River Bend 1
1Q/2008 Plant Inspection Findings

Initiating Events

Significance: G Mar 29, 2008
Identified By: NRC
Item Type: NCV NonCited Violation
Internal Operating Experience Not Used to Prevent Recurrence of Reactor Recirculation FCV Runbacks
The inspectors identified a noncited violation of Technical Specification 5.4.1.a for an inadequate procedure for securing a reactor feedwater pump. Specifically, the licensee failed to incorporate internal operating experience into the procedure. As a result, a reactor recirculation flow control valve runback resulting from a known reactor vessel water level loop tolerance issue recurred, resulting in an unplanned power reduction. This issue was entered into the licensee's corrective action program as Condition Report RBS-2007-4749.

The finding is more than minor since it affects the human performance area of the initiating events cornerstone and affects the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions. Using the NRC Manual Chapter 0609, "Significance Determination Process," Phase 1 worksheet, the finding has very low safety significance since it did not contribute to both the likelihood of a reactor scram and the likelihood that mitigating equipment would not have been available.

Inspection Report# : 2008002 *(pdf)*

Significance: G Mar 29, 2008
Identified By: Self-Revealing
Item Type: FIN Finding
Condensate Demineralizer Tank Liner Failure
A self-revealing finding was identified for the failure to properly repair condensate Demineralizer 1E tank liner prior to returning it to service. As a result, failure of the liner resulted in approximately 20,000 gallons of radiological contaminated condensate being spilled from the manway flange. Operations lowered reactor power from 90 percent to 82 percent to conserve condensate system inventory. This issue was entered into the licensee's corrective action program as Condition Report RBS-2007-5440.

The finding is greater 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 events that upset plant stability and challenge critical safety functions during shutdown and power operations. Using the NRC Manual Chapter 0609, "Significance Determination Process," Phase 1 worksheet, the finding was considered to be a transient initiator contributor which contributed to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available and, therefore, screened to Phase 2. Using the Phase 2 worksheets, the inspectors assumed that successful recovery of the condensate system from the leak was highly likely and determined the finding to be of very low safety significance. This finding has crosscutting aspects associated with human performance in the area of resources in that a complete, accurate, and up-to-date work package was not available to assure nuclear safety [H.2(c)].

Inspection Report# : 2008002 *(pdf)*

Significance: G Dec 31, 2007
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
RPS Terminal Board Loose Connection Results in a Reactor Scram
A self-revealing noncited violation of 10 CFR Part 50 Appendix B, Criterion V was identified involving the failure to adequately torque reactor protection system electrical terminal board connections during initial construction. This

failure resulted in a loose terminal connection causing thermal degradation that subsequently resulted in an automatic reactor scram during average power range monitor surveillance testing. The licensee entered this issue into their corrective action program as Condition Report CR-RBS-2007-04264.

The finding was more than minor because it was associated with the initiating events cornerstone attribute of equipment performance and affected the associated cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during power operations. Using Manual Chapter 0609, “Significance Determination Process,” Phase 1 Worksheet, the finding was determined to have very low safety significance (Green) because the finding did not contribute to both the likelihood of a reactor trip and that mitigating equipment or functions would not be available following a reactor trip.
Inspection Report# : 2007005 *(pdf)*

Significance: G Dec 31, 2007
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
Inadequate Preventive Maintenance Strategy Results in a Breaker's Failure to Promptly Open Due to Hardened Grease Results in a Complicated Reactor Scram
A self-revealing Green noncited violation of 10 CFR 50.65(A)(3) was identified for failure to incorporate internal and external operating experience into preventive maintenance activities to prevent industry known electrical circuit breaker deficiencies. Specifically, inadequate breaker maintenance, leading to grease hardening degradation, resulted in inadequate electrical fault protection on November 7, 2007. The failure to adequately isolate the electrical fault resulted in a complicated reactor scram involving the loss of the main condenser and reactor feedwater. The licensee entered this into their corrective action program as CR-RBS-2007-04922.

