

# Byron 1

## 1Q/2005 Plant Inspection Findings

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### Initiating Events

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### Mitigating Systems

**Significance:**  Sep 30, 2004

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

#### **FAILURE TO FOLLOW CLEARANCE ORDER PROCEDURES RESULTS IN DAMAGE TO DEEP WELL PUMP DUE TO OPERATIONS WITHOUT ADEQUATE DISCHARGE PATH.**

A finding of very low safety significance and an associated NCV of TS 5.4.1 regarding procedure adherence was self-revealed on July 2, 2004 when, as a result of an equipment control error, the licensee ran the Unit 0 train A (0A) deep well pump with an inadequate flow path such that it was no longer capable of performing its safety function. The licensee had since repaired the pump and placed it back into service. The primary cause of this violation was related to the cross-cutting area of Human Performance. Although procedure requirements stated that effects on components outside the clearance order boundary must be identified as acceptable or properly dispositioned, the effects of work on the 0A deep well pump discharge valve to the SX cooling tower basin were not understood. This was evidenced by the fact that the pump continued to run when the operators expected it to automatically shut off.

The finding was more than minor because the failure to follow the procedure for clearance and tagging was similar to the greater than minor examples of Section 4 of Appendix E of IMC 0612. The finding was of very low safety significance because there was no design deficiency, no actual loss of safety function, and no single train loss of safety function for greater than the TS allowed outage time. Also, there was no risk due to external events because the loss of this equipment by itself would not degrade two or more trains of a multi-train safety system function. Inspection Report# : [2004007\(pdf\)](#)

**Significance:**  Jul 09, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Failure to Install Fire Detector in Accordance With NFPA 72E**

The inspectors identified the lack of a smoke detector on the ceiling of the Auxiliary Building 426' general area, Fire Zone 11.6-0, in the beam pocket north of beam 7AB253, located outside of the Radwaste Evaporator Rooms. The failure to have adequate detector placement in this area is a Non-Cited Violation of the Byron operating license, which required detectors to be installed in accordance with National Fire Protection Association (NFPA) standard 72-E. The licensee initiated a corrective action to install adequate detection in the area. The finding was greater than minor because it affected the mitigating systems cornerstone attribute of protection against external factors (fire). As a result of the inadequate detector placement, detection of a fire north of beam 7AB253 could be delayed. The finding was of very low safety significance because of the low fire ignition frequency in this location.

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

**Significance:**  Jul 09, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Design Control of Fire Loading Calculations**

The inspectors identified that permanent fire loading added during a modification to install a work station for Radiation Protection personnel at Byron Station Unit 2 Auxiliary Building EL. 401', was not added to the total fire loading for the fire zone. The design change process considered fire loading less than 1000 BTUs/sq. ft. to be negligible, creating the potential to lose track of the cumulative fire loading for a given fire zone. The failure to revise the fire loading calculation to account for additional permanent fire loading in a fire zone is a Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control." The licensee's Quality Assurance Manual states that Quality Assurance design control requirements are applicable to fire protection. The licensee initiated a corrective action to ensure that the design control processes would account for all increases in permanent fire loading. The finding was greater than minor because if left uncorrected, it would become a more significant safety concern as it could affect the ability of systems designed to cope with a fire in a given fire zone, if the cumulative fire loading exceeded allowable values. The finding was of very low safety significance because the heat load added by this modification did not exceed the allowance for the area.

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

**G****Significance:** Jul 09, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

**Faulted Pressurizer PORV Power Source Restoration Directions Inadequate**

A finding of very low safety significance was identified by the inspectors for failure to have adequate procedures to achieve cold shutdown conditions within 72 hours following a fire. The inspectors found that the procedures for shutdown from outside of the control room did not provide sufficient direction to restore a faulted pressurizer power operated relief valve (PORV) power source. Once identified, the licensee initiated corrective actions to evaluate and take appropriate corrective actions to restore a faulted pressurizer PORV power source. This finding was more than minor because a deficiency in the procedures for transition to cold shutdown from outside of the control room could have delayed cold shutdown. A delay in achieving cold shutdown following a fire that required shutdown from outside of the control room could have an adverse impact on safety. The finding was of very low safety significance because the finding only involved the ability to achieve cold shutdown and did not affect the ability to achieve and maintain hot standby. This issue was a violation of the licensee's operating licenses as identified in 10 CFR Part 50, Appendix R, Section III.L.3, because the procedures for shutdown from outside of the control room did not provide sufficient direction to restore a faulted pressurizer PORV power source.

