inspectors identified a cross-cutting aspect associated with this finding in the area of Human Performance, Resources component, because the licensee did not ensure that personnel, equipment, procedures, and other resources are adequate to assure nuclear safety by maintaining long term plant safety.

Inspection Report# : [2014008](#) (pdf)

Significance:  Sep 30, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

ANGLE IRON SUPPORT INSTALLED WITH MINIMAL CLEARANCE TO UNIT 2 TORUS SHELL

A finding of very low safety significance (Green) and associated non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," was identified by the inspectors for the licensee's failure to evaluate the impact of a conduit support installed in close proximity of the Unit 2 torus shell. Specifically, during installation of the conduit support, the licensee failed to provide instructions to ensure that sufficient clearance from the torus shell was provided to accommodate the torus wall movements predicted in the Updated Final Safety Analysis Report (UFSAR) torus design basis load cases. Immediate corrective actions included performing an operability evaluation under Issue Report (IR) 1672301 that determined the torus remained operable under all design basis events. The licensee has also corrected the condition by cutting the conduit support to ensure sufficient clearance to the torus wall is maintained.

The performance deficiency was determined to be more than minor because the finding was associated with the design control attribute of both the Mitigating Systems and Barrier Integrity Cornerstones. The finding adversely affected the Mitigating Systems cornerstone attribute of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The finding also adversely affected the Barrier Integrity Cornerstone objective of providing reasonable assurance that physical design barriers (containment) protect the public from radionuclide releases caused by accidents or events. The inspectors determined the finding screened as very low safety significance (Green) because the licensee's operability evaluation determined the torus remained operable under all design basis conditions. The inspectors did not identify a cross-cutting aspect associated with this finding because the finding was not representative of current performance because it was associated with a modification that occurred in the 1980s.

Inspection Report# : [2014004](#) (pdf)

Significance:  Sep 26, 2014

Identified By: NRC

Item Type: FIN Finding

INADEQUATE ROUNDS PACKAGE ACCEPTANCE CRITERIA

A finding of very low safety significance (Green) was identified by the inspectors when they determined that non-licensed operator general area rounds and field checks were inadequate for the circumstances. The inspectors determined that the failure to have non-licensed operator rounds package acceptance criteria that met procedural requirements was a performance deficiency. The licensee entered this issue into the CAP as Issue Report (IR) 02385609, "PIR – Operator Rounds For HPCI Bearing Oil Lvl Differ between Units." The licensee had not had time to determine corrective actions before the end of the inspection.

The performance deficiency was more than minor because it was associated with the procedure quality attribute of the mitigating systems cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability and capability to response to initiating events to prevent undesirable consequences and is therefore a finding. Using Manual Chapter 0609, Attachment 0609.04 "Initial Characterization of Findings," and Appendix A "The Significance Determination Process for Findings at Power," the

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finding was screened against the mitigating systems cornerstone and determined to be of very low safety significance (Green) because the finding was/did not: 1) a deficiency affecting the design or qualification of a mitigating structure, system or component, 2) represent a loss of system and/or function, 3) represent an actual loss of function of a single train for greater than its technical specification allowed outage time, 4) represent an actual loss of function of one or more non-technical specification trains of equipment designated as high safety-significant for greater than 24 hours and 5) did not involve the loss or degradation of equipment or function specifically designed to mitigate a seismic, flooding or severe weather event. The inspectors determined this finding affected the cross-cutting area of Human Performance in the aspect of Training. Specifically, the non-licensed operators should have been trained that an oil level not between the marked bands on the oil level indicator was an issue regardless of the rounds acceptance criteria for that parameter. (IMC 0310 H.9)

Inspection Report# : [2014007](#) (pdf)

Significance:  Sep 26, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

INADEQUATE ADMINISTRATIVE CONTROLS

A finding of very low safety significance (Green) and an associated non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was identified by the inspectors when they determined that Technical Specification (TS) surveillance procedures contained inadequate acceptance criteria. The failure to have TS surveillance procedure acceptance criteria that ensured the Emergency Diesel Generator (EDG) loading would not exceed the maximum licensed limit was a performance deficiency. The issue was entered into the licensee's CAP as IR 02389102, "PIR Admin Controls For Allowed EDG Frequency Tolerance." The licensee had not had time to determine corrective actions before the end of the inspection.

The performance deficiency was determined to be more than minor because it was associated with the design control attribute of the Mitigating Systems Cornerstone, and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences and is therefore a finding. Specifically, the licensee failed to ensure the acceptance criteria for EDG frequency and voltage would not affect the operability and reliability of the engine and safety related structures, systems or components. Using Manual Chapter 0609, Attachment 0609.04 "Initial Characterization of Findings," and Appendix A, "The Significance Determination Process for Findings at Power," dated June 19, 2012, the finding was screened against the mitigating systems cornerstone and determined to be of very low safety significance (Green) because the finding was a deficiency affecting the design or qualification of a mitigating structure, system or component. This finding has a cross-cutting aspect of resolution in the area of problem identification because the licensee did not take effective corrective actions to address issues in a timely manner commensurate with their safety significance.

Specifically, the licensee did not implement adequate administrative controls to their EDG testing procedures to ensure that the procedures adequately addressed the non-conservative TS. (IMC 0310 P.3)

Inspection Report# : [2014007](#) (pdf)

Barrier Integrity

Emergency Preparedness

Significance:  Sep 30, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

INADEQUATE EVACUATION TIME ESTIMATE SUBMITTALS

The inspectors identified a finding of very low safety significance (Green) with an associated non-cited violation of 10 CFR 50.54(q)(2) as required by 10 CFR 50.47(b)(10) and 10 CFR Part 50, Appendix E, Section IV.4, for failing to maintain the effectiveness of the Quad Cities Nuclear Power Station Emergency Plan, as a result of failing to provide the station evacuation time estimate (ETE) to the responsible offsite response organizations by the required date.

Exelon submitted the Quad Cities Nuclear Power Station ETE to the NRC on December 12, 2012, prior to the required due date of December 22, 2012. The NRC completeness review found the ETEs to be incomplete due to Exelon fleet common and site-specific deficiencies, thereby preventing Exelon from providing the ETEs to responsible offsite response organizations and from updating site-specific protective action strategies as necessary. The NRC discussed its concerns regarding the completeness of the ETE, in a teleconference with Exelon on June 10, 2013, and on September 5, 2013, Exelon resubmitted the ETEs for its sites. The NRC again found the ETEs to be incomplete. The issue is a performance deficiency because it involves a failure to comply with a regulation that was under Exelon's control to identify and prevent. The finding is more than minor because it is associated with the Emergency Preparedness Cornerstone attribute of procedure quality and because it adversely affected the cornerstone objective of ensuring that the licensee is capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. The finding is of very low safety significance (Green) because it was a failure to comply with a non-risk significant portion of 10 CFR 50.47(b)(10). The licensee had entered this issue into their corrective action program (CAP) and re-submitted a new revision of the Quad Cities Nuclear Power Station ETE to the NRC on April 30, 2014. The cause of the finding is related to cross-cutting element of Human Performance, Documentation [H.7].

Inspection Report# : [2014004](#) (pdf)

Occupational Radiation Safety

Public Radiation Safety

Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the [cover letters](#) to security inspection reports may be viewed.

Miscellaneous

Last modified : August 07, 2015

Quad Cities 2

3Q/2015 Plant Inspection Findings

Initiating Events

Significance: G Jun 30, 2015

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

INADEQUATE ZONE OF PROTECTION FOR ELECTRICAL BUS MAINTENANCE

A finding of very low safety significance and associated NCV of Technical Specification 5.4, “Procedures,” was self-revealed on March 14, 2015, for the licensee’s failure to implement a clearance order in accordance with procedure OP-AA-109-101, “Clearance and Tagging,” for electrical maintenance on Bus 12, Cubicle 9. The clearance order failed to provide a safe zone of protection for all physical work to be performed under the clearance order or for required equipment protection. Immediate corrective actions included stopping all electrical work and verifying electrical work boundaries prior to re-commencing work. The licensee documented the issue in the corrective action program (CAP) under Issue Report 2468511.

The finding was determined to be more than minor because, if left uncorrected, it could become a more significant safety concern. Specifically, the failure to properly control and de-energize equipment prior to performing maintenance could have an impact on safety-related equipment (including equipment damage and potential loss of off-site power). The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, “Significance Determination Process,” Attachment 0609.04, “Initial Characterization of Findings.” Because the finding impacted the Initiating Events Cornerstone and Unit 1 was shut down at the time of the event, the inspectors determined the finding could be further evaluated using IMC 0609, Appendix G, Attachment 1, “Shutdown Operations Significance Determination Process Phase 1 Initial Screening and Characterization of Findings.” The inspectors answered “No” to all questions in Exhibit 2 of IMC 0609, Appendix G, Attachment 1 and determined the finding was of very low safety significance (Green). This finding has a cross-cutting aspect in the area of Human Performance, Work Management because the licensee did not implement a process of planning, controlling, and executing work activities such that nuclear safety is the overriding priority. Specifically, the licensee failed to plan, control, and execute a clearance order that provided a safe zone of protection for all physical work to be performed under the clearance order or for required equipment protection during maintenance on Bus 12, Cubicle 9 [H.5].

Inspection Report# : [2015002](#) (*pdf*)

Mitigating Systems

Significance: G Sep 30, 2015

Identified By: NRC

Item Type: NCV Non-Cited Violation

FAILURE TO EVALUATE DEGRADED OR NON-CONFORMING CONDITIONS FOR OPERABILITY

A finding of very low safety significance and an associated non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” was identified by the inspectors for the licensee’s failure to document degraded or non conforming conditions in the corrective action program (CAP) and route or discuss the

issue with Operations shift management so that operability of the affected components could be evaluated. Immediate corrective actions included entering the issues into the CAP and evaluating the issues for operability. The licensee captured the issue in the CAP as Issue Reports (IRs) 2537968 and 2537936.

The finding was determined to be more than minor because, if left uncorrected, it could become a more significant safety concern. Specifically, the failure to identify degraded, non-conforming, or unanalyzed conditions in the CAP and bring those conditions to the attention of Operations shift management so that the operability of safety-related systems, structures, and components (SSCs) may be evaluated could lead to those SSCs being in an inoperable condition without the appropriate Technical Specification (TS) actions taken. The inspectors concluded this finding was associated with the Mitigating Systems Cornerstone. The finding was determined to be of very low safety significance because the control room emergency ventilation (CREV) and high pressure coolant injection (HPCI) systems remained operable. This finding had a cross cutting aspect of identification in the area of problem identification and resolution because the licensee did not identify issues completely, accurately, and in a timely manner in accordance with the program. Specifically, when degraded and non conforming conditions were identified, licensee personnel failed to promptly capture the issues in the CAP [P.1].

Inspection Report# : [2015003](#) (*pdf*)

Significance:  Sep 30, 2015

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

FAILURE TO ADEQUATELY INSPECT RELAY CONTACTS FOR OXIDATION RESULTS IN RELAY FAILURE

A finding of very low safety significance and an associated non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” was self-revealed for the licensee’s failure to establish a preventive maintenance procedure for HFA relays that was appropriate to the circumstances. Immediate corrective actions included burnishing of the associated relay contacts and testing the associated relays. In addition, the licensee revised their relay inspection procedure and planned future relay replacements during the next refueling outage. The licensee entered the issue into their CAP as IR 2485051.

The finding was determined to be more than minor because the finding was associated with the Mitigating Systems Cornerstone attribute of Procedure Quality and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e. core damage). Specifically, the failure to perform adequate preventive maintenance on the automatic depressurization system (ADS) logic HFA relay in 2013 resulted in the build up of oxidation on the relay contacts. This build up caused the relay to fail its next scheduled test in 2015. A senior reactor analyst performed a detailed risk evaluation and determined the finding was of very low safety significance. This finding had a cross cutting aspect of operating experience in the area of problem identification and resolution, because the licensee did not systematically collect, evaluate, and implement relevant internal and external operating experience in a timely manner. Specifically, the licensee identified several internal and external operating experience events related to relay contact oxidation and failed to implement changes to their relay inspection procedures to ensure that effective corrective actions were implemented [P.5].

Inspection Report# : [2015003](#) (*pdf*)

Significance:  Jun 30, 2015

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

FAILURE TO CONDUCT POST MAINTENANCE TESTING FOLLOWING MANUAL OPERATION OF RCIC MOV

A finding of very low safety significance and associated NCV of Technical Specification 5.4, “Procedures,” was self-revealed on March 22, 2015, for the licensee’s failure to conduct procedurally required post-maintenance testing on

reactor core isolation cooling (RCIC) motor operated valve (MOV) MO 1–1301–61, following operation of the valve in the manual mode. Immediate corrective actions included manually engaging the motor clutch and functionally stroking the valve from the control room to verify operation. The licensee captured this condition in their CAP as Issue Report 2472416.

The finding was determined to be more than minor because it was associated with the Mitigating Systems Cornerstone attribute of Equipment Performance and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the licensee was not able to ensure the operability of the RCIC system when they failed to conduct post-maintenance testing (PMT) on RCIC 1–1301–61. The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, Appendix A, Exhibit 2, “Mitigating Systems Screening Questions.” The inspectors answered “No” to all questions in Section A of Exhibit 2 and the finding screened as Green, or very low safety significance. This finding has a cross-cutting aspect in the area of Human Performance, Documentation, because the licensee did not maintain complete, accurate, and up-to-date documentation. Specifically, the licensee failed to document the status of the RCIC valve after placing it in the manual mode of operation to ensure that the required PMT was performed [H.7].

Inspection Report# : [2015002](#) (*pdf*)

Significance:  Mar 31, 2015

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

FAILURE TO ESTABLISH AND MAINTAIN SERVICE LIFE FOR SAFETY-RELATED RELAY RESULTS IN FAILURE AND INOPERABILITY

A finding of very low safety significance (Green) and associated NCV of 10 CFR 50, Appendix B, Criterion III, “Design Control,” was self-revealed on January 6, 2015, when an electrical maintenance worker found a tripped breaker in motor control center (MCC) 28–1, for the Unit 2 power feed to the common unit (Unit 0) fuel oil transfer pump (FOTP). The licensee determined that an HGA relay in the FOTP power transfer circuit had failed due to aging and not having any associated preventive maintenance task. The inspectors determined the licensee failed to establish and maintain the service life for the FOTP

HGA relay, which was a performance deficiency. This also resulted in the inoperability of the Unit 0 emergency diesel generator (EDG) for longer than its technical specification allowed outage time, which was a violation of Technical Specification 3.8.1, “AC Sources–Operating.” The immediate corrective actions included replacing the failed relay and declaring the EDG operable following post-maintenance testing. The licensee captured the issue in their corrective action program (CAP) as Issue Report (IR) 2433389.

