

## Brunswick 1

---

### Initiating Events

---

### Mitigating Systems



**Significance:** Sep 29, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

#### **FAILURE TO CORRECT UNIT 1 BATTERY DEFICIENCIES**

A Non-Cited violation for inadequate corrective actions was identified when the Unit 1, 125 VDC 1B-2 battery was found to be inoperable following a quarterly battery surveillance test. The inspectors determined that inadequate actions were taken by the licensee to maintain battery cells 3 and 57, located in the 1B-2 battery, within TS limits. The finding was of very low safety significance because no actual loss of safety function occurred, in that a loss of DC supplied loads did not occur.

Inspection Report# : [2001003\(pdf\)](#)



**Significance:** Sep 29, 2001

Identified By: NRC

Item Type: FIN Finding

#### **MAINTENANCE RULE CONDITION MONITORING CRITERIA FOR BATTERY SPECIFIC GRAVITY EXCEEDED**

The licensee failed to identify that a deficient 1B-2 battery cell condition related to specific gravity had lead to exceeding the licensee's appropriate Maintenance Rule (MR) condition monitoring threshold criteria. As a result, this condition existed without pursuit of the expected MR activities such as recognition of the condition, determination of the cause, and goals to fix and restore optimum battery performance. The finding was of very low safety significance because no actual loss of safety function occurred in that a loss of Direct Current (DC) supplied loads from the 1B-2 battery did not take place.

Inspection Report# : [2001003\(pdf\)](#)



**Significance:** Sep 29, 2001

Identified By: NRC

Item Type: FIN Finding

#### **INOPERABILITY OF SAFETY RELATED 480 VOLT FEEDER BREAKER OVERCURRENT TRIP DEVICE**

The inoperability of the DGB motor control center (MCC) safety-related 480 volt feeder breaker overcurrent trip device was a degraded condition that was an unrecognized increase in risk while the plant was operating over the past three years. If a fault occurred on MCC DGB, the MCC DGB feeder breaker would not operate and therefore the E-6 bus supply breaker would trip open to isolate the fault. This would result in the loss of the entire E-6 substation and the loss of emergency diesel generator number 2. The finding was of very low safety significance based on the small probability of a bus fault actually occurring.

Inspection Report# : [2001003\(pdf\)](#)



**Significance:** Sep 30, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

#### **SITE MANHOLE CORRECTIVE ACTIONS**

A Non-cited Violation (NCV) was identified for the failure to promptly identify and correct conditions adverse to quality involving 57 underground safety-related manholes subject to flooding and containing safety-related alternating current and direct current cables. This was determined to be of very low safety significance because no operability problems on safety-related equipment were identified from an engineering review of the deficiencies.

Inspection Report# : [2000004\(pdf\)](#)

**Significance:** N/A Sep 30, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

**FAILURE TO CONSIDER UNIT 1 BATTERY UNAVAILABILITY**

No Color. An NCV was identified for the failure to adequately monitor system unavailability hours and take appropriate corrective actions, when the 1A safety-related battery exceeded the licensee established goal for unavailability. This was an isolated failure which did not result in any unidentified equipment failures and was dispositioned outside the SDP as a no color NCV.

Inspection Report# : [2000004\(pdf\)](#)



**Significance:** Jul 01, 2000

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

**FAILURE TO ADEQUATELY ESTABLISH A PROCEDURE TO DEMONSTRATE THE OPERABILITY OF THE ENGINE DRIVEN FIRE PUMP 24 VOLT BATTERY CHARGER AND BATTERY**

A non-cited violation of the fire protection program was identified for a failure to establish an adequate procedure to demonstrate the operability of the engine driven fire pump (EDFP) 24 volt battery charger and battery. This failure resulted in the inability of the engine driven fire pump to start when called upon to accomplish its fire or risk-related function. The licensee performed satisfactory troubleshooting, timely repair of the damaged battery charger, and replacement of the dedicated fire batteries. The motor driven fire pump and jockey pumps were unavailable for a short time while the EDFP was considered inoperable; therefore, the issue was found to be of very low safety significance.

Inspection Report# : [2000003\(pdf\)](#)

---

## Barrier Integrity

---

## Emergency Preparedness

---

## Occupational Radiation Safety

---

## Public Radiation Safety

---

## Physical Protection



**Significance:** Sep 29, 2001

Identified By: Licensee

Item Type: NCV NonCited Violation

**FAILURE TO SUSPEND UNESCORTED ACCESS FOR AN EMPLOYEE WHOSE ACCESS HAD BEEN DENIED DUE TO AN ONGOING INVESTIGATION.**

An access control violation of security procedures was identified by the licensee. Brunswick operating license condition 2D, the Brunswick Physical Security Plan, and security implementing procedures SEC-NGGC-2130, Revision 10 and Operating Security Instruction (OSI)-09, Revision 83 require that unescorted access be suspended for individuals who have had their access denied based on an ongoing investigation. From September 19, 2000 through October 4, 2000, an employee whose access had been denied based on an ongoing investigation, continued to maintain the capability of gaining unescorted access to the Brunswick Nuclear Plant.

Inspection Report# : [2001003\(pdf\)](#)

---

## Miscellaneous

**Significance:** N/A Sep 14, 2001

Identified By: NRC

Item Type: FIN Finding

**PROBLEM IDENTIFICATION AND RESOLUTION**

Based on the results of the inspection, no findings of significance were identified. The implementation of the corrective action program was acceptable. The licensee was effective at identifying problems and placing them into the corrective action program as evidenced by the review of corrective action program documents, corrective action program trend reports, operating experience review items, and items from system health reports. When conditions adverse to quality were identified, the licensee generally identified the appropriate causes, and developed and implemented effective corrective actions. For some complex issues, corrective action documentation did not adequately reflect those actions that were actually taken to correct the problem and prevent repetition. Based on discussions conducted with plant employees from various departments, the inspectors determined that a reluctance to report safety concerns did not exist.

Inspection Report# : [2001008\(pdf\)](#)

**Significance:** N/A Sep 01, 2000

Identified By: NRC

Item Type: FIN Finding

**PROBLEM IDENTIFICATION AND RESOLUTION**

Based on the results of the inspection, no findings of significance were identified. The implementation of the corrective action program was acceptable with concerns noted. The licensee was generally effective at identifying problems and placing them into the corrective action program as evidenced by the inspectors review of external operating experience, Corrective Action Program Trend Reports, and items from system health reports and through plant tours. However, several instances where the licensee had not initiated condition reports were noted. When conditions adverse to quality were identified, the licensee generally identified the appropriate causes and developed and implemented effective corrective actions. The inspectors determined that the licensee properly classified discrepant conditions, but did not use risk when classifying/assigning prioritization of these items. The licensee's self-assessments and audits were effective in identifying deficiencies in the corrective action program. Based on discussions with plant employees from various departments, the inspectors determined that employees felt free to report safety concerns.

Inspection Report# : [2000007\(pdf\)](#)

Last modified : April 01, 2002

## Brunswick 1

---

### Initiating Events

---

### Mitigating Systems



**Significance:** Sep 29, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

#### **FAILURE TO CORRECT UNIT 1 BATTERY DEFICIENCIES**

A Non-Cited violation for inadequate corrective actions was identified when the Unit 1, 125 VDC 1B-2 battery was found to be inoperable following a quarterly battery surveillance test. The inspectors determined that inadequate actions were taken by the licensee to maintain battery cells 3 and 57, located in the 1B-2 battery, within TS limits. The finding was of very low safety significance because no actual loss of safety function occurred, in that a loss of DC supplied loads did not occur.

Inspection Report# : [2001003\(pdf\)](#)



**Significance:** Sep 29, 2001

Identified By: NRC

Item Type: FIN Finding

#### **MAINTENANCE RULE CONDITION MONITORING CRITERIA FOR BATTERY SPECIFIC GRAVITY EXCEEDED**

The licensee failed to identify that a deficient 1B-2 battery cell condition related to specific gravity had lead to exceeding the licensee's appropriate Maintenance Rule (MR) condition monitoring threshold criteria. As a result, this condition existed without pursuit of the expected MR activities such as recognition of the condition, determination of the cause, and goals to fix and restore optimum battery performance. The finding was of very low safety significance because no actual loss of safety function occurred in that a loss of Direct Current (DC) supplied loads from the 1B-2 battery did not take place.

Inspection Report# : [2001003\(pdf\)](#)



**Significance:** Sep 29, 2001

Identified By: NRC

Item Type: FIN Finding

#### **INOPERABILITY OF SAFETY RELATED 480 VOLT FEEDER BREAKER OVERCURRENT TRIP DEVICE**

The inoperability of the DGB motor control center (MCC) safety-related 480 volt feeder breaker overcurrent trip device was a degraded condition that was an unrecognized increase in risk while the plant was operating over the past three years. If a fault occurred on MCC DGB, the MCC DGB feeder breaker would not operate and therefore the E-6 bus supply breaker would trip open to isolate the fault. This would result in the loss of the entire E-6 substation and the loss of emergency diesel generator number 2. The finding was of very low safety significance based on the small probability of a bus fault actually occurring.

Inspection Report# : [2001003\(pdf\)](#)

**Significance:** N/A Sep 30, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

#### **FAILURE TO CONSIDER UNIT 1 BATTERY UNAVAILABILITY**

No Color. An NCV was identified for the failure to adequately monitor system unavailability hours and take appropriate corrective actions, when the 1A safety-related battery exceeded the licensee established goal for unavailability. This was an isolated failure which did not result in any unidentified equipment failures and was dispositioned outside the SDP as a no color NCV.

