Brunswick 2
2Q/2007 Plant Inspection Findings

Initiating Events

Significance: G Mar 31, 2007
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
Incorrect Fuel Assembly Moved to Core
A self-revealing non-cited violation of Technical Specification 5.4.1, Administrative Controls (Procedures) was identified for failing to follow the Core Component Sequence Sheet for Refueling Outage B218R1 during fuel movement on Unit 2. This resulted in the incorrect fuel assembly being loaded in core location 11-14 which caused an unanalyzed change in core shutdown margin. This issue was entered into the corrective action program for resolution.

The finding was more than minor because it was associated with configuration control of Unit 2 core and affected the Initiating Events Cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety function during shutdown as well as power operations. The finding was assessed using the Significance Determination Process for Reactor Inspection Findings for Shutdown Operations and determined to be of very low safety significance (Green) because it did not contribute to a loss of decay heat removal or a loss of reactor coolant system inventory. This finding has a crosscutting aspect of Human Performance, Work Practices, because the incorrect fuel movement was the result of a human error which was not prevented by the use of self and peer checking human error prevention techniques (Section 1R20).

Inspection Report# : 2007002 *(pdf)*

Mitigating Systems

Significance: G Jun 30, 2007
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
Failure to Incorporate Operating Experience into Plant Procedures and Training
A self-revealing non-cited violation of 10CFR50, Appendix B, Criterion XVI, Corrective Action, was identified for failing to incorporate operating experience into appropriate precautions and operating limitations for single recirculation loop operation into plant procedures and training. As a result, Unit 2 experienced an automatic reactor scram on December 25, 2006 due to actuation of the Neutron Monitoring Oscillation Power Range Monitors while in single recirculation loop operation.

The finding was more than minor because it was associated with equipment performance and affected the Initiating Events Cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety function during power operations. The finding was assessed using the Significance Determination Process for Reactor Inspection Findings for At-Power Situations and determined to be of very low safety significance (Green) because, although the finding contributed to the likelihood of a reactor trip, it did not contribute to the likelihood that mitigation equipment or functions would not be available. This finding has a crosscutting aspect in the area of Problem Identification and Resolution, specifically because the licensee did not implement appropriate changes to plant procedures and training programs to address operating experience that was reviewed (Section 4OA2.2).

Inspection Report# : 2007003 *(pdf)*

Significance: N/A Apr 13, 2007
Identified By: NRC

Item Type: FIN Finding
95001 Supplemental Inspection
The U.S. Nuclear Regulatory Commission (NRC) performed this supplemental inspection in accordance with Inspection Procedure 95001, to assess the licensee's evaluation associated with the Unit 1 and Unit 2 performance indicators in the mitigating systems cornerstone. The mitigating systems performance indicator (MSPI) for emergency AC power systems crossed the threshold from Green (very low risk significance) to White (low to moderate risk significance) in the second quarter of 2006. Specifically, the licensee's emergency AC power systems MSPI value reached 2.01E-6 for Unit 1 and 1.50E-6 for Unit 2. The MSPI becomes White when the value reaches 1.0E-6. The MSPI for Units 1 and 2 consist of an unreliability index based on emergency AC power system function failures and an unavailability index based on emergency AC power system unavailability. Since the vast majority of the contribution to the MSPI for Units 1 and 2 is from the unreliability indexes, the inspection focused on the emergency AC system functional failures.

The inspector determined that the licensee performed a comprehensive evaluation of the conditions that led to the MSPI exceeding the Green/White threshold. Performance deficiencies were identified by the NRC during previous inspections and are listed in subsequent sections of this report. In addition, the licensee adequately analyzed the circumstances associated with those issues and, where appropriate, took effective immediate corrective action. Also, the licensee developed corrective actions to prevent recurrence. The inspector noted that additional failures of the emergency diesel generators have occurred subsequently to the failures included in the scope of this inspection. These failures will be further evaluated by the NRC outside of this inspection.

Inspection Report# : 2006008 *(pdf)*

Significance: G Feb 23, 2007
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to Adequately Evaluate and Correct Condition Adverse to Quality Resulting in 2C CSW Pump Failure
A self-revealing, non-cited violation of 10CFR50, Appendix B, Criteria XVI, "Corrective Action," was identified for the failure to take adequate corrective actions to prevent a failure of the 2C Conventional Service Water (CSW) pump on July 26, 2006, due to corrosion of the pump shaft coupling. Specifically, the licensee failed to implement timely preventive maintenance to inspect the condition of pump shaft based on previous indications of pump shaft corrosion. The licensee entered the deficiency into their corrective action program as Action Request 201240 and completed inspections of the remaining pumps susceptible to similar corrosion.

The finding is more than minor because it was associated with the equipment performance attribute of the mitigating systems cornerstone and affects the cornerstone objective of ensuring the availability of systems that respond to initiating events. The failure of the 2C CSW pump shaft coupling affected the availability of the CSW system. Using the Phase 1 worksheet in Manual Chapter 0609, "Significance Determination Process," the finding is determined to be of very low safety significance because it is not a design or qualification deficiency, does not result in an actual loss of service water safety function, and does not screen as potentially risk significant for external events. The contributing cause of this finding involved the appropriate and timely corrective actions aspect of the Problem Identification and Resolution cross-cutting cornerstone (4OA2.a.(3)(i)).