The performance deficiency was determined to be more than minor and a finding because it was associated with the equipment performance attribute of the Mitigating Systems Cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the performance deficiency caused an unplanned inoperable condition for the Unit 0 EDG. The inspectors evaluated the finding using IMC 0609, Appendix A, “The SDP for Findings At-Power,” issued June 19, 2012. The issue resulted in the EDG being inoperable for longer than the Technical Specification (TS) allowed outage time. A detailed risk analysis was performed and determined the finding was of very low safety significance. This finding had a cross-cutting aspect in the area of Problem Identification and Resolution, Evaluation, because the licensee did not thoroughly evaluate issues to ensure that the resolution addressed causes and extent of conditions commensurate with their safety significance. Specifically, the licensee identified other EDG electrical component failures that occurred at the station where the causes were identified as failure to have associated preventive maintenance for the affected components and equipment. The extent of condition evaluations for those events failed to identify additional safety related components that did not have any associated preventive maintenance tasks or documented service life, including replacement schedules [P.2].

Inspection Report# : [2015001](#) (pdf)

Significance:  Dec 05, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to Identify Aging Effects on Plant Equipment and Structures

The inspectors identified a finding of very low safety significance and associated NCV of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for the licensee's failure to effectively identify, evaluate, and document aging effects on plant equipment and structures as part of the licensee's Aging Management Programs for a plant within its period of extended operation. The inspectors identified two corroded pipe supports and associated base plates in the Unit 1 high pressure coolant injection (HPCI) room as well as a severely corroded nut and stud on the 1/2 diesel generator cooling water pump outboard mechanical seal. These conditions had not been previously identified, evaluated, or documented. The licensee entered this finding into their Corrective Action Program.

The performance deficiency was determined to be more than minor and a finding in accordance with IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," because if left uncorrected, the performance deficiency would have the potential to lead to a more significant safety concern. The finding screened as very low safety significance (Green) because the inspectors were able to answer "No" to each screening question, because the conditions had not yet affected structural integrity or operability of the systems. Specifically, the licensee confirmed the HPCI supports would be capable to perform their function and the remaining bolts on the mechanical seal were sufficient to prevent excessive leakage. The inspectors identified a cross-cutting aspect associated with this finding in the area of Human Performance, Resources component, because the licensee did not ensure that personnel, equipment, procedures, and other resources are adequate to assure nuclear safety by maintaining long term plant safety.

Inspection Report# : [2014008](#) (pdf)

Barrier Integrity

Significance:  Sep 30, 2015

Identified By: NRC

Item Type: NCV Non-Cited Violation

FAILURE TO ESTABLISH ADEQUATE PROCEDURE TO PRECLUDE UNACCEPTABLE PRECONDITIONING OF THE STANDBY GAS TREATMENT SYSTEM

A finding of very low safety significance and an associated non-cited violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was identified by the inspectors for the licensee's failure to establish a procedure appropriate to the circumstances that precluded unacceptable preconditioning of the standby gas treatment (SBGT) system during surveillance testing. The licensee performed an evaluation and concluded the SBGT system was operable and planned additional testing on the relay timing function. Other corrective actions included revising the applicable procedures such that unacceptable preconditioning would not occur. The licensee captured this issue in their CAP as IR 2524699.

The finding was determined to be more than minor because it was associated with the Barrier Integrity Cornerstone attribute of Procedure Quality and affected the cornerstone objective to provide reasonable assurance that physical design barriers (fuel cladding, reactor coolant system, and containment) protect the public from radionuclide releases caused by accidents or events. Specifically, the inadequate procedure had the potential to mask the ability of the SBGT system to initiate in time to prevent ex-filtration of radioactive gases during a design basis accident. The finding was determined to be of very low safety significance because it represented a degradation of the radiological barrier function for the SBGT system. This finding had a cross cutting aspect of questioning attitude in the area of

human performance because the licensee did not recognize the possibility of mistakes, latent problems, or inherent risk, even while expecting successful outcomes. Specifically, the licensee failed to recognize that performing the steps in the specified sequence could unacceptably precondition the time-delay relay for the SBGT system and mask the ability of the system to perform its function [H.12].

Inspection Report# : [2015003](#) (*pdf*)

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the [cover letters](#) to security inspection reports may be viewed.

Miscellaneous

Last modified : December 15, 2015

Quad Cities 2

4Q/2015 Plant Inspection Findings

Initiating Events

Significance:  Jun 30, 2015

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

INADEQUATE ZONE OF PROTECTION FOR ELECTRICAL BUS MAINTENANCE

A finding of very low safety significance and associated NCV of Technical Specification 5.4, “Procedures,” was self-revealed on March 14, 2015, for the licensee’s failure to implement a clearance order in accordance with procedure OP-AA-109-101, “Clearance and Tagging,” for electrical maintenance on Bus 12, Cubicle 9. The clearance order failed to provide a safe zone of protection for all physical work to be performed under the clearance order or for required equipment protection. Immediate corrective actions included stopping all electrical work and verifying electrical work boundaries prior to re-commencing work. The licensee documented the issue in the corrective action program (CAP) under Issue Report 2468511.

The finding was determined to be more than minor because, if left uncorrected, it could become a more significant safety concern. Specifically, the failure to properly control and de-energize equipment prior to performing maintenance could have an impact on safety-related equipment (including equipment damage and potential loss of off-site power). The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, “Significance Determination Process,” Attachment 0609.04, “Initial Characterization of Findings.” Because the finding impacted the Initiating Events Cornerstone and Unit 1 was shut down at the time of the event, the inspectors determined the finding could be further evaluated using IMC 0609, Appendix G, Attachment 1, “Shutdown Operations Significance Determination Process Phase 1 Initial Screening and Characterization of Findings.” The inspectors answered “No” to all questions in Exhibit 2 of IMC 0609, Appendix G, Attachment 1 and determined the finding was of very low safety significance (Green). This finding has a cross-cutting aspect in the area of Human Performance, Work Management because the licensee did not implement a process of planning, controlling, and executing work activities such that nuclear safety is the overriding priority. Specifically, the licensee failed to plan, control, and execute a clearance order that provided a safe zone of protection for all physical work to be performed under the clearance order or for required equipment protection during maintenance on Bus 12, Cubicle 9 [H.5].

Inspection Report# : [2015002](#) (*pdf*)

Mitigating Systems

Significance:  Sep 30, 2015

Identified By: NRC

Item Type: NCV Non-Cited Violation

FAILURE TO EVALUATE DEGRADED OR NON-CONFORMING CONDITIONS FOR OPERABILITY

A finding of very low safety significance and an associated non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” was identified by the inspectors for the licensee’s failure to document degraded or non conforming conditions in the corrective action program (CAP) and route or discuss the

issue with Operations shift management so that operability of the affected components could be evaluated. Immediate corrective actions included entering the issues into the CAP and evaluating the issues for operability. The licensee captured the issue in the CAP as Issue Reports (IRs) 2537968 and 2537936.

The finding was determined to be more than minor because, if left uncorrected, it could become a more significant safety concern. Specifically, the failure to identify degraded, non-conforming, or unanalyzed conditions in the CAP and bring those conditions to the attention of Operations shift management so that the operability of safety-related systems, structures, and components (SSCs) may be evaluated could lead to those SSCs being in an inoperable condition without the appropriate Technical Specification (TS) actions taken. The inspectors concluded this finding was associated with the Mitigating Systems Cornerstone. The finding was determined to be of very low safety significance because the control room emergency ventilation (CREV) and high pressure coolant injection (HPCI) systems remained operable. This finding had a cross cutting aspect of identification in the area of problem identification and resolution because the licensee did not identify issues completely, accurately, and in a timely manner in accordance with the program. Specifically, when degraded and non conforming conditions were identified, licensee personnel failed to promptly capture the issues in the CAP [P.1].

Inspection Report# : [2015003](#) (*pdf*)

Significance:  Sep 30, 2015

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

FAILURE TO ADEQUATELY INSPECT RELAY CONTACTS FOR OXIDATION RESULTS IN RELAY FAILURE

A finding of very low safety significance and an associated non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” was self-revealed for the licensee’s failure to establish a preventive maintenance procedure for HFA relays that was appropriate to the circumstances. Immediate corrective actions included burnishing of the associated relay contacts and testing the associated relays. In addition, the licensee revised their relay inspection procedure and planned future relay replacements during the next refueling outage. The licensee entered the issue into their CAP as IR 2485051.

The finding was determined to be more than minor because the finding was associated with the Mitigating Systems Cornerstone attribute of Procedure Quality and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e. core damage). Specifically, the failure to perform adequate preventive maintenance on the automatic depressurization system (ADS) logic HFA relay in 2013 resulted in the build up of oxidation on the relay contacts. This build up caused the relay to fail its next scheduled test in 2015. A senior reactor analyst performed a detailed risk evaluation and determined the finding was of very low safety significance. This finding had a cross cutting aspect of operating experience in the area of problem identification and resolution, because the licensee did not systematically collect, evaluate, and implement relevant internal and external operating experience in a timely manner. Specifically, the licensee identified several internal and external operating experience events related to relay contact oxidation and failed to implement changes to their relay inspection procedures to ensure that effective corrective actions were implemented [P.5].

Inspection Report# : [2015003](#) (*pdf*)

Significance:  Jun 30, 2015

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

FAILURE TO CONDUCT POST MAINTENANCE TESTING FOLLOWING MANUAL OPERATION OF RCIC MOV

A finding of very low safety significance and associated NCV of Technical Specification 5.4, “Procedures,” was self-revealed on March 22, 2015, for the licensee’s failure to conduct procedurally required post-maintenance testing on

reactor core isolation cooling (RCIC) motor operated valve (MOV) MO 1-1301-61, following operation of the valve in the manual mode. Immediate corrective actions included manually engaging the motor clutch and functionally stroking the valve from the control room to verify operation. The licensee captured this condition in their CAP as Issue Report 2472416.

The finding was determined to be more than minor because it was associated with the Mitigating Systems Cornerstone attribute of Equipment Performance and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the licensee was not able to ensure the operability of the RCIC system when they failed to conduct post-maintenance testing (PMT) on RCIC 1-1301-61. The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, Appendix A, Exhibit 2, "Mitigating Systems Screening Questions." The inspectors answered "No" to all questions in Section A of Exhibit 2 and the finding screened as Green, or very low safety significance. This finding has a cross-cutting aspect in the area of Human Performance, Documentation, because the licensee did not maintain complete, accurate, and up-to-date documentation. Specifically, the licensee failed to document the status of the RCIC valve after placing it in the manual mode of operation to ensure that the required PMT was performed [H.7].

Inspection Report# : [2015002](#) (pdf)

Significance:  Mar 31, 2015

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

FAILURE TO ESTABLISH AND MAINTAIN SERVICE LIFE FOR SAFETY-RELATED RELAY RESULTS IN FAILURE AND INOPERABILITY

A finding of very low safety significance (Green) and associated NCV of 10 CFR 50, Appendix B, Criterion III, "Design Control," was self-revealed on January 6, 2015, when an electrical maintenance worker found a tripped breaker in motor control center (MCC) 28-1, for the Unit 2 power feed to the common unit (Unit 0) fuel oil transfer pump (FOTP). The licensee determined that an HGA relay in the FOTP power transfer circuit had failed due to aging and not having any associated preventive maintenance task. The inspectors determined the licensee failed to establish and maintain the service life for the FOTP

HGA relay, which was a performance deficiency. This also resulted in the inoperability of the Unit 0 emergency diesel generator (EDG) for longer than its technical

specification allowed outage time, which was a violation of Technical Specification 3.8.1, "AC Sources-Operating."

The immediate corrective actions included replacing the failed relay and declaring the EDG operable following post-maintenance testing. The licensee captured the issue in their corrective action program (CAP) as Issue Report (IR) 2433389.

The performance deficiency was determined to be more than minor and a finding because it was associated with the equipment performance attribute of the Mitigating Systems Cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the performance deficiency caused an unplanned inoperable condition for the Unit 0 EDG. The inspectors evaluated the finding using IMC 0609, Appendix A, "The SDP for Findings At-Power," issued June 19, 2012. The issue resulted in the EDG being inoperable for longer than the Technical Specification (TS) allowed outage time. A detailed risk analysis was performed and determined the finding was of very low safety significance. This finding had a cross-cutting aspect in the area of Problem Identification and Resolution, Evaluation, because the licensee did not thoroughly evaluate issues to ensure that the resolution addressed causes and extent of conditions commensurate with their safety significance. Specifically, the licensee identified other EDG electrical component failures that occurred at the station where the causes were identified as failure to have associated preventive maintenance for the affected components and equipment. The extent of condition evaluations for those events failed to identify additional safety related components that did not have any associated preventive maintenance tasks or documented service life, including replacement schedules [P.2].

Inspection Report# : [2015001](#) (pdf)

Barrier Integrity

Significance:  Sep 30, 2015

Identified By: NRC

Item Type: NCV Non-Cited Violation

FAILURE TO ESTABLISH ADEQUATE PROCEDURE TO PRECLUDE UNACCEPTABLE PRECONDITIONING OF THE STANDBY GAS TREATMENT SYSTEM

A finding of very low safety significance and an associated non-cited violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was identified by the inspectors for the licensee's failure to establish a procedure appropriate to the circumstances that precluded unacceptable preconditioning of the standby gas treatment (SBGT) system during surveillance testing. The licensee performed an evaluation and concluded the SBGT system was operable and planned additional testing on the relay timing function. Other corrective actions included revising the applicable procedures such that unacceptable preconditioning would not occur. The licensee captured this issue in their CAP as IR 2524699.

The finding was determined to be more than minor because it was associated with the Barrier Integrity Cornerstone attribute of Procedure Quality and affected the cornerstone objective to provide reasonable assurance that physical design barriers (fuel cladding, reactor coolant system, and containment) protect the public from radionuclide releases caused by accidents or events. Specifically, the inadequate procedure had the potential to mask the ability of the SBGT system to initiate in time to prevent ex-filtration of radioactive gases during a design basis accident. The finding was determined to be of very low safety significance because it represented a degradation of the radiological barrier function for the SBGT system. This finding had a cross cutting aspect of questioning attitude in the area of human performance because the licensee did not recognize the possibility of mistakes, latent problems, or inherent risk, even while expecting successful outcomes. Specifically, the licensee failed to recognize that performing the steps in the specified sequence could unacceptably precondition the time-delay relay for the SBGT system and mask the ability of the system to perform its function [H.12].

Inspection Report# : [2015003](#) (pdf)

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the [cover letters](#) to security inspection reports may be viewed.

Miscellaneous

Last modified : March 01, 2016

Quad Cities 2

1Q/2016 Plant Inspection Findings

Initiating Events

Significance: G Jun 30, 2015

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

INADEQUATE ZONE OF PROTECTION FOR ELECTRICAL BUS MAINTENANCE

A finding of very low safety significance and associated NCV of Technical Specification 5.4, “Procedures,” was self-revealed on March 14, 2015, for the licensee’s failure to implement a clearance order in accordance with procedure OP-AA-109-101, “Clearance and Tagging,” for electrical maintenance on Bus 12, Cubicle 9. The clearance order failed to provide a safe zone of protection for all physical work to be performed under the clearance order or for required equipment protection. Immediate corrective actions included stopping all electrical work and verifying electrical work boundaries prior to re-commencing work. The licensee documented the issue in the corrective action program (CAP) under Issue Report 2468511.

