

## River Bend 1 1Q/2014 Plant Inspection Findings

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### Initiating Events

**Significance:** G Jun 29, 2013

Identified By: Self-Revealing

Item Type: FIN Finding

**Failure to Establish Effective Preventive Maintenance for Components Used in High Critical Applications**

The inspectors reviewed a self-revealing finding for the failure to establish an adequate preventive maintenance strategy for the reactor feedwater regulating valves that resulted in several unplanned power changes due to packing steam leaks. In response, the station polished the pitted and scored valve stems and created a four-year periodic preventive maintenance task to replace the valve stems. The licensee entered this issue into their corrective action program as Condition Report CR-RBS-2013-00076.

The performance deficiency is more than minor because it is associated with the equipment performance attribute of the initiating events cornerstone and adversely affected the cornerstone objective of limiting the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the failure to implement an appropriate preventive maintenance strategy resulted in multiple unplanned reactor power changes. In accordance with NRC Inspection Manual Chapter 0609, Attachment 4, "Initial Characterization of Findings," and NRC Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process for Findings At Power," Exhibit 1, Section B, this finding screened as very low safety significance (Green) because it was a transient initiator that did not result in both a reactor trip and loss of mitigating equipment. The most significant causal factor of the performance deficiency was over confidence with a lack of a questioning attitude concerning a flawed assumption that the engineering change had significantly increased the valves operating performance margin and solved the past operating issues with feedwater regulating valve packing leakage. No cross-cutting aspect was assigned because the station completed its decision making for the engineering change in June 2007, and these decisions are not indicative of current licensee performance.

Inspection Report# : [2013003](#) (*pdf*)

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### Mitigating Systems

**Significance:** G Mar 31, 2014

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Maintain Design Control for Performance Testing of the Control Building Chillers**

The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for failing to verify acceptable performance of the control building chillers. Specifically, station personnel failed to evaluate the increase in instrument uncertainty and increase in design basis accident heat loads in a calculation used to determine the thermal performance for control building chillers. The station's corrective actions included reanalyzing the performance calculation to account for the increased chiller loads and instrument uncertainty; revising the acceptance criteria used in the surveillance test procedures; and revising the surveillance test procedures to use instruments of similar or better accuracy than the instruments used in the performance calculation. The licensee

entered this issue into their corrective action program as Condition Reports CR-RBS-2013-07133 and CR-RBS-2013-7105.

The failure to evaluate the decrease in temperature accuracy in measuring chilled water and service water temperatures, and evaluate the increase in control building heat loads in the performance calculation to ensure that the chiller capacity acceptance criteria stated in the surveillance test procedures was acceptable, was a performance deficiency. The performance deficiency was more than minor, and therefore a finding, because if left uncorrected the performance deficiency would have the potential to lead to a more significant safety concern. Specifically, station personnel used incorrect assumptions in the performance calculation that created a reasonable doubt of the operability of the Divisions 1 and 2 control building chillers. In addition, the potential existed that in future testing the as-left instrument uncertainty plus the design basis load could exceed the chiller's load capacity. The inspectors determined the finding to be of very low safety significance (Green) in accordance with Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process for Findings At-Power," dated June 19, 2012. Using Exhibit 2, which contains the screening questions for the Mitigating Systems Cornerstone, the inspectors determined that the finding screened as Green because it was not a deficiency affecting the design or qualification deficiency; it did not represent a loss of system or function; it did not represent the loss of function for any technical specification system, train, or component beyond the allowed technical specification outage time; it did not represent an actual loss of function of any non technical specification trains of equipment designated as high safety-significant; and it did not screen as potentially risk-significant due to a seismic, flooding, or severe weather initiating event. These performance deficiencies occurred in 2003 and 2009 and therefore are not indicative of current licensee performance.

Inspection Report# : [2014002](#) (*pdf*)

**Significance:** G Mar 31, 2014

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Failure to Assess and Manage Risk for Electrical Switchyard Impacting Maintenance**

The inspectors identified a non-cited violation of 10 CFR 50.65(a)(4), "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants." Specifically, on February 12, 2014, the licensee failed to correctly assess and manage the increase in risk associated with work in the station's Fancy Point electrical switchyard. Corrective actions included reevaluating risk for the time period and issuing interim guidance on planning and evaluating the risk of switchyard work. The station planned to revise the OSP-0048 procedure to include the interim guidance. The licensee entered this issue into their corrective action program as Condition Report CR-RBS-2014-01221.

