

River Bend 1

4Q/2011 Plant Inspection Findings

Initiating Events

Significance:  Sep 30, 2011

Identified By: NRC

Item Type: FIN Finding

Ineffective Corrective Actions on the Main Steam Equalizing Header Drain Bypass Valve Results in an Unplanned Down Power

The inspectors identified a self-revealing finding involving inadequate corrective actions in response to a failure in the main steam equalizing header drain bypass valve, resulting in a steam leak and an unplanned plant down power. Specifically, plant personnel failed to properly address the dual indication on the bypass valve and fluid flow through the valve caused water to flash to steam accelerating pipe wall erosion and piping failure. The licensee's immediate corrective actions were to identify, secure, and temporarily repair the steam leak. The licensee entered this issue into the licensee's corrective action program as Condition Report CR-RBS-2011-04592.

The finding was more than minor because it 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 during shutdown as well as power operations. The inspectors reviewed the finding using Inspection Manual Chapter 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations." Based on the Phase 1 screening of the finding, the inspectors determined that the finding was of very low safety significance (Green) because it was not a loss of coolant accident initiator, did not contribute to both the likelihood of an initiating event and the likelihood that mitigating equipment or functions would not be available, nor increase the likelihood of an external event (seismic, flooding, or severe weather event). The apparent cause of the performance deficiency was that the control room and outage control center personnel presumed that the main control room dual indication for the valve was incorrect because previously valve operation successfully closed the valve. Consequently, this finding has a crosscutting aspect in the area of human performance associated with the decision-making component because station personnel did not use a systematic process to assess the condition of the bypass valve, and failed to verify the validity of the underlying assumptions that were used to justify operation with the valve having dual indications [H.1(a)].

Inspection Report# : [2011004](#) (pdf)

Significance:  Mar 31, 2011

Identified By: Self-Revealing

Item Type: FIN Finding

Feedwater Control System Inadequate Corrective Actions Results in Power Transient

The inspectors reviewed a self-revealing finding involving failure to take adequate corrective actions on a degraded feedwater flow controller push-button, causing a recirculation flow control valve runback, reactor vessel level transient, and a resulting reactor power transient. On September 24, 2008, operations documented a deficiency in the function of the push-button, however station maintenance personnel failed to adequately address the identified deficiency. The push button was subsequently repaired and this issue was entered into the licensee's corrective action program as Condition Report CR-RBS-2011-00300.

The finding was more than minor because it was associated with the equipment performance attribute of the Initiating Events Cornerstone, and it affected the cornerstone objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. The inspectors evaluated this finding using Phase 1 of Inspection Manual Chapter 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," and determined it to be of very low safety significance (Green) 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. The inspectors determined that the apparent cause of the performance deficiency was the

failure to thoroughly evaluate the cause of the defective push-button's stickiness. Consequently, this finding has a crosscutting aspect in the area of problem identification and resolution associated with the corrective action program component because the licensee failed to adequately review the results of the work order to ensure that the cause and extent of condition of the defective push-button was resolved in a timely manner [P.1(c)].

Inspection Report# : [2011002](#) (pdf)

Mitigating Systems

Significance:  Oct 27, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Testing of Division I and Division III Standby Diesel Generators

The team identified a Green, noncited violation of 10 CFR Part 50, Appendix B, Criterion XI, "Test Control," which states, in part, "A test program shall be established to assure that all testing required to demonstrate that structures, systems, and components will perform satisfactorily in service is identified and performed in accordance with written test procedures which incorporate the requirements and acceptance limits contained in applicable design documents." Specifically, prior to October 27, 2011, the licensee failed to ensure surveillance testing procedures of Division I and III standby diesel generators incorporated the correct acceptance limits for maximum expected load at max frequency and voltage specified in design basis documents. This finding was entered into the licensee's corrective action program as Condition Reports CR-RBS-2011-07132, CR-RBS-2011-07294, and CR-RBS-2011-07518.