The finding was determined to be more than minor because, if left uncorrected, it could become a more significant safety concern. Specifically, the failure to properly control and de-energize equipment prior to performing maintenance could have an impact on safety-related equipment (including equipment damage and potential loss of off-site power). The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, “Significance Determination Process,” Attachment 0609.04, “Initial Characterization of Findings.” Because the finding impacted the Initiating Events Cornerstone and Unit 1 was shut down at the time of the event, the inspectors determined the finding could be further evaluated using IMC 0609, Appendix G, Attachment 1, “Shutdown Operations Significance Determination Process Phase 1 Initial Screening and Characterization of Findings.” The inspectors answered “No” to all questions in Exhibit 2 of IMC 0609, Appendix G, Attachment 1 and determined the finding was of very low safety significance (Green). This finding has a cross-cutting aspect in the area of Human Performance, Work Management because the licensee did not implement a process of planning, controlling, and executing work activities such that nuclear safety is the overriding priority. Specifically, the licensee failed to plan, control, and execute a clearance order that provided a safe zone of protection for all physical work to be performed under the clearance order or for required equipment protection during maintenance on Bus 12, Cubicle 9 [H.5].

Inspection Report# : [2015002](#) (*pdf*)

Mitigating Systems

Significance: G Sep 30, 2015

Identified By: NRC

Item Type: NCV Non-Cited Violation

FAILURE TO EVALUATE DEGRADED OR NON-CONFORMING CONDITIONS FOR OPERABILITY

A finding of very low safety significance and an associated non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” was identified by the inspectors for the licensee’s failure to document degraded or non conforming conditions in the corrective action program (CAP) and route or discuss the

issue with Operations shift management so that operability of the affected components could be evaluated. Immediate corrective actions included entering the issues into the CAP and evaluating the issues for operability. The licensee captured the issue in the CAP as Issue Reports (IRs) 2537968 and 2537936.

The finding was determined to be more than minor because, if left uncorrected, it could become a more significant safety concern. Specifically, the failure to identify degraded, non-conforming, or unanalyzed conditions in the CAP and bring those conditions to the attention of Operations shift management so that the operability of safety-related systems, structures, and components (SSCs) may be evaluated could lead to those SSCs being in an inoperable condition without the appropriate Technical Specification (TS) actions taken. The inspectors concluded this finding was associated with the Mitigating Systems Cornerstone. The finding was determined to be of very low safety significance because the control room emergency ventilation (CREV) and high pressure coolant injection (HPCI) systems remained operable. This finding had a cross cutting aspect of identification in the area of problem identification and resolution because the licensee did not identify issues completely, accurately, and in a timely manner in accordance with the program. Specifically, when degraded and non conforming conditions were identified, licensee personnel failed to promptly capture the issues in the CAP [P.1].

Inspection Report# : [2015003](#) (*pdf*)

Significance:  Sep 30, 2015

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

FAILURE TO ADEQUATELY INSPECT RELAY CONTACTS FOR OXIDATION RESULTS IN RELAY FAILURE

A finding of very low safety significance and an associated non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” was self-revealed for the licensee’s failure to establish a preventive maintenance procedure for HFA relays that was appropriate to the circumstances. Immediate corrective actions included burnishing of the associated relay contacts and testing the associated relays. In addition, the licensee revised their relay inspection procedure and planned future relay replacements during the next refueling outage. The licensee entered the issue into their CAP as IR 2485051.

The finding was determined to be more than minor because the finding was associated with the Mitigating Systems Cornerstone attribute of Procedure Quality and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e. core damage). Specifically, the failure to perform adequate preventive maintenance on the automatic depressurization system (ADS) logic HFA relay in 2013 resulted in the build up of oxidation on the relay contacts. This build up caused the relay to fail its next scheduled test in 2015. A senior reactor analyst performed a detailed risk evaluation and determined the finding was of very low safety significance. This finding had a cross cutting aspect of operating experience in the area of problem identification and resolution, because the licensee did not systematically collect, evaluate, and implement relevant internal and external operating experience in a timely manner. Specifically, the licensee identified several internal and external operating experience events related to relay contact oxidation and failed to implement changes to their relay inspection procedures to ensure that effective corrective actions were implemented [P.5].

Inspection Report# : [2015003](#) (*pdf*)

Significance:  Jun 30, 2015

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

FAILURE TO CONDUCT POST MAINTENANCE TESTING FOLLOWING MANUAL OPERATION OF RCIC MOV

A finding of very low safety significance and associated NCV of Technical Specification 5.4, “Procedures,” was self-revealed on March 22, 2015, for the licensee’s failure to conduct procedurally required post-maintenance testing on

reactor core isolation cooling (RCIC) motor operated valve (MOV) MO 1-1301-61, following operation of the valve in the manual mode. Immediate corrective actions included manually engaging the motor clutch and functionally stroking the valve from the control room to verify operation. The licensee captured this condition in their CAP as Issue Report 2472416.

The finding was determined to be more than minor because it was associated with the Mitigating Systems Cornerstone attribute of Equipment Performance and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the licensee was not able to ensure the operability of the RCIC system when they failed to conduct post-maintenance testing (PMT) on RCIC 1-1301-61. The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, Appendix A, Exhibit 2, "Mitigating Systems Screening Questions." The inspectors answered "No" to all questions in Section A of Exhibit 2 and the finding screened as Green, or very low safety significance. This finding has a cross-cutting aspect in the area of Human Performance, Documentation, because the licensee did not maintain complete, accurate, and up-to-date documentation. Specifically, the licensee failed to document the status of the RCIC valve after placing it in the manual mode of operation to ensure that the required PMT was performed [H.7].

Inspection Report# : [2015002](#) (*pdf*)

Barrier Integrity

Significance:  Mar 31, 2016

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

FAILURE TO CONTROL DEVIATION FROM EQ STANDARD RESULTS IN LIMIT SWITCH SUBMERGENCE

A finding of very low safety significance and an associated non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," was self-revealed on February 2, 2016, when the operators received an alarm due to a steam leak in the

Unit 1 main steam isolation valve room which resulted in the limit switch compartment for Unit 1 reactor core isolation cooling (RCIC) system motor-operated valve (MOV), MO 1-1301-17 (outboard primary containment steam isolation valve), becoming submerged with water. Specifically, the licensee failed to ensure that deviations from design standard, "Environmental Qualification Standard 74Q (EQ-74Q)," were controlled during original installation of MO 1-1301-17 such that the valve would not be subjected to a spray or submergence environment. The licensee documented the issue in their corrective action program under Issue Report 2625523. Corrective actions included a temporary repair of the steam leak, removal of water from the limit switch compartment, and compensatory measures that included daily monitoring for steam leaks in the Unit 1 main steam isolation valve room. In addition, the licensee performed an extent of condition review of other valves in the main steam isolation valve room. Planned corrective actions included installing t-drains or weep holes in MOVs that the licensee deemed susceptible to spray or submergence.

The performance deficiency was determined to be more than minor and a finding because it was associated with the Barrier Integrity Cornerstone attribute of Design Control and affected the cornerstone objective to provide reasonable assurance that physical design barriers (containment) protect the public from radionuclide releases caused by accidents or events. Specifically, the failure to control any environmental qualification design deviations had the potential to impact the ability of MO 1-1301-17 to close on an isolation signal and prevent radioactive releases to the environment. The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," Appendix A, "The Significance Determination Process for Findings at Power," issued June 19, 2012. The inspectors determined the finding to be of very low safety significance (Green) in

accordance with Exhibit 3, “Barrier Integrity Screening Questions,” because the inspectors answered “No” to all questions in Section B of Exhibit 3. This finding did not have a cross-cutting aspect because the performance deficiency was not indicative of current performance.

Inspection Report# : [2016001](#) (*pdf*)

Significance:  Mar 31, 2016

Identified By: NRC

Item Type: NCV Non-Cited Violation

FAILURE TO IDENTIFY STRUCTURES, SYSTEMS, AND COMPONENTS AS SAFETY-RELATED

A finding of very low safety significance and an associated non-cited violation of 10 CFR Part 50, Appendix B, Criterion II, “Quality Assurance,” was identified by the inspectors for the licensee’s failure to identify the structures, systems, and components to be covered by the quality assurance program, in that they did not properly classify a component of the control room emergency ventilation system as safety related. The licensee documented the issue in their corrective action program under Issue Report 2596725. Immediate corrective actions included replacing Differential Pressure Switch (DPS) 0–5795–50 and revising the control room ventilation procedure to allow operators to disable the interlock between the ‘A’ and ‘B’ trains of the control room emergency ventilation system. The procedure change eliminated the need for the DPS to be classified as safety-related (and therefore corrected the violation) because in the event of a failure of the DPS, the system would still be able to perform its safety function. The performance deficiency was determined to be more than minor and a finding because it was associated with the Barrier Integrity Cornerstone attribute of Design Control and affected the cornerstone objective of providing reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. Specifically, the ‘B’ train of the control room emergency ventilation system is a habitability system that is provided to ensure control room operators are able to remain in the control room and operate the plant safely and to maintain the plant in a safe condition under accident conditions. The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, “Significance Determination Process,” Appendix A, “The Significance Determination Process for Findings at Power,” issued June 19, 2012. The inspectors determined the finding to be of very low safety significance (Green) in accordance with Exhibit 3, “Barrier Integrity Screening Questions,” because the finding only represented a degradation of the radiological barrier function provided for the control room and did not represent a degradation of the barrier function of the control room against smoke or toxic atmosphere. This finding did not have a cross-cutting aspect because the performance deficiency was not indicative of current performance.

Inspection Report# : [2016001](#) (*pdf*)

Significance:  Sep 30, 2015

Identified By: NRC

Item Type: NCV Non-Cited Violation

FAILURE TO ESTABLISH ADEQUATE PROCEDURE TO PRECLUDE UNACCEPTABLE PRECONDITIONING OF THE STANDBY GAS TREATMENT SYSTEM

A finding of very low safety significance and an associated non-cited violation of 10 CFR 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” was identified by the inspectors for the licensee’s failure to establish a procedure appropriate to the circumstances that precluded unacceptable preconditioning of the standby gas treatment (SBGT) system during surveillance testing. The licensee performed an evaluation and concluded the SBGT system was operable and planned additional testing on the relay timing function. Other corrective actions included revising the applicable procedures such that unacceptable preconditioning would not occur. The licensee captured this issue in their CAP as IR 2524699.

The finding was determined to be more than minor because it was associated with the Barrier Integrity Cornerstone attribute of Procedure Quality and affected the cornerstone objective to provide reasonable assurance that physical design barriers (fuel cladding, reactor coolant system, and containment) protect the public from radionuclide releases

caused by accidents or events. Specifically, the inadequate procedure had the potential to mask the ability of the SBT system to initiate in time to prevent ex-filtration of radioactive gases during a design basis accident. The finding was determined to be of very low safety significance because it represented a degradation of the radiological barrier function for the SBT system. This finding had a cross cutting aspect of questioning attitude in the area of human performance because the licensee did not recognize the possibility of mistakes, latent problems, or inherent risk, even while expecting successful outcomes. Specifically, the licensee failed to recognize that performing the steps in the specified sequence could unacceptably precondition the time-delay relay for the SBT system and mask the ability of the system to perform its function [H.12].

Inspection Report# : [2015003](#) (*pdf*)

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the [cover letters](#) to security inspection reports may be viewed.

Miscellaneous

Last modified : July 11, 2016

Quad Cities 2

2Q/2016 Plant Inspection Findings

Initiating Events

Mitigating Systems

Significance: G Jun 30, 2016

Identified By: NRC

Item Type: NCV Non-Cited Violation

FAILURE TO IDENTIFY CONDITIONS ADVERSE TO QUALITY

The inspectors identified a finding of very low safety significance and an associated non-cited violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," for the failure to identify a condition adverse to quality.

Specifically, the licensee failed to identify the installation of the low pressure coolant injection (LPCI) loop-select differential pressure indicating switches (DPISs) on both units beyond their performance centered maintenance template recommended replacement frequency and beyond their environmental qualification (EQ) service life established in EQ binder EQ 83Q as conditions adverse to quality (CAQ) in their corrective action program (CAP).

The licensee's corrective actions included entering the non conforming conditions into the CAP (Issue Report 2663100) and evaluating the CAQs for operability. The licensee determined the current DPISs were operable but non conforming, and replaced all remaining LPCI loop select DPISs.

The failure to identify CAQs within the CAP was determined to be more than minor because if left uncorrected, it had the potential to lead to a more significant safety concern. Specifically, the failure to identify when safety-related structures, systems, or components (SSCs) are beyond their qualified life could lead to an SSC not being able to perform its specified safety function. The finding was screened against the Mitigating Systems Cornerstone and determined to be of very low safety significance because the SSC maintained its operability. The inspectors determined this finding affected the cross cutting area of problem identification and resolution, in the aspect of Identification, which states, "The organization implements a corrective action program with a low threshold for identifying issues. Individuals identify issues completely, accurately, and in a timely manner in accordance with the program." Specifically, the licensee failed to document a condition adverse to quality related to the LPCI loop select DPISs on both units in the CAP in a timely manner [P.1].

Inspection Report# : [2016002](#) (*pdf*)

Significance: G Sep 30, 2015

Identified By: NRC

Item Type: NCV Non-Cited Violation

FAILURE TO EVALUATE DEGRADED OR NON-CONFORMING CONDITIONS FOR OPERABILITY

A finding of very low safety significance and an associated non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was identified by the inspectors for the licensee's failure to document degraded or non conforming conditions in the corrective action program (CAP) and route or discuss the issue with Operations shift management so that operability of the affected components could be evaluated. Immediate corrective actions included entering the issues into the CAP and evaluating the issues for operability. The licensee captured the issue in the CAP as Issue Reports (IRs) 2537968 and 2537936.

The finding was determined to be more than minor because, if left uncorrected, it could become a more significant safety concern. Specifically, the failure to identify degraded, non-conforming, or unanalyzed conditions in the CAP and bring those conditions to the attention of Operations shift management so that the operability of safety-related systems, structures, and components (SSCs) may be evaluated could lead to those SSCs being in an inoperable condition without the appropriate Technical Specification (TS) actions taken. The inspectors concluded this finding was associated with the Mitigating Systems Cornerstone. The finding was determined to be of very low safety significance because the control room emergency ventilation (CREV) and high pressure coolant injection (HPCI) systems remained operable. This finding had a cross cutting aspect of identification in the area of problem identification and resolution because the licensee did not identify issues completely, accurately, and in a timely manner in accordance with the program. Specifically, when degraded and non conforming conditions were identified, licensee personnel failed to promptly capture the issues in the CAP [P.1].

Inspection Report# : [2015003](#) (*pdf*)

Significance:  Sep 30, 2015

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

FAILURE TO ADEQUATELY INSPECT RELAY CONTACTS FOR OXIDATION RESULTS IN RELAY FAILURE

A finding of very low safety significance and an associated non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” was self-revealed for the licensee’s failure to establish a preventive maintenance procedure for HFA relays that was appropriate to the circumstances. Immediate corrective actions included burnishing of the associated relay contacts and testing the associated relays. In addition, the licensee revised their relay inspection procedure and planned future relay replacements during the next refueling outage. The licensee entered the issue into their CAP as IR 2485051.

