

# Brunswick 2

## 1Q/2012 Plant Inspection Findings

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### Initiating Events

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### Mitigating Systems

**Significance:** **G** Dec 31, 2011

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

#### **Failure to Verify Bearing Oil Level Resulted in Residual Heat Removal Service Water Pump Failure**

Green. A self-revealing Green non-cited violation of TS 5.4.1, Procedures, was identified for failure to implement procedural requirements for verifying lubrication levels on the 2B RHRSW Booster pump. This finding resulted in failure of the 2B RHRSW Booster pump. The condition was entered into the licensee's corrective action program as AR #489386 and the licensee investigated the failure and repaired the pump.

The failure to follow procedural requirements for verifying lubrication levels was a performance deficiency. The performance deficiency was more than minor because it was associated with the Mitigating Systems cornerstone attribute of Equipment Performance – Availability, and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the performance deficiency resulted in the failure of the 2B RHRSW booster pump which is credited for decay heat removal and service water injection. Using Inspection Manual Chapter 0609, Significance Determination Process, Attachment 0609.04, Phase 1 Screening Worksheet, the finding screened as potentially greater than green because it represented an actual loss of a single train of equipment for more than its Technical Specifications (TS) allowed outage time. Therefore, a phase 2 significance determination evaluation was required. The significance of this finding is designated as very low safety significance (Green) using Phase 2 pre-solved tables. The cause of the finding was directly related to the training cross-cutting aspect in the Resources component of the Human Performance area because the licensee failed to ensure that workers had adequate knowledge of the RHRSW pump oilers to execute procedures for verifying lubrication levels which caused a failure of a safety-related pump. [H.2(b)] (Section 1R12)

Inspection Report# : [2011005](#) (*pdf*)

**Significance:** **W** Nov 21, 2011

Identified By: NRC

Item Type: VIO Violation

#### **Failure to Identify and Correct a Degraded Flood Barrier for the Emergency Diesel Generator Fuel Oil Tank Rooms**

(TBD) The inspectors identified an Apparent Violation (AV) of 10 CFR Part 50 Appendix B Criterion XVI, Corrective Action, for failure to identify and correct a condition adverse to quality associated with the entrance enclosures for the Emergency Diesel Generator (EDG) fuel oil tank rooms. Specifically, the enclosures contained openings which would adversely impact their ability to mitigate external flooding of the EDG fuel oil tank rooms in the event of a design basis external event (hurricane). These openings were not identified or corrected by the licensee prior to the inspectors identifying the issue. The licensee corrected this condition by installing new sealant material to close the openings and entered the issue into their corrective action program. The licensee entered this issue into their corrective action program as AR 466253.

The licensee's failure to identify and correct the degradation of the access enclosures to the EDG fuel oil tank rooms was a performance deficiency. The finding is more than minor because it affects the Mitigating Systems cornerstone

attribute of protection against external events and affects the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e. core damage). Specifically, the water entry pathways into the EDG fuel oil tank rooms increased the likelihood of EDG failure during an external weather event (hurricane). The significance of this finding was evaluated using Inspection Manual Chapter 0609, Significance Determination Process. Using the phase 1 worksheet tables 4a and 4b, the finding was evaluated to be potentially greater than green because it screens as potentially risk significant due to a seismic, flooding, or severe weather initiating event which would degrade two or more trains of a multi-train system or function. Table 4a of the phase 1 worksheet requires a phase 3 significance determination evaluation. Following the initial review of this matter using preliminary quantitative analysis, Appendix M was used considering the uncertainties in the bounding analysis and the insights from the qualitative review (See Appendix M in Enclosure 2 and Phase 3 in Enclosure 3 of this report). There is a lack of quantitative data and probabilistic risk assessment tools to accurately assess the risk significance of this performance deficiency in a timely manner. The NRC preliminarily concluded that, although licensee performance is outside the bounds of nominal performance, cornerstone objectives were met with minimal reduction in safety margin. The Agency concluded that the finding likely did not represent a decline in licensee performance with a significant reduction in safety margin. Based on the available information from the quantitative and qualitative analyses, and the guidance of Appendix M, the NRC concluded that this performance deficiency is preliminarily characterized as a low to moderate safety significance finding (White). This finding has a cross-cutting aspect in the Corrective Action Program component of the Problem Identification and Resolution area because the licensee did not identify the issue completely, accurately, and in a timely manner commensurate with its safety significance, [P.1(a)].

Final Determination Letter: 2011-014

During an NRC inspection conducted on April 20, 2011 a violation of NRC requirements was identified. In accordance with the NRC Enforcement Policy, the violation is listed below:

10 CFR Part 50 Appendix B Criterion XVI, Corrective Action states, in part, that measures shall be established to assure that conditions adverse to quality are promptly identified and corrected.

Contrary to the above, as of April 20, 2011, the licensee failed to identify and promptly correct a condition adverse to quality involving the external flood barrier for the EDG fuel oil tank rooms. Specifically, the entrance enclosures which house the EDG fuel oil tanks had several openings, unsealed pin holes, and a narrow gap along the perimeter of the base walls, which would allow water intrusion into the EDG fuel oil tank rooms during a design basis external event (hurricane).

