

# Brunswick 2

## 4Q/2008 Plant Inspection Findings

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### Initiating Events

**Significance:**  Dec 31, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Failure to Follow Plant Procedures for Assembly of Safety Relief Valves**

A self-revealing Green NCV of Technical Specification (TS) 5.4.1, Procedures, was identified when the licensee failed to correctly reassemble the pilot valve for the Unit 2 Safety Relief Valve (SRV) H. The plant procedure for assembly of the pilot valve, OCM-VSR-509, Main Steam Relief Valves Target Rock Model 7567 Air Operators and Pilot Assembly, Disassembly, Inspection, and Reassembly, used in 2006 for the Unit 2 SRV H pilot valve specifies that, during assembly, the pilot spring should be placed inside of the pilot valve spring follower. Contrary to this requirement, the pilot valve was assembled with the pilot spring on the ledge of the pilot valve spring follower. The incorrectly assembled pilot valve was installed in Unit 2 in March, 2007 on SRV 'H'. On November 9, 2008, the spring slipped off the ledge of the spring follower, reducing the SRV set point pressure, and causing the SRV to lift at normal operating pressure. The licensee replaced the failed SRV and initiated a root cause analysis to determine the primary and contributing cause of this event.

The failure to assemble the SRV pilot per procedure was identified as a performance deficiency. The performance deficiency was more than minor because it is associated with the equipment performance attribute of the Initiating Events cornerstone, and it affected the cornerstone objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. The finding was determined to be of very low safety significance because the finding does not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions will not be available. The finding has a cross-cutting aspect of procedural compliance, as described in the Work Practices component of the Human Performance cross-cutting area because the licensee failed to follow the procedure as written (H.4(b)).

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

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### Mitigating Systems

**Significance:**  Dec 31, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Failure to Take Prompt Corrective Actions for Low Oil Level in the 2B RHRSW Booster Pump**

The inspectors identified a Green NCV of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action" for failure to assure that a condition adverse to quality was promptly corrected, which resulted in the licensee declaring the 2B residual heat removal service water (RHRSW) booster pump inoperable while responding to the Unit 2 reactor scram on November 9, 2008. The licensee added oil to the bearing, restored the RHRSW to operable and entered the issue into the Corrective Action Program (CAP).

The deficiency associated with this event is not promptly investigating and correcting the low oil level in the 2B RHRSW booster pump bearing.

The finding is more than minor because it affects the Mitigating Systems Cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences

(i.e. core damage). It is also associated with the cornerstone attribute of equipment availability and reliability. Since the finding affects both core damage frequency (CDF) and suppression pool cooling, an evaluation using NRC Inspection Manual Chapter (IMC) 0609, Appendix H, "Containment Integrity Significance Determination Process" was performed. Appendix H table 4.1 lists suppression pool cooling as a contributor to late containment failure, but not large, early release frequency (LERF). Therefore the change in CDF associated with the finding was used to characterize its significance. Using the NRC, pre-solved phase two significance determination process worksheets, the change in core damage frequency was found to be less than 1E-6, therefore this finding is of very low safety significance (Green). The cause of the finding is related to the cross-cutting aspect of thoroughly evaluating problems as described in the Corrective Action Program component of the Problem Identification and Correction cross-cutting area, since the low oil level was identified, but a thorough investigation of the problem was not promptly performed. (P.1(c))

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

**Significance:**  Dec 31, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

### **Inadvertent Rack Out of the 2A Core Spray Pump Circuit Breaker**

A self-revealing Green NCV of TS 5.4.1, "Procedures," was identified for failure to comply with clearance order 180845 and 2OP-50, Plant Electric System Operating Procedure, Section 8.1, Racking Out a 4 KV Breaker." Specifically, the 2A Core Spray pump breaker was inadvertently racked out instead of the Emergency Diesel Generator #3 output breaker. The licensee racked the 2A core spray breaker back into place and entered the issue into the CAP.

The failure to comply with clearance order 180845 and 2OP-50, Plant Electric System Operating Procedure, Section 8.1, Racking Out a 4 KV breaker was identified as a performance deficiency. The performance deficiency was more than minor because it impacted the equipment performance attribute of the Mitigating Systems Cornerstone objective to maintain the availability and reliability of systems that respond to initiating events to prevent undesirable consequences. The finding was determined to be of very low safety significance because the finding was not a design or qualification deficiency, did not represent a loss of system safety function, did not represent an actual loss of safety function of a single train for greater than its TS allowed outage time, did not represent an actual loss of safety function of one or more non-TS trains of equipment designated as risk-significant per 10 CFR 50.65 for greater than 24 hrs, and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. The finding has a cross-cutting aspect of human error prevention, as described in the Work Practices component of the Human Performance cross-cutting area because the licensee inadvertently racked out the wrong breaker. H.4(a)

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

**Significance:**  Dec 31, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Correctly Perform Biennial Written Examination for a Licensed Operator**

The inspectors identified a non-cited violation of 10 CFR Part 55.59(a)(2) for failure to correctly evaluate and grade a written examination during the biennial requalification examination for licensed operators. The licensee operations training staff incorrectly allowed two correct answers for a question, where the answers were diametrically opposed (opposite one another) which is prohibited by the examination guideline NUREG-1021.