The team determined that the failure to ensure that the test procedures required to demonstrate that Division I and Division III standby diesel generators will perform satisfactorily in service incorporated the requirements and acceptance limits contained in applicable design documents was a performance deficiency. The 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 safety systems that respond to initiating events to prevent undesirable consequences. Specifically, the licensee could not ensure that the standby diesel generators would reliably provide power for the maximum expected post-accident loads including maximum frequency and voltage. In accordance with NRC Inspection Manual Chapter 0609, Attachment 4, "Phase 1 – Initial Screening and Characterization of Findings," the finding was determined to have very low safety significance (Green) because it was a design or qualification deficiency confirmed not to result in a loss of operability or functionality, loss of a system safety function, loss of a single train for greater than technical specification allowed outage time, loss of one or more non-technical specification risk significant equipment for greater than 24 hours, and did not screen as potentially risk significant due to seismic, flooding, or severe weather. The finding had a crosscutting aspect in the area of problem identification and resolution, corrective action program component, because the licensee failed to thoroughly evaluate problems such that the resolutions address causes and extent of condition [P.1(c)].

Inspection Report# : [2011008](#) (pdf)

Significance:  Oct 27, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Use Conservative Design Assumptions in the Ultimate Heat Sink Inventory Calculation

The team identified a Green, noncited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," which states, in part, "Measures shall be established to assure that applicable regulatory requirements and the design basis are correctly translated into specifications, drawings, procedures, and instructions." Specifically, prior to October 27, 2011, the licensee failed to assure that the design basis information for expected heat loads to the ultimate heat sink was correctly translated into the ultimate heat sink 30-day inventory analysis. The analysis used a less conservative, frictionless form of the conservation of energy equation to determine heat load in the standby service water system during a 30-day design basis event. This finding was entered into the licensee's corrective action program as Condition Reports CR-RBS-2011-07430 and CR-RBS-2011-07654.

The team determined that the failure to correctly translate expected heat loads into the ultimate heat sink inventory

analysis was a performance deficiency. The finding was more than minor because it was associated with the design control attribute of the Mitigating Systems Cornerstone and adversely affected the cornerstone objective of ensuring availability, reliability, and capability of systems needed to respond to undesired consequences. Specifically, the neglect of friction heat load in the ultimate heat sink analysis system resulted in a condition where there was reasonable doubt on the operability of a system to meet its 30-day mission time without a makeup water source. In accordance with NRC Inspection Manual Chapter 0609, Attachment 4, "Phase 1 – Initial Screening and Characterization of Findings," the finding was determined to have very low safety significance (Green) because it was a design or qualification deficiency confirmed not to result in a loss of operability or functionality, loss of a system safety function, loss of a single train for greater than technical specification allowed outage time, loss of one or more non-technical specification risk significant equipment for greater than 24 hours, and did not screen as potentially risk significant due to seismic, flooding, or severe weather. Specifically, the licensee's revised analysis to determine operability removed overly conservative assumptions for operating the low pressure core spray pump for 30 days to account for the friction heat load added to the system. The finding has a crosscutting aspect in the area of problem identification and resolution, corrective action program component, because the licensee failed to thoroughly evaluate problems such that the resolutions address cause and extent of condition [P.1(c)].

Inspection Report# : [2011008](#) (pdf)

Significance:  Oct 27, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Establish Residual Heat Removal Heat Exchanger Testing Frequency

The team identified a Green, noncited violation of 10 CFR Part 50, Appendix B, Criterion XI, "Test Control," which states, in part, "A test program shall be established to assure that all testing required to demonstrate that structures, systems, and components will perform satisfactorily in service is identified and performed in accordance with written test procedures which incorporate the requirements and acceptance limits contained in applicable design documents." Specifically, from October 1998 to October 27, 2011, the licensee failed to establish a NRC Generic Letter 89-13 test program which incorporated a final test frequency for the residual heat removal heat exchangers and perform an adequate trending analysis upon which to base a final test frequency. This finding was entered into the licensee's corrective action program as Condition Report CR-RBS-2011-07713.

The team determined that failure to establish a NRC Generic Letter 89-13 test program which incorporated a final testing frequency of the residual heat removal heat exchangers was a performance deficiency. The 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 availability, reliability, and capability of systems needed to respond to initiating events to prevent undesired consequences. Specifically, the inappropriate test frequency affected the licensee's ability to ensure residual heat removal heat exchangers, when called upon, were available and capable to reliably perform as expected. In accordance with NRC Inspection Manual Chapter 0609, Attachment 4, "Phase 1 – Initial Screening and Characterization of Findings," the finding was determine to have very low safety significance (Green) because it was a design or qualification deficiency confirmed not to result in a loss of operability or functionality, loss of a system safety function, loss of a single train for greater than technical specification allowed outage time, loss of one or more non-technical specification risk significant equipment for greater than 24 hours, and did not screen as potentially risk significant due to seismic, flooding, or severe weather. This finding did not have a crosscutting aspect because the most significance contributor did not reflect current licensee performance.

