

# Byron 2

## 3Q/2009 Plant Inspection Findings

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### Initiating Events

**Significance:**  Sep 30, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

#### **INADEQUATE EVALUATION OF SEISMIC RESTRAINT ON THE FHB CRANE TROLLEY**

A finding of very low safety-significance and associated Non-Cited Violation (NCV) of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," was identified by the inspectors for failure to perform an adequate evaluation of seismic restraint on the Fuel Handling Building (FHB) crane trolley. Specifically, for evaluation of the seismic restraint in their single failure proof trolley analysis, the licensee failed to use adequate seismic acceleration values and failed to evaluate the connections for resulting reaction forces. Subsequent review found that the restraint was inadequate. The licensee documented the condition in Issue Report (IR) 934467 and initiated actions for calculation revision and installation of a field modification.

The inspectors determined that the failure to perform an adequate analysis for the seismic restraint and its connections for seismic loads was contrary to American Society of Mechanical Engineers (ASME) NOG-1-2004, requirements and was a performance deficiency. The FHB crane is designed to Seismic Category I requirements and the licensee used compliance with ASME NOG-1-2004, as the design basis for their upgrade to a single failure proof crane. The finding was more than minor because it was associated with the Initiating Events cornerstone attribute of Equipment Performance, Refueling/Fuel Handling equipment, 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 evaluated the finding using Inspection Manual Chapter 0609.04, "Phase 1 - Initial Screening and Characterization of Findings," and based on a "No" answer to all the questions in the Initiating Events column of Table 4a, determined the finding to be of very low safety-significance (Green). This finding has a cross-cutting aspect in the area of Human Performance, Work Practices because the licensee did not provide adequate oversight of work activities, including contractors, such that nuclear safety is supported. H.4(c)

Inspection Report# : [2009004](#) (*pdf*)

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### Mitigating Systems

**Significance:**  Sep 30, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

#### **DIESEL OIL STORAGE VENTS DO NOT SEISMICALLY QUALIFIED OR TORNADO RESISTANT**

A finding of very low safety significance and associated NCV of 10 CFR 50, Appendix A, Criterion 2, "Design basis for protection against natural phenomena," and Criterion 4, "Environmental and natural effects design bases," was identified by the inspectors for the failure to seismically support and protect from tornado generated missiles the DG fuel oil storage tank vent lines. Specifically, the licensee installed the vent lines as non-safety related and as such they were not seismically supported nor protected from tornado generated missiles. In response to the issue, the licensee performed an operability determination and concluded that the DGs remained operable.

This performance deficiency was more than minor because it was associated with the Mitigating Systems Cornerstone attribute of equipment performance and adversely affected the cornerstone objective of ensuring availability of the DG to respond to initiating events to prevent undesirable consequences. This finding was of very low safety significance (Green) because the inspectors determined that the finding was a design deficiency confirmed not to result in loss of operability or functionality and the finding screened as Green using the Significance Determination Process Phase 1 screening worksheet. The inspectors did not identify a cross cutting aspect associated with this finding because the performance deficiency occurred over 30 years ago and was not current.

Inspection Report# : [2009004 \(pdf\)](#)

**Significance:**  Mar 31, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

**FAILURE TO PERFORM AN ADEQUATE RISK ASSESSMENT THAT ACCOUNTED FOR ALL RISK SIGNIFICANT STRUCTURES, SYSTEMS AND COMPONENTS THAT WERE UNAVAILABLE PRIOR TO MAINTENANCE ACTIVITIES.**

A finding of very low safety significance and associated NCV of 10 CFR 50.65(a)(4) was identified by the inspectors for the licensee's failure to perform a risk assessment that accounted for the inability of the Unit 1 Essential Service Water suction valve 1SX001A to close before performing maintenance. The finding was more than minor because it was similar to NRC IMC 0612, Appendix E, "Examples of Minor Issues," Example 7e, in that the elevated overall plant risk, when correctly assessed, would have required additional risk management actions. This finding had the potential to become a more significant event if the suction valve was required to mitigate flooding in the auxiliary building.

The finding was determined to be of very low safety significance since the Incremental Core Damage Frequency (ICDP) was calculated to be  $9.44E-7$  given that the condition existed for 14 days. The primary cause of this finding was related to the cross-cutting area of Human Performance for Resources (H.2(c)) because Valve 1SX001A was not added to the Paragon risk assessment computer program to allow the user to make effective risk assessments. The licensee entered this issue into their correction action program as IR 889131 and performed a risk assessment for the condition.