The finding was determined to be more than minor because the finding was associated with the Mitigating Systems Cornerstone attribute of Procedure Quality and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e. core damage). Specifically, the failure to perform adequate preventive maintenance on the automatic depressurization system (ADS) logic HFA relay in 2013 resulted in the build up of oxidation on the relay contacts. This build up caused the relay to fail its next scheduled test in 2015. A senior reactor analyst performed a detailed risk evaluation and determined the finding was of very low safety significance. This finding had a cross cutting aspect of operating experience in the area of problem identification and resolution, because the licensee did not systematically collect, evaluate, and implement relevant internal and external operating experience in a timely manner. Specifically, the licensee identified several internal and external operating experience events related to relay contact oxidation and failed to implement changes to their relay inspection procedures to ensure that effective corrective actions were implemented [P.5].

Inspection Report# : [2015003](#) (*pdf*)

Barrier Integrity

Significance:  Jun 30, 2016

Identified By: NRC

Item Type: NCV Non-Cited Violation

FAILURE TO MAINTAIN PARAMETERS WITHIN LIMITS OF TS 3.6.2.5 AND 3.6.3.1

The inspectors identified a finding of very low safety significance and an associated non-cited violation of Technical

Specifications (TS) 3.6.2.5 and 3.6.3.1 for the licensee's failure to take actions required by TS 3.6.2.5 and 3.6.3.1. Specifically, on May 25, 2016, the licensee failed to restore the Unit 2 drywell-to-suppression chamber differential pressure and primary containment oxygen concentration to within the TS specified limits, or reduce power below 15 percent rated thermal power as required by TS 3.6.2.5 and 3.6.3.1, Conditions A and B. The licensee's corrective actions included restoring both parameters to within their specified limits on May 25, 2016. The violation was entered into the licensee's corrective action program as Issue Report 2677621.

The performance deficiency was determined to be more than minor and a finding because, if left uncorrected, it had the potential to lead to a more significant safety concern. Specifically, the failure to maintain drywell-to-suppression chamber differential pressure and primary containment oxygen concentration within their specified limits had the potential to lead to stresses that could challenge the structural integrity of the containment and/or lead to a combustible mixture inside the Unit 2 drywell following a loss of coolant accident, either of which could have challenged the assumptions of the safety analyses. The finding was screened against the Barrier Integrity Cornerstone and was determined to be of very low safety significance by the Region III senior reactor analyst using the insights from IMC 0609, Appendix H, "Containment Integrity Significance Determination Process," Table 6.2, "Phase 2 Risk Significance—Type B Findings at Full Power," because the duration of the condition was shorter than 3 days. The inspectors determined this finding affected the cross-cutting area of human performance in the aspect of Conservative Bias, which states, "individuals use decision making practices that emphasize prudent choices over those that are simply allowable. A proposed action is determined to be safe in order to proceed, rather than unsafe in order to stop." Specifically, the licensee failed to exercise prudent judgment when they raised power above 15 percent prior to meeting TS Limiting Condition for Operation 3.6.2.5 and 3.6.3.1 while still in the MODE of Applicability (MODE 1) [H.14].

Inspection Report# : [2016002](#) (pdf)

Significance:  Mar 31, 2016

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

FAILURE TO CONTROL DEVIATION FROM EQ STANDARD RESULTS IN LIMIT SWITCH SUBMERGENCE

A finding of very low safety significance and an associated non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," was self-revealed on February 2, 2016, when the operators received an alarm due to a steam leak in the

Unit 1 main steam isolation valve room which resulted in the limit switch compartment for Unit 1 reactor core isolation cooling (RCIC) system motor-operated valve (MOV), MO 1-1301-17 (outboard primary containment steam isolation valve), becoming submerged with water. Specifically, the licensee failed to ensure that deviations from design standard, "Environmental Qualification Standard 74Q (EQ-74Q)," were controlled during original installation of MO 1-1301-17 such that the valve would not be subjected to a spray or submergence environment. The licensee documented the issue in their corrective action program under Issue Report 2625523. Corrective actions included a temporary repair of the steam leak, removal of water from the limit switch compartment, and compensatory measures that included daily monitoring for steam leaks in the Unit 1 main steam isolation valve room. In addition, the licensee performed an extent of condition review of other valves in the main steam isolation valve room. Planned corrective actions included installing t-drains or weep holes in MOVs that the licensee deemed susceptible to spray or submergence.

The performance deficiency was determined to be more than minor and a finding because it was associated with the Barrier Integrity Cornerstone attribute of Design Control and affected the cornerstone objective to provide reasonable assurance that physical design barriers (containment) protect the public from radionuclide releases caused by accidents or events. Specifically, the failure to control any environmental qualification design deviations had the potential to impact the ability of MO 1-1301-17 to close on an isolation signal and prevent radioactive releases to the environment. The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," Appendix A, "The Significance Determination Process for Findings at Power,"

issued June 19, 2012. The inspectors determined the finding to be of very low safety significance (Green) in accordance with Exhibit 3, “Barrier Integrity Screening Questions,” because the inspectors answered “No” to all questions in Section B of Exhibit 3. This finding did not have a cross-cutting aspect because the performance deficiency was not indicative of current performance.

Inspection Report# : [2016001](#) (*pdf*)

Significance:  Mar 31, 2016

Identified By: NRC

Item Type: NCV Non-Cited Violation

FAILURE TO IDENTIFY STRUCTURES, SYSTEMS, AND COMPONENTS AS SAFETY-RELATED

A finding of very low safety significance and an associated non-cited violation of 10 CFR Part 50, Appendix B, Criterion II, “Quality Assurance,” was identified by the inspectors for the licensee’s failure to identify the structures, systems, and components to be covered by the quality assurance program, in that they did not properly classify a component of the control room emergency ventilation system as safety related. The licensee documented the issue in their corrective action program under Issue Report 2596725. Immediate corrective actions included replacing Differential Pressure Switch (DPS) 0–5795–50 and revising the control room ventilation procedure to allow operators to disable the interlock between the ‘A’ and ‘B’ trains of the control room emergency ventilation system. The procedure change eliminated the need for the DPS to be classified as safety-related (and therefore corrected the violation) because in the event of a failure of the DPS, the system would still be able to perform its safety function. The performance deficiency was determined to be more than minor and a finding because it was associated with the Barrier Integrity Cornerstone attribute of Design Control and affected the cornerstone objective of providing reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. Specifically, the ‘B’ train of the control room emergency ventilation system is a habitability system that is provided to ensure control room operators are able to remain in the control room and operate the plant safely and to maintain the plant in a safe condition under accident conditions. The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, “Significance Determination Process,” Appendix A, “The Significance Determination Process for Findings at Power,” issued June 19, 2012. The inspectors determined the finding to be of very low safety significance (Green) in accordance with Exhibit 3, “Barrier Integrity Screening Questions,” because the finding only represented a degradation of the radiological barrier function provided for the control room and did not represent a degradation of the barrier function of the control room against smoke or toxic atmosphere. This finding did not have a cross-cutting aspect because the performance deficiency was not indicative of current performance.

Inspection Report# : [2016001](#) (*pdf*)

Significance:  Sep 30, 2015

Identified By: NRC

Item Type: NCV Non-Cited Violation

FAILURE TO ESTABLISH ADEQUATE PROCEDURE TO PRECLUDE UNACCEPTABLE PRECONDITIONING OF THE STANDBY GAS TREATMENT SYSTEM

A finding of very low safety significance and an associated non-cited violation of 10 CFR 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” was identified by the inspectors for the licensee’s failure to establish a procedure appropriate to the circumstances that precluded unacceptable preconditioning of the standby gas treatment (SBGT) system during surveillance testing. The licensee performed an evaluation and concluded the SBGT system was operable and planned additional testing on the relay timing function. Other corrective actions included revising the applicable procedures such that unacceptable preconditioning would not occur. The licensee captured this issue in their CAP as IR 2524699.

The finding was determined to be more than minor because it was associated with the Barrier Integrity Cornerstone attribute of Procedure Quality and affected the cornerstone objective to provide reasonable assurance that physical

design barriers (fuel cladding, reactor coolant system, and containment) protect the public from radionuclide releases caused by accidents or events. Specifically, the inadequate procedure had the potential to mask the ability of the SGBT system to initiate in time to prevent ex-filtration of radioactive gases during a design basis accident. The finding was determined to be of very low safety significance because it represented a degradation of the radiological barrier function for the SGBT system. This finding had a cross cutting aspect of questioning attitude in the area of human performance because the licensee did not recognize the possibility of mistakes, latent problems, or inherent risk, even while expecting successful outcomes. Specifically, the licensee failed to recognize that performing the steps in the specified sequence could unacceptably precondition the time-delay relay for the SGBT system and mask the ability of the system to perform its function [H.12].

Inspection Report# : [2015003](#) (*pdf*)

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the [cover letters](#) to security inspection reports may be viewed.

Miscellaneous

Last modified : August 29, 2016

Quad Cities 2

3Q/2016 Plant Inspection Findings

Initiating Events

Mitigating Systems

Significance:  Aug 26, 2016

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to Provide Appropriate Operating Instructions for Aligning a Battery Charger to the Station Black-Out Diesel Generator (Section 1R17.1.b.)

Green. A finding of very-low safety significance (Green) and an associated NCV of Technical Specification 5.4.1.a, "Procedures," was self-revealed on December 2, 2014 when procedural guidance failed to be implemented as written. Specifically, Procedure QCOA 6100-17, Revision 12, "Loss of SBO [Station Black-Out Normal 13.8kV Transformer T42R-6 Feed to 4kV Bus 61 and 71]," included inappropriate guidance to cross-tie Bus 61 and Bus 71. The licensee's procedural guidance as written were technically infeasible and could not be implemented due to breaker interlocks caused by the digital control system interface that precluded the 4kV buses 61 and 71 from being cross-tied. The licensee entered this finding into their Corrective Action Program as Issue Report 2487426 and Issue Report 2706435 and removed the guidance to cross-tie the 4KV buses from the procedure.

The performance deficiency was determined to be more-than-minor because it was associated with the Mitigating System cornerstone attribute of design control and adversely affected the cornerstone objective of ensuring the availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). The finding screened as of very-low safety significance (Green) because it did not result in the loss of operability or functionality of any structure, system, or component. Specifically, using other procedural guidance, operators were able to start both station black-out diesels within the hour. The inspectors did not assign a cross-cutting aspect associated with this finding because it was not confirmed to reflect current performance. (Section 1R17.1.b.)

Inspection Report# : [2016008](#) (*pdf*)

Significance:  Aug 26, 2016

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to Evaluate the Target Rock Relief Valve Accumulator per ASME Code (Section 1R17.2.b.)

Green. The inspectors identified a finding of very-low safety significance (Green) and an associated NCV of Title 10 of the Code of Federal Regulations, Part 50, Appendix B, Criterion III, "Design Control," for licensee's failure to assure that quality standards for the Target Rock Relief valve accumulator were specified and included in the design documents and that deviations were identified and controlled. Specifically, Engineering Change (EC 394119) fabricated the replacement Unit 2 Target Rock valve accumulator to American National Standard B31.1 Power Piping code requirements instead of the applicable American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Section VIII requirements, without adequate justifications. The licensee captured this issue in their Corrective Action Program as IR 02708406 to evaluate the appropriate corrective actions and revise documentation as required.

The performance deficiency was determined to be more-than-minor because it was associated with the Mitigating System cornerstone attribute of design control and adversely affected the cornerstone objective to ensure the availability, and reliability of systems that respond to initiating events to prevent undesirable consequences. The finding screened as of very-low safety significance (Green) because it did not result in the loss of operability or functionality of any affected structure, system, or components. This finding has a cross-cutting aspect in the area of Human Performance in the area of Design Margin because the licensee failed to maintain equipment within its design margins. (Section 1R17.2.b.) [H.6]

Inspection Report# : [2016008](#) (*pdf*)

Significance:  Jun 30, 2016

Identified By: NRC

Item Type: NCV Non-Cited Violation

FAILURE TO IDENTIFY CONDITIONS ADVERSE TO QUALITY

The inspectors identified a finding of very low safety significance and an associated non-cited violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," for the failure to identify a condition adverse to quality.

Specifically, the licensee failed to identify the installation of the low pressure coolant injection (LPCI) loop-select differential pressure indicating switches (DPISs) on both units beyond their performance centered maintenance template recommended replacement frequency and beyond their environmental qualification (EQ) service life established in EQ binder EQ 83Q as conditions adverse to quality (CAQ) in their corrective action program (CAP).

The licensee's corrective actions included entering the non conforming conditions into the CAP (Issue Report 2663100) and evaluating the CAQs for operability. The licensee determined the current DPISs were operable but non conforming, and replaced all remaining LPCI loop select DPISs.

The failure to identify CAQs within the CAP was determined to be more than minor because if left uncorrected, it had the potential to lead to a more significant safety concern. Specifically, the failure to identify when safety-related structures, systems, or components (SSCs) are beyond their qualified life could lead to an SSC not being able to perform its specified safety function. The finding was screened against the Mitigating Systems Cornerstone and determined to be of very low safety significance because the SSC maintained its operability. The inspectors determined this finding affected the cross cutting area of problem identification and resolution, in the aspect of Identification, which states, "The organization implements a corrective action program with a low threshold for identifying issues. Individuals identify issues completely, accurately, and in a timely manner in accordance with the program." Specifically, the licensee failed to document a condition adverse to quality related to the LPCI loop select DPISs on both units in the CAP in a timely manner [P.1].

Inspection Report# : [2016002](#) (*pdf*)

Barrier Integrity

Significance:  Jun 30, 2016

Identified By: NRC

Item Type: NCV Non-Cited Violation

FAILURE TO MAINTAIN PARAMETERS WITHIN LIMITS OF TS 3.6.2.5 AND 3.6.3.1

The inspectors identified a finding of very low safety significance and an associated non-cited violation of Technical Specifications (TS) 3.6.2.5 and 3.6.3.1 for the licensee's failure to take actions required by TS 3.6.2.5 and 3.6.3.1.

Specifically, on May 25, 2016, the licensee failed to restore the Unit 2 drywell-to-suppression chamber differential pressure and primary containment oxygen concentration to within the TS specified limits, or reduce power below 15

percent rated thermal power as required by TS 3.6.2.5 and 3.6.3.1, Conditions A and B. The licensee's corrective actions included restoring both parameters to within their specified limits on May 25, 2016. The violation was entered into the licensee's corrective action program as Issue Report 2677621.

The performance deficiency was determined to be more than minor and a finding because, if left uncorrected, it had the potential to lead to a more significant safety concern. Specifically, the failure to maintain drywell-to-suppression chamber differential pressure and primary containment oxygen concentration within their specified limits had the potential to lead to stresses that could challenge the structural integrity of the containment and/or lead to a combustible mixture inside the Unit 2 drywell following a loss of coolant accident, either of which could have challenged the assumptions of the safety analyses. The finding was screened against the Barrier Integrity Cornerstone and was determined to be of very low safety significance by the Region III senior reactor analyst using the insights from IMC 0609, Appendix H, "Containment Integrity Significance Determination Process," Table 6.2, "Phase 2 Risk Significance—Type B Findings at Full Power," because the duration of the condition was shorter than 3 days. The inspectors determined this finding affected the cross-cutting area of human performance in the aspect of Conservative Bias, which states, "individuals use decision making practices that emphasize prudent choices over those that are simply allowable. A proposed action is determined to be safe in order to proceed, rather than unsafe in order to stop." Specifically, the licensee failed to exercise prudent judgment when they raised power above 15 percent prior to meeting TS Limiting Condition for Operation 3.6.2.5 and 3.6.3.1 while still in the MODE of Applicability (MODE 1) [H.14].