Inspection Report# : [2011008](#) (pdf)

Significance:  Oct 27, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Procedures for Monitoring Standby Service Water System Leakage

The team identified a Green, noncited violation of 10 CFR 50, Appendix B, Criterion V, "Instruction, Procedures, and Drawings," which states, in part, "Instructions, procedures, or drawings shall include appropriate quantitative or qualitative acceptance criteria for determining that important activities have been satisfactorily accomplished." Specifically, prior to October 27, 2011, the licensee failed to provide appropriate quantitative or qualitative acceptance criteria in station and abnormal operating procedures to determine if actions for leak detection were satisfactorily accomplished to protect the standby service water system and ultimate heat sink during design basis events. This

finding was entered into the licensee's corrective action program as Condition Report CR-RBS-2011-07555.

The team determined that the failure to include appropriate acceptance criteria for leak detection in abnormal operating procedures for the standby service water system and ultimate heat sink was a performance deficiency. The finding was more than minor because it was associated with the procedure quality attribute of the Mitigating Systems Cornerstone and adversely affected the cornerstone objective of ensuring availability, reliability, and capability of systems needed to respond to initiating events to prevent undesired consequences. Specifically, the inadequate procedure guidance could lead to operators not recognizing conditions that would degrade the availability of the standby service water system. In accordance with NRC Inspection Manual Chapter 0609, Attachment 4, "Phase 1 – Initial Screening and Characterization of Findings," the finding was determined to have very low safety significance (Green) because it was a design or qualification deficiency confirmed not to result in a loss of operability or functionality, loss of a system safety function, loss of a single train for greater than technical specification allowed outage time, loss of one or more non-technical specification risk significant equipment for greater than 24 hours, and did not screen as potentially risk significant due to seismic, flooding, or severe weather. This finding did not have a crosscutting aspect because the most significant contributor did not reflect current licensee performance.

Inspection Report# : [2011008](#) (pdf)

Significance: SL-IV Oct 27, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Obtain NRC Approval for Change to Ultimate Heat Sink Inventory Requirements

The team identified a Severity Level IV, noncited violation of 10 CFR 50.59, "Changes, Tests and Experiments" which states, in part, that "a licensee shall obtain a license amendment pursuant to Section 50.90 prior to implementing a proposed change, test, or experiment if this activity would; result in more than a minimal increase in the likelihood of occurrence of a malfunction of a SSC important to safety previously evaluated in the final safety analysis report (as updated)." Specifically, from December 16, 2002, to October 27, 2011, the licensee changed the design basis of the ultimate heat sink inventory requirements to provide a 30-day cooling water supply without makeup capability to providing a less than 30-day cooling water supply with makeup capability without obtaining a license amendment. This finding was entered into the licensee's corrective action program as Condition Report CR 2011-07674.

The team determined that the failure to obtain a license amendment prior to implementing a proposed change, test or experiment to the ultimate heat sink requirements was a performance deficiency. The performance deficiency was evaluated using traditional enforcement because the finding has the ability to impact the regulatory process. The finding was more than minor because it involved a change to the updated final safety analysis report description where there was a reasonable likelihood that the change would require NRC approval. In accordance with the NRC Enforcement Policy, the team used insights from MC 0609, "Significance Determination Process," to determine the final significance of the finding. In accordance with NRC Inspection Manual Chapter 0609, Attachment 4, "Phase 1 – Initial Screening and Characterization of Findings," the finding represented a loss of system safety function in that the ultimate heat sink could not meet its 30-day mission time to provide decay heat removal. Therefore, a Phase 2 evaluation was necessary. The significance of the finding could not be assessed quantitatively through a Phase 2 or Phase 3 analysis. Consequently, an assessment was performed in accordance with IMC 0609, Appendix M, "Significance Determination Process Using Qualitative Criteria." The finding was determined to have very low safety significance because the frequency of events that would require long term use of the ultimate heat sink is very low and the difference in the failure probability to replenish the ultimate heat sink in 10 days versus 30 days is very small. This was because an early depletion of the inventory would be easily detected and would become a priority. At the time that replenishment would be needed, plant conditions should be stable and local transportation arteries should be restored. Therefore, since the finding had very low safety significance, the finding was determined to be Severity Level IV, in accordance with the NRC Enforcement Policy. This finding did not have a crosscutting aspect because the most significant contributor did not reflect current licensee performance.

