Quad Cities 1
1Q/2008 Plant Inspection Findings

Initiating Events

Significance: G Sep 30, 2007
Identified By: NRC
Item Type: NCV NonCited Violation
FAILURE TO HAVE ADEQUATE PROCEDURES AND USE HUMAN PERFORMANCE TOOLS RESULTS IN REACTOR WATER CLEANUP ISOLATION
A self-revealing finding and a Non-Cited Violation of 10 CFR 50, Appendix B, Criterion V, was identified on August 22, 2007. The finding occurred due to the failure to have instructions and procedures appropriate to the circumstance for performing valve operation test and evaluation systems (VOTES) testing on a high pressure coolant injection valve. This contributed to the unexpected isolation of the Unit 1 reactor water cleanup system due to keying a hand held radio during the VOTES test. Corrective actions for this issue included restoring the reactor water cleanup system, performing training on radio use, briefing personnel on the event, and updating other VOTES testing work instructions to ensure that the presence of a radio-free zone was clearly specified.

This issue was more than minor because, if left uncorrected, the continued use of inadequate procedures would lead to additional initiating events and equipment isolations. This issue was of very low safety significance because it did not contribute to both the likelihood of a reactor trip and the likelihood that mitigating systems equipment would not be available. 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 activities were performed safely.
Inspection Report# : 2007004 *(pdf)*

Significance: G Jun 30, 2007
Identified By: NRC
Item Type: NCV NonCited Violation
UNQUALIFIED TARGET ROCK VALVE REPAIR
On May 7, 2007, the inspectors identified a finding, and a Non-Cited Violation of 10 CFR 50.55a(g)4, for the failure to complete Code qualified weld repairs for Main Steam Safety Relief Valve 1-0203-3A. Specifically, the weld procedures for this repair were not qualified by performing tensile and guided bend tests intended to demonstrate that the weld procedure produced welds with satisfactory strength and ductility for the intended service. Without these tests, the inspectors were concerned that these Non-Code conforming weld repairs affecting the pressure boundary could lead to cracking and failure of the valve body or bellows when the valve was placed in service. Corrective actions for this issue included performing an operability evaluation and entering this issue into the corrective action program.

This finding was more than minor because it could be reasonably viewed as a precursor to a significant event. In addition, the finding was associated with the equipment performance attribute of the initiating events cornerstone and affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions. Absent NRC intervention, the licensee would have relied on unqualified weld repairs on 1-0203-3A for an indefinite period of service, which may have placed the reactor coolant pressure boundary at increased risk for weld failure resulting in leakage, or an inoperable relief valve. The inspectors determined that this finding was of very low safety significance because it was identified prior to repressurizing the plant following the refueling outage.
Inspection Report# : 2007003 *(pdf)*

Mitigating Systems

Significance: G Mar 31, 2008
Identified By: NRC
Item Type: NCV NonCited Violation
RISK ASSESSMENT OF REACTOR CORE ISOLATION COOLING FLOW CONTROLLER FAILURE
A self-revealing finding of very low safety significance and Non Cited Violation of 10 CFR Part 50.65(a)(4) was identified on January 15, 2008, due to the licensee's failure to properly assess and manage the risk associated with the emergent failure of the Unit 1 reactor core isolation cooling flow controller. The risk assessment incorrectly credited manual local operation of the reactor core isolation cooling for maintaining system availability. The inaccurate risk assessment also resulted in the failure to implement the additional risk management actions required by the licensee's procedures. Corrective actions for this issue included implementation of performance management corrective actions for the procedure usage and training for Work Control and Operating personnel on the risk management procedure.
The inspectors determined that the inadequate risk assessment was more than minor because the elevated plant risk associated with the Unit 1 reactor core isolation cooling system being unavailable would have required the implementation of additional risk management actions (i.e., additional risk significant equipment would have been required to be protected and other maintenance performed on January 15, 2008, would have been rescheduled). The inspectors also reviewed Inspection Manual Chapter 0612, Appendix B, Section 3 and determined that this issue was more than minor because the licensee's risk assessment had known errors which changed the outcome of the assessment. Using input from the licensee's risk assessment engineer, the inspectors determined that the actual risk deficit for this event was less than 1E-6 and the finding was determined to be of very low safety significance. The inspectors determined that this issue was cross-cutting in the area of Human Performance, Work Practices, Procedural Adherence because the individual assessing risk did not follow the procedural guidance for crediting manual operation and for crediting a dedicated (H.4(b)).

