Perry 1
4Q/2006 Plant Inspection Findings

Initiating Events

Significance: G Jun 30, 2006
Identified By: NRC
Item Type: FIN Finding
FAILURE TO PROMPTLY COMPLETE HOT WEATHER PREPARATIONS
The inspectors identified a finding of very low significance when licensee personnel failed to complete tasks designed to prepare equipment for operation during high temperature conditions by March 30, 2006. The finding also affected the cross-cutting area of Human Performance because the licensee organization failed to effectively coordinate, plan, and schedule completion of summer preparation activities prior to the onset of hot weather.

This finding was more than minor because it was associated with the protection against external factors attribute of the initiating events cornerstone and adversely affected the cornerstone objective of limiting the likelihood of events that upset plant stability. The finding was of very low safety significance because the finding did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available. No violation of NRC requirements occurred.
Inspection Report# : 2006003 *(pdf)*

Mitigating Systems

Significance: G Dec 31, 2006
Identified By: NRC
Item Type: NCV NonCited Violation
FAILURE TO DEMONSTRATE SIMULATOR FIDELITY FOR STEADY STATE OPERATIONS
The inspectors identified a finding of very low safety significance and an associated non-cited violation of 10 CFR 55.46, “Simulation Facilities,” when licensee personnel failed to adhere to simulator fidelity requirements prescribed by ANSI/ANS-3.5-1998 for annual steady-state operation testing. Specifically, the licensee failed to provide adequate documentation that demonstrated that heat balance testing was performed and evaluated annually as required. The finding was related to the cross-cutting area of Problem Identification and Resolution because the licensee failed to thoroughly evaluate the simulator model limitations to address extent of condition concerns. The reviews and analyses did not fully analyze the impacts of simulator model limitations on previous testing or identify that some test results were not documented. The correction of the simulator model limitations was expected to be accomplished by a simulator model upgrade, scheduled for completion in July 2007.

The failure to evaluate and document simulator performance testing was more than minor because it affected the Mitigating Systems cornerstone and did not meet the requirements of 10 CFR 55.46 because of the realistic potential of providing negative training based on significant simulator deficiencies compared to the plant. The finding was considered to be of very low safety significance because it involved simulator fidelity and the simulator did not meet the performance requirements of 10 CFR 55.46 and had the potential to impact operator actions.
Inspection Report# : 2006005 *(pdf)*

Significance: G Dec 31, 2006
Identified By: NRC
Item Type: NCV NonCited Violation
FAILURE TO PROMPTLY CORRECT DEGRADED CONDITION OF THE REACTOR RECIRCULATION

PUMP CO2 SYSTEM
The inspectors identified a finding of very low safety significance and an associated non-cited violation of License Condition C(6) for the failure to promptly correct the long-term recurring condition of insufficient CO2 tank level that was required to support the operability of the reactor recirculation pump CO2 system. The inspectors noted the reactor recirculation pumps' CO2 system did not meet fire protection requirements on several occasions since 2001 due to the same failure mechanism. The primary cause of this finding was related to the cross-cutting area of Problem Identification and Resolution because the licensee failed to take appropriate corrective actions to address the recurring condition of low tank level in a timely manner. As part of their immediate corrective actions, the licensee restored tank CO2 level to restore system operability and performed maintenance on the CO2 tank to stop the CO2 leak.