Inspection Report# : [2011008](#) (pdf)

Significance:  Oct 27, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Abnormal Procedure for Reducing Loads on Standby Diesel Generators

The team identified a Green, noncited violation of 10 CFR Part 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” which states, in part, “Instructions, procedures, and drawings shall include appropriate quantitative or qualitative acceptance criteria for determining that important activities have been satisfactorily accomplished.” Specifically, prior to October 27, 2011, the licensee failed to include appropriate qualitative and quantitative acceptance criteria in abnormal operating procedures for control room operators to recognize the need to reduce loads on the standby diesel generators during design basis accidents. This finding was entered into the licensee’s corrective action program as Condition Report CR-RBS-2011-07716.

The team determined that the failure to include appropriate quantitative or qualitative acceptance criteria in abnormal operating procedures for control room operators to recognize the need to reduce loads on the standby diesel generators during design basis accidents was a performance deficiency. The finding was more than minor because it was associated with the procedure quality attribute of the Mitigating System Cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesired consequences. Specifically, a control room operating crew’s failure to recognize the need to reduce loads to prevent the standby diesel generator failure during design basis accidents adversely affected the reliability of the standby diesel generators. In accordance with NRC Inspection Manual Chapter 0609, Attachment 4, “Phase 1 – Initial Screening and Characterization of Findings,” the finding was determined to have very low safety significance (Green) because it was a design or qualification deficiency confirmed not to result in a loss of operability or functionality, loss of a system safety function, loss of a single train for greater than technical specification allowed outage time, loss of one or more non-technical specification risk significant equipment for greater than 24 hours, and did not screen as potentially risk significant due to seismic, flooding, or severe weather. This finding had a crosscutting aspect in the area of human performance, resources component, because the licensee did not ensure that personnel, equipment, procedures, and other resources were available and adequate to assure nuclear safety for the correct training of licensed operator personnel [H.2(b)].

Inspection Report# : [2011008](#) (pdf)

G

Significance: Oct 27, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Emergency and Abnormal Procedures for Standby Diesel Generator Fail to Load Sequences

The team identified a Green, noncited violation of 10 CFR Part 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” which states, in part, “Instructions, procedures, and drawings shall include appropriate qualitative and quantitative criteria for determining that important activities have been satisfactorily accomplished.” Specifically, prior to October 27, 2011, the licensee failed to include appropriate quantitative or qualitative acceptance criteria in procedures for control room operators to recognize and recover a standby diesel generator that starts but fails to load with the remaining standby diesel generator out of service during a loss-of-offsite-power event. This finding was entered into the licensee’s corrective action program as Condition Reports CR-RBS-2011-07716, CR-RBS-2011-07717, and CR-RBS-2011-07718.

The team determined that the failure to include appropriate quantitative or qualitative acceptance criteria to determine that important activities are satisfactorily accomplished in emergency and abnormal operating procedures used during loss-of-offsite-power events was a performance deficiency. The finding was more than minor because it is associated with the procedure quality attribute of the Mitigating System Cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesired consequences. Specifically, a control room operator crew’s failure to diagnose recoverable conditions adversely affected the availability of standby diesel generators during a loss-of-offsite-power event. In accordance with NRC Inspection Manual Chapter 0609, Attachment 4, “Phase 1 – Initial Screening and Characterization of Findings,” the finding was determined to have very low safety significance (Green) because it was a design or qualification deficiency confirmed not to result in a loss of operability or functionality, loss of a system safety function, loss of a single train for greater than technical specification allowed outage time, loss of one or more non-technical specification risk significant equipment for greater than 24 hours, and did not screen as potentially risk significant due to seismic, flooding, or severe weather. This finding had a crosscutting aspect in the area of problem identification and resolution, operating experience component, because the licensee did not implement and institutionalize operating experience through changes to station processes, procedures, equipment, and training programs [P.2(b)].

Inspection Report# : [2011008](#) (pdf)

Significance: G Oct 27, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Simulator Fidelity for Emergency Diesel Generator Loading

The team identified a Green, noncited violation of 10 CFR 55.46(c)(1), "Simulation Facilities," which states, in part, that "a plant-referenced simulator used for the administration of the operating test must demonstrate expected plant response to operator input and to normal, transient, and accident conditions to which the simulator has been designed to respond." Specifically, prior to October 27, 2011, the River Bend Station simulator did not demonstrate the expected plant response for standby diesel generator loading during accident conditions to which the simulator was designed to respond. The electrical loading on the emergency diesel generator in the simulator was approximately 800 kW less than the expected full load for the diesel generator. This finding was entered into the licensee's corrective action program as Condition Report CR-RBS-2011-07682.