Inspection Report# : [2011012](#) (pdf)

Inspection Report# : [2011014](#) (pdf)

**Significance:**  Sep 30, 2011

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

### **Inadequate Configuration Control Resulted in Rainwater Intrusion into the Unit 2 Reactor Building**

A self-revealing Green non-cited violation of TS 5.4.1, Procedures, was identified for failure to implement procedural requirements of the equipment configuration control program to ensure that temporary power cables routed through an open manhole and into the reactor building north RHR (NRHR) room did not adversely impact the flood mitigation function of the storm drain system. This finding resulted in rainwater intrusion into the unit 2 reactor building. Upon discovery of this condition, the licensee resealed the manhole. The condition was entered into the licensee's CAP as AR #483473.

The failure to implement the requirements of the equipment configuration control program to ensure that the temporary cable routing did not adversely impact external flood protection features was a performance deficiency. The performance deficiency was more than minor because it was associated with the Mitigating Systems cornerstone attribute of Protection Against External Factors - Flood Hazards and adversely affected the cornerstone objective in that the temporary change impacted the storm drain system which was credited for external flood protection. Using Inspection Manual Chapter 0609, Significance Determination Process, Attachment 0609.04, Phase 1 Screening Worksheet, the finding screened as very low safety significance (Green) because it: (1) was not a design or

qualification deficiency that was confirmed not to affect equipment operability; (2) did not represent a loss of safety function; (3) did not represent an actual loss of a single train of equipment for more than its Technical Specification allowed outage time; (4) did not represent a loss of risk significant non-Technical Specification equipment; and (5) did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. The finding did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event per table 4b of the worksheet because the leakage did not degrade the RHR system. The cause of the finding was directly related to the appropriately planning work activities cross-cutting aspect in the Work Control component of the Human Performance area because the licensee failed to incorporate environmental conditions which may impact plant structures, systems, and components into the temporary change. [H.3(a)]

Inspection Report# : [2011004](#) (pdf)

**Significance:**  Sep 30, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

### **Inadequate Corrective Actions for Control Building Air Conditioning Failures**

The inspectors identified a Green non-cited violation of 10 CFR 50 Appendix B, Criteria XVI, Corrective Action, for the licensee's failure to promptly identify and correct a condition adverse to quality related to the Control Room Air Conditioning (AC) system. Specifically, the licensee failed to identify and correct repetitive failures of nonconforming low ambient temperature damper actuators for the 2D control building air cooled condenser unit. This resulted in multiple control building AC refrigerant circuit failures. Upon discovery of the issue, the licensee placed the control building AC system in a safe condition for summer operation and initiated actions to procure acceptable damper actuators prior to the onset of low seasonal temperatures. The condition was entered into the licensee's CAP as AR #462873.

The inspectors determined that the licensee's failure to promptly identify and correct the failures of the 2D control room AC system low ambient temperature damper actuators was a performance deficiency. This finding is more than minor because it is associated with the Equipment Performance attribute of the Mitigating Systems Cornerstone, and 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). Specifically, the finding reduced the reliability of the control building AC system and its ability to maintain control building equipment within specified temperature limits. The significance of the finding was evaluated using Phase 1 of the significance determination process in accordance with the Inspection Manual Chapter 0609 Attachment 4. The finding was determined to be of very low safety significance (Green) because the finding was a design or qualification deficiency that was confirmed not to affect equipment operability. The cause of this finding was directly related to the cross cutting aspect of thorough evaluation of problems in the Corrective Action Program component of the Problem Identification and Resolution area, because the licensee failed to promptly evaluate the failures of the low ambient temperature damper actuators and eliminate the adverse condition. [P.1(c)]

Inspection Report# : [2011004](#) (pdf)

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## **Barrier Integrity**

**Significance:**  Sep 30, 2011

Identified By: Self-Revealing

Item Type: FIN Finding

### **Inadequate Maintenance Results in Containment Isolation Valve Failure**

A self-revealing Green finding was identified for inadequate maintenance on the overload relay of the unit 2 reactor water cleanup (RWCU) system inlet isolation valve 2-G31-F001. As a result of the inadequate maintenance, the overload relay actuated during operation of the valve under normal conditions, and the valve failed to shut. This was revealed while operators were attempting to isolate the RWCU system on August 2, 2011. After the valve failed to fully shut on August 2, 2011, the licensee shut the valve in series with 2-G31-F001 (2-G31-F004), repaired the overload relay for the 2-G31-F001 valve by installing the correct fasteners, returned the 2-G31-F001 valve to service,

and entered the issue into their corrective action program (AR #480063).

The inadequate maintenance on the 2-G31-F001 valve overload relay was a performance deficiency. The finding was more than minor because it was associated with the Barrier Integrity cornerstone attribute of structure, system, and component (SSC) and Barrier Performance, and it affected the associated cornerstone objective to provide reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. Specifically, the finding prevented a primary containment isolation valve from shutting. This finding was evaluated using Inspection Manual Chapter 0609, Significance Determination Process, Phase 1 Worksheet for Containment Barriers. The finding was determined to be of very low safety significance (Green) because the finding: 1) did not only represent a degradation of the radiological barrier function provided for the control room, auxiliary building, spent fuel pool, or the standby gas treatment system, 2) did not represent a degradation of the barrier function of the control room against smoke or a toxic atmosphere, and 3) did not represent an actual open pathway in the physical integrity of reactor containment. The cause of this finding has no cross-cutting aspect because the maintenance took place in 1992 and is not indicative of current licensee performance.

Inspection Report# : [2011004](#) (*pdf*)

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## **Emergency Preparedness**

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## **Occupational Radiation Safety**

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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**

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