Inspection Report# : [2016002](#) (pdf)

Significance: G Mar 31, 2016

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

FAILURE TO CONTROL DEVIATION FROM EQ STANDARD RESULTS IN LIMIT SWITCH SUBMERGENCE

A finding of very low safety significance and an associated non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," was self-revealed on February 2, 2016, when the operators received an alarm due to a steam leak in the

Unit 1 main steam isolation valve room which resulted in the limit switch compartment for Unit 1 reactor core isolation cooling (RCIC) system motor-operated valve (MOV),

MO 1-1301-17 (outboard primary containment steam isolation valve), becoming submerged with water. Specifically, the licensee failed to ensure that deviations from design standard, "Environmental Qualification Standard 74Q (EQ-74Q)," were controlled during original installation of MO 1-1301-17 such that the valve would not be subjected to a spray or submergence environment. The licensee documented the issue in their corrective action program under Issue Report 2625523. Corrective actions included a temporary repair of the steam leak, removal of water from the limit switch compartment, and compensatory measures that included daily monitoring for steam leaks in the Unit 1 main steam isolation valve room. In addition, the licensee performed an extent of condition review of other valves in the main steam isolation valve room. Planned corrective actions included installing t-drains or weep holes in MOVs that the licensee deemed susceptible to spray or submergence.

The performance deficiency was determined to be more than minor and a finding because it was associated with the Barrier Integrity Cornerstone attribute of Design Control and affected the cornerstone objective to provide reasonable assurance that physical design barriers (containment) protect the public from radionuclide releases caused by accidents or events. Specifically, the failure to control any environmental qualification design deviations had the potential to impact the ability of MO 1-1301-17 to close on an isolation signal and prevent radioactive releases to the environment. The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," Appendix A, "The Significance Determination Process for Findings at Power," issued June 19, 2012. The inspectors determined the finding to be of very low safety significance (Green) in accordance with Exhibit 3, "Barrier Integrity Screening Questions," because the inspectors answered "No" to all questions in Section B of Exhibit 3. This finding did not have a cross-cutting aspect because the performance

deficiency was not indicative of current performance.

Inspection Report# : [2016001](#) (*pdf*)

Significance:  Mar 31, 2016

Identified By: NRC

Item Type: NCV Non-Cited Violation

FAILURE TO IDENTIFY STRUCTURES, SYSTEMS, AND COMPONENTS AS SAFETY-RELATED

A finding of very low safety significance and an associated non-cited violation of 10 CFR Part 50, Appendix B, Criterion II, “Quality Assurance,” was identified by the inspectors for the licensee’s failure to identify the structures, systems, and components to be covered by the quality assurance program, in that they did not properly classify a component of the control room emergency ventilation system as safety related. The licensee documented the issue in their corrective action program under Issue Report 2596725. Immediate corrective actions included replacing Differential Pressure Switch (DPS) 0–5795–50 and revising the control room ventilation procedure to allow operators to disable the interlock between the ‘A’ and ‘B’ trains of the control room emergency ventilation system. The procedure change eliminated the need for the DPS to be classified as safety-related (and therefore corrected the violation) because in the event of a failure of the DPS, the system would still be able to perform its safety function. The performance deficiency was determined to be more than minor and a finding because it was associated with the Barrier Integrity Cornerstone attribute of Design Control and affected the cornerstone objective of providing reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. Specifically, the ‘B’ train of the control room emergency ventilation system is a habitability system that is provided to ensure control room operators are able to remain in the control room and operate the plant safely and to maintain the plant in a safe condition under accident conditions. The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, “Significance Determination Process,” Appendix A, “The Significance Determination Process for Findings at Power,” issued June 19, 2012. The inspectors determined the finding to be of very low safety significance (Green) in accordance with Exhibit 3, “Barrier Integrity Screening Questions,” because the finding only represented a degradation of the radiological barrier function provided for the control room and did not represent a degradation of the barrier function of the control room against smoke or toxic atmosphere. This finding did not have a cross-cutting aspect because the performance deficiency was not indicative of current performance.

Inspection Report# : [2016001](#) (*pdf*)

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the [cover letters](#) to security inspection reports may be viewed.

Miscellaneous

Last modified : December 08, 2016

Quad Cities 2

4Q/2016 Plant Inspection Findings

Initiating Events

Mitigating Systems

Significance: G Aug 26, 2016

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

Failure to Provide Appropriate Operating Instructions for Aligning a Battery Charger to the Station Black-Out Diesel Generator (Section 1R17.1.b.)

Green. A finding of very-low safety significance (Green) and an associated NCV of Technical Specification 5.4.1.a, "Procedures," was self-revealed on December 2, 2014 when procedural guidance failed to be implemented as written. Specifically, Procedure QCOA 6100-17, Revision 12, "Loss of SBO [Station Black-Out Normal 13.8kV Transformer T42R-6 Feed to 4kV Bus 61 and 71]," included inappropriate guidance to cross-tie Bus 61 and Bus 71. The licensee's procedural guidance as written were technically infeasible and could not be implemented due to breaker interlocks caused by the digital control system interface that precluded the 4kV buses 61 and 71 from being cross-tied. The licensee entered this finding into their Corrective Action Program as Issue Report 2487426 and Issue Report 2706435 and removed the guidance to cross-tie the 4KV buses from the procedure.

The performance deficiency was determined to be more-than-minor because it was associated with the Mitigating System cornerstone attribute of design control and adversely affected the cornerstone objective of ensuring the availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). The finding screened as of very-low safety significance (Green) because it did not result in the loss of operability or functionality of any structure, system, or component. Specifically, using other procedural guidance, operators were able to start both station black-out diesels within the hour. The inspectors did not assign a cross-cutting aspect associated with this finding because it was not confirmed to reflect current performance. (Section 1R17.1.b.)

Inspection Report# : [2016008](#) (*pdf*)

Significance: G Aug 26, 2016

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to Evaluate the Target Rock Relief Valve Accumulator per ASME Code (Section 1R17.2.b.)

Green. The inspectors identified a finding of very-low safety significance (Green) and an associated NCV of Title 10 of the Code of Federal Regulations, Part 50, Appendix B, Criterion III, "Design Control," for licensee's failure to assure that quality standards for the Target Rock Relief valve accumulator were specified and included in the design documents and that deviations were identified and controlled. Specifically, Engineering Change (EC 394119) fabricated the replacement Unit 2 Target Rock valve accumulator to American National Standard B31.1 Power Piping code requirements instead of the applicable American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Section VIII requirements, without adequate justifications. The licensee captured this issue in their Corrective Action Program as IR 02708406 to evaluate the appropriate corrective actions and revise documentation as required.

The performance deficiency was determined to be more-than-minor because it was associated with the Mitigating System cornerstone attribute of design control and adversely affected the cornerstone objective to ensure the availability, and reliability of systems that respond to initiating events to prevent undesirable consequences. The finding screened as of very-low safety significance (Green) because it did not result in the loss of operability or functionality of any affected structure, system, or components. This finding has a cross-cutting aspect in the area of Human Performance in the area of Design Margin because the licensee failed to maintain equipment within its design margins. (Section 1R17.2.b.) [H.6]

Inspection Report# : [2016008](#) (pdf)

Significance:  Jun 30, 2016

Identified By: NRC

Item Type: NCV Non-Cited Violation

FAILURE TO IDENTIFY CONDITIONS ADVERSE TO QUALITY

The inspectors identified a finding of very low safety significance and an associated non-cited violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," for the failure to identify a condition adverse to quality.

Specifically, the licensee failed to identify the installation of the low pressure coolant injection (LPCI) loop-select differential pressure indicating switches (DPISs) on both units beyond their performance centered maintenance template recommended replacement frequency and beyond their environmental qualification (EQ) service life established in EQ binder EQ 83Q as conditions adverse to quality (CAQ) in their corrective action program (CAP).

The licensee's corrective actions included entering the non conforming conditions into the CAP (Issue Report 2663100) and evaluating the CAQs for operability. The licensee determined the current DPISs were operable but non conforming, and replaced all remaining LPCI loop select DPISs.

The failure to identify CAQs within the CAP was determined to be more than minor because if left uncorrected, it had the potential to lead to a more significant safety concern. Specifically, the failure to identify when safety-related structures, systems, or components (SSCs) are beyond their qualified life could lead to an SSC not being able to perform its specified safety function. The finding was screened against the Mitigating Systems Cornerstone and determined to be of very low safety significance because the SSC maintained its operability. The inspectors determined this finding affected the cross cutting area of problem identification and resolution, in the aspect of Identification, which states, "The organization implements a corrective action program with a low threshold for identifying issues. Individuals identify issues completely, accurately, and in a timely manner in accordance with the program." Specifically, the licensee failed to document a condition adverse to quality related to the LPCI loop select DPISs on both units in the CAP in a timely manner [P.1].

Inspection Report# : [2016002](#) (pdf)

Barrier Integrity

Significance:  Jun 30, 2016

Identified By: NRC

Item Type: NCV Non-Cited Violation

FAILURE TO MAINTAIN PARAMETERS WITHIN LIMITS OF TS 3.6.2.5 AND 3.6.3.1

The inspectors identified a finding of very low safety significance and an associated non-cited violation of Technical Specifications (TS) 3.6.2.5 and 3.6.3.1 for the licensee's failure to take actions required by TS 3.6.2.5 and 3.6.3.1.

Specifically, on May 25, 2016, the licensee failed to restore the Unit 2 drywell-to-suppression chamber differential pressure and primary containment oxygen concentration to within the TS specified limits, or reduce power below 15

percent rated thermal power as required by TS 3.6.2.5 and 3.6.3.1, Conditions A and B. The licensee's corrective actions included restoring both parameters to within their specified limits on May 25, 2016. The violation was entered into the licensee's corrective action program as Issue Report 2677621.

The performance deficiency was determined to be more than minor and a finding because, if left uncorrected, it had the potential to lead to a more significant safety concern. Specifically, the failure to maintain drywell-to-suppression chamber differential pressure and primary containment oxygen concentration within their specified limits had the potential to lead to stresses that could challenge the structural integrity of the containment and/or lead to a combustible mixture inside the Unit 2 drywell following a loss of coolant accident, either of which could have challenged the assumptions of the safety analyses. The finding was screened against the Barrier Integrity Cornerstone and was determined to be of very low safety significance by the Region III senior reactor analyst using the insights from IMC 0609, Appendix H, "Containment Integrity Significance Determination Process," Table 6.2, "Phase 2 Risk Significance—Type B Findings at Full Power," because the duration of the condition was shorter than 3 days. The inspectors determined this finding affected the cross-cutting area of human performance in the aspect of Conservative Bias, which states, "individuals use decision making practices that emphasize prudent choices over those that are simply allowable. A proposed action is determined to be safe in order to proceed, rather than unsafe in order to stop." Specifically, the licensee failed to exercise prudent judgment when they raised power above 15 percent prior to meeting TS Limiting Condition for Operation 3.6.2.5 and 3.6.3.1 while still in the MODE of Applicability (MODE 1) [H.14].

Inspection Report# : [2016002](#) (*pdf*)

Significance: G Mar 31, 2016

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

FAILURE TO CONTROL DEVIATION FROM EQ STANDARD RESULTS IN LIMIT SWITCH SUBMERGENCE

A finding of very low safety significance and an associated non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," was self-revealed on February 2, 2016, when the operators received an alarm due to a steam leak in the Unit 1 main steam isolation valve room which resulted in the limit switch compartment for Unit 1 reactor core isolation cooling (RCIC) system motor-operated valve (MOV), MO 1-1301-17 (outboard primary containment steam isolation valve), becoming submerged with water. Specifically, the licensee failed to ensure that deviations from design standard, "Environmental Qualification Standard 74Q (EQ-74Q)," were controlled during original installation of MO 1-1301-17 such that the valve would not be subjected to a spray or submergence environment. The licensee documented the issue in their corrective action program under Issue Report 2625523. Corrective actions included a temporary repair of the steam leak, removal of water from the limit switch compartment, and compensatory measures that included daily monitoring for steam leaks in the Unit 1 main steam isolation valve room. In addition, the licensee performed an extent of condition review of other valves in the main steam isolation valve room. Planned corrective actions included installing t-drains or weep holes in MOVs that the licensee deemed susceptible to spray or submergence.

The performance deficiency was determined to be more than minor and a finding because it was associated with the Barrier Integrity Cornerstone attribute of Design Control and affected the cornerstone objective to provide reasonable assurance that physical design barriers (containment) protect the public from radionuclide releases caused by accidents or events. Specifically, the failure to control any environmental qualification design deviations had the potential to impact the ability of MO 1-1301-17 to close on an isolation signal and prevent radioactive releases to the environment. The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," Appendix A, "The Significance Determination Process for Findings at Power," issued June 19, 2012. The inspectors determined the finding to be of very low safety significance (Green) in accordance with Exhibit 3, "Barrier Integrity Screening Questions," because the inspectors answered "No" to all questions in Section B of Exhibit 3. This finding did not have a cross-cutting aspect because the performance deficiency was not indicative of current performance.

Inspection Report# : [2016001](#) (pdf)

Significance:  Mar 31, 2016

Identified By: NRC

Item Type: NCV Non-Cited Violation

FAILURE TO IDENTIFY STRUCTURES, SYSTEMS, AND COMPONENTS AS SAFETY-RELATED

A finding of very low safety significance and an associated non-cited violation of 10 CFR Part 50, Appendix B, Criterion II, “Quality Assurance,” was identified by the inspectors for the licensee’s failure to identify the structures, systems, and components to be covered by the quality assurance program, in that they did not properly classify a component of the control room emergency ventilation system as safety related. The licensee documented the issue in their corrective action program under Issue Report 2596725. Immediate corrective actions included replacing Differential Pressure Switch (DPS) 0–5795–50 and revising the control room ventilation procedure to allow operators to disable the interlock between the ‘A’ and ‘B’ trains of the control room emergency ventilation system. The procedure change eliminated the need for the DPS to be classified as safety-related (and therefore corrected the violation) because in the event of a failure of the DPS, the system would still be able to perform its safety function. The performance deficiency was determined to be more than minor and a finding because it was associated with the Barrier Integrity Cornerstone attribute of Design Control and affected the cornerstone objective of providing reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. Specifically, the ‘B’ train of the control room emergency ventilation system is a habitability system that is provided to ensure control room operators are able to remain in the control room and operate the plant safely and to maintain the plant in a safe condition under accident conditions. The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, “Significance Determination Process,” Appendix A, “The Significance Determination Process for Findings at Power,” issued June 19, 2012. The inspectors determined the finding to be of very low safety significance (Green) in accordance with Exhibit 3, “Barrier Integrity Screening Questions,” because the finding only represented a degradation of the radiological barrier function provided for the control room and did not represent a degradation of the barrier function of the control room against smoke or toxic atmosphere. This finding did not have a cross-cutting aspect because the performance deficiency was not indicative of current performance.