The team determined that the failure of the plant-referenced simulator to demonstrate expected plant response for standby diesel generator loading during accident conditions to which the simulator has been designed to respond was a performance deficiency. The finding was more than minor because it is associated with the human performance attribute of the Mitigating Systems Cornerstone and adversely affected the cornerstone objective of ensuring availability, reliability, and capability of systems needed to respond to initiating events to prevent undesired consequences. Specifically, the incorrect simulator response adversely affected the control room operator crew's capability to assess standby diesel generator loading conditions. In accordance with NRC Inspection Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheets and the associated Appendix I, the finding was determined to be of very low safety significance (Green). Specifically, Manual Chapter 0609, Appendix I, "Operator Requalification Human Performance Significance Determination Process," block 12, establishes a Green finding for failure to correctly replicate the plant's response on the simulator that either has the potential to cause or actually causes negative training to operators. Negative training did occur for this finding because operators thought they had electrical load margin on the emergency diesel generators when the diesels were actually fully loaded with minimal margin without securing other equipment. This finding had a crosscutting aspect in the area of human performance, resources component, in that the licensee did not ensure that equipment (plant-referenced simulator) was adequate to assure nuclear safety for the correct training of licensed operator personnel [H.2(b)].

Inspection Report# : [2011008](#) (*pdf*)

Significance: G Jun 30, 2011

Identified By: NRC

Item Type: FIN Finding

Failure to Track and Document Plant Equipment Oil Usage

The inspectors identified a finding for the failure to properly document equipment oil additions in the oil lubrication accountability log per General Maintenance Procedure GMP-0015, "Lubrication Procedure." To correct the programmatic deficiencies, the station revised General Maintenance Procedure GMP-0015 instructions to enhance and amplify the requirement to record all oil additions in the lubrication accountability log, revise preventative maintenance tasks that sample or change oil to explicitly state "record oil additions in the lubrication accountability log," and to brief station personnel concerning changes to General Maintenance Procedure GMP-0015. The licensee entered this issue into their corrective action program as Condition Report CR-RBS-2011-02883.

The finding is more than minor because if left uncorrected the performance deficiency would have the potential to lead to a more significant safety concern. Using Inspection Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the finding was determined to be of very low safety significance (Green) because it was not a design or qualification deficiency; did not represent either a loss of system safety function, an actual loss of safety function of a single train, or an actual loss of safety function; and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. The inspectors determined that the apparent cause of the performance deficiency was incomplete work package instructions that did not explicitly state to record oil additions in the lubrication accountability log per General Maintenance Procedure GMP-0015, thereby making equipment operability conclusions based on incomplete monitored trends suspect and potentially inaccurate. Consequently, this finding has a cross-cutting aspect in the human performance area associated with the resources component because the station's work packages lacked the necessary instructions to adequately control the lubrication monitoring program [H.2(c)].

Significance: **G** May 12, 2011

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to Take Corrective Action for Service-Induced Failures of Gould J-series Relays

The inspectors reviewed a self-revealing green noncited violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Actions," for the licensee's failure to take corrective action to address service-induced failures of Gould J series relays. In response, the licensee initiated condition report CR RBS 2010 06032 to ensure that appropriate levels of preventive maintenance are performed on high-critical components.

The performance deficiency was the licensee's failure to take adequate corrective actions to address service-induced failures of the high-critical, high-duty-cycle Gould J series relay designated as EHS MCC16B6D 33X1. This performance deficiency was determined to be more than minor and was therefore 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. This finding had very low safety significance because the finding was not a design or qualification deficiency confirmed not to result in a loss of operability, did not represent a loss of system safety function, did not represent a loss of safety function for a single train for greater than its technical specification allowed outage time, and did not screen as potentially risk significant due to a seismic, flooding or severe weather initiating event. Because the apparent cause of this finding was the licensee's misclassification of the failed relay within the preventive maintenance optimization program in 2008, and because the licensee's performance in that program was not reflective of current licensee performance, no cross-cutting aspect was assigned to this finding.