Inspection Report# : [2009002 \(pdf\)](#)

**Significance:**  Mar 27, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Maintain/Extend the Qualification Basis for Molded-Case Circuit Breakers (MCCBs) Used in Safety Related Applications Greater than 20 Years.**

Green. A finding of very low safety significance (Green) and associated NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," was identified by the inspectors for the failure to maintain the qualification bases for safety-related equipment. Specifically, the licensee failed to maintain/extend the qualified life of the Westinghouse molded case circuit breakers (MCCBs) after the manufacturer's qualifications ended at 20 years as required by 10 CFR Part 50, Appendix A and B. As a result, the licensee issued a condition report and performed an engineering evaluation, which supported continuing qualification of the MCCBs and an operability evaluation, which found the MCCBs operable.

The inspectors determined that the finding was more than minor because not maintaining qualified components in safety-related systems structures and components (SSCs) could lead to the inability to respond to design basis events. The finding screened as of very low safety significance because the finding was a design or qualification deficiency confirmed not to result in loss of operability or functionality. The inspectors identified a cross-cutting aspect associated with this finding in the area of problem identification and resolution because the licensee did not effectively incorporate pertinent manufacturer's operating experience into maintaining the qualification of the MCCBs. (P.2.(b))

Inspection Report# : [2009007 \(pdf\)](#)

**Significance:**  Mar 27, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

**Inadequate Analysis of Molded-Case Circuit Breaker Test Data.**

•Green. A finding of very low safety significance (Green) and associated NCV of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Actions," was identified by the inspectors for the failure to identify, and take corrective

action to address adverse mold case circuit breaker (MCCBs) test results. Specifically, the licensee failed to recognize an excessive test failure rate, assess the impact on the installed MCCBs, promptly replace all failed MCCBs, and evaluate the past and current operability of the attached loads. As a result, the licensee issued a condition report and an operability evaluation, which found the MCCBs operable.

The inspectors determined that the finding was more than minor because not ensuring the function and operability of all required MCCBs supplying safety-related SSCs could lead to the inability to respond to design basis events. The finding screened as very low safety significance because it would not result in the total loss of a safety function. Specifically, the licensee evaluation showed that there was no loss of breaker coordination. The inspectors identified a cross-cutting aspect associated with this finding in the area of human performance, decision making because the licensee did not use conservative assumptions in decision-making. (H1.b)

Inspection Report# : [2009007](#) (*pdf*)

**Significance:**  Dec 31, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

**FAILURE TO REMOVE OR EVALUATE LOOSE DEBRIS INSIDE OF CONTAINMENT PRIOR TO APPLICABLE MODE**

The inspectors identified a finding of very low safety significance and associated Non-Cited Violation (NCV) of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for the licensee's failure to follow procedure BAP 1450-1, "Access to Containment." Specifically, the inspectors determined that the licensee failed to remove loose debris items from Unit 2 containment prior to Mode 4 or to perform an engineering evaluation. The issue was entered in the licensee's corrective action program as IR 867171.

The finding was more than minor because, if left uncorrected, the issue could have become a more significant safety concern. The inspectors evaluated the finding using IMC 0609, "SDP," Attachment 0609.04, "Phase 1 – Initial Screening and Characterization of Finding," dated January 10, 2008, for the Mitigating Systems Cornerstone. Since this finding was not a design or qualification deficiency, did not result in loss of system or train safety function and was not safety significant due to external events, this issue was screened as very low safety significance. This finding is related to the Work Control component of the Human Performance cross cutting area for the licensee's failure to coordinate work activities and the need for work groups to coordinate with each other. The personnel who left the material in containment assumed it was acceptable as they had documented the material in a surveillance data sheet and the personnel who reviewed the completed data sheet assumed the material had been or would be removed from containment and none questioned the potential impact upon the recirculation sump screens or coordinated with each other to ensure resolution of the material prior to a Mode change. (H.3 (b))

Inspection Report# : [2008005](#) (*pdf*)

**Significance:** SL-IV Oct 10, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Update the Boron Recycle and RHR System Descriptions in the UFSAR**

Severity Level IV. The inspectors identified a Severity Level IV Non-Cited Violation (NCV), having very low safety significance of 10 CFR 50.71, "Maintenance of Records, Making of Reports," for the licensee's failure to adequately update the Byron Station Updated Final Safety Analysis Report. Specifically, the description of: (1) the boron recycle system did not identify if the system was designed or capable of handling discharges from the safety injection and residual heat removal relief valves; (2) the residual heat removal system did not identify deviations from the system design standard with respect to the suction pipe relief valve single failure analysis and collection of relief valve discharges outside containment. The licensee entered this issue into the corrective action system.

