

River Bend 1

1Q/2005 Plant Inspection Findings

Initiating Events

G**Significance:** Dec 31, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to revise a tagging boundary to support an emergent troubleshooting task resulted in a loss of protected division of offsite power and shutdown cooling

The inspectors identified a green noncited violation of Technical Specification 5.4.1.a for failure to make a proper change to the tagging boundary around balance of plant Transformer RTX-XSR1F during Refueling Outage 12. This performance deficiency resulted in a trip signal, generated during troubleshooting the transformer sudden overpressure protection circuit, which caused the trip of switchyard Breakers OCB-20670 and OCB-20665. This resulted in the loss of offsite power to Division II engineered safety features Transformer RTX-XSR1D, causing a loss of shutdown cooling, a loss of alternate decay heat removal, containment isolations, and an automatic start of the Division II emergency diesel generator.

The inspectors determined that this human performance error was more than minor because it was associated with the initiating event cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown operations. The inspectors evaluated the finding using IMC 0609, Appendix G, "Shutdown Operations Significance Determination Process," and determined that the loss of offsite power to Division II engineered safety features switchgear was of very low safety significance because there was no increased likelihood of a loss of reactor coolant system inventory, there was no loss of reactor water level instrumentation, there was no degradation of the licensee's ability to terminate a leak path or add water to the reactor when needed, nor was there any degradation of the licensee's ability to recover decay heat removal once it was lost. Because this human performance error was of very low safety significance (Green) and was documented in the licensee's corrective action program as CR-RBS-2003-03456, this violation is being treated as a noncited violation, consistent with Section VI.A of the NRC Enforcement Policy, NUREG-1600.

Inspection Report# : [2004005\(pdf\)](#)**G****Significance:** Dec 31, 2004

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

Human performance error causes a loss of offsite power to Division I ESF Switchgear and start of the Division I emergency diesel generator during Refueling Outage 12

The inspectors identified a self-revealing noncited violation of Technical Specification 5.4.1.a. that was of very low safety significance (Green). As a result, during preparation for Division I integrated emergency core cooling systems testing, a technician inadvertently made contact with the wrong terminal on an undervoltage relay which tripped the preferred offsite power feeder breaker for the Division I safety-related 4160 Vac switchgear and started the Division I emergency diesel generator.

The inspectors determined that the inadvertent contact of the wrong terminal on Division I was a performance deficiency and a human performance error. Also, ineffective and incomplete corrective actions for similar errors contributed to the performance deficiency. The finding was more than minor because it was associated with the initiating events cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions, namely a partial loss of offsite power. The inspectors evaluated the finding using Inspection Manual Chapter 0609, Appendix G, "Shutdown Operations Significant Determination Process," Attachment 1, Checklist 7, "BWR Refueling Operations with RCS Level greater than 23 feet." The finding was of very low safety significance (Green) because it did not cause a loss of shutdown cooling and did not compromise the ac power guidelines that: (1) one qualified circuit of offsite power remain operable; (2) at least one emergency diesel generator remain operable; and (3) necessary portions of the ac electrical power distribution systems remain operable.

The inspectors determined that this human performance error with problem identification and resolution aspects was the result of a violation of Technical Specification 5.4.1.a. which states, in part, that procedures shall be implemented and maintained as recommended in NUREG 1.33, Revision 2, Appendix A. Section 9.e. refers to general procedures for the control of maintenance activities. The licensee failed to evaluate the applicability of error reduction techniques, such as "taping of adjacent leads/contact points," for the installation of jumpers during Division I integrated emergency core cooling system testing, Procedure STP-309-0603, in accordance with Procedure ADM-0023, "Conduct of Maintenance," Revision 17A, Section 8.5. In addition, the licensee failed to install banana jacks on terminals on the back of the undervoltage relay in the Division I safety-related 4160 Vac switchgear, which were jumpered during the performance of Procedure STP-309-0603, in accordance with Procedure EDS-EE-001, "Banana Jack Standard," Revision 3. Because the finding was of very low safety significance and was entered into the licensee's corrective action program as Condition Report CR-RBS-2004-3518, this violation is being treated as a noncited violation, consistent with Section VI.A of the NRC Enforcement Policy, NUREG-1600.