Inspection Report# : [2000004\(pdf\)](#)



**Significance:** Sep 30, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

**SITE MANHOLE CORRECTIVE ACTIONS**

A Non-cited Violation (NCV) was identified for the failure to promptly identify and correct conditions adverse to quality involving 57 underground safety-related manholes subject to flooding and containing safety-related alternating current and direct current cables. This was determined to be of very low safety significance because no operability problems on safety-related equipment were identified from an engineering review of the deficiencies.

Inspection Report# : [2000004\(pdf\)](#)



**Significance:** Jul 01, 2000

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

**FAILURE TO ADEQUATELY ESTABLISH A PROCEDURE TO DEMONSTRATE THE OPERABILITY OF THE ENGINE DRIVEN FIRE PUMP 24 VOLT BATTERY CHARGER AND BATTERY**

A non-cited violation of the fire protection program was identified for a failure to establish an adequate procedure to demonstrate the operability of the engine driven fire pump (EDFP) 24 volt battery charger and battery. This failure resulted in the inability of the engine driven fire pump to start when called upon to accomplish its fire or risk-related function. The licensee performed satisfactory troubleshooting, timely repair of the damaged battery charger, and replacement of the dedicated fire batteries. The motor driven fire pump and jockey pumps were unavailable for a short time while the EDFP was considered inoperable; therefore, the issue was found to be of very low safety significance.

Inspection Report# : [2000003\(pdf\)](#)

---

**Barrier Integrity**

---

**Emergency Preparedness**

---

**Occupational Radiation Safety**

---

**Public Radiation Safety**

---

**Physical Protection**

**Significance:** Sep 29, 2001

Identified By: Licensee

Item Type: NCV NonCited Violation

**FAILURE TO SUSPEND UNESCORTED ACCESS FOR AN EMPLOYEE WHOSE ACCESS HAD BEEN DENIED DUE TO AN ONGOING INVESTIGATION.**

An access control violation of security procedures was identified by the licensee. Brunswick operating license condition 2D, the Brunswick Physical Security Plan, and security implementing procedures SEC-NGGC-2130, Revision 10 and Operating Security Instruction (OSI)-09, Revision 83 require that unescorted access be suspended for individuals who have had their access denied based on an ongoing investigation. From September 19, 2000 through October 4, 2000, an employee whose access had been denied based on an ongoing investigation, continued to maintain the capability of gaining unescorted access to the Brunswick Nuclear Plant.

Inspection Report# : [2001003\(pdf\)](#)

---

**Miscellaneous**

**Significance: N/A** Sep 14, 2001

Identified By: NRC

Item Type: FIN Finding

**PROBLEM IDENTIFICATION AND RESOLUTION**

Based on the results of the inspection, no findings of significance were identified. The implementation of the corrective action program was acceptable. The licensee was effective at identifying problems and placing them into the corrective action program as evidenced by the review of corrective action program documents, corrective action program trend reports, operating experience review items, and items from system health reports. When conditions adverse to quality were identified, the licensee generally identified the appropriate causes, and developed and implemented effective corrective actions. For some complex issues, corrective action documentation did not adequately reflect those actions that were actually taken to correct the problem and prevent repetition. Based on discussions conducted with plant employees from various departments, the inspectors determined that a reluctance to report safety concerns did not exist.

Inspection Report# : [2001008\(pdf\)](#)

**Significance: N/A** Sep 01, 2000

Identified By: NRC

Item Type: FIN Finding

**PROBLEM IDENTIFICATION AND RESOLUTION**

Based on the results of the inspection, no findings of significance were identified. The implementation of the corrective action program was acceptable with concerns noted. The licensee was generally effective at identifying problems and placing them into the corrective action program as evidenced by the inspectors review of external operating experience, Corrective Action Program Trend Reports, and items from system health reports and through plant tours. However, several instances where the licensee had not initiated condition reports were noted. When conditions adverse to quality were identified, the licensee generally identified the appropriate causes and developed and implemented effective corrective actions. The inspectors determined that the licensee properly classified discrepant conditions, but did not use risk when classifying/assigning prioritization of these items. The licensee's self-assessments and audits were effective in identifying deficiencies in the corrective action program. Based on discussions with plant employees from various departments, the inspectors determined that employees felt free to report safety concerns.

Inspection Report# : [2000007\(pdf\)](#)

Last modified : April 01, 2002

## Brunswick 1

---

### Initiating Events

---

### Mitigating Systems



**Significance:** G Sep 30, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

#### **SITE MANHOLE CORRECTIVE ACTIONS**

A Non-cited Violation (NCV) was identified for the failure to promptly identify and correct conditions adverse to quality involving 57 underground safety-related manholes subject to flooding and containing safety-related alternating current and direct current cables. This was determined to be of very low safety significance because no operability problems on safety-related equipment were identified from an engineering review of the deficiencies.

Inspection Report# : [2000004\(pdf\)](#)

**Significance:** N/A Sep 30, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

#### **FAILURE TO CONSIDER UNIT 1 BATTERY UNAVAILABILITY**

No Color. An NCV was identified for the failure to adequately monitor system unavailability hours and take appropriate corrective actions, when the 1A safety-related battery exceeded the licensee established goal for unavailability. This was an isolated failure which did not result in any unidentified equipment failures and was dispositioned outside the SDP as a no color NCV.

Inspection Report# : [2000004\(pdf\)](#)



**Significance:** G Jul 01, 2000

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

#### **FAILURE TO ADEQUATELY ESTABLISH A PROCEDURE TO DEMONSTRATE THE OPERABILITY OF THE ENGINE DRIVEN FIRE PUMP 24 VOLT BATTERY CHARGER AND BATTERY**

A non-cited violation of the fire protection program was identified for a failure to establish an adequate procedure to demonstrate the operability of the engine driven fire pump (EDFP) 24 volt battery charger and battery. This failure resulted in the inability of the engine driven fire pump to start when called upon to accomplish its fire or risk-related function. The licensee performed satisfactory troubleshooting, timely repair of the damaged battery charger, and replacement of the dedicated fire batteries. The motor driven fire pump and jockey pumps were unavailable for a short time while the EDFP was considered inoperable; therefore, the issue was found to be of very low safety significance.

Inspection Report# : [2000003\(pdf\)](#)



**Significance:** G Sep 29, 2001

Identified By: NRC

Item Type: FIN Finding

#### **INOPERABILITY OF SAFETY RELATED 480 VOLT FEEDER BREAKER OVERCURRENT TRIP DEVICE**

The inoperability of the DGB motor control center (MCC) safety-related 480 volt feeder breaker overcurrent trip device was a degraded condition that was an unrecognized increase in risk while the plant was operating over the past three years. If a fault occurred on MCC DGB, the MCC DGB feeder breaker would not operate and therefore the E-6 bus supply breaker would trip open to isolate the fault. This would result in the loss of the entire E-6 substation and the loss of emergency diesel generator number 2. The finding was of very low safety significance based on the small probability of a bus fault actually occurring.

Inspection Report# : [2001003\(pdf\)](#)



**Significance:** G Sep 29, 2001

Identified By: NRC

Item Type: FIN Finding

**MAINTENANCE RULE CONDITION MONITORING CRITERIA FOR BATTERY SPECIFIC GRAVITY EXCEEDED**

The licensee failed to identify that a deficient 1B-2 battery cell condition related to specific gravity had lead to exceeding the licensee's appropriate Maintenance Rule (MR) condition monitoring threshold criteria. As a result, this condition existed without pursuit of the expected MR activities such as recognition of the condition, determination of the cause, and goals to fix and restore optimum battery performance. The finding was of very low safety significance because no actual loss of safety function occurred in that a loss of Direct Current (DC) supplied loads from the 1B-2 battery did not take place.

Inspection Report# : [2001003\(pdf\)](#)



**Significance:** G Sep 29, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

**FAILURE TO CORRECT UNIT 1 BATTERY DEFICIENCIES**

A Non-Cited violation for inadequate corrective actions was identified when the Unit 1, 125 VDC 1B-2 battery was found to be inoperable following a quarterly battery surveillance test. The inspectors determined that inadequate actions were taken by the licensee to maintain battery cells 3 and 57, located in the 1B-2 battery, within TS limits. The finding was of very low safety significance because no actual loss of safety function occurred, in that a loss of DC supplied loads did not occur.

Inspection Report# : [2001003\(pdf\)](#)

---

## Barrier Integrity

---

---

## Emergency Preparedness

---

---

## Occupational Radiation Safety

---

---

## Public Radiation Safety

---

---

## Physical Protection



**Significance:** G Sep 29, 2001

Identified By: Licensee

Item Type: NCV NonCited Violation

**FAILURE TO SUSPEND UNESCORTED ACCESS FOR AN EMPLOYEE WHOSE ACCESS HAD BEEN DENIED DUE TO AN ONGOING INVESTIGATION.**

An access control violation of security procedures was identified by the licensee. Brunswick operating license condition 2D, the Brunswick Physical Security Plan, and security implementing procedures SEC-NGGC-2130, Revision 10 and Operating Security Instruction (OSI)-09, Revision 83 require that unescorted access be suspended for individuals who have had their access denied based on an ongoing investigation. From September 19, 2000 through October 4, 2000, an employee whose access had been denied based on an ongoing investigation, continued to maintain the capability of gaining unescorted access to the Brunswick Nuclear Plant.

Inspection Report# : [2001003\(pdf\)](#)

---

## Miscellaneous

**Significance:** N/A Sep 01, 2000

Identified By: NRC

Item Type: FIN Finding

**PROBLEM IDENTIFICATION AND RESOLUTION**

Based on the results of the inspection, no findings of significance were identified. The implementation of the corrective action program was acceptable with concerns noted. The licensee was generally effective at identifying problems and placing them into the corrective action program as evidenced by the inspectors review of external operating experience, Corrective Action Program Trend Reports, and items from system health reports and through plant tours. However, several instances where the licensee had not initiated condition reports were noted. When conditions adverse to quality were identified, the licensee generally identified the appropriate causes and developed and implemented effective corrective actions. The inspectors determined that the licensee properly classified discrepant conditions, but did not use risk when classifying/assigning prioritization of these items. The licensee's self-assessments and audits were effective in identifying deficiencies in the corrective action program. Based on discussions with plant employees from various departments, the inspectors determined that employees felt free to report safety concerns.