The failure to perform an adequate risk assessment and implement appropriate risk management actions was a performance deficiency. The inspectors used Inspection Manual Chapter 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," dated September 7, 2012, to determine that the performance deficiency was more than minor, and therefore a finding, because it was associated with the Mitigating Systems Cornerstone attribute of protection against external factors and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Manual Chapter 0609, Attachment 4, directs the inspectors to Appendix K for Maintenance Risk Assessment issues. The inspector used NRC Inspection Manual Chapter 0609, Appendix K, "Maintenance Risk Assessment and Risk Management Significance Determination Process," dated May 19, 2005. The licensee provided "Risk Assessment Related to CR-RBS-2014-1220/-1221 Switchyard Work," dated March 31, 2014. The exposure period was 20 hours. The licensee identified the risk deficit as 2.6E-8/year. Since the risk deficit was less than 1E-6, the finding was of very low safety significance (Green). This finding was not significant to the large early release frequency. The apparent cause of the finding involved the failure to fill a position to act as a point of contact for switchyard work management for a period of four months due to the station's staffing reorganization. Therefore, this finding has a cross cutting aspect in the area of human performance associated with change in management because the licensee failed to effectively transition the switchyard point-of-contact position through the staff reorganization

[H.3].

Inspection Report# : [2014002](#) (*pdf*)**Significance:** G Mar 31, 2014

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Adequately Control Design Basis Documents for the Emergency Diesel Generators**

The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," involving the licensee's failure to correctly translate the design basis for the diesel fuel oil transfer system into specifications, drawings, procedures, and instructions. Specifically, the station confirmed through calculations that the emergency diesel generator fuel oil transfer system could not perform its seven day mission time to provide filtered fuel oil to emergency diesel generators at the Technical Specification maximum allowable value for fuel oil particulates, with the number of filters available on site. In response to this issue, the licensee verified that the diesel fuel oil particulate level had never approached the technical specification limit; therefore, operability of the emergency diesel generators was never challenged. This finding was entered into the licensee's corrective action program as Condition Report CR-RBS-2013-04780.

The failure to translate into specifications, drawings, procedures, and instructions, the diesel fuel oil transfer system limitations to perform its seven day mission time associated with the number of filters available on site was a performance deficiency. The performance deficiency was more than minor, and therefore a finding, because it was associated with Mitigating Events Cornerstone attribute of Design Control, and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. In accordance with Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," dated June 19, 2012, Exhibit 2, "Mitigating Systems Screening Questions," the finding screened as having very low safety significance (Green) because it was not a design or qualification deficiency that represented a loss of operability or functionality; did not represent an actual loss of safety function of the system or train; did not result in the loss of one or more trains of non-technical specification equipment; and did not screen as potentially risk significant due to seismic, flooding, or severe weather. The inspectors determined that this finding did not have a cross-cutting aspect because the most significant contributor did not reflect current licensee performance.

Inspection Report# : [2014002](#) (*pdf*)**Significance:** G Mar 31, 2014

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Promptly Correct a Degraded Emergency Diesel Generator Voltage Regulator**

The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for failure to promptly correct a degraded voltage regulator in the Division 3 emergency diesel generator. Specifically, the station failed to use operating experience in a timely manner, which resulted in the lockout of the Division 3 emergency diesel generator output breaker. The station replaced the voltage regulator to correct this condition. The licensee entered this issue into their corrective action program as Condition Report CR-RBS-2013-06789.

The inspectors determined that the failure of the licensee to promptly correct the cause of erratic KVAR/voltage output from the Division 3 emergency diesel generator is a performance deficiency. The performance deficiency is more than minor, and therefore a finding, because it is associated with the Mitigating Systems Cornerstone attribute of equipment performance and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). The inspectors used the NRC Inspection Manual 0609, Appendix A, Exhibit 2, "Mitigating Systems Screening Questions." The finding required a detailed risk evaluation because it involved a potential loss of one train of safety related

equipment for longer than the technical specification allowed outage time. The total exposure period was 20.3 days. The allowed outage time was 72 hours. The analyst determined the change to the core damage frequency was  $1.6E-7$ /year (Green). The finding was of very low safety significance (Green). The dominant core damage sequences included loss of offsite power events leading to station blackout. Equipment that helped mitigate the risk included recovery of an emergency diesel generator or offsite power. The finding was not a significant contributor to the large early release frequency (LERF). The cause of the performance deficiency appeared to be the ineffective use of industry operating experience. Therefore, the finding had a cross cutting aspect in the area of problem identification and resolution, associated with the operating experience component because the licensee failed to systematically and effectively collect, evaluate, and implement relevant internal and external operating experience in a timely manner [P.5].

