

## Byron 2

# 1Q/2006 Plant Inspection Findings

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### Initiating Events

**G****Significance:** Dec 31, 2005

Identified By: Self-Revealing

Item Type: FIN Finding

**FAILURE OF THE NEWLY INSTALLED DIGITAL ELECTROHYDRAULIC SYSTEM TO RESPOND TO OPERATOR'S INPUT TO INITIATE A TURBINE RUNBACK**

A finding having very low safety significance (Green) was self-revealed when the newly installed Digital Electrohydraulic System (DEH) failed to respond to operator input to initiate a turbine runback that subsequently resulted in a reactor trip. The inspectors determined that the algorithm required for turbine runback was deleted from the software database due to a compiler fault. Modification review and testing performed by the licensee failed to discover the software error. To correct the problem the licensee reinstalled the deleted software algorithm into the DEH system.

The finding was more than minor because it affected the design control attribute of the Initiating Events cornerstone objective. The attribute objective limits the likelihood of those events that upset plant stability and challenge critical safety functions during at-power operations. Specifically, the lack of turbine runback capability contributed to a reactor trip from a feedwater system transient. The finding was determined to be of very low safety significance (Green), since it only contributed to the likelihood of a reactor trip. No violation of NRC requirements occurred.

Inspection Report# : [2005011\(pdf\)](#)**G****Significance:** Jun 30, 2005

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

**Failure to Follow Severe Weather Procedure Results in Less than Required Essential Service Water Basin Level**

A finding of very low safety significance and associated Non-Cited Violation (NCV) of Technical Specification (TS) 5.4.1 regarding procedure adherence was self revealed, when during a tornado watch, operators failed to maintain both essential service water basin levels greater than 90 percent as specified in the associated abnormal operating procedure. Upon recognizing the low level condition, operators restored basin level to greater than 90 percent. The primary cause of this violation was related to the cross-cutting area of Human Performance (personnel) because the operators failed to maintain the required basin level even though adequate guidance for maintaining basin level was provided in the associated procedure.

This finding was more than minor because the operators allowed the level to drop below the operating limit; which is similar to the more than minor examples of Section 2 of Appendix E to Inspection Manual Chapter (IMC) 0612. The finding was determined to be of very low safety significance because the condition did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available.

Inspection Report# : [2005004\(pdf\)](#)**G****Significance:** Jun 30, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

**Insufficient Fire Seal Material in Penetration Between Emergency Diesel Generator Rooms and Associated Switchgear Rooms**

The inspectors identified a finding of very low safety significance and associated NCV of the license number NPF-66 Section 2.E, requiring that the licensee shall implement and maintain in effect all provisions of the fire protection program as described in the licensee's Fire Protection Report. Specifically, during an inspection of the Division 21 electrical switchgear room the inspectors identified that a penetration that connected the Division 21 electrical switchgear room with the Unit 2 train A diesel generator had not been properly sealed as part of the 3-hour fire barrier. The licensee's extent of condition review identified two more penetrations in the Division 22 electrical switchgear room which also had not been properly sealed. Upon identification of the degraded penetrations, the licensee established the required compensatory fire watches until the penetrations were properly sealed.

This finding was considered more than minor, because it could be reasonably viewed as a precursor to a significant event, specifically a loss of Division 21 or 22 switchgear rooms with a fire in the Unit 2 train A or B diesel-generator rooms or loss of the Unit 2 train A or B diesel generator with a fire in the Division 21 or 22 switchgear rooms. The finding was determined to be of very low safety significance because the condition reflected a fire protection program element whose performance and reliability will be minimally impacted by the inspection finding. That is, if the fire occurred in the Division 21 switchgear room or Unit 2 train A diesel generator room, the fire would be confined in the two areas and the reliance on the Division 22 switchgear power is not effected.

Inspection Report# : [2005004\(pdf\)](#)

## Mitigating Systems

**G****Significance:** Mar 24, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Translate Design Basis Into Procedures for Service Water Flow to the CC Heat Exchangers**

The inspectors identified a Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," having very low safety significance for the licensee's failure to correctly translate the design basis into procedures. Specifically, the licensee failed to update operator rounds to verify the revised design basis minimum value for essential service water flow to the component cooling water (CC) heat exchangers. In addition, because the operator rounds were not revised, the design basis minimum flow value was not bounded by the emergency operating procedure used for establishing initial cold leg recirculation in the event of a loss of coolant accident (LOCA). This issue was entered into the licensee's corrective action program to revise the operator rounds.

The issue was more than minor because it was associated with the Mitigating System cornerstone attribute of "Design Control," and affected the cornerstone objective of ensuring the capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to have operator rounds verify the design basis minimum service water flow or to have the emergency operating procedures ensure the minimum flow prior to establishing initial cold leg recirculation in the event of a LOCA could potentially have allowed the service water flow to be less than the required value to maintain the design heat load during post LOCA conditions. This finding was of very low safety significance because it screened out as Green using the SDP Phase 1 worksheet. Even though the licensee did not control their bounding design basis service water flow procedurally, the flow to the CC heat exchangers has historically been well above the bounding design basis flow.