Inspection Report# : [2000007\(pdf\)](#)

**Significance:** N/A Sep 14, 2001

Identified By: NRC

Item Type: FIN Finding

**PROBLEM IDENTIFICATION AND RESOLUTION**

Based on the results of the inspection, no findings of significance were identified. The implementation of the corrective action program was acceptable. The licensee was effective at identifying problems and placing them into the corrective action program as evidenced by the review of corrective action program documents, corrective action program trend reports, operating experience review items, and items from system health reports. When conditions adverse to quality were identified, the licensee generally identified the appropriate causes, and developed and implemented effective corrective actions. For some complex issues, corrective action documentation did not adequately reflect those actions that were actually taken to correct the problem and prevent repetition. Based on discussions conducted with plant employees from various departments, the inspectors determined that a reluctance to report safety concerns did not exist.

Inspection Report# : [2001008\(pdf\)](#)

Last modified : March 29, 2002

## Brunswick 1

---

### Initiating Events

---

### Mitigating Systems



**Significance:** G Sep 30, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

#### **SITE MANHOLE CORRECTIVE ACTIONS**

A Non-cited Violation (NCV) was identified for the failure to promptly identify and correct conditions adverse to quality involving 57 underground safety-related manholes subject to flooding and containing safety-related alternating current and direct current cables. This was determined to be of very low safety significance because no operability problems on safety-related equipment were identified from an engineering review of the deficiencies.

Inspection Report# : [2000004\(pdf\)](#)

**Significance:** N/A Sep 30, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

#### **FAILURE TO CONSIDER UNIT 1 BATTERY UNAVAILABILITY**

No Color. An NCV was identified for the failure to adequately monitor system unavailability hours and take appropriate corrective actions, when the 1A safety-related battery exceeded the licensee established goal for unavailability. This was an isolated failure which did not result in any unidentified equipment failures and was dispositioned outside the SDP as a no color NCV.

Inspection Report# : [2000004\(pdf\)](#)



**Significance:** G Jul 01, 2000

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

#### **FAILURE TO ADEQUATELY ESTABLISH A PROCEDURE TO DEMONSTRATE THE OPERABILITY OF THE ENGINE DRIVEN FIRE PUMP 24 VOLT BATTERY CHARGER AND BATTERY**

A non-cited violation of the fire protection program was identified for a failure to establish an adequate procedure to demonstrate the operability of the engine driven fire pump (EDFP) 24 volt battery charger and battery. This failure resulted in the inability of the engine driven fire pump to start when called upon to accomplish its fire or risk-related function. The licensee performed satisfactory troubleshooting, timely repair of the damaged battery charger, and replacement of the dedicated fire batteries. The motor driven fire pump and jockey pumps were unavailable for a short time while the EDFP was considered inoperable; therefore, the issue was found to be of very low safety significance.

Inspection Report# : [2000003\(pdf\)](#)



**Significance:** G Sep 29, 2001

Identified By: NRC

Item Type: FIN Finding

#### **INOPERABILITY OF SAFETY RELATED 480 VOLT FEEDER BREAKER OVERCURRENT TRIP DEVICE**

The inoperability of the DGB motor control center (MCC) safety-related 480 volt feeder breaker overcurrent trip device was a degraded condition that was an unrecognized increase in risk while the plant was operating over the past three years. If a fault occurred on MCC DGB, the MCC DGB feeder breaker would not operate and therefore the E-6 bus supply breaker would trip open to isolate the fault. This would result in the loss of the entire E-6 substation and the loss of emergency diesel generator number 2. The finding was of very low safety significance based on the small probability of a bus fault actually occurring.

Inspection Report# : [2001003\(pdf\)](#)



**Significance:** G Sep 29, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

#### **FAILURE TO CORRECT UNIT 1 BATTERY DEFICIENCIES**

A Non-Cited violation for inadequate corrective actions was identified when the Unit 1, 125 VDC 1B-2 battery was found to be inoperable following a quarterly battery surveillance test. The inspectors determined that inadequate actions were taken by the licensee to maintain battery cells 3 and 57, located in the 1B-2 battery, within TS limits. The finding was of very low safety significance because no actual loss of safety function occurred, in that a loss of DC supplied loads did not occur.

Inspection Report# : [2001003\(pdf\)](#)

G

**Significance:** Sep 29, 2001

Identified By: NRC

Item Type: FIN Finding

#### **MAINTENANCE RULE CONDITION MONITORING CRITERIA FOR BATTERY SPECIFIC GRAVITY EXCEEDED**

The licensee failed to identify that a deficient 1B-2 battery cell condition related to specific gravity had lead to exceeding the licensee's appropriate Maintenance Rule (MR) condition monitoring threshold criteria. As a result, this condition existed without pursuit of the expected MR activities such as recognition of the condition, determination of the cause, and goals to fix and restore optimum battery performance. The finding was of very low safety significance because no actual loss of safety function occurred in that a loss of Direct Current (DC) supplied loads from the 1B-2 battery did not take place.

Inspection Report# : [2001003\(pdf\)](#)

---

## Barrier Integrity

---

## Emergency Preparedness

---

## Occupational Radiation Safety

---

## Public Radiation Safety

---

## Physical Protection

G

**Significance:** Sep 29, 2001

Identified By: Licensee

Item Type: NCV NonCited Violation

#### **FAILURE TO SUSPEND UNESCORTED ACCESS FOR AN EMPLOYEE WHOSE ACCESS HAD BEEN DENIED DUE TO AN ONGOING INVESTIGATION.**

An access control violation of security procedures was identified by the licensee. Brunswick operating license condition 2D, the Brunswick Physical Security Plan, and security implementing procedures SEC-NGGC-2130, Revision 10 and Operating Security Instruction (OSI)-09, Revision 83 require that unescorted access be suspended for individuals who have had their access denied based on an ongoing investigation. From September 19, 2000 through October 4, 2000, an employee whose access had been denied based on an ongoing investigation, continued to maintain the capability of gaining unescorted access to the Brunswick Nuclear Plant.

Inspection Report# : [2001003\(pdf\)](#)

---

## Miscellaneous

**Significance:** N/A Sep 01, 2000

Identified By: NRC

Item Type: FIN Finding

**PROBLEM IDENTIFICATION AND RESOLUTION**

Based on the results of the inspection, no findings of significance were identified. The implementation of the corrective action program was acceptable with concerns noted. The licensee was generally effective at identifying problems and placing them into the corrective action program as evidenced by the inspectors review of external operating experience, Corrective Action Program Trend Reports, and items from system health reports and through plant tours. However, several instances where the licensee had not initiated condition reports were noted. When conditions adverse to quality were identified, the licensee generally identified the appropriate causes and developed and implemented effective corrective actions. The inspectors determined that the licensee properly classified discrepant conditions, but did not use risk when classifying/assigning prioritization of these items. The licensee's self-assessments and audits were effective in identifying deficiencies in the corrective action program. Based on discussions with plant employees from various departments, the inspectors determined that employees felt free to report safety concerns.

Inspection Report# : [2000007\(pdf\)](#)

**Significance:** N/A Sep 14, 2001

Identified By: NRC

Item Type: FIN Finding

**PROBLEM IDENTIFICATION AND RESOLUTION**

Based on the results of the inspection, no findings of significance were identified. The implementation of the corrective action program was acceptable. The licensee was effective at identifying problems and placing them into the corrective action program as evidenced by the review of corrective action program documents, corrective action program trend reports, operating experience review items, and items from system health reports. When conditions adverse to quality were identified, the licensee generally identified the appropriate causes, and developed and implemented effective corrective actions. For some complex issues, corrective action documentation did not adequately reflect those actions that were actually taken to correct the problem and prevent repetition. Based on discussions conducted with plant employees from various departments, the inspectors determined that a reluctance to report safety concerns did not exist.

Inspection Report# : [2001008\(pdf\)](#)

Last modified : March 28, 2002

## Brunswick 1

---

### Initiating Events

---

### Mitigating Systems



**Significance:** G Sep 30, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

#### **SITE MANHOLE CORRECTIVE ACTIONS**

A Non-cited Violation (NCV) was identified for the failure to promptly identify and correct conditions adverse to quality involving 57 underground safety-related manholes subject to flooding and containing safety-related alternating current and direct current cables. This was determined to be of very low safety significance because no operability problems on safety-related equipment were identified from an engineering review of the deficiencies.

Inspection Report# : [2000004\(pdf\)](#)

**Significance:** N/A Sep 30, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

#### **FAILURE TO CONSIDER UNIT 1 BATTERY UNAVAILABILITY**

No Color. An NCV was identified for the failure to adequately monitor system unavailability hours and take appropriate corrective actions, when the 1A safety-related battery exceeded the licensee established goal for unavailability. This was an isolated failure which did not result in any unidentified equipment failures and was dispositioned outside the SDP as a no color NCV.