Inspection Report# : [2014002](#) (*pdf*)

**Significance:** G Dec 30, 2013

Identified By: NRC

Item Type: VIO Violation

**Failure to Resolve Noncompliances Associated with Multiple Spurious Operations in a Timely Manner**

The team identified a Green violation of License Condition 2.C.(10) for the failure to implement and maintain in effect all provisions of the approved fire protection program associated with multiple spurious operations concerns. Specifically, the licensee failed to implement all of the required corrective actions for multiple spurious operations concerns prior to November 2, 2012, which marked the expiration of enforcement discretion for multiple spurious operations contained in Enforcement Guidance Memorandum 09-002. The licensee entered this issue into their corrective action program as Condition Report CR-RBS-2013-03465.

The failure to implement all of the required corrective actions for multiple spurious operations concerns in a timely manner was a performance deficiency. The performance deficiency was more than minor because it was associated with the protection against external events (fire) attribute of the Mitigating Systems Cornerstone and it adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The team evaluated this finding using Inspection Manual Chapter 0609, Appendix F, "Fire Protection Significance Determination Process," dated September 20, 2013, because it affected the ability to reach and maintain safe-shutdown conditions in case of a fire. A senior reactor analyst performed a Phase 3 evaluation to determine the risk significance of this finding since it involved multiple fire areas. The senior reactor analyst determined this finding was of very low safety significance (Green).

The finding had a cross-cutting aspect in the Work Practices component of the Human Performance area because the licensee failed to ensure supervisory and management oversight of work activities, including contractors, such that nuclear safety was supported [H.4(c)].

Inspection Report# : [2013007](#) (*pdf*)

**Significance:** G Dec 30, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

**Inadequate Alternative Shutdown Procedure**

The team identified a Green non-cited violation of Technical Specification 5.4.1.d for the failure to implement and maintain adequate written procedures covering fire protection program implementation. Specifically, the licensee failed to maintain an alternative shutdown procedure that ensured operators could safely shutdown the plant under all postulated control room fire scenarios. The licensee entered this issue into their corrective action program as Condition Report CR-RBS-2013-03150.

The failure to maintain adequate written procedures covering fire protection program implementation was a performance deficiency. The performance deficiency was more than minor because it was associated with the procedure quality attribute of the Mitigating Systems Cornerstone and it adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The team evaluated this finding using Inspection Manual Chapter 0609, Appendix F, "Fire Protection Significance Determination Process," dated September 20, 2013, because it affected the ability to reach and maintain safe-shutdown conditions in case of a fire. A senior reactor analyst performed a Phase 3 evaluation to determine the risk significance of this finding since it involved a postulated control room fire that led to control room evacuation. The senior reactor analyst determined this finding was of very low safety significance (Green).

The finding did not have a cross-cutting aspect since it was not indicative of present performance in that the performance deficiency occurred more than three years ago.

Inspection Report# : [2013007](#) (*pdf*)

**Significance:**  Dec 30, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Properly Calculate the Time Available for Operator Actions**

The team identified a Green non-cited violation of License Condition 2.C.(10) for the failure to implement and maintain in effect all provisions of the approved fire protection program. Specifically, the licensee failed to properly calculate the amount of time available for operators to perform time critical actions for all control room fire scenarios. The licensee entered this issue into their corrective action program as Condition Report CR-RBS-2013-03472.

The failure to properly calculate the amount of time available for operators to perform time critical actions for all control room fire scenarios was a performance deficiency. The performance deficiency was more than minor because it was associated with the protection against external events (fire) attribute of the Mitigating Systems Cornerstone and it adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The team evaluated this finding using Inspection Manual Chapter 0609, Appendix F, "Fire Protection Significance Determination Process," dated September 20, 2013, because it affected the ability to reach and maintain safe-shutdown conditions in case of a fire. A senior reactor analyst performed a Phase 3 evaluation to determine the risk significance of this finding since it involved a postulated control room fire that led to control room evacuation. The senior reactor analyst determined this finding was of very low safety significance (Green).

