Quad Cities 2
3Q/2008 Plant Inspection Findings

Initiating Events

Significance: G 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: G 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 was 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: G 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)*

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)*

Barrier Integrity

Significance: G 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: G 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