Inspection Report# : [2004005\(pdf\)](#)

G**Significance:** Dec 31, 2004

Identified By: NRC

Item Type: FIN Finding

Automatic reactor scram during main turbine control valve testing due to control system malfunction

The inspectors identified a finding based on the licensee's failure to adequately identify the root cause of the April 21, 2001, turbine trip and reactor scram so as to prevent recurrence. This failure resulted in a subsequent turbine trip and reactor scram on September 22, 2003.

The inspectors determined that the failure by the licensee to adequately identify the root cause of the April 21, 2001, event and to take effective corrective actions to prevent electrostatic arcing from affecting the primary and backup speed probes, was a performance deficiency. The inspectors determined that this performance deficiency led directly to the recurrence of the event on September 22, 2003. 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 the Phase 1 screening of the finding, the inspectors determined that the finding was of very low safety significance because it did not affect loss of coolant accident initiators, did not contribute to increasing the likelihood of both an initiating event and affect mitigating equipment, and did not increase the likelihood of a fire or flood. This finding had problem identification and resolution crosscutting aspects regarding ineffective root cause determinations (evaluation). It was entered into the licensee's corrective action program as Condition Report CR-RBS-2003-3203.

Inspection Report# : [2004005\(pdf\)](#)**G****Significance:** Dec 31, 2004

Identified By: Self Disclosing

Item Type: FIN Finding

Failure to identify and properly evaluate deficient conditions related to switchyard breakers

The inspectors identified a self-revealing finding of very low safety significance concerning the licensee's failure to identify a deficient condition due to preconditioned speed testing of station switchyard breakers and properly evaluate three similar failures of station switchyard breakers. As a result, three switchyard breakers opened slowly on August 15, 2004, and a transmission line ground fault that should have been isolated from the station switchyard remained connected to the main transformer long enough to cause a main generator lockout and reactor scram. Additionally, because slow breaker opening deenergized the north 230 kV bus, isolation of a coincident transmission line fault resulted in a loss of power to half of the balance of plant loads and the Division II engineered safety features switchboard.

This problem identification and resolution finding was more than minor because it was associated with the initiating events cornerstone objective to limit those events that upset plant stability and challenge a critical safety function during power operations. The inspectors evaluated the finding using Inspection Manual Chapter 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations." Because the finding contributed to the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available, the finding required a Phase 2 analysis. The inspectors referred the results of the Phase 2 analysis to the regional senior reactor analyst for final determination of risk.

The senior reactor analyst performed a Phase 3 analysis of the event. The factors that contributed to the result of that analysis included: (1) the dominant sequence was a transient with a loss of power to a vital bus; (2) the consequences of the finding were bounded by a complete loss of offsite power; (3) the history of single slow switchyard breaker operation; (4) the design and layout of the station switchyard; and (4) the possibility of recovery from either a partial or complete loss of offsite power given the conditions that led to the events of August 15, 2004. The result was that the finding was of very low safety significance.

Inspection Report# : [2004005\(pdf\)](#)**G****Significance:** Oct 08, 2004

Identified By: Self Disclosing

Item Type: FIN Finding

Failure to maintain circulating water cooling tower drift eliminators and to take timely corrective actions to address insulator arcing

The inspectors documented a self-revealing finding for failure to adequately maintain the circulating water cooling tower drift eliminators which resulted in salt contamination of the insulators in the on-site transformer yard, and failure to take corrective actions when pre-established trigger points were reached regarding insulator arcing (corona). The resulting contamination and failure to clean the insulators caused ground faults on Reserve Station Service Line1 and main transformers, which resulted in the loss of the Division I off-site power and a reactor scram on October 1, 2004. This finding had crosscutting aspects related to problem identification and resolution in that corrective actions were not implemented in a timely manner to prevent a significant plant transient.

This finding is 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. A completed Phase 3 evaluation resulted in an incremental conditional core damage probability of 1.2E-7. Therefore, the significance of the finding was determined to be of very low safety significance.

Inspection Report# : [2004012\(pdf\)](#)

Mitigating Systems

Significance:  Dec 31, 2004

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

Wide range reactor water level indication did not respond, as expected by operators, following an unplanned reactor scram

A self-revealing, noncited violation of 10 CFR 55.46(c) was identified regarding differences between the simulator's and the plant's wide-range reactor water level digital indications during an unplanned reactor scram. This unexpected level indication resulted in indecision on the part of the operators during postscram recovery actions on December 10, 2004.