Inspection Report# : [2006006\(pdf\)](#)**G****Significance:** Mar 24, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

**Reduction of Fire Suppression Capacity and Capability**

The inspectors identified a Non-Cited Violation of 10 CFR 50.48(a)(1) having very low safety significance for the licensee's failure to provide fire fighting systems of appropriate capacity and capability to minimize the adverse effects of fires on structures, systems, and components important to safety. Specifically, the licensee abandoned standpipes and manual hose stations located near safety-related equipment (essential service water makeup pumps) which reduced the fire suppression capacity and capability to protect such equipment. In addition, the site relied on a local fire department instead of the site fire brigade to manually suppress a fire that could have affected safety-related equipment. This issue was entered into the licensee's corrective action program, and compensatory measures were taken to place dry chemical fire extinguishers in the vicinity of the fire area to take the place of the abandoned manual fire hose stations.

This finding was considered more than minor because it was associated with the Mitigating System cornerstone attribute of "Protection Against External Factors," and affected the cornerstone objective of ensuring the availability of systems that respond to initiating events to prevent undesirable consequences. Specifically, removing the manual hose stations reduced the fire suppression capacity and capability for protecting the emergency service water cooling tower makeup pumps and their diesels in the event of a fire. This finding was determined to be of very low safety significance (Green) based on a Phase 3 SDP evaluation.

Inspection Report# : [2006006\(pdf\)](#)**G****Significance:** Dec 31, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

**FAILED TO PERFORM VT-2 EXAMINATION AT NOMINAL OPERATING PRESSURE FOR SIX NEW RHR SYSTEM WELDS**

The inspectors identified a finding involving a Non-Cited Violation (NCV) of 10 CFR Part 50.55a(g)(4)ii having very low safety significance for failure to perform a VT-2 examination at nominal operating pressure for six new residual heat removal system welds that were returned to service. This finding was entered into the licensee's corrective action program.

This finding was more than minor significance because the licensee returned these six welds to service without completing the required pressure test and VT-2 examination, which placed this system at increased risk for undetected leakage and component failure. Operation of this system with improperly tested piping affected the mitigating systems cornerstone objective of equipment reliability. This finding was of very low safety significance because the required test and VT-2 examination were subsequently completed and all welds passed. The finding was not suitable for a significance determination process evaluation. This finding has been reviewed by NRC Management and has been determined to be a Green finding of very low safety significance.

Inspection Report# : [2005011\(pdf\)](#)

**Significance:** **G** Sep 30, 2005

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

### **INADEQUATE CLEANING OF ESSENTIAL SERVICE WATER DIESEL FUEL OIL STORAGE TANKS.**

A self-revealing NCV of Technical Specification 5.4.1a, "Procedures", was identified for Byron's inadequate cleaning procedure for the Essential Service Water (SX) make-up pump diesel fuel oil storage tanks. This resulted in each of the SX make-up pumps being inoperable for a period of approximately 60 days. Byron's inadequate SX fuel tank cleaning procedure is identified as a performance deficiency that is greater than minor because it is associated with the equipment performance attribute of the mitigating systems cornerstone to ensure the availability, reliability, and capability of systems to respond to an initiating event to prevent undesirable consequences. A contributing cause to the inadequate SX fuel tank cleaning is related to the Human Performance cross-cutting area. Procedures for diesel fuel oil tank cleaning and post maintenance testing lacked technical details to ensure that the SX make-up pumps were restored to an operable condition.

Inspection Report# : [2005009\(pdf\)](#)

## **Barrier Integrity**

**Significance:** **G** Mar 31, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

### **DEGRADED INCORRECT PLANT BARRIER IMPAIRMENT EVALUATION RESULTED IN AN AUXILIARY BUILDING INTEGRITY**

A finding of very low safety significance and associated Non-Cited Violation (NCV) of Technical Specification 5.4.1, regarding procedure adherence was inspector identified when the inspectors identified that ventilation barrier requirements were not being met during a routine assessment of work activities in the Unit 2 containment spray pump rooms. Upon identification, the licensee restored the barrier. The primary cause of this violation was related to the cross-cutting area of Human Performance.

This finding was more than minor because it affected the barrier integrity objective to provide reasonable assurance that the physical design barriers to protect the public from radionuclide releases caused by accidents or events. The finding was determined to be of very low safety significance because the issue only represented a degradation of the radiological barrier function provided for the auxiliary building.