This finding was more than minor because it was associated with the Protection Against External Factors 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. The finding was determined through a Significance Determination Process analysis to be of very low safety significance because of safety functions that were assumed to remain available in the event of a reactor recirculation pump fire even though the finding was assigned a high degradation rating due to inadequate agent concentration required for deep seated fires.
Inspection Report# : 2006005 *(pdf)*

Significance: G Dec 31, 2006
Identified By: NRC
Item Type: FIN Finding
MINIMUM PUMP FLOW SETTING NOT SUFFICIENT FOR UNLIMITED OPERATION
The inspectors identified a finding of very low safety significance associated with the minimum flow settings for the high pressure core spray, low pressure core spray, and residual heat removal pumps. Bulletin 88-04 identified that many pump minimum flow values were too low because they did not account for flow instability concerns. The inspectors identified that when licensee personnel addressed this operating experience item, they failed to properly verify the minimum flow settings with the pump manufacturer in accordance with the bulletin. The licensee's corrective actions included having the manufacturer perform a new analysis, which concluded that the existing minimum flow settings did not allow continuous operation of the pumps, and provided a monitoring and maintenance schedule based on the minimum flow values in order to promptly detect degradation. This performance deficiency was entered into the licensee's corrective action program for resolution. No violation of NRC requirements was identified.

This finding represented a performance deficiency because the licensee did not verify with the manufacturer that the minimum flow settings for these safety-related pumps were acceptable. The finding was more than minor because these pumps were operated since original plant start-up with an increased potential for unusual wear and aging without establishing increased monitoring and maintenance, or other compensatory actions and, therefore, was associated with the Equipment Performance attribute of the Mitigating Systems cornerstone and impacted the cornerstone objective of ensuring the availability and reliability of safety-related pumps. The finding was of very low safety significance based on the results of the licensee's analysis and screened as Green using the Significant Determination Process Phase 1 screening worksheet.
Inspection Report# : 2006005 *(pdf)*

Significance: G Dec 15, 2006
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to provide full electrical isolation in the design of the post-fire safe shutdown control logic circuitry
The team identified a NCV of the Perry 1 Nuclear Power Plant Facility Operating License Condition 2.C.(6) and 10 CFR Part 50, Appendix R, Section III.L.3, having very low safety significance (Green), for failure to provide the required electrical isolation in the design of the post-fire safe shutdown control logic circuitry. Specifically, the control logic for Emergency Service Water Pump Discharge Shutoff Valve 1P45F0130A, did not have a transfer switch isolation contact provided, that would open to isolate main control room (MCR) fire-induced electrical faults when transferring controls to the remote shutdown location. This is required to ensure that postulated fire-induced electrical faults would not result in the loss of post-fire alternative safe shutdown equipment. The licensee's immediate corrective action was to perform an extensive evaluation of the associated circuitry and cables, to contact the panel's vendor, and other BWR6 plants, and to perform an extent of condition review. The licensee entered the issue into the corrective action program as CR 06-11399.

The finding was more than minor because it was associated with the mitigating systems cornerstone attribute of protection against external factors (fire) and had the potential to impact the mitigating systems cornerstone objective of ensuring the capability of systems, that respond to initiating events to prevent undesirable consequences. The violation is associated with degradation of a fire protection feature. Using Part 1 of the Inspection Manual Chapter 0609, fire protection Significance Determination Process Phase 1 Worksheet, the performance issue was determined to be in the post-fire safe shutdown category. The degradation rating was low based on FirstEnergy Nuclear Operating Company's (FENOC's) engineering evaluation that concluded that there were no fire induced electrical faults resulting from a MCR fire that would prevent the plant from achieving and maintaining a safe shutdown in the event of a control room fire. Therefore, the finding screens as Green or of very low safety significance in the Phase 1 Worksheet. This violation is being treated as a NCV consistent with Section VI.A of the Enforcement Policy (Section 1R05.4). The cause of the finding related to cross-cutting aspect of problem identification and resolution.
Inspection Report# : 2006006 *(pdf)*

Significance: G Dec 15, 2006
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to evaluate the floor drain capacity in the division 1 and 2 cable spreading rooms
The team identified a NCV of the Perry 1 Nuclear Power Plant Facility Operating License Condition 2.C.(6) having very low safety significance (Green) for failing to implement and maintain in effect all provisions of the approved fire protection program as described in section 9A.5, D.1.(i) of the Updated Safety Analysis Report (USAR). The USAR stated that floor drains were designed to remove the expected fire fighting water flow from areas where fixed fire suppression systems were installed or where a fire hose may be used. The team identified that the licensee failed to evaluate the water flow capacity of the floor drains in the Division 1 and 2 cable spreading rooms.