Inspection Report# : 2007007 *(pdf)*

Significance: G Dec 31, 2006
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to Periodically Calibrate Service Water Pump Discharge Pressure Gages
An NRC-identified non-cited violation of 10CFR50, Appendix B, Criteria XII, Control of Measuring and Test Equipment, was identified for failing to periodically calibrate the Units 1 and 2 service water pump discharge pressure gages. As a result, the quality of the test data collected from the gages, used to satisfy ASME Section XI in-service test requirements and performed to demonstrate pump operability, was compromised. This issue was entered into the corrective action program for resolution.

The finding was more than minor because it was associated with service water pump equipment performance and affected the Mitigating System Cornerstone objective to ensure the capability of system that respond to initiating events to prevent undesirable consequences. In addition, if left uncorrected the finding could potentially become a more significant safety concern because the issue affected all the site's service water pumps and degraded pump performance could go undetected. The finding was determined to be of very low safety significance (Green) because it did not result in the loss of safety function of a service water pump (Section 1R22.2).

Inspection Report# : 2006005 *(pdf)*

Significance: N/A Jul 05, 2006
Identified By: NRC
Item Type: FIN Finding
95001 Supplemental Inspection
This supplemental inspection was conducted in accordance with Inspection Procedure 95001, to assess the licensee's evaluation associated with a Unit 2 performance indicator in the initiating events cornerstone. The Unplanned Power Changes per 7000 Critical Hours Performance Indicator crossed the threshold from Green (very-low risk significance) to White (low-to-moderate risk significance) in the fourth quarter of 2005. Specifically, the licensee experienced two unplanned power changes in the second quarter of 2005, one unplanned power change in the third quarter of 2005, and four unplanned power changes in the fourth quarter of 2005. The first unplanned power change, which occurred on April 20, was the result of a downpower initiated to remove the 2B reactor feed pump from service following an impeller failure which occurred on April 19. The second unplanned power change, which occurred on June 25, was the result of a downpower initiated to stabilize condenser vacuum following the trip of the 2B circulating water pump. The third unplanned power change, which occurred on August 5, was the result of placing Unit 2 in cold shutdown due to declaring all site emergency diesel generators (EDGs) inoperable. The fourth, fifth and sixth unplanned power changes, which occurred on November 8, 14, and 25, respectively, were the result of downpowers initiated to effect repairs on condenser tube leaks. The seventh unplanned power change, which occurred on December 13, was the result of a downpower caused by tripping of the 2B recirculation pump.

The licensee's problem identification, root cause and extent-of-condition evaluations, and corrective actions for the seven downpowers were adequate.

Inspection Report# : 2006007 *(pdf)*

Barrier Integrity

Emergency Preparedness

Significance:  Sep 30, 2006
Identified By: NRC
Item Type: NCV NonCited Violation
Potential Reduction in Effectiveness of Emergency Plan
An NRC-identified non-cited violation of 10 CFR 50.54(q) was identified for the failure to determine if the introduction or the increasing of air into the offgas flowpath for the purpose of reducing steam jet air ejector radiation monitor readings would reduce the effectiveness of the site Emergency Plan. The deficiency associated with this finding is that a 50.54(q) review was not performed to determine if there would be a potential reduction in the effectiveness of the site Emergency Plan because emergency action level classifications for both an Unusual Event and an Alert are based on radiation level readings from the steam jet air ejector radiation monitor. The procedure change which allowed the introduction of air into the offgas flowpath, and the implementation of the procedure on June 1, 2006 did not have associated 50.54(q) reviews.

The finding was greater than minor because it is associated with the Emergency Preparedness Cornerstone and potentially affected the program elements of 10 CFR 50.54(b)(4). The finding was of very low safety significance

because the licensee performed an analysis of the potential affects of the range of airflow rates on the radiation monitor readings which demonstrated that the emergency action level values would not have been detrimentally affected.
Inspection Report# : 2006004 *(pdf)*

Occupational Radiation Safety

Public Radiation Safety

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.

Miscellaneous

Significance: N/A Feb 23, 2007
Identified By: NRC
Item Type: FIN Finding
Corrective action program
The team concluded that in general, problems were adequately identified and evaluated, and effective corrective actions were implemented. The team found that established thresholds for identifying and classifying issues were appropriately low. However, several instances were identified where adverse conditions were not adequately evaluated and corrective actions were not implemented in a timely manner to prevent recurrence of equipment related problems. Corrective action program goals for completing evaluations and implementing corrective actions were sometimes not met because of competing priorities and lack of management enforcement of timeliness goals. One NCV was identified involving ineffective and untimely corrective actions associated with the failure of a conventional service water pump due to shaft corrosion.

Operating experience was adequately evaluated for applicability to the plant, however, several examples were identified where external operating experience was not used effectively, such as with industry material corrosion controls, which resulted in service water pump and valve stem equipment failures prior to the implementation of appropriate preventive maintenance. The licensee's audits and self-assessments were effective at identifying issues and entering them into the corrective action program. These audits and assessments identified issues similar to those identified by the NRC with respect to repetitive significant equipment failures due in part to untimely and ineffective implementation of preventive maintenance. Based on discussions with licensee employees during the inspection, personnel felt free to report safety concerns.

Inspection Report# : 2007007 *(pdf)*

Last modified : August 24, 2007