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

Identified By: NRC

Item Type: NCV NonCited Violation

**FAILURE TO IDENTIFY SEVERAL SITUATIONS OF SCAFFOLDS NOT MEETING THE SEISMIC CLEARANCE SPECIFICATIONS.**

The inspectors identified a Non-Cited Violation of 10 CFR 50 Appendix B, Criterion XVI, Corrective Actions, having very low safety significance for failing to identify several instances of improperly installed scaffolding, which was considered a condition adverse to quality. These improperly installed scaffolds were identified by the inspectors during plant tours on March 16, March 19, March 28, April 6, and April 7 of 2004. In each case, after being brought to their attention, the licensee took actions to correct the improperly installed scaffolding. The cross-cutting area of Human Performance was affected because the licensee personnel failed to install scaffolding in accordance with the licensee's procedure. The cross-cutting area of Problem Identification and Resolution was affected because the deficiencies were not identified during the scaffolding inspections nor were these deficiencies identified by other members of the licensee's staff. Moreover, even after the inspectors' initial identification of improperly installed scaffolding, the licensee's extent of condition review was inadequate as evidenced by the additional deficiencies later identified by the inspectors.

The issue was more than minor because the licensee failed to perform engineering evaluations on scaffold that potentially impacted safety-related systems. The issue was similar to more than minor example 4.a of Appendix E of IMC 0612. The inspectors determined that the finding could not be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process." Therefore, this finding was reviewed by the Regional Branch Chief in accordance with IMC 0612, Section 05.04c, and determined to be of very low safety significance (Green) because in no case was the improperly installed scaffolding determined to adversely impact the operability of safety-related equipment. The issue was a Non-Cited Violation of Criterion XVI of 10 CFR 50 Appendix B.

Inspection Report# : [2004004\(pdf\)](#)

## Barrier Integrity

**G****Significance:** Mar 31, 2005

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

**INADEQUATELY CHANGED PROCEDURE RESULTS IN UNEXPECTED STEAM DUMP VALVES OPENING DURING A TEST.**

A finding of very low safety significance and an associated Non-Cited Violation (NCV) of Technical Specifications (TS) 5.4.1 regarding procedure quality was self-revealed. Specifically, an inadequate procedure used by operators during the post maintenance testing of three steam dump valves resulted in the unexpected opening of all the steam dump valves causing a small power increase. The primary cause of this finding was related to the cross-cutting area of Human Performance (organization) in that during the recent revision to the procedure, the reviewers did not complete a sufficient validation of the changes.

The finding was more than minor because it affected the Barrier Integrity Cornerstone objective of providing reasonable assurance that the physical design barrier of fuel cladding protect the public from radionuclide releases caused by accidents or events, and was associated with the attribute of procedure quality. The finding was of very low safety significance because the fuel cladding barrier was not degraded.

Inspection Report# : [2005003\(pdf\)](#)**G****Significance:** Mar 31, 2005

Identified By: Self Disclosing  
Item Type: NCV NonCited Violation

**EXCEEDING 100% LICENSED POWER FOLLOWING THE IMPLEMENTATION OF THE ULTRASONIC FEEDWATER FLOW MEASURING INSTRUMENTS.**

A finding of very low safety significance and an associated NCV for operating in excess of the licensed thermal power limits was self-revealed. Specifically, it was determined that for periods between May 2000 and August 2003, the installed feedwater ultrasonic flow measurement instruments provided non-conservative data to the reactor power calculation which resulted in power operation greater than the licensed maximum thermal power output of 3586.6 megawatts thermal (100 percent power). Unit 1 operated with a maximum power level of 102.62 percent. Unit 2 operated with a maximum power level of 101.88 percent. This finding was related to the cross-cutting area of Problem Identification and Resolution (evaluation) because the licensee missed several opportunities to determine that an over power condition existed.