Inspection Report# : [2016001](#) (pdf)

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission

has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the [cover letters](#) to security inspection reports may be viewed.

Miscellaneous

Last modified : February 01, 2017



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Quad Cities 2 – Quarterly Plant Inspection Findings

2Q/2017 – Plant Inspection Findings

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Initiating Events

Mitigating Systems

Significance: G Mar 31, 2017

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

FAILURE TO ENSURE HARDWARE SECURE FOR BREAKER MOC SWITCH LINKAGE

A finding of very low safety significance and an associated NCV of 10 CFR 50, Appendix B, Criterion V was self revealed on January 27, 2017, when the Unit 1C residual heat removal service water (RHRSW) pump was started for a routine surveillance evolution and all expected annunciators and equipment failed to operate properly, which led to the licensee declaring the Unit 1C RHRSW pump inoperable. Specifically, the licensee failed to establish a procedure for the mechanism operated contact (MOC) switch linkage arm that was appropriate to the circumstances to ensure the component would continue to perform its function. Immediate corrective actions included reconnecting the MOC switch linkage arm assembly and testing it by starting the 1C RHRSW pump prior to declaring the pump operable. In addition, the licensee planned procedure revisions to QCEPM 0200-11 that would specify a torque value to ensure the MOC switch linkage arm was adequately secured and could perform its function. This issue was entered into the licensee's corrective action program as Issue Report 3967424.

The finding was determined to be more than minor because the finding was associated with the Mitigating Systems cornerstone attribute of equipment performance and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to ensure the MOC switch linkage arm was adequately fastened led to the failure of the component and its associated Unit 1C RHRSW pump during breaker operation on January 27, 2017. The finding was determined to be of very low safety significance (Green), because the inspectors answered "No" to all of the questions in IMC 0609, Appendix A, "The Significance Determination Process for Findings at Power," Exhibit 2, "Mitigating Systems Screening Questions," Section A, "Mitigating SSCs and Functionality." The inspectors determined this finding affected the cross-cutting area of human performance, in the aspect of avoid complacency, which states, "Individuals recognize and plan for the possibility of mistakes, latent issues, and inherent risk, even while expecting successful outcomes."

Specifically, the licensee failed to recognize a potential risk and inherent latent issue for a condition identified in 2015 at Quad Cities, when a MOC switch failed to perform its function due to a missing nut in a different breaker's linkage assembly. The licensee identified and corrected the condition but failed to evaluate the cause of the missing nut because it did not impact the operability of the component. In the 2015 instance, the MOC switch issue only affected indications for the component and had no adverse impact on the ability of the component to perform its function [H.12].

Inspection Report# : 2017001 (*pdf*)

Significance:  Dec 31, 2016

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

FAILURE TO IMPLEMENT FOREIGN MATERIAL EXCLUSION CONTROLS

A finding of very low safety significance and an associated non-cited violation of Title 10 of the Code of Federal Regulations (CFR) Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was self revealed for the licensee's failure to implement foreign material exclusion (FME) controls during the implementation of modification Work Order 1649339, "Modify the Target Rock to Increase the Volume per Engineering Change 394119," and was contrary to MA-AA-716-008, "Foreign Material Exclusion Program," Revision 9. The failure to implement FME controls during maintenance led to the failure of the Unit 2 Target Rock safety relief valve solenoid valve during surveillance testing on April 5, 2016. The licensee's corrective actions included replacing the Target Rock safety relief valve solenoid valve. In addition, the licensee made procedure revisions to the standard template for welding activities to ensure that a FME plan is developed when performing butt welds or weld repairs. The licensee entered this issue into their corrective action program as Issue Report 2703233.

The finding was determined to be more than minor because the finding was associated with the Mitigating Systems Cornerstone attribute of Equipment Performance. The inspectors determined the finding represented a potential loss of the valve function and, therefore, a detailed risk evaluation was required. A regional senior risk analyst performed a detailed risk evaluation and determined the finding was of very low safety significance. This finding had a cross-cutting aspect in the area of Human Performance, Work Management, because the licensee did not implement a process of planning, controlling, and executing work activities such that nuclear safety was an overriding priority. Specifically, during the implementation of Work Order 1649339 and subsequent revisions, the licensee failed to control and execute the work while following FME processes and procedures [H.5].

Inspection Report# : 2016004 (*pdf*)

Significance:  Aug 26, 2016

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

Failure to Provide Appropriate Operating Instructions for Aligning a Battery Charger to the Station Black-Out Diesel Generator (Section 1R17.1.b.)

Green. A finding of very-low safety significance (Green) and an associated NCV of Technical Specification 5.4.1.a, "Procedures," was self-revealed on December 2, 2014 when procedural guidance failed to be implemented as written. Specifically, Procedure QCOA 6100-17, Revision 12, "Loss of SBO [Station Black-Out Normal 13.8kV Transformer T42R-6 Feed to 4kV Bus 61 and 71]," included inappropriate guidance to cross-tie Bus 61 and Bus 71. The licensee's procedural guidance as written were technically infeasible and could not be implemented due to breaker interlocks caused by the digital control system interface that precluded the 4kV buses 61 and 71 from being cross-tied. The licensee entered this finding into their Corrective Action Program as Issue Report 2487426 and Issue Report 2706435 and removed the guidance to cross-tie the 4KV buses from the procedure.

The performance deficiency was determined to be more-than-minor because it was associated with the Mitigating System cornerstone attribute of design control and adversely affected the cornerstone objective of ensuring the availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences

(i.e., core damage). The finding screened as of very-low safety significance (Green) because it did not result in the loss of operability or functionality of any structure, system, or component. Specifically, using other procedural guidance, operators were able to start both station black-out diesels within the hour. The inspectors did not assign a cross-cutting aspect associated with this finding because it was not confirmed to reflect current performance. (Section 1R17.1.b.)

Inspection Report# : 2016008 (*pdf*)

Significance:  Aug 26, 2016

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to Evaluate the Target Rock Relief Valve Accumulator per ASME Code (Section 1R17.2.b.)

Green. The inspectors identified a finding of very-low safety significance (Green) and an associated NCV of Title 10 of the Code of Federal Regulations, Part 50, Appendix B, Criterion III, "Design Control," for licensee's failure to assure that quality standards for the Target Rock Relief valve accumulator were specified and included in the design documents and that deviations were identified and controlled. Specifically, Engineering Change (EC 394119) fabricated the replacement Unit 2 Target Rock valve accumulator to American National Standard B31.1 Power Piping code requirements instead of the applicable American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Section VIII requirements, without adequate justifications. The licensee captured this issue in their Corrective Action Program as IR 02708406 to evaluate the appropriate corrective actions and revise documentation as required. The performance deficiency was determined to be more-than-minor because it was associated with the Mitigating System cornerstone attribute of design control and adversely affected the cornerstone objective to ensure the availability, and reliability of systems that respond to initiating events to prevent undesirable consequences. The finding screened as of very-low safety significance (Green) because it did not result in the loss of operability or functionality of any affected structure, system, or components. This finding has a cross-cutting aspect in the area of Human Performance in the area of Design Margin because the licensee failed to maintain equipment within its design margins. (Section 1R17.2.b.) [H.6]

Inspection Report# : 2016008 (*pdf*)

Barrier Integrity

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Security

The security cornerstone is an important component of the ROP, which includes various security inspection activities the NRC uses to verify licensee compliance with Commission regulations and thus ensure public health and safety. The Commission determined in the staff requirements memorandum (SRM) for SECY-04-0191, "Withholding Sensitive Unclassified Information Concerning Nuclear Power Reactors from Public Disclosure," dated November 9, 2004, that specific information related to findings and performance indicators associated with the security cornerstone will not be publicly available to ensure that security-related information is not provided to a possible adversary. Security inspection report cover letters will be available on the NRC Web site; however, security-related information on the details of inspection finding(s) will not be displayed.

Miscellaneous

Current data as of : August 03, 2017

Page Last Reviewed/Updated Wednesday, August 10, 2016



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Quad Cities 2 – Quarterly Plant Inspection Findings

2Q/2017 – Plant Inspection Findings

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Initiating Events

Significance: G Jun 30, 2017

Identified By: NRC

Item Type: FIN Finding

FAILURE TO JUSTIFY MSIV MAINTENANCE DEFERRAL

The inspectors identified a finding of very low safety significance for the licensee's failure to provide an adequate technical justification for deferral of a preventative maintenance task to replace or refurbish the Unit 1 2D main steam isolation valve (MSIV) in accordance with WC-AA-120, "Preventive Maintenance (PM) Database Revision Requirements." Specifically, overhaul or replacement of the 2D MSIV was deferred despite the historical performance of the valve, the as-found test results during Q1R24, and the amount of time that was available to plan for the overhaul to meet the maintenance strategy requirement of every seventh outage. Corrective actions for this issue included the licensee scheduling replacement of the Unit 1 2D MSIV during the next scheduled refueling outage (RFO). This issue was captured in the licensee's corrective action program (CAP) as Issue Report (IR) 4017529.

The inspectors determined the performance deficiency was more than minor because it was associated with the Initiating Events Cornerstone attribute of Equipment Performance and impacted the cornerstone objective because the MSIV preventive maintenance overhaul/replacement frequency was not effectively managed to ensure the reliability of the MSIV closure time performance to meet Technical Specification (TS) requirements on a consistent basis. The inspectors determined the finding could be evaluated using IMC 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," Exhibit 1, for the Initiating Events screening questions and determined the finding was of very low safety significance. The inspectors determined the finding had a cross-cutting aspect in the area of Human Performance, Conservative Bias, which states, "Individuals use the decision making practices that emphasize prudent choices over those that are simply allowable" [H.14].

Inspection Report# : 2017002 (*pdf*)

Mitigating Systems

Significance: G Jun 30, 2017

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

FAILURE TO ESTABLISH A PROCEDURE APPROPRIATE FOR CALIBRATION OF RCIC GOVERNOR

A finding of very low safety significance and an associated non-cited violation of Technical Specification (TS) Section 5.4.1 was self-revealed for the licensee's failure to establish a procedure as governed by Regulatory Guide 1.33, Revision 2, Appendix A that was appropriate for performing adjustments to the governing control system for the Unit 1 reactor core isolation cooling (RCIC) system. Specifically, on April 14, 2017, the licensee failed to ensure procedure QCIPM 1300-04, "RCIC Woodward Governor EG-M Control Box and Ramp Generator/Signal Converter in Field Calibration," was appropriate for the accurate calibration of the RCIC system turbine governor actuator such that the system would be capable supplying its TS required flowrate of 400 gallons per minute (gpm). Immediate corrective actions included the licensee declaring the Unit 1 RCIC system inoperable and performing required calibrations at normal operating temperatures and pressures. Additional corrective actions included the licensee making procedural revisions to QCIPM 1300-04 to include specific guidance on performing turbine governor calibration adjustments and providing training to maintenance control system technicians on performing the procedure tasks and other related tasks that led to the inadequate adjustment. The issue was entered into the licensee's CAP as IR 3998478.

The performance deficiency was determined to be more than minor, and a finding, because it impacted the Mitigating Systems Cornerstone attribute of Equipment Performance and affected the cornerstone objective because the failure to properly calibrate the RCIC governor led to the system becoming inoperable. The inspectors determined the finding could be evaluated using IMC 0609, Appendix A, "Significance Determination Process (SDP) for Findings At-Power," Exhibit 2, "Mitigating Systems Screening Questions," and determined that the finding required a detailed risk evaluation by a senior reactor analyst (SRA) because it resulted in the loss of the RCIC system function. An SRA performed a detailed risk evaluation of the performance deficiency using the Quad Cities SPAR Model and determined the total delta Core Damage Frequency (CDF) was $7E-9$ (Green). The inspectors determined this finding affected the cross-cutting area of Human Performance, in the aspect of Training, because the licensee failed to ensure the technicians performing the calibration understood null voltage adjustments to the RCIC turbine governor could only be performed when the system was at a specified rated speed and pressure [H.9].

Inspection Report# : 2017002 (*pdf*)

Significance: G Jun 30, 2017

Identified By: NRC

Item Type: NCV Non-Cited Violation

FAILURE TO ENSURE TWO LOW PRESSURE ECCS SYSTEMS OPERABLE IN MODE 4

The inspectors identified a finding of very low safety significance and an associated non-cited violation of Technical Specification (TS) 3.0.1 on April 12, 2017, for the licensee's failure to meet TS Limiting Condition for Operation (LCO) 3.5.2, "Emergency Core Cooling Systems (ECCS)-Shutdown." Specifically, on April 12, 2017, the licensee failed to ensure two low pressure ECCS subsystems were operable in Mode 4 in accordance with TS LCO 3.5.2 and failed to verify the LCO action conditions were met. Immediate corrective actions included restoring the 1A core spray pump to an operable status within 4 hours in order to comply with TS 3.5.2. This issue was entered into the licensee's CAP as IR 3997127.

The performance deficiency was determined to be more than minor, and a finding, because it impacted the Mitigating Systems Cornerstone attribute of Equipment Performance and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences

(i.e., core damage). The finding was screened using IMC 0609, Appendix G, Attachment 1, "Shutdown Operations Significance Determination Process Phase 1 Initial Screening and Characterization of Findings," against the questions in Exhibit 3, "Mitigating Systems Screening Questions." The inspectors answered "No" to all of the questions and determined the finding could be screened as very low safety significance. The inspectors determined this finding affected the cross-cutting aspect of Human Performance, in the aspect of Work Management, because the licensee failed to ensure proper controls were in place while performing multiple activities which rendered multiple low pressure ECCS systems inoperable. In addition, the licensee failed to identify and manage the risk associated with performing multiple evolutions concurrently so that TS LCO 3.5.2 would be met and the required actions taken as necessary [H.5].

Inspection Report# : 2017002 (*pdf*)

Significance:  Jun 30, 2017

Identified By: NRC

Item Type: NCV Non-Cited Violation

FAILURE TO HAVE ADEQUATE GUIDANCE IN THE FIRE/EXPLOSION RESPONSE PROCEDURE

The inspectors identified a finding of very low safety significance and an associated non-cited violation of TS Section 5.4.1.c, "Procedures," for the licensee's failure to establish and maintain the fire response procedure. Specifically, Procedure QCOA 0010-12 "Fire/Explosion," Revision 47, failed to provide adequate instructions to ensure that the reactor core isolation cooling (RCIC) system would not be potentially affected by a single spurious operation of any of its associated valves in the event of a fire in Fire Area TB-II. The licensee entered the issue into their CAP as IR 2595878 and planned to revise the affected procedures.

The performance deficiency was determined to be more-than-minor because it impacted the Mitigating Systems Cornerstone attribute of Protection Against External Events (Fire), and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, the lack of adequate procedural guidance in the fire response procedure did not ensure a single spurious operation would not potentially impair the operation of RCIC system in the event of a fire in TB-II. The finding was screened using IMC 0609, Appendix F, Attachment 1, "Fire Protection Significance Determination Process Worksheet." The inspectors determined the finding required a detailed risk evaluation by a Senior Reactor Analyst. The finding screened as very low safety significance because the calculated total delta Core Damage Frequency (CDF) was $9.5E-7$ /yr per the detailed risk evaluation. The inspectors did not identify a cross cutting aspect associated with this finding because it was not confirmed to reflect current performance due to the age of the performance deficiency.