Inspection Report# : 2008002 *(pdf)*

Significance: G 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: G 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: G 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
DOCUMENTATION ISSUES RESULT IN UNEXPECTED SAFETY-RELATED VALVE LEAKAGE
A self-revealing finding and Non-Cited Violation of Technical Specification 5.4.1 was identified due to the failure to properly preplan and perform maintenance on safety-related equipment in May 2007. This failure resulted in unexpected leakage on two safety-related valves. Corrective actions for this issue included repairing the valves, revising the maintenance procedures to ensure they complied with procedural requirements, and providing additional training to maintenance and maintenance planning personnel on the planning and performing of maintenance activities.

The inspectors determined that this issue was more than minor because, if left uncorrected, the failure to properly pre-plan and perform safety-related maintenance would lead to the continued degradation of equipment important to safety. This finding was of very low safety significance because the leakage did not result in the total loss of safety function for the main steam, high pressure coolant injection, or the containment isolation systems. The inspectors

determined 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 for performing safety-related maintenance.
Inspection Report# : 2007004 *(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: G 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: G Jun 30, 2007
Identified By: NRC
Item Type: NCV NonCited Violation
FAILURE TO ADEQUATELY IMPLEMENT DRYWELL CLOSEOUT PROCEDURE
The inspectors identified a finding of very low safety significance, and a Non-Cited Violation of 10 CFR 50, Appendix B, Criterion V, due to the failure to effectively implement QCOS 1600-32, "Drywell/Torus Closeout," in May 2007. Corrective actions for this issue included removing the NRC identified debris from the drywell, informing personnel of the ineffective drywell cleaning, and conducting an assessment to determine more effective methods for cleaning the drywell during future outages.

This finding was more than minor because, if left uncorrected, it would result in the continued accumulation of foreign material in the drywell. The accumulation of materials could result in blocking the emergency core cooling system suction strainers, drywell ventilation equipment, drain lines, or motor vents during normal operation or accident conditions. This finding was of very low safety significance since the debris did not result in an actual loss of safety function for any system and because the debris was removed when it was found. The inspectors concluded that this finding was cross-cutting in the area of problem identification and resolution, corrective action program (P.1(d)), in that the licensee failed to ensure that corrective actions were taken to address a previously identified adverse trend.
Inspection Report# : 2007003 *(pdf)*

Barrier Integrity

Significance: G 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)*

Significance: G Sep 30, 2007
Identified By: NRC
Item Type: NCV NonCited Violation
INADEQUATE CLEARANCE ORDER RESULTS IN FUEL POOL COOLING PUMP TRIP
A self-revealing finding and Non-Cited Violation of Technical Specification 5.4.1 was identified on July 30, 2007, due to the failure to properly implement OP-AA-109-101, "Clearance and Tagging." This failure resulted in tripping the 1A fuel pool cooling pump during clearance and tagging activities. Corrective actions for this issue included restoring the fuel pool cooling system to normal operation, establishing a clearance order review board to thoroughly review clearance orders, holding training sessions to ensure that the clearance order writers clearly understood that each clearance order step should contain only one equipment manipulation, and implementing additional actions to improve Operations Department performance.

This issue was more than minor because, if left uncorrected, the failure to properly implement the clearance and tagging program would become a more significant safety concern. The inspectors determined that this finding was of very low safety significance because the finding only represented a degradation of the radiological barrier provided by the spent fuel pool. The inspectors concluded that this finding was cross-cutting in the area of Human Performance, Resources, Documentation in that operations personnel did not ensure that Clearance Order 55101 was complete and accurate prior to use.
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