The finding was more than minor because it was associated with the initiating events cornerstone attribute of equipment performance and affected the associated cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during power operations. The inspectors evaluated the finding using Manual Chapter 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations." The finding required a Phase 2 analysis because the finding contributed to the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available. A senior reactor analyst estimated the risk of the subject finding using the Risk-Informed Inspection Notebook for River Bend Station, Unit 1, Revision 2.1a. The analyst determined the finding was of very low safety significance.

This finding has a crosscutting aspect in the area of Problem Identification and Resolution, Corrective Action Program, because the licensee did not take appropriate corrective actions to address safety issues and adverse trends in a timely manner, commensurate with their safety significance and complexity.
Inspection Report# : 2007005 *(pdf)*

Significance: G Dec 31, 2007
Identified By: Self-Revealing
Item Type: FIN Finding
Inadequate Preventative Maintenance Results in a Plant Down Power
A self-revealing finding was identified for failure to perform adequate preventive maintenance for control panels associated with providing make up water to the circulating water system. Adequate preventative maintenance was not performed on this system, resulting in failure, based on an inappropriate run to failure classification of this equipment. The failure of this system resulted in a significant unplanned reduction in reactor power to 20 percent. The licensee entered this issue into their corrective action program as Condition Report CR-RBS-2007-04447.

The finding was more than minor because it was associated with the initiating events cornerstone attribute of equipment performance and affected the associated cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during power operations. Using Manual Chapter 0609, “Significance Determination Process,” Phase 1 Worksheet, the finding has very low safety significance (Green) since the finding did not contribute to both the likelihood of a reactor trip and that mitigating equipment or functions would not be available following a reactor trip.
Inspection Report# : 2007005 *(pdf)*

Significance: G Jun 30, 2007
Identified By: Self-Revealing
Item Type: FIN Finding
Failure to Implement Vendor Recommendations
A self-revealing finding was identified involving the failure to implement 1998 vendor recommendations associated with the potential for vibration induced degradation of recirculation loop gate valves. This resulted in the failure to identify and implement timely corrective actions prior to disk to stem separation of recirculation Pump A discharge gate valve that occurred on May 21, 2007. This issue was entered into the licensee's corrective action program as condition Report CR-RBS-2007-02113.

The finding was more than minor because it was associated with the initiating events cornerstone attribute of equipment performance and affected the associated cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during power operations. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the finding was determined to have a very low safety significance because the finding did not contribute to the likelihood that mitigation equipment or functions would not be available following a reactor trip.
Inspection Report# : 2007003 *(pdf)*

Significance: G Jun 30, 2007
Identified By: NRC
Item Type: FIN Finding
Inadequate Work Instructions
The inspectors identified a finding involving inadequate maintenance instructions for opening a stuck closed feedwater regulating Valve A isolation valve. Specifically, the instructions failed to account for the system being pressurized resulting in unexpected valve stem movement while technicians were removing the manual operator from the valve on June 10, 2007. This deficiency could have resulted in personnel harm or an unexpected and uncontrolled plant transient. This issue was entered into the licensee's corrective action program as condition Report CR-RBS-2007-02576.

The finding was more than minor because it could become a more significant safety concern if left uncorrected. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the finding was determined to have very low safety significance because the deficiency 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. The cause of this finding was related to the human performance crosscutting component of resources because the licensee did not ensure a complete and accurate work package was available prior to the start of the job (H.2(c)).
Inspection Report# : 2007003 *(pdf)*

Significance: G Jun 30, 2007
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
Failure to Install Scram Discharge Instrument Volume Vent Plug
A self-revealing noncited violation of Technical Specification 5.4.1.a was identified involving the failure to follow a surveillance procedure for scram discharge instrument volume water level channel calibration. Specifically, on February 9, 2007, an instrument line plug was not replaced following surveillance testing. As a result, on May 5, 2007, following a reactor scram, reactor water sprayed out of the scram discharge instrument volume and contaminated some accessible portions of the containment building causing three inadvertent personnel contamination events. This issue was entered into the licensee's corrective action program as condition Report CR-RBS-2007-01809.