Inspection Report# : [2000004\(pdf\)](#)



**Significance:** G Jul 01, 2000

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

#### **FAILURE TO ADEQUATELY ESTABLISH A PROCEDURE TO DEMONSTRATE THE OPERABILITY OF THE ENGINE DRIVEN FIRE PUMP 24 VOLT BATTERY CHARGER AND BATTERY**

A non-cited violation of the fire protection program was identified for a failure to establish an adequate procedure to demonstrate the operability of the engine driven fire pump (EDFP) 24 volt battery charger and battery. This failure resulted in the inability of the engine driven fire pump to start when called upon to accomplish its fire or risk-related function. The licensee performed satisfactory troubleshooting, timely repair of the damaged battery charger, and replacement of the dedicated fire batteries. The motor driven fire pump and jockey pumps were unavailable for a short time while the EDFP was considered inoperable; therefore, the issue was found to be of very low safety significance.

Inspection Report# : [2000003\(pdf\)](#)



**Significance:** G Sep 29, 2001

Identified By: NRC

Item Type: FIN Finding

#### **INOPERABILITY OF SAFETY RELATED 480 VOLT FEEDER BREAKER OVERCURRENT TRIP DEVICE**

The inoperability of the DGB motor control center (MCC) safety-related 480 volt feeder breaker overcurrent trip device was a degraded condition that was an unrecognized increase in risk while the plant was operating over the past three years. If a fault occurred on MCC DGB, the MCC DGB feeder breaker would not operate and therefore the E-6 bus supply breaker would trip open to isolate the fault. This would result in the loss of the entire E-6 substation and the loss of emergency diesel generator number 2. The finding was of very low safety significance based on the small probability of a bus fault actually occurring.

Inspection Report# : [2001003\(pdf\)](#)



**Significance:** G Sep 29, 2001

Identified By: NRC

Item Type: FIN Finding

#### **MAINTENANCE RULE CONDITION MONITORING CRITERIA FOR BATTERY SPECIFIC GRAVITY EXCEEDED**

The licensee failed to identify that a deficient 1B-2 battery cell condition related to specific gravity had lead to exceeding the licensee's appropriate Maintenance Rule (MR) condition monitoring threshold criteria. As a result, this condition existed without pursuit of the expected MR activities such as recognition of the condition, determination of the cause, and goals to fix and restore optimum battery performance. The finding was of very low safety significance because no actual loss of safety function occurred in that a loss of Direct Current (DC) supplied loads from the 1B-2 battery did not take place.

Inspection Report# : [2001003\(pdf\)](#)



**Significance:** G Sep 29, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

#### **FAILURE TO CORRECT UNIT 1 BATTERY DEFICIENCIES**

A Non-Cited violation for inadequate corrective actions was identified when the Unit 1, 125 VDC 1B-2 battery was found to be inoperable following a quarterly battery surveillance test. The inspectors determined that inadequate actions were taken by the licensee to maintain battery cells 3 and 57, located in the 1B-2 battery, within TS limits. The finding was of very low safety significance because no actual loss of safety function occurred, in that a loss of DC supplied loads did not occur.

Inspection Report# : [2001003\(pdf\)](#)

---

## Barrier Integrity

---

---

## Emergency Preparedness

---

---

## Occupational Radiation Safety

---

---

## Public Radiation Safety

---

---

## Physical Protection



**Significance:** G Sep 29, 2001

Identified By: Licensee

Item Type: NCV NonCited Violation

#### **FAILURE TO SUSPEND UNESCORTED ACCESS FOR AN EMPLOYEE WHOSE ACCESS HAD BEEN DENIED DUE TO AN ONGOING INVESTIGATION.**

An access control violation of security procedures was identified by the licensee. Brunswick operating license condition 2D, the Brunswick Physical Security Plan, and security implementing procedures SEC-NGGC-2130, Revision 10 and Operating Security Instruction (OSI)-09, Revision 83 require that unescorted access be suspended for individuals who have had their access denied based on an ongoing investigation. From September 19, 2000 through October 4, 2000, an employee whose access had been denied based on an ongoing investigation, continued to maintain the capability of gaining unescorted access to the Brunswick Nuclear Plant.

Inspection Report# : [2001003\(pdf\)](#)

---

## Miscellaneous

**Significance:** N/A Sep 01, 2000

Identified By: NRC

Item Type: FIN Finding

**PROBLEM IDENTIFICATION AND RESOLUTION**

Based on the results of the inspection, no findings of significance were identified. The implementation of the corrective action program was acceptable with concerns noted. The licensee was generally effective at identifying problems and placing them into the corrective action program as evidenced by the inspectors review of external operating experience, Corrective Action Program Trend Reports, and items from system health reports and through plant tours. However, several instances where the licensee had not initiated condition reports were noted. When conditions adverse to quality were identified, the licensee generally identified the appropriate causes and developed and implemented effective corrective actions. The inspectors determined that the licensee properly classified discrepant conditions, but did not use risk when classifying/assigning prioritization of these items. The licensee's self-assessments and audits were effective in identifying deficiencies in the corrective action program. Based on discussions with plant employees from various departments, the inspectors determined that employees felt free to report safety concerns.

Inspection Report# : [2000007\(pdf\)](#)

**Significance:** N/A Sep 14, 2001

Identified By: NRC

Item Type: FIN Finding

**PROBLEM IDENTIFICATION AND RESOLUTION**

Based on the results of the inspection, no findings of significance were identified. The implementation of the corrective action program was acceptable. The licensee was effective at identifying problems and placing them into the corrective action program as evidenced by the review of corrective action program documents, corrective action program trend reports, operating experience review items, and items from system health reports. When conditions adverse to quality were identified, the licensee generally identified the appropriate causes, and developed and implemented effective corrective actions. For some complex issues, corrective action documentation did not adequately reflect those actions that were actually taken to correct the problem and prevent repetition. Based on discussions conducted with plant employees from various departments, the inspectors determined that a reluctance to report safety concerns did not exist.

Inspection Report# : [2001008\(pdf\)](#)

Last modified : March 28, 2002

## Brunswick 1

---

### Initiating Events

---

### Mitigating Systems



**Significance:** G Sep 30, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

#### **SITE MANHOLE CORRECTIVE ACTIONS**

A Non-cited Violation (NCV) was identified for the failure to promptly identify and correct conditions adverse to quality involving 57 underground safety-related manholes subject to flooding and containing safety-related alternating current and direct current cables. This was determined to be of very low safety significance because no operability problems on safety-related equipment were identified from an engineering review of the deficiencies.

Inspection Report# : [2000004\(pdf\)](#)

**Significance:** N/A Sep 30, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

#### **FAILURE TO CONSIDER UNIT 1 BATTERY UNAVAILABILITY**

No Color. An NCV was identified for the failure to adequately monitor system unavailability hours and take appropriate corrective actions, when the 1A safety-related battery exceeded the licensee established goal for unavailability. This was an isolated failure which did not result in any unidentified equipment failures and was dispositioned outside the SDP as a no color NCV.

Inspection Report# : [2000004\(pdf\)](#)



**Significance:** G Jul 01, 2000

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

#### **FAILURE TO ADEQUATELY ESTABLISH A PROCEDURE TO DEMONSTRATE THE OPERABILITY OF THE ENGINE DRIVEN FIRE PUMP 24 VOLT BATTERY CHARGER AND BATTERY**

A non-cited violation of the fire protection program was identified for a failure to establish an adequate procedure to demonstrate the operability of the engine driven fire pump (EDFP) 24 volt battery charger and battery. This failure resulted in the inability of the engine driven fire pump to start when called upon to accomplish its fire or risk-related function. The licensee performed satisfactory troubleshooting, timely repair of the damaged battery charger, and replacement of the dedicated fire batteries. The motor driven fire pump and jockey pumps were unavailable for a short time while the EDFP was considered inoperable; therefore, the issue was found to be of very low safety significance.

Inspection Report# : [2000003\(pdf\)](#)



**Significance:** G Sep 29, 2001

Identified By: NRC

Item Type: FIN Finding

#### **INOPERABILITY OF SAFETY RELATED 480 VOLT FEEDER BREAKER OVERCURRENT TRIP DEVICE**

The inoperability of the DGB motor control center (MCC) safety-related 480 volt feeder breaker overcurrent trip device was a degraded condition that was an unrecognized increase in risk while the plant was operating over the past three years. If a fault occurred on MCC DGB, the MCC DGB feeder breaker would not operate and therefore the E-6 bus supply breaker would trip open to isolate the fault. This would result in the loss of the entire E-6 substation and the loss of emergency diesel generator number 2. The finding was of very low safety significance based on the small probability of a bus fault actually occurring.

Inspection Report# : [2001003\(pdf\)](#)



**Significance:** G Sep 29, 2001

Identified By: NRC

Item Type: FIN Finding

#### **MAINTENANCE RULE CONDITION MONITORING CRITERIA FOR BATTERY SPECIFIC GRAVITY EXCEEDED**

The licensee failed to identify that a deficient 1B-2 battery cell condition related to specific gravity had lead to exceeding the licensee's appropriate Maintenance Rule (MR) condition monitoring threshold criteria. As a result, this condition existed without pursuit of the expected MR activities such as recognition of the condition, determination of the cause, and goals to fix and restore optimum battery performance. The finding was of very low safety significance because no actual loss of safety function occurred in that a loss of Direct Current (DC) supplied loads from the 1B-2 battery did not take place.

Inspection Report# : [2001003\(pdf\)](#)



**Significance:** G Sep 29, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

#### **FAILURE TO CORRECT UNIT 1 BATTERY DEFICIENCIES**

A Non-Cited violation for inadequate corrective actions was identified when the Unit 1, 125 VDC 1B-2 battery was found to be inoperable following a quarterly battery surveillance test. The inspectors determined that inadequate actions were taken by the licensee to maintain battery cells 3 and 57, located in the 1B-2 battery, within TS limits. The finding was of very low safety significance because no actual loss of safety function occurred, in that a loss of DC supplied loads did not occur.