This finding is more than minor since deficiencies in the operator training program could become a more significant safety concern if left uncorrected. Based on the results of the significance determination process using Inspection Manual Chapter 0609, Appendix I, "Operator Requalification Human Performance Significance Determination Process," this finding was determined to have very low safety significance, since it did not involve an exam or operating test but did involve a simulator fidelity issue which impacted operator actions during the response to an actual transient in the plant.

Inspection Report# : [2004005\(pdf\)](#)

Significance:  Dec 31, 2004

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

Rainwater leaked from auxiliary building roof onto Division I auxiliary building 480 Vac ESF switchgear, causing loss of a safety-related auxiliary building area unit

The inspectors identified a self-revealing noncited violation of 10 CFR Part 50 Appendix B, Criterion XVI, for the licensee's failure to take timely and effective corrective action to prevent recurrence of rainwater leakage from the auxiliary building roof onto auxiliary building 480 Vac safety-related Switchgear EJS-SWGR2A, causing a loss of auxiliary building area unit Cooler HVR-UC11A. Investigation into the source of water determined that rainwater was accumulating inside the auxiliary building fresh air intake structure on the roof and leaking through seals along the air inlet ductwork onto Switchgear EJS-SWGR2A. The inspectors determined that this was a repeat of a February 5, 2004, leak documented in River Bend Station Condition Report 2004-0346 and a problem identification and resolution Noncited Violation 05000458/2004002-02. This finding had crosscutting aspects related to ineffective corrective actions.

The inspectors determined that the licensee's failure to take timely and effective corrective action to stop rainwater leaks from the auxiliary building roof onto Switchgear EJS-SWG2A was a performance deficiency that caused the loss of Cooler HVR-UC11A. The finding was more than minor because, if left uncorrected, rainwater leaks from the auxiliary building roof could lead to the loss of other Division I safety-related equipment and motor control centers powered by Switchgear EJS-SWG2A. 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 results of the Phase 1 screening of the finding, the inspectors determined that the finding was of very low safety significance because the short-term loss of unit Cooler HVR-UC11A did not cause an actual loss of safety function of any train of Technical Specification risk significant equipment and was not potentially risk significant due to a seismic, flooding, or severe weather initiating event. The inspectors determined that the failure to take timely and effective actions to prevent rainwater from leaking onto Switchgear EJS-SWGR2A was a violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action." Because this finding was of very low safety significance and was entered into the licensee's corrective action program as CR-RBS-2004-4218, this violation is being treated as a noncited violation, consistent with Section IV.A of the NRC Enforcement Policy, NUREG-1600.

Inspection Report# : [2004005\(pdf\)](#)

Significance:  Oct 08, 2004

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

Failure to implement a required procedure for loss of main condenser vacuum/trip of circulating water pumps

The inspectors identified a non-cited violation of Technical Specifications 5.4.1.a for the failure of the licensee to implement the Abnormal Operating Procedure AOP-0005, "Loss of Main Condenser Vacuum/Trip of Circulating Water Pump," following the loss of two of three operating circulating water pumps. Failure to implement this procedure contributed to the loss of condenser vacuum. This finding had cross-cutting aspects of human performance in that the operators did not implement the abnormal operating procedure as required. Additionally, this finding had cross-cutting aspects regarding problem identification and resolution in that a similar event had occurred over a month earlier, and no actions were taken to incorporate that operating experience into the operating procedures or process it through the corrective action program.

This finding is greater than minor because it is associated with human performance attribute of the mitigating system cornerstone and affects the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. This finding actually led to the loss of main condenser vacuum and forced the operators to perform a reactor cool down through safety relief valves, reactor core isolation cooling and the suppression pool. This finding is of very low safety significance because it would only affect the plant during this particular situation of partial loss of offsite power and that all mitigating capability was maintained.

Inspection Report# : [2004012\(pdf\)](#)

G**Significance:** Jun 30, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to maintain design control conditions of engineered safety features electrical switchgear

The inspectors identified two examples of a noncited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the licensee's failure to maintain the original design configuration of engineered safety feature switchgear. The inspectors found all of the heat dissipation louvers on top of the load centers and the relay control cabinets for both Divisions I and II auxiliary building 480 Vac engineered safety features switchgear covered with tape. Previously, the licensee had identified cardboard covering the ventilation louvers on breaker cubicles in the Division I engineered safety features 4160 Vac switchgear in the control building.