Because this finding affected the NRC's ability to perform its regulatory function, this issue was evaluated using the traditional enforcement process. The finding was determined to be more than minor because the inspectors could not reasonably determine that a change to correct the Final Safety Analysis Report to reflect actual design would not have ultimately required NRC prior approval. The finding was determined to be of very low safety significance because the design deviations associated with the residual heat removal system and boron recycle system did not impact system operability. The inspectors determined that the finding did not have a cross-cutting aspect.

## Barrier Integrity

**Significance:**  Oct 10, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Analyze Inlet Piping Loads and Establish an Adequate HUT Quench Volume**

Green. The inspectors identified an NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," having very low safety significance, associated with the licensee's failure to analyze and establish an adequate quench volume within the boron recycle system holdup tanks and failure to analyze the water hammer loads on boron recycle system holdup tank inlet piping induced by relief valve discharges. Insufficient holdup tank quench volume could result in an overpressure failure of the holdup tank and the water hammer induced piping loads could damage the boron recycle system holdup tank inlet piping system. The licensee corrective actions included maintaining a minimum 40 percent boron recycle holdup tank level as a quench volume for system relief valves and initiated an action to perform an analysis to investigate the magnitude of the potential water hammer loads on the inlet piping.

The finding was more than minor because, the finding affects the Barrier Integrity Cornerstone objective for maintaining the Radiological Barrier Function of the Containment. The finding was associated with the design control and procedure quality attributes of the Barrier Integrity Cornerstone. The inspectors determined that the failure to establish an adequate boron recycle system holdup tank quench volume and analyze the magnitude of water hammer loads on boron recycle system holdup tank inlet piping degraded the Radiological Barrier Function of the Containment; but did not represent an actual open pathway from containment, therefore, the finding screened as having very low safety significance (Green). The inspectors determined that the finding did not have a cross-cutting aspect.

Inspection Report# : [2008009](#) (pdf)

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## Emergency Preparedness

## Occupational Radiation Safety

**Significance:**  Dec 31, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

### **FAILURE TO EVALUATE RADIOLIGICAL HAZARDS FOR AIRBORNE RADIOACTIVITY**

The inspectors identified a finding of very low safety significance and associated Non-Cited Violation (NCV) of Technical Specification (TS) 5.4.1 for failure to implement procedures required to evaluate radiological hazards for airborne radioactivity. Specifically, the inspectors identified that the licensee failed to re-start an air sampler on the refuel floor which supplied the only air monitoring while workers were performing activities in the area. The corrective actions taken by the licensee included starting the required air sampler. The issue was entered in the licensee's corrective action program as IR 828767.

The finding is more than minor because it impacted the program and process attribute of the Occupational Radiation Safety Cornerstone and affected the cornerstone objective of ensuring adequate protection of worker health and safety from exposure to radiation, in that the failure to fully evaluate the radiological hazards present in work areas could result in unplanned exposure to workers. The finding was determined to be of very low safety significance because it was not an As-Low-As-Is-Reasonably-Achievable (ALARA) planning issue, there was no overexposure nor potential

for overexposure, and the licensee's ability to assess dose was not compromised. This finding was caused by inadequate self checking and peer checking. Consequently, the cause of this deficiency had a cross-cutting aspect in the area of Human Performance. Specifically, the licensee failed to utilize human error prevention techniques commensurate with the risk of the task. H.4(a)

Inspection Report# : [2008005](#) (*pdf*)

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## Public Radiation Safety

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### 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.

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### Miscellaneous

**Significance:** N/A Sep 01, 2009

Identified By: NRC

Item Type: FIN Finding

#### PI&R Summary

The inspectors concluded that the licensee's corrective action program (CAP) in general was effective in identifying, evaluating and correcting issues at the site. The licensee had a low threshold for identifying issues and entering them into the CAP. Overall, the issues were properly prioritized and evaluated based on plant risk and uncertainty.

Corrective actions, when specified, were generally implemented in a timely manner, commensurate with their safety consequences. The use of operating experience was found to be effective and was integrated into daily activities. In addition, the licensee's self-assessments, audits and effectiveness reviews were thorough and effective in identifying site performance deficiencies, programmatic concerns and improvement opportunities. On the basis of the interviews conducted, site personnel were free to raise safety concerns through the established processes.

Inspection Report# : [2009008](#) (*pdf*)

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