Inspection Report# : [2001003\(pdf\)](#)

---

## Barrier Integrity

---

---

## Emergency Preparedness

---

---

## Occupational Radiation Safety

---

---

## Public Radiation Safety

---

---

## Physical Protection



**Significance:** G Sep 29, 2001

Identified By: Licensee

Item Type: NCV NonCited Violation

#### **FAILURE TO SUSPEND UNESCORTED ACCESS FOR AN EMPLOYEE WHOSE ACCESS HAD BEEN DENIED DUE TO AN ONGOING INVESTIGATION.**

An access control violation of security procedures was identified by the licensee. Brunswick operating license condition 2D, the Brunswick Physical Security Plan, and security implementing procedures SEC-NGGC-2130, Revision 10 and Operating Security Instruction (OSI)-09, Revision 83 require that unescorted access be suspended for individuals who have had their access denied based on an ongoing investigation. From September 19, 2000 through October 4, 2000, an employee whose access had been denied based on an ongoing investigation, continued to maintain the capability of gaining unescorted access to the Brunswick Nuclear Plant.

Inspection Report# : [2001003\(pdf\)](#)

---

## Miscellaneous

**Significance:** N/A Sep 01, 2000

Identified By: NRC

Item Type: FIN Finding

**PROBLEM IDENTIFICATION AND RESOLUTION**

Based on the results of the inspection, no findings of significance were identified. The implementation of the corrective action program was acceptable with concerns noted. The licensee was generally effective at identifying problems and placing them into the corrective action program as evidenced by the inspectors review of external operating experience, Corrective Action Program Trend Reports, and items from system health reports and through plant tours. However, several instances where the licensee had not initiated condition reports were noted. When conditions adverse to quality were identified, the licensee generally identified the appropriate causes and developed and implemented effective corrective actions. The inspectors determined that the licensee properly classified discrepant conditions, but did not use risk when classifying/assigning prioritization of these items. The licensee's self-assessments and audits were effective in identifying deficiencies in the corrective action program. Based on discussions with plant employees from various departments, the inspectors determined that employees felt free to report safety concerns.

Inspection Report# : [2000007\(pdf\)](#)

**Significance:** N/A Sep 14, 2001

Identified By: NRC

Item Type: FIN Finding

**PROBLEM IDENTIFICATION AND RESOLUTION**

Based on the results of the inspection, no findings of significance were identified. The implementation of the corrective action program was acceptable. The licensee was effective at identifying problems and placing them into the corrective action program as evidenced by the review of corrective action program documents, corrective action program trend reports, operating experience review items, and items from system health reports. When conditions adverse to quality were identified, the licensee generally identified the appropriate causes, and developed and implemented effective corrective actions. For some complex issues, corrective action documentation did not adequately reflect those actions that were actually taken to correct the problem and prevent repetition. Based on discussions conducted with plant employees from various departments, the inspectors determined that a reluctance to report safety concerns did not exist.

Inspection Report# : [2001008\(pdf\)](#)

Last modified : March 27, 2002

## Brunswick 1

---

### Initiating Events

---

### Mitigating Systems



**Significance:** Sep 29, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

#### **FAILURE TO CORRECT UNIT 1 BATTERY DEFICIENCIES**

A Non-Cited violation for inadequate corrective actions was identified when the Unit 1, 125 VDC 1B-2 battery was found to be inoperable following a quarterly battery surveillance test. The inspectors determined that inadequate actions were taken by the licensee to maintain battery cells 3 and 57, located in the 1B-2 battery, within TS limits. The finding was of very low safety significance because no actual loss of safety function occurred, in that a loss of DC supplied loads did not occur.

Inspection Report# : [2001003\(pdf\)](#)



**Significance:** Sep 29, 2001

Identified By: NRC

Item Type: FIN Finding

#### **MAINTENANCE RULE CONDITION MONITORING CRITERIA FOR BATTERY SPECIFIC GRAVITY EXCEEDED**

The licensee failed to identify that a deficient 1B-2 battery cell condition related to specific gravity had lead to exceeding the licensee's appropriate Maintenance Rule (MR) condition monitoring threshold criteria. As a result, this condition existed without pursuit of the expected MR activities such as recognition of the condition, determination of the cause, and goals to fix and restore optimum battery performance. The finding was of very low safety significance because no actual loss of safety function occurred in that a loss of Direct Current (DC) supplied loads from the 1B-2 battery did not take place.

Inspection Report# : [2001003\(pdf\)](#)



**Significance:** Sep 29, 2001

Identified By: NRC

Item Type: FIN Finding

#### **INOPERABILITY OF SAFETY RELATED 480 VOLT FEEDER BREAKER OVERCURRENT TRIP DEVICE**

The inoperability of the DGB motor control center (MCC) safety-related 480 volt feeder breaker overcurrent trip device was a degraded condition that was an unrecognized increase in risk while the plant was operating over the past three years. If a fault occurred on MCC DGB, the MCC DGB feeder breaker would not operate and therefore the E-6 bus supply breaker would trip open to isolate the fault. This would result in the loss of the entire E-6 substation and the loss of emergency diesel generator number 2. The finding was of very low safety significance based on the small probability of a bus fault actually occurring.

Inspection Report# : [2001003\(pdf\)](#)



**Significance:** Sep 30, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

#### **SITE MANHOLE CORRECTIVE ACTIONS**

A Non-cited Violation (NCV) was identified for the failure to promptly identify and correct conditions adverse to quality involving 57 underground safety-related manholes subject to flooding and containing safety-related alternating current and direct current cables. This was determined to be of very low safety significance because no operability problems on safety-related equipment were identified from an engineering review of the deficiencies.

Inspection Report# : [2000004\(pdf\)](#)

**Significance:** N/A Sep 30, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

**FAILURE TO CONSIDER UNIT 1 BATTERY UNAVAILABILITY**

No Color. An NCV was identified for the failure to adequately monitor system unavailability hours and take appropriate corrective actions, when the 1A safety-related battery exceeded the licensee established goal for unavailability. This was an isolated failure which did not result in any unidentified equipment failures and was dispositioned outside the SDP as a no color NCV.

Inspection Report# : [2000004\(pdf\)](#)



**Significance:** Jul 01, 2000

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

**FAILURE TO ADEQUATELY ESTABLISH A PROCEDURE TO DEMONSTRATE THE OPERABILITY OF THE ENGINE DRIVEN FIRE PUMP 24 VOLT BATTERY CHARGER AND BATTERY**

A non-cited violation of the fire protection program was identified for a failure to establish an adequate procedure to demonstrate the operability of the engine driven fire pump (EDFP) 24 volt battery charger and battery. This failure resulted in the inability of the engine driven fire pump to start when called upon to accomplish its fire or risk-related function. The licensee performed satisfactory troubleshooting, timely repair of the damaged battery charger, and replacement of the dedicated fire batteries. The motor driven fire pump and jockey pumps were unavailable for a short time while the EDFP was considered inoperable; therefore, the issue was found to be of very low safety significance.

Inspection Report# : [2000003\(pdf\)](#)

---

## Barrier Integrity

---

---

## Emergency Preparedness

---

---

## Occupational Radiation Safety

---

---

## Public Radiation Safety

---

---

## Physical Protection



**Significance:** Sep 29, 2001

Identified By: Licensee

Item Type: NCV NonCited Violation

**FAILURE TO SUSPEND UNESCORTED ACCESS FOR AN EMPLOYEE WHOSE ACCESS HAD BEEN DENIED DUE TO AN ONGOING INVESTIGATION.**

An access control violation of security procedures was identified by the licensee. Brunswick operating license condition 2D, the Brunswick Physical Security Plan, and security implementing procedures SEC-NGGC-2130, Revision 10 and Operating Security Instruction (OSI)-09, Revision 83 require that unescorted access be suspended for individuals who have had their access denied based on an ongoing investigation. From September 19, 2000 through October 4, 2000, an employee whose access had been denied based on an ongoing investigation, continued to maintain the capability of gaining unescorted access to the Brunswick Nuclear Plant.

Inspection Report# : [2001003\(pdf\)](#)

---

## Miscellaneous

**Significance: N/A** Sep 14, 2001

Identified By: NRC

Item Type: FIN Finding

**PROBLEM IDENTIFICATION AND RESOLUTION**

Based on the results of the inspection, no findings of significance were identified. The implementation of the corrective action program was acceptable. The licensee was effective at identifying problems and placing them into the corrective action program as evidenced by the review of corrective action program documents, corrective action program trend reports, operating experience review items, and items from system health reports. When conditions adverse to quality were identified, the licensee generally identified the appropriate causes, and developed and implemented effective corrective actions. For some complex issues, corrective action documentation did not adequately reflect those actions that were actually taken to correct the problem and prevent repetition. Based on discussions conducted with plant employees from various departments, the inspectors determined that a reluctance to report safety concerns did not exist.

Inspection Report# : [2001008\(pdf\)](#)

**Significance: N/A** Sep 01, 2000

Identified By: NRC

Item Type: FIN Finding

**PROBLEM IDENTIFICATION AND RESOLUTION**

Based on the results of the inspection, no findings of significance were identified. The implementation of the corrective action program was acceptable with concerns noted. The licensee was generally effective at identifying problems and placing them into the corrective action program as evidenced by the inspectors review of external operating experience, Corrective Action Program Trend Reports, and items from system health reports and through plant tours. However, several instances where the licensee had not initiated condition reports were noted. When conditions adverse to quality were identified, the licensee generally identified the appropriate causes and developed and implemented effective corrective actions. The inspectors determined that the licensee properly classified discrepant conditions, but did not use risk when classifying/assigning prioritization of these items. The licensee's self-assessments and audits were effective in identifying deficiencies in the corrective action program. Based on discussions with plant employees from various departments, the inspectors determined that employees felt free to report safety concerns.