This finding was more than minor because it affected the Barrier Integrity Cornerstone objective of providing reasonable assurance that the physical design barrier of fuel cladding protect the public from radionuclide releases caused by accidents or events, and was associated with the attribute of design control (core design analysis). The finding was of very low safety significance because of the fuel cladding barrier was no degraded.

Inspection Report# : [2005003\(pdf\)](#)

**G**

**Significance:** Mar 31, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

**FAILURE TO CONTROL CONTAINMENT PENETRATIONS IN ACCORDANCE WITH TECHNICAL SPECIFICATION 3.9.4C DURING CORE ALTERATIONS.**

A finding of very low safety significance and an associated NCV of TS 3.9.4c was identified by the NRC. Specifically, the inspectors determined that during the performance of local leak rate tests the licensee failed to maintain containment penetrations closed while core alterations were in progress as was required by the TS.

The finding was more than minor because it affected the configuration control, specifically containment boundary preservation, attribute associated with the Reactor Safety Barrier Integrity Cornerstone objective to provide reasonable assurance that physical barriers, specifically containment, protect the public from radionuclide releases caused by accidents or events. This finding was of very low safety significance because (1) the issue did not increase the likelihood of a loss of primary coolant system inventory; (2) the issue did not degrade the licensee's ability to terminate a leak path or add RCS inventory when needed; and (3) the issue did not degrade the licensee's ability to recover decay heat removal once lost. Furthermore, the issue only impacted the containment function without affecting core damage frequency, and was associated with a shutdown condition during periods when the reactor vessel water level was greater than or equal to the level required for fuel moves.

Inspection Report# : [2005003\(pdf\)](#)

**G**

**Significance:** Dec 31, 2004

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

**TECHNICAL SPECIFICATION 3.6.6 VIOLATION FOR INOPERABLE REACTOR CONTAINMENT FAN COOLERS DUE TO LOW ESSENTIAL SERVICE WATER FLOW**

A finding of very low safety significance was self-revealed when the licensee recognized that essential service water (SX) flows to the 1A, 1B and 1C reactor containment fan coolers (RCFCs) were less than the Technical Specification required value due to incorrectly adjusting the SX flows to the RCFCs 4 months earlier. Upon recognizing the condition, the licensee adjusted flows back within the required values. The primary cause of this finding was related to the cross cutting area of Problem Identification and Resolution. Specifically, while the operators were performing the flow balance of SX to the Unit 1 RCFCs they failed to recognize that the local indicators were not responding as expected during significance adjustments to the associated throttle valves.

This finding was greater than minor because it was associated with the containment barrier integrity cornerstone attribute of risk important systems function and affected the cornerstone objective of providing reasonable assurance that the physical containment barrier would protect the public from radio nuclide releases caused by accidents or events. The finding was of very low safety significance because it did not affect the core damage frequency, and inoperability of a RCFC did not have an effect on the large early release frequency for a pressurized water reactor with a large dry containment. This issue was a NCV of Technical Specification 3.6.6 because the duration of the low flow condition to the RCFC exceeded the specified allowable outage time.

Inspection Report# : [2004009\(pdf\)](#)

## Emergency Preparedness

**G**

**Significance:** Mar 31, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

**FAILURE TO DECLARE AN UNUSUAL EVENT FOR EAL MU7, DOSE EQUIVALENT SPECIFIC ACTIVITY FOR IODINE RCS DOSE EQUIVALENT 1-131 IN EXCESS OF 1.0 MICRO CI/GM.**

A finding of very low safety significance and an associated NCV of Title 10 of the Code of Federal Regulations Part 50.54q regarding the implementation of emergency plans was self-revealed. Specifically, operators failed to declare an Unusual Event upon determining that reactor coolant system dose equivalent 1-131 activity exceeded 1.0 micro Ci/gm. Reactor coolant system dose equivalent 10131 greater than 1.0 micro Ci/gm was the limit specified in the licensee emergency plan for an Unusual event. The primary cause of this finding was related to the cross-cutting area of Human Performance (organization) in that licensed operators failed to realize that an Emergency Action Level threshold had been exceeded and that an Unusual Event declaration was required.