This finding is more than minor because if left uncorrected, it could become a more significant safety concern in that licensed operators would not be adequately tested to ensure an acceptable knowledge level for performing licensed duties. Using the Licensed Operator Requalification Significance Determination Process, this finding was determined to be of very low safety significance (Green) because the individual that failed was a part of a crew that passed their biennial examinations and no issues resulted during the actual watch standing of this crew. All other operators involved were able to perform assigned licensed duties. The finding was a result of the licensee not in compliance with the requirements of TAP-403, "Conduct of Examinations," and TAP-411, "Continuing Training Annual/Biennial Exam Development, Administration and Security." The finding was related to the cross-cutting aspect of procedural compliance of the work control component of the cross-cutting area of Human Performance (H.4(b)) because the

examination developers did not comply with procedure requirements to ensure examination integrity was maintained. The licensee has initiated a root cause analysis to determine the primary and contributing causes of this event.

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

**Significance:**  Jun 30, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

### **Inadequate Procedure for Performing Maintenance on the Control Room AC Subsystem**

A self-revealing Green non-cited violation of Technical Specification 5.4.1 was identified for an inadequate procedure used to specify configuration controls during a maintenance activity. The configuration management program implementation procedure, ADM-NGGC-0106, was not clear in determining whether additional actions should be taken to ensure Control Room Air Conditioning (AC) operation while preventative maintenance was being performed on the CREV system. The three Control Room AC subsystems tripped inadvertently during the performance of this planned preventive maintenance activity due to the supply fan dampers drifting shut, resulting in Unit 1 and Unit 2 entering LCO 3.0.3. This issue was entered into the licensee's Corrective Action Program (CAP) as AR 281950.

The finding was more than minor because it impacted the mitigating systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences, and the related attribute of equipment performance. The finding was determined to be of very low safety significance because it did not represent an actual loss of safety function for greater than the TS allowed outage time. The finding has a cross-cutting aspect in the area of Human Performance of complete documentation because the licensee did not provide an adequate procedure that provided clear guidance in identifying intrusive maintenance on the CREV system such that appropriate actions were taken to ensure proper operation during preventative maintenance. (H.2.(c))

Inspection Report# : [2008003](#) (*pdf*)

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## **Barrier Integrity**

**Significance:**  Feb 29, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Correct a Condition Adverse to Quality Involving an MSIV Design Deficiency**

The inspectors identified a Green non-cited violation of 10 CFR 50 Appendix B, Criterion XVI, Corrective Action, for failure to correct a condition adverse to quality (i.e., design deficiency) which led to multiple and repetitive failures of the main steam isolation valves (MSIVs). The March 2007 failure of the 2-B21-F028A outboard MSIV to pressurize during local leak rate testing (LLRT) exhibited similar symptoms to previous MSIV failures which occurred over the period from 2003 to 2006. The inspectors identified a number of missed opportunities by the licensee to properly identify and correct the failure mechanism (i.e., design deficiency) which led to the most recent failures. The licensee has entered this issue into the corrective action program as nuclear condition report 267744, and was evaluating their plans to improve MSIV performance.

This finding is of greater than minor safety significance because it was associated with the Containment Barrier Performance attribute of the Barrier Integrity Cornerstone, and adversely affected the cornerstone objective of containment isolation reliability to protect the public from radiological releases caused by accidents or events. The finding was determined to be of very low safety significance because there was no loss of safety function (i.e., simultaneous failure of both the inboard and outboard MSIVs) that resulted in an actual open pathway in the physical integrity of containment. This finding has a cross-cutting aspect in the area of Problem Identification and Resolution 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, regarding an adverse trend of continuing MSIV LLRT failures. (P.1.(d))

## Emergency Preparedness

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## Occupational Radiation Safety

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## Public Radiation Safety

**Significance:**  Jun 30, 2008

Identified By: NRC

Item Type: FIN Finding

### **Failure to Conduct Adequate and Timely Evaluations of Onsite Groundwater Monitoring Well Tritium Concentration Trend Data**

The inspectors identified a Green finding (FIN) for failure to properly evaluate the potential causes of increased tritium (H-3) concentrations in groundwater samples collected and reviewed in accordance with Brunswick procedure E&RC-3250, "Environmental and Radiation Control." Specifically, the licensee failed to properly evaluate, and initiate actions to address increasing H-3 concentrations reported from 2003 through 2007 for quarterly samples collected from Environmental Sampling Station (ESS)-2C and ESS-16 monitoring wells. The failure to properly investigate the increasing H-3 concentrations resulted in the licensee continuing to attribute the subject results to a 1994 U2 radioactive liquid effluent waste line break without considering potential leakage of contaminated liquids from U2 storm drain piping.

This issue has been entered in the licensee's CAP as NCR 268357.

The finding is more than minor because it is associated with the Program and Process attribute of the Public Radiation Safety Cornerstone and adversely affects the cornerstone objective because it relates to effluent measurement and abnormal releases. The licensee's failure to recognize the increasing groundwater tritium concentrations delayed actions to address and correct abnormal liquid releases within the switchyard area. Using the Public Radiation Safety Significance Determination Process, this finding was determined to be of very low safety significance (Green) because the performance deficiency did not result in offsite releases and resultant offsite doses to members of the public and was not a failure to implement the effluent program. Furthermore, the finding did not prevent the licensee from initiating appropriate corrective actions to determine extent of the contamination and to mitigate its effect on the surrounding environs. The cause of the finding was related to the cross cutting area of human performance, the component of work practices, and the aspect involving supervisory oversight of work activities, because the licensee failed to properly evaluate monitoring well sample data to determine the possible radiological effects of plant operation on the local groundwater.

Inspection Report# : [2008003](#) (pdf)

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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

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