The finding was more than minor because it affected a cornerstone objective. The finding was associated with the Mitigating System cornerstone attribute of protection against external factors (i.e., flood hazard) and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events, (i.e., flood hazard) to prevent undesirable consequences. The finding was of very low safety significance due to the fact that internal flooding would not result in the total loss of any safety function because the loss of safety related equipment in one division cable spreading room would not affect the safety related equipment in the other division cable spreading room. (Section 1R05.10)

Inspection Report# : 2006006 *(pdf)*

Significance: G Dec 13, 2006
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
IMPROPER FUSE REMOVAL DURING CLEARANCE HANGING
A finding of very low safety significance and a non-cited violation of Technical Specification 5.4, "Procedures," was self revealed after licensee personnel failed to adhere to clearance procedures affecting the Division 1 emergency diesel generator (EDG) room ventilation system. While performing a clearance instruction, licensee personnel erroneously removed a fuse that disabled a required remote shutdown function associated with the Division 1 EDG ventilation system. The error was discovered during the clearance restoration process. As part of their immediate corrective actions, the licensee counseled involved personnel regarding procedure adherence expectations. The finding affected the cross-cutting area of human performance because licensee personnel failed to follow the established decision-making process when faced with the decision to remove a fuse that was not listed on the clearance instruction.

The finding was more than minor because the failure to adhere to procedures associated with the maintenance of safety-related equipment, if left uncorrected, could become a more significant safety concern. In this case, the removal of a fuse contrary to the clearance procedure affected the remote shutdown capability of the Division 1 EDG. Because the finding only affected the remote shutdown operations capability of the EDG, the finding was determined to be of very low safety significance.
Inspection Report# : 2006017 *(pdf)*

Significance: G Jun 30, 2006
Identified By: NRC
Item Type: NCV NonCited Violation
FAILURE TO PROMPTLY CORRECT A TESTING DEFICIENCY AFFECTING A REACTOR CORE ISOLATION COOLING REMOTE SHUTDOWN SYSTEM FUNCTION
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," following a review of Licensee Event Report 05000440/2006-001-00, "Incorrect Wiring in the Remote Shutdown Panel Results in a Fire Protection Program Violation," which identified that licensee personnel failed to correct a test deficiency associated with the remote shutdown circuit in a timely manner. The test deficiency was identified on September 9, 2003. The licensee corrected a wiring error and adequately tested the circuit on January 17, 2006. As part of their corrective actions, in addition to correcting the wiring error, licensee personnel performed an extent of condition review, which did not identify any additional wiring errors. The primary cause of this finding was related to the cross-cutting area of Problem Identification and Resolution because licensee personnel failed to appropriately evaluate the significance of the issue when the test deficiency was identified and therefore failed to appropriately prioritize and implement corrective actions in a timely manner.

This finding was more than minor 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. The finding affected the reliability of the reactor core isolation cooling system during a control room fire scenario. The finding was determined through a Significance Determination Process Phase 3 analysis to be of very low safety significance due, in large part, to the low initiating event frequency of fires in the main control room as well as the availability of other mitigating systems.
Inspection Report# : 2006003 *(pdf)*

Significance: G Mar 31, 2006
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
FAILURE TO FOLLOW MAINTENACE PROCEDURES FOR ELECTRICAL EQUIPMENT VENTILATION FAN MOTOR WHEN VIBRATION LEVELS EXCEEDED ALERT CRITERIA
A finding of very low safety significance and a non-cited violation of Technical Specification 5.4, "Procedures," was self-revealed on February 11, 2006, when licensee personnel failed to adhere to predictive maintenance program procedures after "B" Motor Control Center Switchgear and Miscellaneous Electrical Equipment Ventilation system return fan vibration levels exceeded predictive maintenance program alert criteria on September 29, 2005. As part of their immediate corrective actions, licensee personnel completed repairs to the "B" Motor Control Center Switchgear and Miscellaneous Electrical Equipment Ventilation system on March 3, 2006. The finding affected the cross-cutting area of Human Performance because licensee personnel failed to adhere to predictive maintenance program procedures after a degraded condition was identified.