Inspection Report# : [2000007\(pdf\)](#)

Last modified : March 26, 2002

## Brunswick 1

### Initiating Events

### Mitigating Systems

**Significance:**  Sep 29, 2001

Identified By: NRC

Item Type: FIN Finding

#### **MAINTENANCE RULE CONDITION MONITORING CRITERIA FOR BATTERY SPECIFIC GRAVITY EXCEEDED**

The licensee failed to identify that a deficient 1B-2 battery cell condition related to specific gravity had lead to exceeding the licensee's appropriate Maintenance Rule (MR) condition monitoring threshold criteria. As a result, this condition existed without pursuit of the expected MR activities such as recognition of the condition, determination of the cause, and goals to fix and restore optimum battery performance. The finding was of very low safety significance because no actual loss of safety function occurred in that a loss of Direct Current (DC) supplied loads from the 1B-2 battery did not take place.

Inspection Report# : [2001003\(pdf\)](#)

**Significance:**  Sep 29, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

#### **FAILURE TO CORRECT UNIT 1 BATTERY DEFICIENCIES**

A Non-Cited violation for inadequate corrective actions was identified when the Unit 1, 125 VDC 1B-2 battery was found to be inoperable following a quarterly battery surveillance test. The inspectors determined that inadequate actions were taken by the licensee to maintain battery cells 3 and 57, located in the 1B-2 battery, within TS limits. The finding was of very low safety significance because no actual loss of safety function occurred, in that a loss of DC supplied loads did not occur.

Inspection Report# : [2001003\(pdf\)](#)

**Significance:**  Sep 29, 2001

Identified By: NRC

Item Type: FIN Finding

#### **INOPERABILITY OF SAFETY RELATED 480 VOLT FEEDER BREAKER OVERCURRENT TRIP DEVICE**

The inoperability of the DGB motor control center (MCC) safety-related 480 volt feeder breaker overcurrent trip device was a degraded condition that was an unrecognized increase in risk while the plant was operating over the past three years. If a fault occurred on MCC DGB, the MCC DGB feeder breaker would not operate and therefore the E-6 bus supply breaker would trip open to isolate the fault. This would result in the loss of the entire E-6 substation and the loss of emergency diesel generator number 2. The finding was of very low safety significance based on the small probability of a bus fault actually occurring.

Inspection Report# : [2001003\(pdf\)](#)

**Significance:** N/A Sep 30, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

#### **FAILURE TO CONSIDER UNIT 1 BATTERY UNAVAILABILITY**

No Color. An NCV was identified for the failure to adequately monitor system unavailability hours and take appropriate corrective actions, when the 1A safety-related battery exceeded the licensee established goal for unavailability. This was an isolated failure which did not result in any unidentified equipment failures and was dispositioned outside the SDP as a no color NCV.

Inspection Report# : [2000004\(pdf\)](#)

**Significance:**  Sep 30, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

#### **SITE MANHOLE CORRECTIVE ACTIONS**

A Non-cited Violation (NCV) was identified for the failure to promptly identify and correct conditions adverse to quality involving 57 underground safety-related manholes subject to flooding and containing safety-related alternating current and direct current cables. This was determined to be of very low safety significance because no operability problems on safety-related equipment were identified from an engineering review of the deficiencies.

Inspection Report# : [2000004\(pdf\)](#)

G

**Significance:** Jul 01, 2000  
Identified By: Self Disclosing  
Item Type: NCV NonCited Violation

**FAILURE TO ADEQUATELY ESTABLISH A PROCEDURE TO DEMONSTRATE THE OPERABILITY OF THE ENGINE DRIVEN FIRE PUMP 24 VOLT BATTERY CHARGER AND BATTERY**

A non-cited violation of the fire protection program was identified for a failure to establish an adequate procedure to demonstrate the operability of the engine driven fire pump (EDFP) 24 volt battery charger and battery. This failure resulted in the inability of the engine driven fire pump to start when called upon to accomplish its fire or risk-related function. The licensee performed satisfactory troubleshooting, timely repair of the damaged battery charger, and replacement of the dedicated fire batteries. The motor driven fire pump and jockey pumps were unavailable for a short time while the EDFP was considered inoperable; therefore, the issue was found to be of very low safety significance.

Inspection Report# : [2000003\(pdf\)](#)

---

## Barrier Integrity

---

## Emergency Preparedness

---

## Occupational Radiation Safety

---

## Public Radiation Safety

---

## Physical Protection

G

**Significance:** Sep 29, 2001  
Identified By: Licensee  
Item Type: NCV NonCited Violation

**FAILURE TO SUSPEND UNSCORTED ACCESS FOR AN EMPLOYEE WHOSE ACCESS HAD BEEN DENIED DUE TO AN ONGOING INVESTIGATION.**

An access control violation of security procedures was identified by the licensee. Brunswick operating license condition 2D, the Brunswick Physical Security Plan, and security implementing procedures SEC-NGGC-2130, Revision 10 and Operating Security Instruction (OSI)-09, Revision 83 require that unescorted access be suspended for individuals who have had their access denied based on an ongoing investigation. From September 19, 2000 through October 4, 2000, an employee whose access had been denied based on an ongoing investigation, continued to maintain the capability of gaining unescorted access to the Brunswick Nuclear Plant.

Inspection Report# : [2001003\(pdf\)](#)

---

## Miscellaneous

**Significance:** N/A Sep 14, 2001  
Identified By: NRC  
Item Type: FIN Finding

**PROBLEM IDENTIFICATION AND RESOLUTION**

Based on the results of the inspection, no findings of significance were identified. The implementation of the corrective action program was acceptable. The licensee was effective at identifying problems and placing them into the corrective action program as evidenced by the review of corrective action program documents, corrective action program trend reports, operating experience review items, and items from system health reports. When conditions adverse to quality were identified, the licensee generally identified the appropriate causes, and developed and implemented effective corrective actions. For some complex issues, corrective action documentation did not adequately reflect those actions that were actually taken to correct the problem and prevent repetition. Based on discussions conducted with plant employees from various departments, the inspectors determined that a reluctance to report safety concerns did not exist.

Inspection Report# : [2001008\(pdf\)](#)

**Significance:** N/A Sep 01, 2000

Identified By: NRC

Item Type: FIN Finding

**PROBLEM IDENTIFICATION AND RESOLUTION**

Based on the results of the inspection, no findings of significance were identified. The implementation of the corrective action program was acceptable with concerns noted. The licensee was generally effective at identifying problems and placing them into the corrective action program as evidenced by the inspectors review of external operating experience, Corrective Action Program Trend Reports, and items from system health reports and through plant tours. However, several instances where the licensee had not initiated condition reports were noted. When conditions adverse to quality were identified, the licensee generally identified the appropriate causes and developed and implemented effective corrective actions. The inspectors determined that the licensee properly classified discrepant conditions, but did not use risk when classifying/assigning prioritization of these items. The licensee's self-assessments and audits were effective in identifying deficiencies in the corrective action program. Based on discussions with plant employees from various departments, the inspectors determined that employees felt free to report safety concerns.

Inspection Report# : [2000007\(pdf\)](#)

Last modified : March 01, 2002

## Brunswick 1

### Initiating Events

### Mitigating Systems

**Significance:**  Sep 29, 2001  
Identified By: NRC

Item Type: FIN Finding  
**MAINTENANCE RULE CONDITION MONITORING CRITERIA FOR BATTERY SPECIFIC GRAVITY EXCEEDED**

The licensee failed to identify that a deficient 1B-2 battery cell condition related to specific gravity had lead to exceeding the licensee's appropriate Maintenance Rule (MR) condition monitoring threshold criteria. As a result, this condition existed without pursuit of the expected MR activities such as recognition of the condition, determination of the cause, and goals to fix and restore optimum battery performance. The finding was of very low safety significance because no actual loss of safety function occurred in that a loss of Direct Current (DC) supplied loads from the 1B-2 battery did not take place.

Inspection Report#: [2001003\(pdf\)](#)

**Significance:**  Sep 29, 2001  
Identified By: NRC

Item Type: FIN Finding  
**INOPERABILITY OF SAFETY RELATED 480 VOLT FEEDER BREAKER OVERCURRENT TRIP DEVICE**

The inoperability of the DGB motor control center (MCC) safety-related 480 volt feeder breaker overcurrent trip device was a degraded condition that was an unrecognized increase in risk while the plant was operating over the past three years. If a fault occurred on MCC DGB, the MCC DGB feeder breaker would not operate and therefore the E-6 bus supply breaker would trip open to isolate the fault. This would result in the loss of the entire E-6 substation and the loss of emergency diesel generator number 2. The finding was of very low safety significance based on the small probability of a bus fault actually occurring.

Inspection Report#: [2001003\(pdf\)](#)

**Significance:**  Sep 29, 2001  
Identified By: NRC

Item Type: NCV NonCited Violation  
**FAILURE TO CORRECT UNIT 1 BATTERY DEFICIENCIES**

A Non-Cited violation for inadequate corrective actions was identified when the Unit 1, 125 VDC 1B-2 battery was found to be inoperable following a quarterly battery surveillance test. The inspectors determined that inadequate actions were taken by the licensee to maintain battery cells 3 and 57, located in the 1B-2 battery, within TS limits. The finding was of very low safety significance because no actual loss of safety function occurred, in that a loss of DC supplied loads did not occur.

Inspection Report#: [2001003\(pdf\)](#)

**Significance:**  Sep 30, 2000  
Identified By: NRC

Item Type: NCV NonCited Violation  
**SITE MANHOLE CORRECTIVE ACTIONS**

A Non-cited Violation (NCV) was identified for the failure to promptly identify and correct conditions adverse to quality involving 57 underground safety-related manholes subject to flooding and containing safety-related alternating current and direct current cables. This was determined to be of very low safety significance because no operability problems on safety-related equipment were identified from an engineering review of the deficiencies.