The finding was more than minor because it was associated with Reactor Safety/Emergency Preparedness Cornerstone Attribute of Response Organization performance and affected the cornerstone objective of providing reasonable assurance that the licensee is capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. The finding was of very low safety significance because, although it involved an actual event, the event was only an Unusual Event, and the finding only involved a failure to comply with the emergency plan and there were no indications of Planning Standard problems.

Inspection Report# : [2005003\(pdf\)](#)

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## Occupational Radiation Safety

**Significance:**  Mar 31, 2005

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

**FAILURE TO EVALUATE RADIOLOGICAL CONDITIONS PRIOR TO A SIGNIFICANT EQUIPMENT CONFIGURATION CHANGE.**

One self-revealed finding of very low safety significance and an associated Non-Cited Violation was identified when, on March 12, 2005, the licensee failed to conduct an adequate evaluation of the radiological conditions prior to removing the charcoal adsorber portion of HEPA units associated with work on the Unit 1 steam generators. Subsequently, Unit 1 Containment radiological conditions changed such that several air monitors went into high alarm on the iodine channel and 28 personnel were found to have unintended, low-level, internal contamination.

The issue was more than minor because it was associated with the Human Performance attribute (a cross-cutting area) of the Occupational Radiation Safety Cornerstone and affected the cornerstone objective of ensuring adequate protection of worker health and safety from exposure to radioactive materials in that multiple workers received unintended dose from small intakes. In that the finding was not specifically related to ALARA or planning issues, there was no radiological overexposures, nor the substantial potential for an overexposure, and the licensee's ability to assess worker dose was not compromised, the finding was determined to be of very low safety significance. The licensee's corrective actions for this issue included reinstalling the charcoal adsorbers and initiating additional containment atmosphere treatment, revising procedures to include specific criteria for charcoal adsorber removal, and modifying the outage schedule such that charcoal adsorber removal is logically tied to steam generator manway installation. One Non-Cited Violation for the failure to adequately evaluate radiological conditions in accordance with 10 CFR 20.1501 was also identified.

Inspection Report# : [2005003\(pdf\)](#)

**Significance:**  Mar 31, 2005

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

**FAILURE TO OBTAIN A RADIATION PROTECTION BRIEFING PRIOR TO AN ENTRY INTO A HIGH RADIATION AREA.**

One self-revealed finding of very low safety significance and an associated NCV was identified when, on March 9, 2005, a contract radiation worker, while supporting polar crane movement of equipment used for the upper internals split pin modification, entered a High Radiation Area (HRA) without receiving a high radiation area brief from the radiation protection staff as required by the Radiation Work Permit.

The primary cause of this finding was related to the cross-cutting area of Human Performance (personnel). This issue was more than minor because it was associated with the Human Performance attribute of the Occupational Radiation Safety Cornerstone and affected the cornerstone objective of ensuring adequate protection of worker health and safety from exposure to radioactive materials in that two barriers (i.e., the HRA briefing and compliance with the HRA posting) in place to prevent unplanned, unintended worker dose failed. In that the finding was not specifically related to ALARA or planning issues, there were no radiological overexposures, nor the substantial potential for an overexposure, and the licensee's ability to assess worker dose was not compromised, the finding was determined to be of very low safety significance. The licensee's corrective actions for this issue included enhancing the physical and administrative RP controls over HRAs within containment. One Non-Cited Violation for the failure to obtain a HRA briefing prior to entry into the area in accordance with licensee procedures and Technical Specification 5.4.1 was also identified.

Inspection Report# : [2005003\(pdf\)](#)

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## Public Radiation Safety

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### Physical Protection

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

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### Miscellaneous

Last modified : June 17, 2005