Inspection Report# : [2006002\(pdf\)](#)

**Significance:** **G** Sep 30, 2005

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

### **FUEL HANDLING ERROR POTENTIALLY DAMAGES FUEL ASSEMBLY.**

A Non-Cited Violation (NCV) of TS 5.4.1a, having very low safety significance was self-revealed. Specifically, a fuel handler moving new fuel in the spent fuel pool failed to unlatch the fuel assembly after being lowered into the designated storage position, potentially damaging the fuel assembly as the bridge crane was trolleyed with the fuel assembly partially inserted in its storage location. The inspectors determined that the failure to detach the fuel assembly from the fuel handling tool prior to raising the assembly approximately three feet and moving the spent fuel pool bridge crane hoist trolley was a performance deficiency. This performance deficiency warranted a significance evaluation in accordance with Inspection Manual Chapter (IMC) 0612 "Power Reactor Inspection Reports," Appendix B, "Issue Disposition Screening." The inspectors determined that the finding was more than minor because it is related to the human performance attribute of the barrier integrity cornerstone to provide reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. A contributing cause to the fuel handling procedure violation is related to the Human Performance cross-cutting area. The operators failed to follow the procedure specified in OU-BY-204, "Fuel Handling Procedures in the Spent Fuel Pool for Byron", Revision 2.

Inspection Report# : [2005009\(pdf\)](#)

**Significance:** **SL-III** Jun 30, 2005

Identified By: NRC

Item Type: VIO Violation

### **Review of Missed Ventilation And Filtration System Technical Specification Surveillance Requirements**

On January 13, 2005, during a Nuclear Oversight Audit, the licensee identified that 15 Technical Specifications required ventilation surveillance tests were not performed. The licensee's subsequent root cause evaluation and investigation determined that the missed surveillance tests were due to willful falsification of documents by a non-licensed employee. The licensee's associated extent of condition review identified 12 additional TS required ventilation surveillance tests that were also falsified. Upon performing the 27 falsified surveillance requirements, six failed. The NRC determined that this issue was a violation of Byron Station Technical Specifications. By providing false information regarding the surveillances, the non-licensed employee also caused the licensee to be in violation of 10 CFR 50.9, "Completeness and Accuracy of Information. In addition, the activities of the employee also placed himself in violation of 10 CFR 50.5, "Deliberate Misconduct." The enforcement aspects of this issue were described in the Notice of Violation EA-05-159, "Byron Station - Notice of Violation [NRC Office of Investigations Report No. 3-2005-008," from James L. Caldwell to Christopher M. Crane, dated October 27, 2005. This URI is closed.

Inspection Report# : [2005011\(pdf\)](#)

Inspection Report# : [2005004\(pdf\)](#)

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## Emergency Preparedness

**Significance:** SL-IV Dec 31, 2005

Identified By: NRC

Item Type: VIO Violation

### **FAILURE TO OBTAIN PRIOR NRC APPROVAL FOR CHANGE TO AN EAL THAT DECREASED THE EFFECTIVENESS OF THE EMERGENCY PLAN**

The inspectors identified that the licensee had changed its standard emergency action level (EAL) scheme by revising one EAL's criteria for an Unusual Event declaration that addressed an unplanned radiological release in excess of effluent radiation monitor readings unless the release could be determined to be below Offsite Dose Calculation Manual limits within 15 minutes for releases that could not be terminated in 60 minutes or less. The inspectors determined that this EAL change decreased the effectiveness of the emergency plan, and that the licensee did not obtain prior NRC approval for this change, contrary to the requirements of 10 CFR 50.54(q). The licensee is evaluating the options to correct the EAL.

Because the issue affected the NRC's ability to perform its regulatory function, it was evaluated with the traditional enforcement process as specified in Section IV.A.3 of the Enforcement Policy. According to Supplement VIII of the Enforcement Policy, this finding was determined to be a Severity Level IV because it involved a failure to meet a requirement not directly related to assessment and notification. Further, this problem was isolated to one EAL and was not indicative of a functional problem with the EAL scheme. Additionally, because the violation was a Severity Level IV and the licensee entered this issue into its corrective action program this finding is being treated as a Severity Level IV Non-Cited Violation of 10 CFR 50.54(q).

Inspection Report# : [2005011\(pdf\)](#)

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## Occupational Radiation Safety

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## Public Radiation Safety

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## Physical Protection

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

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## Miscellaneous

**Significance:** N/A Jul 01, 2005

Identified By: NRC

Item Type: FIN Finding

### **PI&R INSPECTION SUMMARY**

Overall, the team concluded that problems were being adequately identified, evaluated, and corrected. Issues captured in the corrective action program were appropriately screened and evaluated for root or apparent causes and workers generally expressed positive views about the program. However, the team identified two concerns that cut across all the functional areas (problem identification, evaluation and resolution) of the corrective actions program. Specifically, the team identified that plant staff were sometimes too focused on the specific process being implemented than on the overall program. There were several instances where issues were identified during cause or operability evaluations, but were not fed back into the corrective action program, because it was not a specific requirement of the evaluation process. The team also noted that industry experience, especially Braidwood station experience, was underutilized in identifying or evaluating issues. The Nuclear Oversight organization was considered intrusive and challenged corrective action program performance based on the numerous examples of assessment findings reviewed during the inspection. The team also observed that the station had reasonably addressed previously identified NRC issues, but noted that Nuclear Oversight had identified some concerns with the corrective actions for those issues identified during the 2003 NRC Problem Identification and Resolution inspection.

Inspection Report# : [2005008\(pdf\)](#)

Last modified : May 25, 2006