Inspection Report# : 2017002 (*pdf*)

Significance:  Mar 31, 2017

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

FAILURE TO ENSURE HARDWARE SECURE FOR BREAKER MOC SWITCH LINKAGE

A finding of very low safety significance and an associated NCV of 10 CFR 50, Appendix B, Criterion V was self revealed on January 27, 2017, when the Unit 1C residual heat removal service water (RHRSW) pump was started for a routine surveillance evolution and all expected annunciators and equipment failed to operate properly, which led to the licensee declaring the Unit 1C RHRSW pump inoperable. Specifically, the licensee failed to establish a procedure for the mechanism operated contact (MOC) switch linkage arm that was appropriate to the circumstances to ensure the component would continue to perform its function. Immediate corrective actions included reconnecting the MOC switch linkage arm assembly and testing it by starting the 1C RHRSW pump prior to declaring the pump operable. In addition, the licensee planned procedure revisions to QCEPM 0200-11 that would specify a torque value to ensure the

MOC switch linkage arm was adequately secured and could perform its function. This issue was entered into the licensee's corrective action program as Issue Report 3967424.

The finding was determined to be more than minor because the finding was associated with the Mitigating Systems cornerstone attribute of equipment performance and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to ensure the MOC switch linkage arm was adequately fastened led to the failure of the component and its associated Unit 1C RHRSW pump during breaker operation on January 27, 2017. The finding was determined to be of very low safety significance (Green), because the inspectors answered "No" to all of the questions in IMC 0609, Appendix A, "The Significance Determination Process for Findings at Power," Exhibit 2, "Mitigating Systems Screening Questions," Section A, "Mitigating SSCs and Functionality." The inspectors determined this finding affected the cross-cutting area of human performance, in the aspect of avoid complacency, which states, "Individuals recognize and plan for the possibility of mistakes, latent issues, and inherent risk, even while expecting successful outcomes." Specifically, the licensee failed to recognize a potential risk and inherent latent issue for a condition identified in 2015 at Quad Cities, when an MOC switch failed to perform its function due to a missing nut in a different breaker's linkage assembly. The licensee identified and corrected the condition but failed to evaluate the cause of the missing nut because it did not impact the operability of the component. In the 2015 instance, the MOC switch issue only affected indications for the component and had no adverse impact on the ability of the component to perform its function [H.12].

Inspection Report# : 2017001 (*pdf*)

Significance:  Dec 31, 2016

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

FAILURE TO IMPLEMENT FOREIGN MATERIAL EXCLUSION CONTROLS

A finding of very low safety significance and an associated non-cited violation of Title 10 of the Code of Federal Regulations (CFR) Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was self revealed for the licensee's failure to implement foreign material exclusion (FME) controls during the implementation of modification Work Order 1649339, "Modify the Target Rock to Increase the Volume per Engineering Change 394119," and was contrary to MA-AA-716-008, "Foreign Material Exclusion Program," Revision 9. The failure to implement FME controls during maintenance led to the failure of the Unit 2 Target Rock safety relief valve solenoid valve during surveillance testing on April 5, 2016. The licensee's corrective actions included replacing the Target Rock safety relief valve solenoid valve. In addition, the licensee made procedure revisions to the standard template for welding activities to ensure that a FME plan is developed when performing butt welds or weld repairs. The licensee entered this issue into their corrective action program as Issue Report 2703233.

The finding was determined to be more than minor because the finding was associated with the Mitigating Systems Cornerstone attribute of Equipment Performance. The inspectors determined the finding represented a potential loss of the valve function and, therefore, a detailed risk evaluation was required. A regional senior risk analyst performed a detailed risk evaluation and determined the finding was of very low safety significance. This finding had a cross-cutting aspect in the area of Human Performance, Work Management, because the licensee did not implement a process of planning, controlling, and executing work activities such that nuclear safety was an overriding priority. Specifically, during the implementation of Work Order 1649339 and subsequent revisions, the licensee failed to control and execute the work while following FME processes and procedures [H.5].

Inspection Report# : 2016004 (*pdf*)

Significance:  Aug 26, 2016

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

Failure to Provide Appropriate Operating Instructions for Aligning a Battery Charger to the Station Black-Out Diesel Generator (Section 1R17.1.b.)

Green. A finding of very-low safety significance (Green) and an associated NCV of Technical Specification 5.4.1.a, "Procedures," was self-revealed on December 2, 2014 when procedural guidance failed to be implemented as written. Specifically, Procedure QCOA 6100-17, Revision 12, "Loss of SBO [Station Black-Out Normal 13.8kV Transformer T42R-6 Feed to 4kV Bus 61 and 71]," included inappropriate guidance to cross-tie Bus 61 and Bus 71. The licensee's procedural guidance as written were technically infeasible and could not be implemented due to breaker interlocks caused by the digital control system interface that precluded the 4kV buses 61 and 71 from being cross-tied. The licensee entered this finding into their Corrective Action Program as Issue Report 2487426 and Issue Report 2706435 and removed the guidance to cross-tie the 4KV buses from the procedure.

The performance deficiency was determined to be more-than-minor because it was associated with the Mitigating System cornerstone attribute of design control and adversely affected the cornerstone objective of ensuring the availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). The finding screened as of very-low safety significance (Green) because it did not result in the loss of operability or functionality of any structure, system, or component. Specifically, using other procedural guidance, operators were able to start both station black-out diesels within the hour. The inspectors did not assign a cross-cutting aspect associated with this finding because it was not confirmed to reflect current performance. (Section 1R17.1.b.)

Inspection Report# : 2016008 (*pdf*)

Significance:  Aug 26, 2016

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to Evaluate the Target Rock Relief Valve Accumulator per ASME Code (Section 1R17.2.b.)

Green. The inspectors identified a finding of very-low safety significance (Green) and an associated NCV of Title 10 of the Code of Federal Regulations, Part 50, Appendix B, Criterion III, "Design Control," for licensee's failure to assure that quality standards for the Target Rock Relief valve accumulator were specified and included in the design documents and that deviations were identified and controlled. Specifically, Engineering Change (EC 394119) fabricated the replacement Unit 2 Target Rock valve accumulator to American National Standard B31.1 Power Piping code requirements instead of the applicable American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Section VIII requirements, without adequate justifications. The licensee captured this issue in their Corrective Action Program as IR 02708406 to evaluate the appropriate corrective actions and revise documentation as required. The performance deficiency was determined to be more-than-minor because it was associated with the Mitigating System cornerstone attribute of design control and adversely affected the cornerstone objective to ensure the availability, and reliability of systems that respond to initiating events to prevent undesirable consequences. The finding screened as of very-low safety significance (Green) because it did not result in the loss of operability or functionality of any affected structure, system, or components. This finding has a cross-cutting aspect in the area of Human Performance in the area of Design Margin because the licensee failed to maintain equipment within its design margins. (Section 1R17.2.b.) [H.6]

Inspection Report# : 2016008 (*pdf*)

Barrier Integrity
Emergency Preparedness
Occupational Radiation Safety
Public Radiation Safety
Security

The security cornerstone is an important component of the ROP, which includes various security inspection activities the NRC uses to verify licensee compliance with Commission regulations and thus ensure public health and safety. The Commission determined in the staff requirements memorandum (SRM) for SECY-04-0191, "Withholding Sensitive Unclassified Information Concerning Nuclear Power Reactors from Public Disclosure," dated November 9, 2004, that specific information related to findings and performance indicators associated with the security cornerstone will not be publicly available to ensure that security-related information is not provided to a possible adversary. Security inspection report cover letters will be available on the NRC Web site; however, security-related information on the details of inspection finding(s) will not be displayed.

Miscellaneous

Current data as of : September 05, 2017

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Quad Cities 2 – Quarterly Plant Inspection Findings

3Q/2017 – Plant Inspection Findings

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Initiating Events

Significance: G Jun 30, 2017

Identified By: NRC

Item Type: FIN Finding

FAILURE TO JUSTIFY MSIV MAINTENANCE DEFERRAL

The inspectors identified a finding of very low safety significance for the licensee's failure to provide an adequate technical justification for deferral of a preventative maintenance task to replace or refurbish the Unit 1 2D main steam isolation valve (MSIV) in accordance with WC-AA-120, "Preventive Maintenance (PM) Database Revision Requirements." Specifically, overhaul or replacement of the 2D MSIV was deferred despite the historical performance of the valve, the as-found test results during Q1R24, and the amount of time that was available to plan for the overhaul to meet the maintenance strategy requirement of every seventh outage. Corrective actions for this issue included the licensee scheduling replacement of the Unit 1 2D MSIV during the next scheduled refueling outage (RFO). This issue was captured in the licensee's corrective action program (CAP) as Issue Report (IR) 4017529.

The inspectors determined the performance deficiency was more than minor because it was associated with the Initiating Events Cornerstone attribute of Equipment Performance and impacted the cornerstone objective because the MSIV preventive maintenance overhaul/replacement frequency was not effectively managed to ensure the reliability of the MSIV closure time performance to meet Technical Specification (TS) requirements on a consistent basis. The inspectors determined the finding could be evaluated using IMC 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," Exhibit 1, for the Initiating Events screening questions and determined the finding was of very low safety significance. The inspectors determined the finding had a cross-cutting aspect in the area of Human Performance, Conservative Bias, which states, "Individuals use the decision making practices that emphasize prudent choices over those that are simply allowable" [H.14].

Inspection Report# : 2017002 (*pdf*)

Mitigating Systems

Significance: G Jun 30, 2017

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

FAILURE TO ESTABLISH A PROCEDURE APPROPRIATE FOR CALIBRATION OF RCIC GOVERNOR

A finding of very low safety significance and an associated non-cited violation of Technical Specification (TS) Section 5.4.1 was self-revealed for the licensee's failure to establish a procedure as governed by Regulatory Guide 1.33, Revision 2, Appendix A that was appropriate for performing adjustments to the governing control system for the Unit 1 reactor core isolation cooling (RCIC) system. Specifically, on April 14, 2017, the licensee failed to ensure procedure QCIPM 1300-04, "RCIC Woodward Governor EG-M Control Box and Ramp Generator/Signal Converter in Field Calibration," was appropriate for the accurate calibration of the RCIC system turbine governor actuator such that the system would be capable supplying its TS required flowrate of 400 gallons per minute (gpm). Immediate corrective actions included the licensee declaring the Unit 1 RCIC system inoperable and performing required calibrations at normal operating temperatures and pressures. Additional corrective actions included the licensee making procedural revisions to QCIPM 1300-04 to include specific guidance on performing turbine governor calibration adjustments and providing training to maintenance control system technicians on performing the procedure tasks and other related tasks that led to the inadequate adjustment. The issue was entered into the licensee's CAP as IR 3998478.

The performance deficiency was determined to be more than minor, and a finding, because it impacted the Mitigating Systems Cornerstone attribute of Equipment Performance and affected the cornerstone objective because the failure to properly calibrate the RCIC governor led to the system becoming inoperable. The inspectors determined the finding could be evaluated using IMC 0609, Appendix A, "Significance Determination Process (SDP) for Findings At-Power," Exhibit 2, "Mitigating Systems Screening Questions," and determined that the finding required a detailed risk evaluation by a senior reactor analyst (SRA) because it resulted in the loss of the RCIC system function. An SRA performed a detailed risk evaluation of the performance deficiency using the Quad Cities SPAR Model and determined the total delta Core Damage Frequency (CDF) was $7E-9$ (Green). The inspectors determined this finding affected the cross-cutting area of Human Performance, in the aspect of Training, because the licensee failed to ensure the technicians performing the calibration understood null voltage adjustments to the RCIC turbine governor could only be performed when the system was at a specified rated speed and pressure [H.9].

Inspection Report# : 2017002 (*pdf*)

Significance: G Jun 30, 2017

Identified By: NRC

Item Type: NCV Non-Cited Violation

FAILURE TO ENSURE TWO LOW PRESSURE ECCS SYSTEMS OPERABLE IN MODE 4

The inspectors identified a finding of very low safety significance and an associated non-cited violation of Technical Specification (TS) 3.0.1 on April 12, 2017, for the licensee's failure to meet TS Limiting Condition for Operation (LCO) 3.5.2, "Emergency Core Cooling Systems (ECCS)-Shutdown." Specifically, on April 12, 2017, the licensee failed to ensure two low pressure ECCS subsystems were operable in Mode 4 in accordance with TS LCO 3.5.2 and failed to verify the LCO action conditions were met. Immediate corrective actions included restoring the 1A core spray pump to an operable status within 4 hours in order to comply with TS 3.5.2. This issue was entered into the licensee's CAP as IR 3997127.

The performance deficiency was determined to be more than minor, and a finding, because it impacted the Mitigating Systems Cornerstone attribute of Equipment Performance and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences

(i.e., core damage). The finding was screened using IMC 0609, Appendix G, Attachment 1, "Shutdown Operations Significance Determination Process Phase 1 Initial Screening and Characterization of Findings," against the questions in Exhibit 3, "Mitigating Systems Screening Questions." The inspectors answered "No" to all of the questions and determined the finding could be screened as very low safety significance. The inspectors determined this finding affected the cross-cutting aspect of Human Performance, in the aspect of Work Management, because the licensee failed to ensure proper controls were in place while performing multiple activities which rendered multiple low pressure ECCS systems inoperable. In addition, the licensee failed to identify and manage the risk associated with performing multiple evolutions concurrently so that TS LCO 3.5.2 would be met and the required actions taken as necessary [H.5].

Inspection Report# : 2017002 (*pdf*)

Significance:  Jun 30, 2017

Identified By: NRC

Item Type: NCV Non-Cited Violation

FAILURE TO HAVE ADEQUATE GUIDANCE IN THE FIRE/EXPLOSION RESPONSE PROCEDURE

The inspectors identified a finding of very low safety significance and an associated non-cited violation of TS Section 5.4.1.c, "Procedures," for the licensee's failure to establish and maintain the fire response procedure. Specifically, Procedure QCOA 0010-12 "Fire/Explosion," Revision 47, failed to provide adequate instructions to ensure that the reactor core isolation cooling (RCIC) system would not be potentially affected by a single spurious operation of any of its associated valves in the event of a fire in Fire Area TB-II. The licensee entered the issue into their CAP as IR 2595878 and planned to revise the affected procedures.

The performance deficiency was determined to be more-than-minor because it impacted the Mitigating Systems Cornerstone attribute of Protection Against External Events (Fire), and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, the lack of adequate procedural guidance in the fire response procedure did not ensure a single spurious operation would not potentially impair the operation of RCIC system in the event of a fire in TB-II. The finding was screened using IMC 0609, Appendix F, Attachment 1, "Fire Protection Significance Determination Process Worksheet." The inspectors determined the finding required a detailed risk evaluation by a Senior Reactor Analyst. The finding screened as very low safety significance because the calculated total delta Core Damage Frequency (CDF) was $9.5E-7$ /yr per the detailed risk evaluation. The inspectors did not identify a cross cutting aspect associated with this finding because it was not confirmed to reflect current performance due to the age of the performance deficiency.