The finding was more than minor because it was associated with the initiating event cornerstone attribute of equipment performance and affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during power operations. A Phase 2 estimation was required, as determined by the Manual Chapter 0609, Appendix A, Phase 1 Worksheet, "SDP Phase 1 Screening Worksheet for Initiating Events, Mitigation Systems, and Barriers Cornerstones," because the associated performance deficiency resulted in a reactor coolant leak greater than the Technical Specification limit for identified reactor coolant system

leakage. Using the plant-specific Phase 2 risk-informed notebook, this violation was determined to have very low safety significance because the violation only increased the likelihood of a small-break loss of coolant accident by a very small amount and mitigation capability was unaffected. The cause of the finding was related to the human performance crosscutting component of work practices because neither self nor peer checking actions identified the failure to replace the vent plug (H.4(a)).
Inspection Report# : 2007003 *(pdf)*

Mitigating Systems

Significance: G Mar 29, 2008
Identified By: NRC
Item Type: NCV NonCited Violation
Improper Design Control for Evaluating Emergency Diesel Generator Turbocharger Combustion Air Pipe Stresses
The inspectors identified a noncited violation of Title 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for failure to incorporate accurate design information into a calculation to determine emergency diesel generator turbocharger discharge combustion air pipe stresses. This resulted in pipe failure. Specifically, a calculation assumed nonconservative pipe wall thicknesses and process air temperatures, treated pipe end points as rigid anchors and failed to use stress intensification factors. This resulted in low calculated pipe stresses. With appropriately calculated pipe stress values, Entergy personnel could reasonably have been expected to adequately modify the combustion air piping to preclude subsequent failures. This issue was entered into the licensee's corrective action program as Condition Report RBS-2008-2869.

This issue was determined to be more than minor because it affected the mitigating systems cornerstone objective and was similar to Manual Chapter 0612, Appendix E, Example 3.j because the errors were considered more than a minor calculation error in that the deficiency failed to identify the high pipe wall stresses that significantly reduced the overall allowable material strength margin. Later pipe and weld flaws developed at the intercooler adapter and turbocharger end connections that rendered the emergency diesel generator Division 2 inoperable. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 worksheet, the inspectors determined that the issue was of very low safety significance (Green) because it did not screen as risk significant due to a seismic, flooding, or severe weather initiating event.
Inspection Report# : 2008002 *(pdf)*

Significance: G Sep 29, 2007
Identified By: NRC
Item Type: NCV NonCited Violation
Inadequate Risk Assessment for Removing Control Building Chilled Water System from Service
An NRC identified noncited violation of 10 CFR 50.65 (a)(4) was identified for the failure to assess and manage the increase in risk that may result from proposed maintenance activities on the control building chilled water system. This issue was entered into the licensee's corrective action program as Condition Report CR-RBS-2007-03059.

Using NRC Manual Chapter 0612, Appendix B, Section 3, Item 5(h), the finding is more than minor because the licensee's risk assessment had errors and incorrect assumptions that changed the outcome of the assessment. Using Manual Chapter 0609, "Significance Determination Process," Appendix K, "Maintenance Risk Assessment and Risk Management Significance Determination Process," the finding is determined to have very low safety significance (Green) because the incremental core damage probability deficit for the affected time periods is less than 1.0E-6
Inspection Report# : 2007004 *(pdf)*

Significance: G Apr 27, 2007
Identified By: NRC
Item Type: FIN Finding
Foreign Material Found in Residual Heat Removal Room Sump Pump Discharge Check Valve
The team identified a finding because the licensee failed to address control of foreign material in the Train B residual

heat removal room in June 2003. Consequently, on March 5, 2007, maintenance technicians found foreign material in one of the sump pump discharge check valves. This failure to control foreign material resulted in sump high level alarms, which had caused the operators to enter the emergency operating procedure for auxiliary building room flooding on three different occasions. The licensee documented this deficiency in Condition Report 2007-00859.