The finding was more than minor because the failure to adhere to procedures associated with the maintenance of safety-related equipment, if left uncorrected, could become a more significant safety concern. In this case, the failure to adhere to predictive maintenance program procedures on September 29, 2005, resulted in an unaddressed and unmonitored degraded fan motor condition, led to the fan motor failure, and resulted in a small fire and an Alert emergency declaration on February 11, 2006. Because the Motor Control Center Switchgear and Miscellaneous Electrical Equipment Ventilation system was a support system, the finding was not suitable for Significance Determination Process review. Following management review, the finding was determined to be of very low safety significance because only one train of the Motor Control Center Switchgear and Miscellaneous Electrical Equipment Ventilation system was affected and the fire did not result in any personnel injuries or damage to other equipment.
Inspection Report# : 2006002 *(pdf)*

Significance: G Mar 31, 2006
Identified By: NRC
Item Type: NCV NonCited Violation
FAILURE TO FOLLOW BELT TENSIONING MAINTENANCE PROCEDURES FOR ELECTRICAL EQUIPMENT VENTILATION FAN MOTOR

The inspectors identified a finding of very low safety significance and a non-cited violation of Technical Specification 5.4, "Procedures," when licensee personnel failed to adhere to maintenance procedures during "B" Motor Control Center Switchgear and Miscellaneous Electrical Equipment Ventilation train maintenance and did not establish the required drive belt tension between the return fan and motor prior to returning the train to service. As part of their immediate corrective actions, the licensee counseled involved personnel regarding procedure adherence expectations. The finding affected the cross-cutting area of Human Performance because licensee personnel failed to adhere to maintenance procedures affecting safety-related equipment.

The finding was more than minor because the failure to adhere to procedures associated with the maintenance of safety-related equipment, if left uncorrected, could become a more significant safety concern. In this case, a previous failure to adhere to procedures associated with this fan motor contributed to the failure of the "B" Motor Control Center Switchgear and Miscellaneous Electrical Equipment Ventilation train that resulted in a fire and an Alert emergency declaration on February 11, 2006. Because the Motor Control Center Switchgear and Miscellaneous Electrical Equipment Ventilation system was a support system, the finding was not suitable for Significance Determination Process review. Following management review, the finding was determined to be of very low safety significance because only one train of the Motor Control Center Switchgear and Miscellaneous Electrical Equipment Ventilation system was affected.
Inspection Report# : 2006002 *(pdf)*

Significance:  Mar 23, 2006
Identified By: NRC
Item Type: NCV NonCited Violation
ADS and MSIV Air Accumulators Stress Analysis Deficiencies
The inspectors identified a Non-Cited Violation (NCV) of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," having very low safety significance (Green) involving an inadequate stress analysis performed for the automatic depressurization system (ADS) air accumulators. Specifically, the licensee failed to account for all the related stresses in the ADS accumulator stress analysis calculation. Inclusion of these additional stresses resulted in a higher stress than allowed by the American Society of Mechanical Engineers Code. Additionally, the accumulators' certification of design, as required by the Code, Section III, did not include the maximum design pressure, which resulted in the accumulators being non-conforming.