Inspection Report# : [2011006](#) (pdf)

Significance: **G** Mar 31, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

Repetitive Service Water Pressure Control Valves Diaphragm Failures Affecting Control Building Chillers Operability

The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for failure to promptly identify and correct adverse service water chemistry conditions to resolve repetitive service water pressure control valves diaphragm failures that affected operability of the control building chillers. Specifically, station personnel failed to address excessive internal corrosion in the pressure control valves, which resulted in loss of service water pressure control to the control building chillers. As immediate corrective action, the licensee replaced the damaged pressure control valve and is currently evaluating methods to preclude corrosion around the diaphragm. The licensee placed this issue into their corrective action program as Condition Report CR-RBS-2011-02126.

The finding was more than minor because it was associated with the equipment performance attribute of the reactor safety Mitigating Systems (MS) 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. Using Inspection Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the finding was determined to be of very low safety significance (Green), because it did not result in a loss of system safety function. The inspectors determined that the apparent cause of the performance deficiency was the repetitive failure of 1SWP-PVY32 diaphragm from rust barnacles that formed on the valve internal steel parts during low flow conditions. The apparent cause of the performance deficiency was the station's failure to thoroughly evaluate the cause of the corrosion build up mechanism because the station treated diaphragm failures as a broke/fix maintenance item. Consequently, this finding has a crosscutting aspect in the area of human performance associated with the resources component because the licensee failed to minimize long-standing equipment issues [H.2(a)].

Inspection Report# : [2011002](#) (pdf)

Significance: **G** Mar 31, 2011

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to Determine the Appropriate Preventive Maintenance Strategy and Task Frequency for the Reactor Core Isolation Cooling System Turbine Lube Oil Cooler Inlet Pressure Control Valve

The inspectors reviewed a self-revealing noncited violation of Technical Specification 5.4.1 for the licensee's failure to determine the appropriate preventive maintenance strategy and task frequency for the reactor core isolation cooling system turbine lube oil cooler inlet pressure control valve (E51-PCVF015). The vendor manual for the pressure control valve recommends that non-metallic parts (including diaphragms) be replaced after 5 years in service. On October 13, 2010, after being in service for more than ten years without diaphragm replacement, the valve developed a leak that rendered the reactor core isolation cooling system inoperable. The licensee replaced the damaged diaphragm and created a preventive maintenance activity for its periodically replacement. This issue was entered into the licensee's corrective action program as Condition Report CR-RBS-2010-05224.

This finding was more than minor because it was associated with the equipment performance attribute of the Mitigating Systems Cornerstone and adversely affected the associated cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the subject performance deficiency allowed a failure to occur that rendered the reactor core isolation cooling system inoperable for approximately 14 hours. Because this finding occurred while the unit was operating at full power, the inspectors used Inspection Manual Chapter 0609, Attachment 4, "Phase 1 - Initial Screening and Characterization of Findings," to assess its risk significance. The reactor core isolation cooling diaphragm failure was determined to have occurred when the pump was secured; that is, the pump could have operated for 24 hours if it had not been shut down at that time. Therefore, the exposure time was equal to the repair time, which was 15.5 hours. The finding involved a loss of safety system function and therefore did not screen in Phase 1, requiring a Phase 2 evaluation. The inspectors used the Phase 2 pre-solved spreadsheet with a duration of 0-3 days to determine that the issue had very low significance (Green). The inspectors concurred with the licensee's determination that a "lack of technical rigor" had been the reason why the preventive maintenance evaluation of valve E51-PCVF015 had been incorrect, and was therefore the major contributor to the finding. The inspectors considered that this contributor does not reflect current licensee performance because this contributor is a human performance error that occurred in September 2006, and because in 2007, the licensee developed corrective actions to address a substantive crosscutting issue in human performance. Those actions are described in Condition Report CR-RBS-2007-00835 and included activities that changed the licensee's human performance program such that the human performance error that occurred in September of 2006 is not likely to re-occur. This finding therefore does not have a crosscutting aspect.

Inspection Report# : [2011002](#) (*pdf*)

Significance:  Mar 31, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Control Rod Inspection Procedure

The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," involving an inadequate control rod inspection procedure. Specifically, the station's procedures only required inspection of a only 20 percent of the control rods that exceeded the inspection criteria, instead of all of them. The station currently has 18 CR 82M control rods in the reactor core in shutdown locations that have exceeded Westinghouse's inspection threshold exposure limits. In response to the inspectors' inquiries, the licensee reviewed their water chemistry and concluded the current tritium and boron levels indicated there was margin for control rod operability. The licensee intends to monitor the reactor coolant for increasing boron and tritium levels throughout this operating cycle. The licensee placed this issue into their corrective action program as Condition Report CR-RBS-2011-01704.