Inspection Report#: [2000004\(pdf\)](#)

**Significance:** N/A Sep 30, 2000  
Identified By: NRC

Item Type: NCV NonCited Violation  
**FAILURE TO CONSIDER UNIT 1 BATTERY UNAVAILABILITY**

No Color. An NCV was identified for the failure to adequately monitor system unavailability hours and take appropriate corrective actions, when the 1A safety-related battery exceeded the licensee established goal for unavailability. This was an isolated failure which did not result in any unidentified equipment failures and was dispositioned outside the SDP as a no color NCV.

Inspection Report# : [2000004\(pdf\)](#)

G

**Significance:** Jul 01, 2000

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

### **FAILURE TO ADEQUATELY ESTABLISH A PROCEDURE TO DEMONSTRATE THE OPERABILITY OF THE ENGINE DRIVEN FIRE PUMP 24 VOLT BATTERY CHARGER AND BATTERY**

A non-cited violation of the fire protection program was identified for a failure to establish an adequate procedure to demonstrate the operability of the engine driven fire pump (EDFP) 24 volt battery charger and battery. This failure resulted in the inability of the engine driven fire pump to start when called upon to accomplish its fire or risk-related function. The licensee performed satisfactory troubleshooting, timely repair of the damaged battery charger, and replacement of the dedicated fire batteries. The motor driven fire pump and jockey pumps were unavailable for a short time while the EDFP was considered inoperable; therefore, the issue was found to be of very low safety significance.

Inspection Report# : [2000003\(pdf\)](#)

---

## Barrier Integrity

---

## Emergency Preparedness

---

## Occupational Radiation Safety

G

**Significance:** Mar 30, 2002

Identified By: Licensee

Item Type: NCV NonCited Violation

### **FAILURE TO MEET TS PERSONNEL RADIOLOGICAL MONITORING REQUIREMENTS**

Technical Specification (TS) 5.7.2 prescribes licensee requirements for personnel entering high radiation areas with dose rates greater than 1.0 rem/hour (at 30 centimeters from the radiation source or from any surface penetrated by the radiation), but less than 500 rads/hour (at 1 meter from the radiation source or from any surface penetrated by the radiation). TS Section 5.7.2.d prescribes acceptable monitoring requirements for personnel entering such an area. The licensee failed to meet these requirements on March 2 when an individual entered the Unit 1 drywell without a dosimeter and remained in the area for approximately 10 minutes. The inspectors noted that the licensee had met part of the monitoring requirements of TS 5.7.2.d.3 during the drywell entry, in that a health physics technicians accompanied the individual and monitored radiation levels as they worked. This item is described in licensee corrective action program AR 56719, Individual Entered LHRA Without Electronic Dosimeter.

Inspection Report# : [2001005\(pdf\)](#)

---

## Public Radiation Safety

---

## Physical Protection

G

**Significance:** Sep 29, 2001

Identified By: Licensee

Item Type: NCV NonCited Violation

**FAILURE TO SUSPEND UNESCORTED ACCESS FOR AN EMPLOYEE WHOSE ACCESS HAD BEEN DENIED DUE TO AN ONGOING INVESTIGATION.**

An access control violation of security procedures was identified by the licensee. Brunswick operating license condition 2D, the Brunswick Physical Security Plan, and security implementing procedures SEC-NGGC-2130, Revision 10 and Operating Security Instruction (OSI)-09, Revision 83 require that unescorted access be suspended for individuals who have had their access denied based on an ongoing investigation. From September 19, 2000 through October 4, 2000, an employee whose access had been denied based on an ongoing investigation, continued to maintain the capability of gaining unescorted access to the Brunswick Nuclear Plant.

Inspection Report# : [2001003\(pdf\)](#)

---

## Miscellaneous

**Significance: N/A** Sep 14, 2001

Identified By: NRC

Item Type: FIN Finding

**PROBLEM IDENTIFICATION AND RESOLUTION**

Based on the results of the inspection, no findings of significance were identified. The implementation of the corrective action program was acceptable. The licensee was effective at identifying problems and placing them into the corrective action program as evidenced by the review of corrective action program documents, corrective action program trend reports, operating experience review items, and items from system health reports. When conditions adverse to quality were identified, the licensee generally identified the appropriate causes, and developed and implemented effective corrective actions. For some complex issues, corrective action documentation did not adequately reflect those actions that were actually taken to correct the problem and prevent repetition. Based on discussions conducted with plant employees from various departments, the inspectors determined that a reluctance to report safety concerns did not exist.

Inspection Report# : [2001008\(pdf\)](#)

**Significance: N/A** Sep 01, 2000

Identified By: NRC

Item Type: FIN Finding

**PROBLEM IDENTIFICATION AND RESOLUTION**

Based on the results of the inspection, no findings of significance were identified. The implementation of the corrective action program was acceptable with concerns noted. The licensee was generally effective at identifying problems and placing them into the corrective action program as evidenced by the inspectors review of external operating experience, Corrective Action Program Trend Reports, and items from system health reports and through plant tours. However, several instances where the licensee had not initiated condition reports were noted. When conditions adverse to quality were identified, the licensee generally identified the appropriate causes and developed and implemented effective corrective actions. The inspectors determined that the licensee properly classified discrepant conditions, but did not use risk when classifying/assigning prioritization of these items. The licensee's self-assessments and audits were effective in identifying deficiencies in the corrective action program. Based on discussions with plant employees from various departments, the inspectors determined that employees felt free to report safety concerns.

Inspection Report# : [2000007\(pdf\)](#)

Last modified : July 22, 2002

## Brunswick 1

---

### Initiating Events

---

### Mitigating Systems

**Significance:**  Sep 29, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

#### **FAILURE TO CORRECT UNIT 1 BATTERY DEFICIENCIES**

A Non-Cited violation for inadequate corrective actions was identified when the Unit 1, 125 VDC 1B-2 battery was found to be inoperable following a quarterly battery surveillance test. The inspectors determined that inadequate actions were taken by the licensee to maintain battery cells 3 and 57, located in the 1B-2 battery, within TS limits. The finding was of very low safety significance because no actual loss of safety function occurred, in that a loss of DC supplied loads did not occur.

Inspection Report# : [2001003\(pdf\)](#)

**Significance:**  Sep 29, 2001

Identified By: NRC

Item Type: FIN Finding

#### **INOPERABILITY OF SAFETY RELATED 480 VOLT FEEDER BREAKER OVERCURRENT TRIP DEVICE**

The inoperability of the DGB motor control center (MCC) safety-related 480 volt feeder breaker overcurrent trip device was a degraded condition that was an unrecognized increase in risk while the plant was operating over the past three years. If a fault occurred on MCC DGB, the MCC DGB feeder breaker would not operate and therefore the E-6 bus supply breaker would trip open to isolate the fault. This would result in the loss of the entire E-6 substation and the loss of emergency diesel generator number 2. The finding was of very low safety significance based on the small probability of a bus fault actually occurring.

Inspection Report# : [2001003\(pdf\)](#)

**Significance:**  Sep 29, 2001

Identified By: NRC

Item Type: FIN Finding

#### **MAINTENANCE RULE CONDITION MONITORING CRITERIA FOR BATTERY SPECIFIC GRAVITY EXCEEDED**

The licensee failed to identify that a deficient 1B-2 battery cell condition related to specific gravity had lead to exceeding the licensee's appropriate Maintenance Rule (MR) condition monitoring threshold criteria. As a result, this condition existed without pursuit of the expected MR activities such as recognition of the condition, determination of the cause, and goals to fix and restore optimum battery performance. The finding was of very low safety significance because no actual loss of safety function occurred in that a loss of Direct Current (DC) supplied loads from the 1B-2 battery did not take place.

Inspection Report# : [2001003\(pdf\)](#)

**Significance:**  Sep 30, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

#### **SITE MANHOLE CORRECTIVE ACTIONS**

A Non-cited Violation (NCV) was identified for the failure to promptly identify and correct conditions adverse to quality involving 57 underground safety-related manholes subject to flooding and containing safety-related alternating current and direct current cables. This was determined to be of very low safety significance because no operability problems on safety-related equipment were identified from an engineering review of the deficiencies.

Inspection Report# : [2000004\(pdf\)](#)

**Significance:** N/A Sep 30, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

#### **FAILURE TO CONSIDER UNIT 1 BATTERY UNAVAILABILITY**

No Color. An NCV was identified for the failure to adequately monitor system unavailability hours and take appropriate corrective actions, when the 1A safety-related battery exceeded the licensee established goal for unavailability. This was an isolated failure which did not result in any unidentified equipment failures and was dispositioned outside the SDP as a no color NCV.

Inspection Report# : [2000004\(pdf\)](#)

**Significance:**  Jul 01, 2000

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

#### **FAILURE TO ADEQUATELY ESTABLISH A PROCEDURE TO DEMONSTRATE THE OPERABILITY OF THE ENGINE DRIVEN FIRE PUMP 24 VOLT BATTERY CHARGER AND BATTERY**

A non-cited violation of the fire protection program was identified for a failure to establish an adequate procedure to demonstrate the operability of the engine driven fire pump (EDFP) 24 volt battery charger and battery. This failure resulted in the inability of the engine driven fire pump to start when called upon to accomplish its fire or risk-related function. The licensee performed satisfactory troubleshooting, timely repair of the damaged battery charger, and replacement of the dedicated fire batteries. The motor driven fire pump and jockey pumps were unavailable for a short time while the EDFP was considered inoperable; therefore, the issue was found to be of very low safety significance.