The finding was more than minor because the failure to adequately evaluate the design requirements of the accumulators could have led to structural failure of the tanks, which would have prevented the ADS valves from functioning as designed and could have affected the mitigating systems cornerstone objective of design control. 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.
Inspection Report# : 2006009 *(pdf)*

Significance:  Mar 23, 2006
Identified By: NRC
Item Type: NCV NonCited Violation
Non-conservative Safety-Related Air Storage Tank Sizing Calculation
The inspectors identified a Non-Cited Violation (NCV) of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," having very low safety significance (Green) involving the sizing of the main steam isolation valve and automatic depressurization system (ADS) air storage tank. The inspectors identified that the licensee failed to correctly specify in a design calculation the required minimum differential air pressure required to actuate the ADS valves when manually operated. This resulted in a safety-related air system calculation that was non-conservative when determining the long-term air volume requirements in the air storage tank. The licensee's corrective actions included verifying that adequate design margin existed for the air tank capacity and entered this performance deficiency into their corrective action program for resolution.

The finding was more than minor because the failure to adequately evaluate air storage tank sizing could result in over-predicting the tank's capacity as verified by the surveillance test's acceptance criteria (i.e., creating design margin capability that would not exist) and could have affected the mitigating systems cornerstone objective of design control. 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.

Inspection Report# : 2006009 *(pdf)*

Significance: G Mar 17, 2006
Identified By: NRC
Item Type: NCV NonCited Violation
FAILURE TO PERFORM REQUIRED STEPS PRESCRIBED BY PROCEDURE GEI-0009
A finding of very low safety significance and an associated non-cited violation of Technical Specification 5.4,"Procedures," was identified on January 19, 2006, when the inspectors identified during a safety-related breaker maintenance activity, that licensee personnel failed to perform required steps in procedure GEI-0009, "ABB Low Voltage Power Circuit Breaker Types K-600 & K-600S Through K-3000 & K-3000S Maintenance." Specifically, licensee personnel failed to perform required minimum operating voltage testing on the safety-related EF1A05 breaker that provided power to Division 1 Motor Control Center (MCC), Switchgear (SWGR), and Battery Room Supply Fan A. The primary cause of this finding was related to the cross-cutting area of Human Performance because licensee personnel failed to adhere to a step-by-step procedure associated with safety-related equipment. As part of the licensee's corrective actions, an extent of condition review was conducted, which determined that no additional safety-related breakers were affected.

The inspectors concluded that the finding was more than minor in accordance with example 4.l in IMC 0612, Appendix E, "Examples of Minor Issues," since the subject breaker was subsequently determined to be out of specification. This issue was also associated with the equipment performance attribute 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 because: (1) it did not represent an actual loss of safety function of a system; (2) it did not represent an actual loss of safety function of a single train for greater than its Technical Specification allowed outage time; (3) it did not represent an actual loss of safety function of one or more non-Technical Specification trains of equipment designated as risk-significant per 10 CFR 50.65 for greater than 24 hours; and (4) it did not screen as potentially risk significant due to a seismic, fire, flooding, or severe weather initiating event.
Inspection Report# : 2006007 *(pdf)*

Significance: G Mar 17, 2006
Identified By: NRC
Item Type: NCV NonCited Violation
FAILURE TO PERFORM REQUIRED STEPS PRESCRIBED BY PROCEDURE ICI-B12-0001
A finding of very low safety significance and an associated non-cited violation of Technical Specification 5.4, "Procedures," was identified on January 10, 2006, when the inspectors observed during a calibration check of a Division III Emergency Diesel Generator (EDG) Exhaust Air Damper, that licensee personnel failed to perform required steps prescribed by procedure ICI-B12-0001, "ITT NH90 Series Milliampere Proportional/On-Off Hydramotor Actuator Calibration." The primary cause of this finding was related to the cross-cutting area of Human Performance because licensee personnel failed to adhere to a step-by-step procedure associated with safety-related equipment. As part of their corrective actions, licensee personnel revised ICI-B12-0001 to clarify the requirements of the procedure.