The finding is more than minor because it is associated with the equipment performance attribute of the reactor safety 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. Using Inspection Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the finding is determined to be of very low safety significance (Green) because it did not result in a loss of system safety function. The inspectors determined that the apparent cause of the performance deficiency was River Bend Station's failure to communicate relevant operating experience to affected internal and external stakeholders. This finding has a crosscutting aspect in the area of problem identification and resolution associated with the operating experience component because the licensee failed to appropriately apply all the CR 82M control rod inspection requirements provided by the control rod

Barrier Integrity

Significance:  Sep 30, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Standby Gas Treatment Electric Heater Power Output Calculation

The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion III “Design Control,” for an inadequate calculation methodology used in determining standby gas treatment system operability. The inspectors found that the calculation neither considered instrument uncertainty nor applied a proper voltage drop from the breaker to the standby gas treatment system filter train heater. The licensee entered this issue into the licensee’s corrective action program as Condition Report CR-RBS-2011-07332.

The finding was more than minor because it was associated with the design control attribute of the Barrier Integrity Cornerstone to maintain radiological barrier functionality of standby gas treatment trains, and affected the cornerstone objective to provide reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. Specifically, operating the standby gas system filter train heaters without sufficient output power is detrimental to the charcoal filters ability to retain radioactive iodine. This could result in a greater amount of radiation release to the environment in the event of an accident. In accordance with Inspection manual Chapter 0609, Appendix A, “Significance Determination of Reactor Inspection Findings for At-Power Situations,” the Phase 1 significance determination process screening determined the finding to be only of very low safety significance (Green) because the finding only represented a degradation of the radiological barrier function provided for the standby gas treatment system. The apparent cause of this finding was the decision to develop an engineering evaluation that did not include instrument uncertainty and did not validate the correct voltage drop between the filter train heater feeder breaker and the heater elements. The finding has a crosscutting aspect in the area of human performance associated with the decision-making component because station personnel failed to use conservative assumptions when developing the modified output power methodology for operation of the standby gas treatment system filter heaters with only 8 of 9 heater elements installed [H.1(b)].

Inspection Report# : [2011004](#) (pdf)

Significance:  Mar 31, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Implement Procedure AOP-0027, "Fuel Handling Mishaps"

The inspector identified a Green noncited violation of Technical Specification 5.4.1.a, “Procedures” for River Bend Station fuel handling personnel failing to follow AOP-0027, “Fuel Handling Mishaps,” when an actual fuel handling event occurred. Instead of entering the AOP, fuel handling personnel continued to move a fuel assembly after equipment damage and potential fuel damage. The licensee entered this issue into their corrective action program as Condition Report CR-RBS-2011-03692.

This failure to follow procedures is a performance deficiency. The performance deficiency is more than minor, and therefore a finding, because it adversely impacted the human performance attribute of the barrier integrity cornerstone objective to provide reasonable assurance that physical design barriers (fuel cladding) protect the public from radionuclide releases caused by accidents or events. Using Manual Chapter 0609, “Significance Determination Process,” Phase 1 worksheets, the inspector determined the finding had very low safety significance (Green) because the fuel cladding barrier was potentially degraded but there was no release of radionuclides. This finding has a crosscutting aspect in the area of problem identification and resolution associated with the operating experience component because the licensee failed to implement and institutionalize operating experience through changes to station procedures and training programs [P.2(b)].

Inspection Report# : [2011002](#) (pdf)

Significance:  Mar 31, 2011

Identified By: NRC

Item Type: FIN Finding

Failure to Follow Fuel Handling Guidelines

The inspector identified a finding for failure to follow River Bend Station's "Fuel Handling Guideline." A fuel handling event occurred at River Bend Station on January 21, 2011, when a fuel assembly was grappled and raised approximately one foot rather than fully withdrawn from the core. With the fuel assembly only partially withdrawn from the core, the refuel platform was erroneously moved horizontally approximately five feet. This inappropriate stop at one foot followed by inappropriate horizontal movement of the refuel platform with the fuel partially inserted into the core resulted in equipment damage and potential fuel damage. The licensee entered this issue into their corrective action program as Condition Report CR-RBS-2011-03693.