The finding had a cross-cutting aspect in the Decision Making component of the Human Performance area because the licensee failed to use conservative assumptions in decision-making when applying the guidance for control room fires contained in the safe-shutdown analysis [H.1(b)].

Inspection Report# : [2013007](#) (*pdf*)

**Significance:**  Dec 30, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Maintain Communication Systems Required for Alternative Shutdown Scenarios**

The team identified a Green non-cited violation of License Condition 2.C.(10) for the failure to implement and maintain in effect all provisions of the approved fire protection program. Specifically, the licensee failed to ensure that the communications systems would work under all postulated control room fire scenarios. The licensee entered this issue into their corrective action program as Condition Reports CR RBS 2013-03243 and CR-RBS-2013-03397.

The failure to ensure that the communications systems would work under all postulated control room fire scenarios

was a performance deficiency. The performance deficiency was more than minor because it was associated with the protection against external events (fire) attribute of the Mitigating Systems Cornerstone and it adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The team evaluated this finding using Inspection Manual Chapter 0609, Appendix F, "Fire Protection Significance Determination Process," dated September 20, 2013, because it affected the ability to reach and maintain safe-shutdown conditions in case of a fire. A senior reactor analyst performed a Phase 3 evaluation to determine the risk significance of this finding since it involved a postulated control room fire that led to control room evacuation. The senior reactor analyst determined this finding was of very low safety significance (Green).

The finding had a cross-cutting aspect in the Work Practices component of the Human Performance area because the licensee failed to ensure supervisory and management oversight of work activities, including contractors, such that nuclear safety was supported [H.4(c)].

Inspection Report# : [2013007](#) (*pdf*)

**Significance:**  Dec 30, 2013

Identified By: NRC

Item Type: FIN Finding

#### **Failure to Implement the Engineering Change Process for Appendix R Lighting**

The team identified a Green finding for the failure to properly implement the engineering change process. Specifically, the licensee failed to update the Maintenance Rule program and perform the required preventive maintenance tasks after the addition of three 8-hour Appendix R emergency lights. During subsequent discharge testing, two of the three lights failed. The licensee entered this issue into their corrective action program as Condition Reports CR-RBS-2013-03118 and CR-RBS-2013-03273.

The failure to properly implement the engineering change process was a performance deficiency. The performance deficiency was more than minor because it was associated with the protection against external events (fire) attribute of the Mitigating Systems Cornerstone and it adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The team evaluated this finding using Inspection Manual Chapter 0609, Appendix F, "Fire Protection Significance Determination Process," dated September 20, 2013, because it affected the ability to reach and maintain safe-shutdown conditions in case of a fire. The team assigned the finding a low degradation rating since the ability to reach and maintain safe-shutdown conditions in the event of a control room fire would be minimally impacted by the failure of the three emergency lights to function for 8-hours. Specifically, the team determined that the alternative shutdown procedure provided operators with an alternate method of verifying that the emergency diesel generator breaker was closed. Because this finding had a low degradation rating, it screened as having very low safety significance (Green).

The finding did not have a cross-cutting aspect since it was not indicative of present performance in that the performance deficiency occurred more than three years ago.

Inspection Report# : [2013007](#) (*pdf*)

**Significance:**  Jun 29, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Failure to Adequately Evaluate and Correct Degraded 125 Vdc Fused Disconnect Switches**

The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, Corrective Action, for the failure to identify and take prompt and adequate corrective actions to address a condition adverse to quality specifically related to the 125 Vdc fused disconnect switches located in the diesel generator building electrical distribution panels. The licensee addressed the underlying safety concern by cycling the disconnect switch to clean the

corroded contact surfaces and performing voltage and current checks to verify circuitry operability. The licensee entered the finding into the corrective action program as Condition Report CR-RBS-2013-04247.

The inspectors determined that this finding is more than minor because it is associated with the equipment performance attribute of the mitigating systems cornerstone and affects the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, during a seismic event the partially seated, corroded knife blades could cause a loss of safety related 125 Vdc power to the Division 1 and 2 emergency diesel generators, reactor water recirculation pumps A and B, or Division 1 and 2 remote shutdown panels. In accordance with NRC Inspection Manual Chapter 0609, Attachment 4, "Initial Characterization of Findings," and NRC Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process for Findings At-Power," Exhibit 2, this finding screened as very low safety significance (Green) because the degraded condition was not a design or qualification deficiency; did not represent an actual loss of function of a system; did not represent an actual loss of function of a single train or two separate trains for greater than its technical specification allowed outage time; did not represent an actual loss of function of one or more non-technical specification trains of equipment designated as high safety significant; and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. Because the most significant causal factor of the performance deficiency was the licensee's failure to use consistent key words in the corrective action program to characterize the disconnect switch failures, this finding has a cross-cutting aspect in the problem identification and resolution area associated with the corrective action program component because the licensee did not periodically trend and assess information from the corrective action program and other assessments in the aggregate to identify programmatic and common cause problems [P.1(b)].