This finding was more than minor because it was associated with the Mitigating System 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. The finding was of very low safety significance because: (1) it did not represent an actual loss of safety function of a system; (2) it did not represent an actual loss of safety function of a single train for greater than its Technical Specification allowed outage time; (3) it did not represent an actual loss of safety function of one or more non-Technical Specification trains of equipment designated as risk-significant per 10 CFR 50.65 for greater than 24 hours; and (4) it did not screen as potentially risk significant due to a seismic, fire, flooding, or severe weather initiating event.
Inspection Report# : 2006007 *(pdf)*

Significance: W Dec 31, 2003
Identified By: NRC
Item Type: VIO Violation
INADEQUATE LPCS/RHR 'A' FILL AND VENT PROCEDURES RESULTS IN SYSTEM INOPERABILITY

AFTER LOSS OF OFFSITE POWER
An apparent self-revealed violation of Technical Specification 5.4 occurred when the waterleg pump for low pressure core spray (LPCS) and residual heat removal (RHR) 'A' became air bound following a loss of offsite power. Subsequent investigation revealed that the procedures for venting these systems did not include the high point vent valve on the discharge of the pump, thus allowing gas to accumulate in a vertical section of system piping. When the waterleg pump lost power on August 14, 2003, the accumulated gas expanded and caused voiding of the pump. As a result, both LPCS and RHR 'A' were rendered inoperable.

The NRC assessed this finding through Phase 3 of the Significance Determination Process and made a preliminary determination that it is an issue with low to moderate safety significance.

After considering the information developed during the inspection, the NRC has concluded that the inspection finding is appropriately characterized as White (i.e., an issue with low to moderate increased importance to safety) and a final Significance Determination Process letter was issued on March 12, 2004, and will be inspected within the scope of a supplemental 95002 inspection in May 2004.

Inspection Report# : 2004006 *(pdf)*
Inspection Report# : 2005003 *(pdf)*

Significance: W Sep 30, 2003
Identified By: NRC
Item Type: VIO Violation
IMPROPER MAINTENANCE CAUSES EMERGENCY SERVICE WATER PUMP FAILURE
A self-revealed apparent violation of Technical Specification (TS) 5.4 occurred when the Division 1 emergency service water (ESW) pump failed during routine pump operation. The licensee rebuilt the pump in 1997 and during this reassembly, failed to properly reassemble the pump shaft connections. The improper reassembly led to pump failure on September 1, 2003.

The NRC assessed this finding through Phase 3 of the Significance Determination Process and made a preliminary determination that it is an issue with low to moderate safety significance. On January 28, 2004, a final significance determination letter was issued which characterized this issue as white.
Inspection Report# : 2004005 *(pdf)*
Inspection Report# : 2005003 *(pdf)*

Barrier Integrity

Significance: G Dec 13, 2006
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
INADEQUATE REPAIRS TO OUTER LOWER CONTAINMENT AIRLOCK
A finding of very low safety significance and an associated non-cited violation of Technical Specification 5.4.1.a, “Procedures,” was self-revealed when the lower outer containment airlock door failed to close as a result of improper maintenance on the door about 3 months prior to the failure. As part of the licensee’s immediate corrective actions, the door was repaired and the event was discussed with involved maintenance personnel.

This finding was greater than minor because the finding was associated with the Human Performance attribute of the Barrier Integrity cornerstone and adversely impacted the cornerstone objective of providing reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents. The inspectors determined that the issue was of very low safety significance because the finding did not represent an actual open pathway in the physical integrity of reactor containment, or involve an actual reduction in defense-in-depth for the atmospheric pressure control or hydrogen control functions of the reactor containment. This finding had a cross-cutting aspect in the area of human

performance because licensee personnel failed to appropriately plan work activities to incorporate the need for planned contingencies, compensatory actions, and abort criteria.
Inspection Report# : 2006015 *(pdf)*

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Physical Protection

Physical Protection information not publicly available.

Miscellaneous

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