The failure to maintain design control over Switchgear EJS-SWGR2A and -2B and ENS-SWGR1A was a performance deficiency. The violation was more than minor because it was associated with the mitigating systems cornerstone attribute for design control. It affects the mitigating system cornerstone objective to ensure the reliability of systems that respond to initiating events to prevent undesirable consequences. This noncited violation was evaluated using Manual Chapter 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations." During the Phase 1 analysis, the issue was determined to have very low safety significance because it did not: (1) represent a design or qualification deficiency, (2) represent an actual loss of safety function of a system or a single train of a system for greater than the Technical Specification allowed out-of-service time, (3) represent an actual loss of safety function of non-Technical Specification trains of equipment per 10 CFR 50.65 for more than 24 hours, and (4) screen as potentially risk significant due to a seismic, fire, flooding, or severe weather initiating event. Since this violation of 10 CFR Part 50, Appendix B, Criterion III, was of very low safety significance and was entered in the licensee's corrective action program as CR-RBS-2004-0512, -1389, -1855, and -1856, it is being treated as a noncited violation consistent with the NRC Enforcement Policy, NUREG-1600.

The inspectors also determined that on at least two occasions the licensee had the opportunity but failed to identify the tape covering the louvers on top of auxiliary building 480 Vac engineered safety features Switchgear EJS-SWGR2A. Therefore, the inspectors consider this finding to have problem identification and resolution aspects for failure to identify a condition adverse to quality. Also the inspectors determined that the design engineering evaluation of as-found conditions for Division I engineered safety features 4160 Vac ENS-SWGR1A for past reportability was actually an evaluation of Division I 480 Vac engineered safety features EJS-SWGR1A and therefore a human performance error.

Inspection Report# : [2004003\(pdf\)](#)**G****Significance:** Jun 30, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

Unacceptable preconditioning of Technical Specification diesel generator surveillance testing

The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for the licensee's performance of unacceptable preconditioning of Technical Specification emergency diesel generator surveillance testing. The inspectors found three unacceptable preconditioning activities the licensee performed during the May and June 2004 emergency diesel generator monthly surveillance tests. The inspectors determined that this finding has problem identification and resolution aspects because the licensee identified some of these activities as unacceptable preconditioning in their evaluation of NRC Information Notice 97-16, "Preconditioning of Plant Structures, Systems, and Components Before ASME Code Inservice Testing or Technical Specification Surveillance Testing," dated June 9, 1997, yet failed to take actions to correct the test procedures.

The inspectors determined the unacceptable preconditioning of emergency diesel generator surveillance testing was a performance deficiency. The finding was more than minor because it was associated with the mitigating systems cornerstone attribute for procedure quality. The finding affected the cornerstone objective to maintain availability and reliability of systems that respond to events to prevent undesirable consequences. The inspectors reviewed the finding using Manual Chapter 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations." Based on the results of 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 design or qualification deficiency, was not an actual loss of safety function for a system or train, and was not risk significant due to a seismic, fire, flooding, or severe weather initiating event. The inspectors determined that unacceptable preconditioning of Technical Specification diesel generator surveillance testing was a violation of 10 CFR Part 50, Appendix B, Criterion V. Because the violation was of very low safety significance and was entered into the licensee's corrective action program as CR-RBS-2004-1839 and -1858, it is being treated as a noncited violation, consistent with Section VI.A of the NRC Enforcement Policy, NUREG 1600.

The inspectors identified aspects related to problem identification and resolution. In their evaluation of NRC Information Notice 97-15, the licensee identified and evaluated some activities that precondition the emergency diesel generators during their prestart checks for surveillance testing, but failed to take appropriate actions to correct the procedures.