The finding was more than minor because it was associated with the mitigating systems cornerstone attribute of equipment performance and affected the associated cornerstone objective to ensure the availability of the residual heat removal system. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the finding was determined to have very low safety significance because there was no actual loss of the residual heat removal system function and it did not screen as potentially risk significant for an internal flooding event. The cause of the finding was related to the crosscutting element of human performance work practices in that licensee management failed to communicate and enforce compliance with the site foreign material control program.
Inspection Report# : 2007009 *(pdf)*

Barrier Integrity

Significance: G Mar 29, 2008
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
Failure to Follow Reactor Startup Procedure Results in Six Control Rod Withdrawal Errors
A self-revealing noncited violation of Technical Specification 5.4.1.a occurred when River Bend Station reactor operators failed to comply with General Operating Procedure GOP 000-1, “Plant Start Up.” Specifically operators withdrew six control rods two notches past the target out notch position specified in Reactivity Control Plan RCP-15-03. No fuel damage resulted from these errors. This issue was entered into the licensee’s corrective action program as Condition Report RBS-2008-2174.

This finding was more than minor because the finding affected the barrier integrity cornerstone attributes of configuration control and human performance and adversely impacts the cornerstone’s objective to provide reasonable assurance that physical design barriers (fuel cladding) protect the public from radio nuclide releases caused by accidents or events. The inspectors completed a Phase 1 significance determination using Manual Chapter 0609 Appendix A, Significance Determination Process Phase 1 screening worksheet, and determined the finding to be of very low safety significance (Green) because the performance issue only degraded the fuel cladding barrier. This finding had crosscutting aspects associated with human performance in the area of work practices in that the reactor operators failed to use self-check and peer-check during control rod reactivity manipulations (H.4.a).

Inspection Report# : 2008002 *(pdf)*

Significance: G Jun 30, 2007
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
Failure to Follow Instructions Resulted in Exceeding Load Line Analysis Limit
A self-revealing noncited violation of Technical Specification 5.4.1.a was identified involving the failure to follow procedure. Specifically, during control rod withdrawal a reactor engineer noted that reactor power, as calculated by a heat balance, was inconsistent with predicted power. Although this inconsistency was identified the reactor engineers and operators failed to fully evaluate this condition, as required by procedure, and continued with power ascension resulting in an automatic rod withdrawal block. Upon further review the event was caused from feed flow and temperature data not automatically updating resulting in calculated power being less than actual power. This issue was entered into the licensee's corrective action program as condition Report CR-RBS-2007-01691.

The finding was more than minor because it was associated with the barrier integrity cornerstone attribute of configuration control and it affected the cornerstone objective to provide reasonable assurance that physical design barriers, such as fuel cladding, protect the public from radio-nuclide releases caused by accidents or events. Using the Manual Chapter 0609, “Significance Determination Process,” Phase 1 Worksheet, the finding was determined to have a very low safety significance because it did not have the potential to affect the integrity of the RCS barrier. The cause

of this finding is related to the human performance cross cutting component of work practices because neither self nor peer checking actions prevented the automatic rod withdrawal block (H.4(a)).
Inspection Report# : 2007003 *(pdf)*

Emergency Preparedness

Occupational Radiation Safety

Significance: G Dec 31, 2007
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
Failure to Evaluate the Magnitude and Extent of Radiological Hazards Results in Personnel Contaminations
A self-revealing noncited violation of 10 CFR 20.1501(a) was identified for failure to evaluate the magnitude and extent of radiological hazards associated with performing inspections of equipment in the containment building after a reactor trip on May 4, 2007. This failure resulted in six personnel contaminations and uptakes. Followup surveys identified contamination levels of 60 mRad/smear beta/gamma and up to 1300 dpm alpha. Air sample results determined a derived air concentration value of 44 for noble gas. The licensee has placed this event in the radiation protection continuing training program and entered it into their corrective action program as Condition Report CR-RBS-2007-1822.