Inspection Report# : [2013003](#) (*pdf*)

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## Barrier Integrity

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## Emergency Preparedness

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## Occupational Radiation Safety

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## Public Radiation Safety

**Significance:**  Dec 31, 2013

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

### **Failure to Perform a Survey on Water Leak**

Inspectors reviewed a self-revealing non-cited violation of 10 CFR 20.1501(a) because the licensee failed to perform radiation surveys to evaluate radiological conditions associated with a 5 gallons per minute water leak to ensure compliance with 10 CFR 20.1406(c). The leak continued for approximately five months before a radiological survey was completed that identified the leak source to be the circulating water blowdown system which contained liquid radioactive waste. This issue was entered into the corrective action program as Condition Report CR-RBS-2013-

02400.

The failure to perform a timely radiological survey was a performance deficiency. The finding was more than minor because if left uncorrected it could have led to a more significant concern. If not for the outage, the unidentified releases would have continued depositing radioactivity onsite and into the environment. Using NRC Manual Chapter 0609, Appendix D, "Public Radiation Safety Significance Determination Process," issued February 12, 2008, the finding was determined to be of very low safety significance because it was not a failure to implement an effluent program and public dose was not greater than Appendix I criteria or 10 CFR 20.1301(e). The finding had a cross-cutting aspect associated with the problem identification and resolution component because the licensee did not thoroughly evaluate the source of the leak in a timely manner [P.1(c)].

Inspection Report# : [2013005](#) (*pdf*)

**Significance:** N/A Dec 31, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Periodically Update the UFSAR**

The inspectors identified two examples of a Severity Level IV non-cited violation of 10 CFR 50.71(e) for failure to update the Updated Safety Analysis Report. Specifically, the licensee failed to adequately describe the Low-Level Radwaste Storage Facility and the Independent Spent Fuel Storage Installation in the Updated Safety Analysis Report in accordance with Regulatory Guide 1.70, Revision 3. The licensee entered the issue into their corrective action program as Condition Report CR-RBS-2013-07265.

The failure to update the Updated Safety Analysis Report to reflect changes made to the facility was a violation of regulatory requirements of 10 CFR 50.71(e), "Maintenance of Records, Making of Reports." This issue was evaluated using traditional enforcement because it had the potential to impact the NRC's ability to perform its regulatory function. The issue was characterized as a Severity Level IV violation in accordance with Section 6.1.d.3 of the NRC Enforcement Policy, issued January 28, 2013, because the erroneous information in the Updated Safety Analysis Report was not used to make an unacceptable change to the facility or procedures. Since this issue was dispositioned using traditional enforcement, there is no cross-cutting aspect.

Inspection Report# : [2013005](#) (*pdf*)

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## Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the [cover letters](#) to security inspection reports may be viewed.

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## Miscellaneous

**Significance:** N/A Sep 13, 2013

Identified By: NRC

Item Type: FIN Finding

**River Bend Station 2013 Biennial Problem Identification and Resolution Inspection Summary**

The team found that licensee was generally effective at identifying problems and putting them into the corrective action program; however, there were a few instances identified during the assessment period where the licensee had missed identification of problems. The licensee was also generally effective in prioritizing the extent to which individual problems would be evaluated and in establishing schedules for implementing corrective actions. The licensee's corrective action process was generally found to be effective; however, six findings were documented during the assessment period associated with the effectiveness indicating attention to this aspect of the corrective action program may be warranted.

The licensee used industry operating experience when performing root cause and apparent cause evaluations; however, three findings were documented during the assessment period associated with the licensee's failure to institutionalize industry information and may warrant attention by the licensee. The licensee generally evaluated industry operating experience for relevance to the facility and entered applicable items in the corrective action program. 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.

Inspection Report# : [2013008](#) (*pdf*)

Last modified : May 30, 2014