Inspection Report# : [2004003\(pdf\)](#)

G**Significance:** Dec 31, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to control special processes such as welding in accordance with qualified welding procedures

The inspector identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion IX, for failure to control special processes, such as welding, in accordance with qualified welding procedures as required. The finding was a human performance error for the failure to follow procedure. Criterion IX, Appendix B, of 10 CFR Part 50, "Control of Special Processes," requires in part that measures shall be established to assure that special processes, including welding, heat treating, and nondestructive testing are controlled and accomplished by qualified personnel using qualified procedures in accordance with applicable codes, standards, specifications, criteria, and other special requirements. Contrary to the above, welding personnel failed to verify interpass temperature during welding activities on feedwater inlet check Valve B21-AOVF032, an ASME Class 1 valve, in accordance with qualified welding procedures.

This finding was determined to be more than minor, through Inspection Manual Chapter 0612, Appendix B, in that it affected the barrier integrity cornerstone attribute of human performance, could have represented a more significant issue if left uncorrected, and there was a reasonable likelihood that the valve would have been returned to service if the inspector had not intervened. Based on the results of a significance determination process Phase 1 analysis, this finding had very low safety significance because it did not result in the loss of a barrier integrity function and has been entered into the licensee's corrective action program as Condition Report CR-RBS-2004-03395. This violation is being treated as a noncited violation, consistent with Section VI.A of the NRC Enforcement Policy, NUREG-1600.

Inspection Report# : [2004005\(pdf\)](#)**G****Significance:** Jun 30, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to identify a functional failure

The NRC inspectors identified a noncited violation of 10 CFR 50.65(a)(2). On May 15, 2003, the licensee failed to set goals and monitor the performance of the secondary containment system as required by 10 CFR 50.65(a)(1). As required by 10 CFR 50.65(a)(2), the licensee must demonstrate effective control of a structure's condition through appropriate preventive maintenance to not require paragraph (a)(1) monitoring. The licensee had no justification for not requiring (a)(1) monitoring, after they failed to demonstrate effective control of the performance of the secondary containment system through appropriate preventive maintenance. The inspectors considered this violation to be noncited consistent with Section VI.A.1 of the NRC Enforcement Policy. The licensee entered this noncited violation into its corrective action program as Condition Report CR-RBS-2004-01706.

The inspectors determined this violation was more than minor because the failure to identify functional failures resulted in the system not being evaluated for 10 CFR 50.65(a)(1) status and had a credible impact on safety. The licensee performed engineering evaluations which concluded that, had a design basis accident occurred while the condition existed, the main control room, exclusion area boundary, and low population zone doses would have remained within the limits of 10CFR50.67. The inspectors determined the safety significance of this violation to be very low by the Reactor Safety Significance Determination Process. The inspectors answered the Phase 1 question regarding containment as yes because the inspectors determined that this finding represented a degradation of the radiological barrier only; therefore, in accordance with Manual Chapter 0609, Appendix A, Attachment 1, this finding is of very low safety significance.

Inspection Report# : [2004003\(pdf\)](#)

Emergency Preparedness

Occupational Radiation Safety

G**Significance:** Dec 31, 2004

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

Failure to control a high radiation area in accordance with Technical Specification 5.7.3

The inspector reviewed a self-revealing noncited violation of Technical Specification 5.7.3 because the licensee failed to control a high radiation area with dose rates greater than 1,000 millirems per hour. On October 31, 2004, during maintenance activities on valves located on the 82-foot level of the drywell, three workers' electronic alarming dosimeters unexpectedly alarmed when they were exposed to unanticipated radiation levels of approximately 1,700 millirems per hour. Subsequent radiation surveys at the source of radiation around Valve RCS-V-3009 identified 6,000 millirems per hour on contact and 2,000 millirems per hour at 30 centimeters. The area was not barricaded, conspicuously posted, and did not have a flashing light activated as a warning device. The licensee determined that the three workers received 84, 85, and 95 millirems, respectively. This finding was entered into the licensee's corrective action program.

This finding is more than minor because it is associated with the Occupational Radiation Safety attribute of exposure control and affected the cornerstone objective, in that not controlling locked high radiation areas could increase personal exposure. Using the Occupational Radiation Safety Significance Determination Process, the inspector determined that the finding was of very low safety significance (Green) because it did not involve: (1) as low as reasonably achievable planning and controls, (2) an overexposure, (3) a substantial potential for overexposure, or (4) an impaired ability to assess dose.

Inspection Report# : [2004005\(pdf\)](#)

Public Radiation Safety

Physical Protection

[Physical Protection](#) information not publicly available.

Miscellaneous

Last modified : June 17, 2005