This finding was greater than minor because it was associated with the occupational radiation safety cornerstone attribute of program and process and affected the cornerstone objective in that the failure to evaluate the magnitude and extent of radiological hazards could cause unintentional dose to radiation workers. This finding was evaluated using the Occupational Radiation Safety Significance Determination Process and determined to be of very low safety significance (Green) because it did not involve: (1) ALARA planning and controls, (2) an overexposure, (3) a substantial potential for overexposure, or (4) an impaired ability to assess dose. This finding had a crosscutting aspect in the area of human performance related to the component of work control because the licensee did not communicate, coordinate, and cooperate with each other during activities in which interdepartmental coordination is necessary to assure plant and human performance.
Inspection Report# : 2007005 *(pdf)*

Significance: G Dec 31, 2007
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
Failure to Follow Radiation Work Permit and Radiation Worker Expectations
A self-revealing noncited violation of Technical Specification 5.4.1 was identified for failure to follow radiation work permit instructions resulting in a worker entering a posted high radiation area without authorization. On April 20, 2007, an individual received an electronic alarming dosimeter dose rate alarm after entering a posted high radiation area. The individual was signed on to a radiation work permit that did not allow entry into a high radiation area. This violation was entered into licensee's corrective action program as Condition Report CR-RBS-2007-1584.

This finding was greater than minor because it was associated with the occupational radiation safety cornerstone attribute of human performance and affected the cornerstone objective in that the failure to follow radiation work permit requirements could cause unintentional dose. This finding was evaluated using the Occupational Radiation Safety Significance Determination Process and determined to be of very low safety significance (Green) because it did not involve: (1) ALARA planning and controls, (2) an overexposure, (3) a substantial potential for overexposure, or (4) an impaired ability to assess dose. This finding had a crosscutting aspect in the area of human performance related to the component of work practices because the individual involved did not use proper self-checking and entered an area he was not authorized to enter.
Inspection Report# : 2007005 *(pdf)*

Significance: G Dec 31, 2007
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to Post a Radiation Area
An NRC-identified noncited violation of 10 CFR 20.1902(a) was identified for failure to conspicuously post a radiation area. Specifically, the inspector identified an entrance to a radiation area on the 90-foot elevation of the radwaste building that was accessible by a permanently installed ladder from the 65-foot elevation, which was not conspicuously posted as a radiation area. General area dose rates in the area were as high as 7 mrem/hour. This violation was entered into the licensee's corrective action program as Condition Report CR-RBS-2007-4954.

This finding was greater than minor because it was associated with the occupational radiation safety cornerstone attribute of program and process and affected the cornerstone objective in that the failure to post radiation areas could cause unintentional dose to radiation workers. This finding was evaluated using the Occupational Radiation Safety Significance Determination Process and determined to be of very low safety significance (Green) because it did not involve: (1) ALARA planning and controls, (2) an overexposure, (3) a substantial potential for overexposure, or (4) an impaired ability to assess dose. This finding had a crosscutting aspect in the area of human performance related to the component of work practices because radiation protection personnel did not adhere to management expectations regarding procedural compliance and following station procedures.
Inspection Report# : 2007005 *(pdf)*

Significance: G Sep 29, 2007
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to Survey Following Containment Atmosphere Radiation Monitor Particulate Channel Alarms
An NRC-identified noncited violation of 10 CFR 20.1501(a) was identified involving multiple failures to perform radiological surveys to evaluate radiological hazards following control room alarms of the Containment Atmosphere Radiation monitor particulate channel. This issue was entered into the licensee's corrective action program as Condition Report CR-RBS-2007-04415.