Inspection Report# : 2017002 (*pdf*)

Significance:  Mar 31, 2017

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

FAILURE TO ENSURE HARDWARE SECURE FOR BREAKER MOC SWITCH LINKAGE

A finding of very low safety significance and an associated NCV of 10 CFR 50, Appendix B, Criterion V was self revealed on January 27, 2017, when the Unit 1C residual heat removal service water (RHRSW) pump was started for a routine surveillance evolution and all expected annunciators and equipment failed to operate properly, which led to the licensee declaring the Unit 1C RHRSW pump inoperable. Specifically, the licensee failed to establish a procedure for the mechanism operated contact (MOC) switch linkage arm that was appropriate to the circumstances to ensure the component would continue to perform its function. Immediate corrective actions included reconnecting the MOC switch linkage arm assembly and testing it by starting the 1C RHRSW pump prior to declaring the pump operable. In addition, the licensee planned procedure revisions to QCEPM 0200-11 that would specify a torque value to ensure the

MOC switch linkage arm was adequately secured and could perform its function. This issue was entered into the licensee's corrective action program as Issue Report 3967424.

The finding was determined to be more than minor because the finding was associated with the Mitigating Systems cornerstone attribute of equipment performance and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to ensure the MOC switch linkage arm was adequately fastened led to the failure of the component and its associated Unit 1C RHRSW pump during breaker operation on January 27, 2017. The finding was determined to be of very low safety significance (Green), because the inspectors answered "No" to all of the questions in IMC 0609, Appendix A, "The Significance Determination Process for Findings at Power," Exhibit 2, "Mitigating Systems Screening Questions," Section A, "Mitigating SSCs and Functionality." The inspectors determined this finding affected the cross-cutting area of human performance, in the aspect of avoid complacency, which states, "Individuals recognize and plan for the possibility of mistakes, latent issues, and inherent risk, even while expecting successful outcomes." Specifically, the licensee failed to recognize a potential risk and inherent latent issue for a condition identified in 2015 at Quad Cities, when an MOC switch failed to perform its function due to a missing nut in a different breaker's linkage assembly. The licensee identified and corrected the condition but failed to evaluate the cause of the missing nut because it did not impact the operability of the component. In the 2015 instance, the MOC switch issue only affected indications for the component and had no adverse impact on the ability of the component to perform its function [H.12].

Inspection Report# : 2017001 (*pdf*)

Significance:  Dec 31, 2016

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

FAILURE TO IMPLEMENT FOREIGN MATERIAL EXCLUSION CONTROLS

A finding of very low safety significance and an associated non-cited violation of Title 10 of the Code of Federal Regulations (CFR) Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was self revealed for the licensee's failure to implement foreign material exclusion (FME) controls during the implementation of modification Work Order 1649339, "Modify the Target Rock to Increase the Volume per Engineering Change 394119," and was contrary to MA-AA-716-008, "Foreign Material Exclusion Program," Revision 9. The failure to implement FME controls during maintenance led to the failure of the Unit 2 Target Rock safety relief valve solenoid valve during surveillance testing on April 5, 2016. The licensee's corrective actions included replacing the Target Rock safety relief valve solenoid valve. In addition, the licensee made procedure revisions to the standard template for welding activities to ensure that a FME plan is developed when performing butt welds or weld repairs. The licensee entered this issue into their corrective action program as Issue Report 2703233.

The finding was determined to be more than minor because the finding was associated with the Mitigating Systems Cornerstone attribute of Equipment Performance. The inspectors determined the finding represented a potential loss of the valve function and, therefore, a detailed risk evaluation was required. A regional senior risk analyst performed a detailed risk evaluation and determined the finding was of very low safety significance. This finding had a cross-cutting aspect in the area of Human Performance, Work Management, because the licensee did not implement a process of planning, controlling, and executing work activities such that nuclear safety was an overriding priority. Specifically, during the implementation of Work Order 1649339 and subsequent revisions, the licensee failed to control and execute the work while following FME processes and procedures [H.5].

Inspection Report# : 2016004 (*pdf*)

Barrier Integrity

Emergency Preparedness

Occupational Radiation Safety
Public Radiation Safety
Security

The security cornerstone is an important component of the ROP, which includes various security inspection activities the NRC uses to verify licensee compliance with Commission regulations and thus ensure public health and safety. The Commission determined in the staff requirements memorandum (SRM) for SECY-04-0191, "Withholding Sensitive Unclassified Information Concerning Nuclear Power Reactors from Public Disclosure," dated November 9, 2004, that specific information related to findings and performance indicators associated with the security cornerstone will not be publicly available to ensure that security-related information is not provided to a possible adversary. Security inspection report cover letters will be available on the NRC Web site; however, security-related information on the details of inspection finding(s) will not be displayed.

Miscellaneous

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Quad Cities 2 – Quarterly Plant Inspection Findings

4Q/2017 – Plant Inspection Findings

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Initiating Events

Significance: G Jun 30, 2017

Identified By: NRC

Item Type: FIN Finding

FAILURE TO JUSTIFY MSIV MAINTENANCE DEFERRAL

The inspectors identified a finding of very low safety significance for the licensee's failure to provide an adequate technical justification for deferral of a preventative maintenance task to replace or refurbish the Unit 1 2D main steam isolation valve (MSIV) in accordance with WC-AA-120, "Preventive Maintenance (PM) Database Revision Requirements." Specifically, overhaul or replacement of the 2D MSIV was deferred despite the historical performance of the valve, the as-found test results during Q1R24, and the amount of time that was available to plan for the overhaul to meet the maintenance strategy requirement of every seventh outage. Corrective actions for this issue included the licensee scheduling replacement of the Unit 1 2D MSIV during the next scheduled refueling outage (RFO). This issue was captured in the licensee's corrective action program (CAP) as Issue Report (IR) 4017529.

The inspectors determined the performance deficiency was more than minor because it was associated with the Initiating Events Cornerstone attribute of Equipment Performance and impacted the cornerstone objective because the MSIV preventive maintenance overhaul/replacement frequency was not effectively managed to ensure the reliability of the MSIV closure time performance to meet Technical Specification (TS) requirements on a consistent basis. The inspectors determined the finding could be evaluated using IMC 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," Exhibit 1, for the Initiating Events screening questions and determined the finding was of very low safety significance. The inspectors determined the finding had a cross-cutting aspect in the area of Human Performance, Conservative Bias, which states, "Individuals use the decision making practices that emphasize prudent choices over those that are simply allowable" [H.14].

Inspection Report# : 2017002 (*pdf*)

Mitigating Systems

Significance: G Jun 30, 2017

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

FAILURE TO ESTABLISH A PROCEDURE APPROPRIATE FOR CALIBRATION OF RCIC GOVERNOR

A finding of very low safety significance and an associated non-cited violation of Technical Specification (TS) Section 5.4.1 was self-revealed for the licensee's failure to establish a procedure as governed by Regulatory Guide 1.33, Revision 2, Appendix A that was appropriate for performing adjustments to the governing control system for the Unit 1 reactor core isolation cooling (RCIC) system. Specifically, on April 14, 2017, the licensee failed to ensure procedure QCIPM 1300-04, "RCIC Woodward Governor EG-M Control Box and Ramp Generator/Signal Converter in Field Calibration," was appropriate for the accurate calibration of the RCIC system turbine governor actuator such that the system would be capable supplying its TS required flowrate of 400 gallons per minute (gpm). Immediate corrective actions included the licensee declaring the Unit 1 RCIC system inoperable and performing required calibrations at normal operating temperatures and pressures. Additional corrective actions included the licensee making procedural revisions to QCIPM 1300-04 to include specific guidance on performing turbine governor calibration adjustments and providing training to maintenance control system technicians on performing the procedure tasks and other related tasks that led to the inadequate adjustment. The issue was entered into the licensee's CAP as IR 3998478.

The performance deficiency was determined to be more than minor, and a finding, because it impacted the Mitigating Systems Cornerstone attribute of Equipment Performance and affected the cornerstone objective because the failure to properly calibrate the RCIC governor led to the system becoming inoperable. The inspectors determined the finding could be evaluated using IMC 0609, Appendix A, "Significance Determination Process (SDP) for Findings At-Power," Exhibit 2, "Mitigating Systems Screening Questions," and determined that the finding required a detailed risk evaluation by a senior reactor analyst (SRA) because it resulted in the loss of the RCIC system function. An SRA performed a detailed risk evaluation of the performance deficiency using the Quad Cities SPAR Model and determined the total delta Core Damage Frequency (CDF) was $7E-9$ (Green). The inspectors determined this finding affected the cross-cutting area of Human Performance, in the aspect of Training, because the licensee failed to ensure the technicians performing the calibration understood null voltage adjustments to the RCIC turbine governor could only be performed when the system was at a specified rated speed and pressure [H.9].

Inspection Report# : 2017002 (*pdf*)

Significance: G Jun 30, 2017

Identified By: NRC

Item Type: NCV Non-Cited Violation

FAILURE TO ENSURE TWO LOW PRESSURE ECCS SYSTEMS OPERABLE IN MODE 4

The inspectors identified a finding of very low safety significance and an associated non-cited violation of Technical Specification (TS) 3.0.1 on April 12, 2017, for the licensee's failure to meet TS Limiting Condition for Operation (LCO) 3.5.2, "Emergency Core Cooling Systems (ECCS)-Shutdown." Specifically, on April 12, 2017, the licensee failed to ensure two low pressure ECCS subsystems were operable in Mode 4 in accordance with TS LCO 3.5.2 and failed to verify the LCO action conditions were met. Immediate corrective actions included restoring the 1A core spray pump to an operable status within 4 hours in order to comply with TS 3.5.2. This issue was entered into the licensee's CAP as IR 3997127.

The performance deficiency was determined to be more than minor, and a finding, because it impacted the Mitigating Systems Cornerstone attribute of Equipment Performance and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences

(i.e., core damage). The finding was screened using IMC 0609, Appendix G, Attachment 1, "Shutdown Operations Significance Determination Process Phase 1 Initial Screening and Characterization of Findings," against the questions in Exhibit 3, "Mitigating Systems Screening Questions." The inspectors answered "No" to all of the questions and determined the finding could be screened as very low safety significance. The inspectors determined this finding affected the cross-cutting aspect of Human Performance, in the aspect of Work Management, because the licensee failed to ensure proper controls were in place while performing multiple activities which rendered multiple low pressure ECCS systems inoperable. In addition, the licensee failed to identify and manage the risk associated with performing multiple evolutions concurrently so that TS LCO 3.5.2 would be met and the required actions taken as necessary [H.5].

Inspection Report# : 2017002 (*pdf*)

Significance:  Jun 30, 2017

Identified By: NRC

Item Type: NCV Non-Cited Violation

FAILURE TO HAVE ADEQUATE GUIDANCE IN THE FIRE/EXPLOSION RESPONSE PROCEDURE

The inspectors identified a finding of very low safety significance and an associated non-cited violation of TS Section 5.4.1.c, "Procedures," for the licensee's failure to establish and maintain the fire response procedure. Specifically, Procedure QCOA 0010-12 "Fire/Explosion," Revision 47, failed to provide adequate instructions to ensure that the reactor core isolation cooling (RCIC) system would not be potentially affected by a single spurious operation of any of its associated valves in the event of a fire in Fire Area TB-II. The licensee entered the issue into their CAP as IR 2595878 and planned to revise the affected procedures.

The performance deficiency was determined to be more-than-minor because it impacted the Mitigating Systems Cornerstone attribute of Protection Against External Events (Fire), and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, the lack of adequate procedural guidance in the fire response procedure did not ensure a single spurious operation would not potentially impair the operation of RCIC system in the event of a fire in TB-II. The finding was screened using IMC 0609, Appendix F, Attachment 1, "Fire Protection Significance Determination Process Worksheet." The inspectors determined the finding required a detailed risk evaluation by a Senior Reactor Analyst. The finding screened as very low safety significance because the calculated total delta Core Damage Frequency (CDF) was $9.5E-7$ /yr per the detailed risk evaluation. The inspectors did not identify a cross cutting aspect associated with this finding because it was not confirmed to reflect current performance due to the age of the performance deficiency.

Inspection Report# : 2017002 (*pdf*)

Significance:  Mar 31, 2017

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

FAILURE TO ENSURE HARDWARE SECURE FOR BREAKER MOC SWITCH LINKAGE

A finding of very low safety significance and an associated NCV of 10 CFR 50, Appendix B, Criterion V was self revealed on January 27, 2017, when the Unit 1C residual heat removal service water (RHRSW) pump was started for a routine surveillance evolution and all expected annunciators and equipment failed to operate properly, which led to the licensee declaring the Unit 1C RHRSW pump inoperable. Specifically, the licensee failed to establish a procedure for the mechanism operated contact (MOC) switch linkage arm that was appropriate to the circumstances to ensure the component would continue to perform its function. Immediate corrective actions included reconnecting the MOC switch linkage arm assembly and testing it by starting the 1C RHRSW pump prior to declaring the pump operable. In addition, the licensee planned procedure revisions to QCEPM 0200-11 that would specify a torque value to ensure the

MOC switch linkage arm was adequately secured and could perform its function. This issue was entered into the licensee's corrective action program as Issue Report 3967424.

The finding was determined to be more than minor because the finding was associated with the Mitigating Systems cornerstone attribute of equipment performance and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to ensure the MOC switch linkage arm was adequately fastened led to the failure of the component and its associated Unit 1C RHRSW pump during breaker operation on January 27, 2017. The finding was determined to be of very low safety significance (Green), because the inspectors answered "No" to all of the questions in IMC 0609, Appendix A, "The Significance Determination Process for Findings at Power," Exhibit 2, "Mitigating Systems Screening Questions," Section A, "Mitigating SSCs and Functionality." The inspectors determined this finding affected the cross-cutting area of human performance, in the aspect of avoid complacency, which states, "Individuals recognize and plan for the possibility of mistakes, latent issues, and inherent risk, even while expecting successful outcomes." Specifically, the licensee failed to recognize a potential risk and inherent latent issue for a condition identified in 2015 at Quad Cities, when an MOC switch failed to perform its function due to a missing nut in a different breaker's linkage assembly. The licensee identified and corrected the condition but failed to evaluate the cause of the missing nut because it did not impact the operability of the component. In the 2015 instance, the MOC switch issue only affected indications for the component and had no adverse impact on the ability of the component to perform its function [H.12].

Inspection Report# : 2017001 (*pdf*)

Barrier Integrity

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Security

The security cornerstone is an important component of the ROP, which includes various security inspection activities the NRC uses to verify licensee compliance with Commission regulations and thus ensure public health and safety. The Commission determined in the staff requirements memorandum (SRM) for SECY-04-0191, "Withholding Sensitive Unclassified Information Concerning Nuclear Power Reactors from Public Disclosure," dated November 9, 2004, that specific information related to findings and performance indicators associated with the security cornerstone will not be publicly available to ensure that security-related information is not provided to a possible adversary. Security inspection report cover letters will be available on the NRC Web site; however, security-related information on the details of inspection finding(s) will not be displayed.

Miscellaneous

Current data as of : February 01, 2018

Page Last Reviewed/Updated Monday, November 06, 2017