This failure to follow the guideline is a performance deficiency. The performance deficiency is more than minor, and therefore a finding, because it adversely impacted the human performance attribute of the Barrier Integrity Cornerstone objective to provide reasonable assurance that physical design barriers (fuel cladding) protect the public from radionuclide releases caused by accidents or events. Using Manual Chapter 0609, "Significance Determination Process," Phase 1 worksheets, the inspector determined the finding had very low safety significance (Green) because the fuel cladding barrier was potentially degraded but there was no release of radionuclides. This finding has a crosscutting aspect in the area of human performance associated with the decision making component because the licensee made a safety-significant decision without verifying the validity of underlying assumptions [H.1(b)].

Inspection Report# : [2011002](#) (*pdf*)

Emergency Preparedness

Significance: SL-IV Mar 31, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

Reduction in ERO Staffing Decreased Emergency Plan Effectiveness

The inspector identified a Severity Level IV noncited violation of 10 CFR 50.54(q) for changes to the licensee's emergency plans that decreased the effectiveness of those plans without NRC approval. Specifically, the effectiveness of River Bend Station Emergency Plan, Revision 36, was reduced by removal of the Health Physics Communicator position from the emergency response organization. The licensee's failure to recognize that Revision 36 decreased the effectiveness of licensee emergency plans was a performance deficiency. The licensee has entered this issue into their corrective action system as CR-RBS-2011-02366.

This finding is more than minor because it has a potential effect on the licensee's emergency response capabilities and because the licensee may not be capable of implementing adequate measures to protect the health and safety of the public when the effectiveness of its emergency response organization has been reduced. The finding was evaluated using the NRC Enforcement Policy because it impeded the regulatory process as defined by Manual Chapter 0609, Appendix B, Section 2.2(e). The finding was determined to be Severity Level IV because it decreased the licensee's ability to meet or implement a regulatory requirement not related to assessment or notification.

Inspection Report# : [2011002](#) (*pdf*)

Occupational Radiation Safety

Significance:  Mar 31, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Properly Control and Guard the Entrance to a Locked High Radiation Area

The inspectors identified a noncited violation of Technical Specification 5.7.2 for failure to properly control and guard

a high radiation area with dose rates greater than or equal to 1000 mrem/hr. Specifically, on January 25, 2011, while touring the outside area between the auxiliary building and the radioactive waste building, the inspectors noted that the access gate to a locked high radiation area was open. A guard for the locked high radiation area was positioned in a tent enclosure to the right of the gate, but was not in a position to maintain “line-of-sight” control of the access to the locked high radiation area. The licensee immediately repositioned the guard and enhanced the tent construction to provide the necessary control for access to the area. The licensee placed this issue into their corrective action program as CR 2011-01154.

The finding was more than minor because it was associated with the Occupational Radiation Safety Cornerstone attribute (exposure control) of program and process and affected the cornerstone objective, in that, the failure to properly control access to a high radiation area with dose rates in excess of 1000 mrem/hr had the potential to increase personnel dose. Using the Occupational Radiation Safety Significance Determination Process, the inspectors determined the finding to have very low safety significance because it was not associated with ALARA planning or work controls, there was no overexposure, there was no substantial potential for an overexposure, and the ability to assess dose was not compromised. The finding has a human performance crosscutting aspect associated with work control, work planning activities, because the individuals failed to consider job site conditions which would impact the ability of the guard to adequately observe the entrance to the locked high radiation area [H.3(a)].

Inspection Report# : [2011002](#) (*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 May 12, 2011

Identified By: NRC

Item Type: FIN Finding

River Bend Plant Biennial PI&R Inspection Summary

The team determined that the licensee’s program for identifying, prioritizing, and correcting conditions adverse to quality was effective. With few exceptions, the licensee identified conditions adverse to quality at a low threshold, properly classified and evaluated those conditions, and developed appropriate corrective actions.

The licensee appropriately evaluated industry operating experience for relevance to the facility and had entered applicable items in the corrective action program. The licensee used industry operating experience when performing root cause and apparent cause evaluations. In addition, the licensee performed effective quality assurance audits and self-assessments.

The team determined that the licensee had a healthy safety-conscious work environment in that workers felt free to raise safety concerns without fear of retaliation using all avenues available.

Inspection Report# : [2011006](#) (*pdf*)

Last modified : March 02, 2012