This finding is more than minor because it is associated with the Occupational Radiation Safety Cornerstone attribute of program and process, and affects the cornerstone objective to ensure the adequate protection of a worker's health and safety from exposure to radiation because it could have resulted in workers being exposed to higher radiation levels. When processed through the Occupational Radiation Safety Significance Determination Process, the finding is determined to be of very low safety significance because it is not an as low as is reasonably achievable finding, there was no overexposure or substantial potential for an overexposure, and the ability to assess dose was not compromised. The finding has a crosscutting aspect in the area of human performance, specifically the work control component, because the licensee failed to appropriately coordinate work activities by incorporating actions to address the impact of the work on different job activities and the need for work groups to communicate, coordinate, and cooperate with each other during activities in which interdepartmental coordination is necessary to assure plant and human performance (H.3(b)).
Inspection Report# : 2007004 *(pdf)*

Significance: G Jul 13, 2007
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to Conspicuously Post Radiation Areas
The team identified a noncited violation of 10 CFR 20.1902(a) because the licensee failed to post radiation areas in the radwaste building with a conspicuous sign or signs bearing the radiation symbol and the words "Caution, Radiation Area." The licensee posted radiation area signs only at the entrances to the different elevations of the building, instead of at the discrete radiation areas, even though most of the radwaste building was not a radiation area. Dose rates in unposted radiation areas were as high as 15 millirems per hour. As corrective action, the licensee posted the discrete areas. Additional corrective action is still being evaluated.

The finding was greater than minor because it was associated with one of the cornerstone attributes (exposure control and monitoring) and the finding affected the Occupational Radiation Safety cornerstone objective, in that, uninformed workers could unknowingly accrue additional radiation dose. Using the Occupational Radiation Safety Significance

Determination Process, the team determined that the finding was of very low safety significance because it did not involve: (1) ALARA planning and controls, (2) an overexposure, (3) a substantial potential for overexposure, or (4) an impaired ability to assess dose. Also, this finding had a cross-cutting aspect in the area of human performance and component of work control because the licensee did not coordinate work activities by incorporating actions to address the need to keep personnel apprised of plant conditions that may affect work activities.
Inspection Report# : 2007010 *(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 21, 2007
Identified By: NRC
Item Type: FIN Finding
Identification and Resolution of Problems
The team reviewed approximately 227 condition reports, work orders, engineering evaluations, associated root and apparent cause evaluations, and other supporting documentation to assess problem identification and resolution activities. On most occasions, the team determined that the licensee adequately identified, evaluated, prioritized, and implemented timely and effective corrective actions for conditions adverse to quality. However, the team concluded that the licensee had experienced some continuing challenges in all three areas based upon the number of issues identified during the last 15 months. Examples of poor engineering evaluations continued during this assessment period; however, the licensee had recognized this deficiency and had taken actions to address the weakness. The licensee had also implemented actions to improve their ability to correctly identify and take appropriate actions in response to the Substantive Crosscutting Issue in Problem Identification and Resolution identified in 2006. The licensee improved in their coordination among plant processes when closing condition reports to other corrective action or work control documents although some instances of incorrect closure had recently been identified.

Overall, the licensee appropriately evaluated industry operating experience for relevance to the facility and had entered applicable items into the corrective action program. The licensee appropriately used industry operating experience when performing root cause and apparent cause evaluations. The licensee performed effective Quality Assurance audits and self-assessments, as demonstrated by self-identification of poor corrective action program performance and identification of ineffective corrective actions. The team concluded that the licensee maintains an appropriate safety conscious work environment. The team concluded from interviews that, although no safety conscious work environment concerns existed, the complaints related to general culture factors that have been stated for the last two safety culture surveys, if not addressed, might result in safety conscious work environment concerns.

Inspection Report# : 2007009 *(pdf)*

Last modified : June 05, 2008