Inspection Report# : [2000003\(pdf\)](#)

---

## **Barrier Integrity**

---

## **Emergency Preparedness**

---

## **Occupational Radiation Safety**

**Significance:**  Mar 30, 2002

Identified By: Licensee

Item Type: NCV NonCited Violation

### **FAILURE TO MEET TS PERSONNEL RADIOLOGICAL MONITORING REQUIREMENTS**

Technical Specification (TS) 5.7.2 prescribes licensee requirements for personnel entering high radiation areas with dose rates greater than 1.0 rem/hour (at 30 centimeters from the radiation source or from any surface penetrated by the radiation), but less than 500 rads/hour (at 1 meter from the radiation source or from any surface penetrated by the radiation). TS Section 5.7.2.d prescribes acceptable monitoring requirements for personnel entering such an area. The licensee failed to meet these requirements on March 2 when an individual entered the Unit 1 drywell without a dosimeter and remained in the area for approximately 10 minutes. The inspectors noted that the licensee had met part of the monitoring requirements of TS 5.7.2.d.3 during the drywell entry, in that a health physics technicians accompanied the individual and monitored radiation levels as they worked. This item is described in licensee corrective action program AR 56719, Individual Entered LHRA Without Electronic Dosimeter.

Inspection Report# : [2001005\(pdf\)](#)

---

## **Public Radiation Safety**

---

### **Physical Protection**

**Significance:**  Sep 29, 2001

Identified By: Licensee

Item Type: NCV NonCited Violation

### **FAILURE TO SUSPEND UNSCORTED ACCESS FOR AN EMPLOYEE WHOSE ACCESS HAD BEEN DENIED DUE TO AN ONGOING INVESTIGATION.**

An access control violation of security procedures was identified by the licensee. Brunswick operating license condition 2D, the Brunswick Physical Security Plan, and security implementing procedures SEC-NGGC-2130, Revision 10 and Operating Security Instruction (OSI)-09, Revision 83 require that unescorted access be suspended for individuals who have had their access denied based on an ongoing investigation. From September 19, 2000 through October 4, 2000, an employee whose access had been denied based on an ongoing investigation, continued to maintain the capability of gaining unescorted access to the Brunswick Nuclear Plant.

Inspection Report# : [2001003\(pdf\)](#)

---

## **Miscellaneous**

**Significance:** N/A Sep 14, 2001

Identified By: NRC

Item Type: FIN Finding

### **PROBLEM IDENTIFICATION AND RESOLUTION**

Based on the results of the inspection, no findings of significance were identified. The implementation of the corrective action program was acceptable. The licensee was effective at identifying problems and placing them into the corrective

action program as evidenced by the review of corrective action program documents, corrective action program trend reports, operating experience review items, and items from system health reports. When conditions adverse to quality were identified, the licensee generally identified the appropriate causes, and developed and implemented effective corrective actions. For some complex issues, corrective action documentation did not adequately reflect those actions that were actually taken to correct the problem and prevent repetition. Based on discussions conducted with plant employees from various departments, the inspectors determined that a reluctance to report safety concerns did not exist.

Inspection Report# : [2001008\(pdf\)](#)

**Significance:** N/A Sep 01, 2000

Identified By: NRC

Item Type: FIN Finding

#### **PROBLEM IDENTIFICATION AND RESOLUTION**

Based on the results of the inspection, no findings of significance were identified. The implementation of the corrective action program was acceptable with concerns noted. The licensee was generally effective at identifying problems and placing them into the corrective action program as evidenced by the inspectors review of external operating experience, Corrective Action Program Trend Reports, and items from system health reports and through plant tours. However, several instances where the licensee had not initiated condition reports were noted. When conditions adverse to quality were identified, the licensee generally identified the appropriate causes and developed and implemented effective corrective actions. The inspectors determined that the licensee properly classified discrepant conditions, but did not use risk when classifying/assigning prioritization of these items. The licensee's self-assessments and audits were effective in identifying deficiencies in the corrective action program. Based on discussions with plant employees from various departments, the inspectors determined that employees felt free to report safety concerns.

Inspection Report# : [2000007\(pdf\)](#)

Last modified : August 29, 2002

# Brunswick 1

## Initiating Events

## Mitigating Systems

**Significance:**  Sep 28, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

### **FAILURE TO HAVE INSTALLED FIXED FIRE SUPPRESSION SYSTEMS THAT ARE CAPABLE OF MINIMIZING FIRE DAMAGE TO SAFE SHUTDOWN CABLING DURING FLOOR LEVEL TRANSIENT COMBUSTIBLE FIRES IN THE UNIT 1 AND 2 CSRs**

Green. The licensee failed to install fixed fire suppression systems that were capable of minimizing damage to safe shutdown cabling caused by floor level transient combustible fires in the Unit 1 and Unit 2 Cable Spreading Rooms (CSRs). The systems were determined to be unable to fulfill their intended function of limiting fire damage to the preferred trains of safe shutdown cables and safety-related cables in the CSRs. The finding was of very low safety significance based on the initiating event likelihood for this event in conjunction with the remaining mitigation capability in the Unit 1 and Unit 2 CSRs.

Inspection Report# : [2002003\(pdf\)](#)

**Significance:**  Sep 29, 2001

Identified By: NRC

Item Type: FIN Finding

### **INOPERABILITY OF SAFETY RELATED 480 VOLT FEEDER BREAKER OVERCURRENT TRIP DEVICE**

The inoperability of the DGB motor control center (MCC) safety-related 480 volt feeder breaker overcurrent trip device was a degraded condition that was an unrecognized increase in risk while the plant was operating over the past three years. If a fault occurred on MCC DGB, the MCC DGB feeder breaker would not operate and therefore the E-6 bus supply breaker would trip open to isolate the fault. This would result in the loss of the entire E-6 substation and the loss of emergency diesel generator number 2. The finding was of very low safety significance based on the small probability of a bus fault actually occurring.

Inspection Report# : [2001003\(pdf\)](#)

**Significance:**  Sep 29, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

### **FAILURE TO CORRECT UNIT 1 BATTERY DEFICIENCIES**

A Non-Cited violation for inadequate corrective actions was identified when the Unit 1, 125 VDC 1B-2 battery was found to be inoperable following a quarterly battery surveillance test. The inspectors determined that inadequate actions were taken by the licensee to maintain battery cells 3 and 57, located in the 1B-2 battery, within TS limits. The finding was of very low safety significance because no actual loss of safety function occurred, in that a loss of DC supplied loads did not occur.

Inspection Report# : [2001003\(pdf\)](#)

**Significance:**  Sep 29, 2001

Identified By: NRC

Item Type: FIN Finding

**MAINTENANCE RULE CONDITION MONITORING CRITERIA FOR BATTERY SPECIFIC GRAVITY EXCEEDED**

The licensee failed to identify that a deficient 1B-2 battery cell condition related to specific gravity had lead to exceeding the licensee's appropriate Maintenance Rule (MR) condition monitoring threshold criteria. As a result, this condition existed without pursuit of the expected MR activities such as recognition of the condition, determination of the cause, and goals to fix and restore optimum battery performance. The finding was of very low safety significance because no actual loss of safety function occurred in that a loss of Direct Current (DC) supplied loads from the 1B-2 battery did not take place.

Inspection Report# : [2001003\(pdf\)](#)

**Significance:**  Sep 30, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

**SITE MANHOLE CORRECTIVE ACTIONS**

A Non-cited Violation (NCV) was identified for the failure to promptly identify and correct conditions adverse to quality involving 57 underground safety-related manholes subject to flooding and containing safety-related alternating current and direct current cables. This was determined to be of very low safety significance because no operability problems on safety-related equipment were identified from an engineering review of the deficiencies.

Inspection Report# : [2000004\(pdf\)](#)

**Significance:** N/A Sep 30, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

**FAILURE TO CONSIDER UNIT 1 BATTERY UNAVAILBILITY**

No Color. An NCV was identified for the failure to adequately monitor system unavailability hours and take appropriate corrective actions, when the 1A safety-related battery exceeded the licensee established goal for unavailability. This was an isolated failure which did not result in any unidentified equipment failures and was dispositioned outside the SDP as a no color NCV.

Inspection Report# : [2000004\(pdf\)](#)

**Significance:**  Jul 01, 2000

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

**FAILURE TO ADEQUATELY ESTABLISH A PROCEDURE TO DEMONSTRATE THE OPERABILITY OF THE ENGINE DRIVEN FIRE PUMP 24 VOLT BATTERY CHARGER AND BATTERY**

A non-cited violation of the fire protection program was identified for a failure to establish an adequate procedure to demonstrate the operability of the engine driven fire pump (EDFP) 24 volt battery charger and battery. This failure resulted in the inability of the engine driven fire pump to start when called upon to accomplish its fire or risk-related function. The licensee performed satisfactory troubleshooting, timely repair of the damaged battery charger, and replacement of the dedicated fire batteries. The motor driven fire pump and jockey pumps were unavailable for a short time while the EDFP was considered inoperable; therefore, the issue was found to be of very low safety significance.

Inspection Report# : [2000003\(pdf\)](#)

---

## Emergency Preparedness

---

## Occupational Radiation Safety

**Significance:**  Mar 30, 2002

Identified By: Licensee

Item Type: NCV NonCited Violation

### **FAILURE TO MEET TS PERSONNEL RADIOLOGICAL MONITORING REQUIREMENTS**

Technical Specification (TS) 5.7.2 prescribes licensee requirements for personnel entering high radiation areas with dose rates greater than 1.0 rem/hour (at 30 centimeters from the radiation source or from any surface penetrated by the radiation), but less than 500 rads/hour (at 1 meter from the radiation source or from any surface penetrated by the radiation). TS Section 5.7.2.d prescribes acceptable monitoring requirements for personnel entering such an area. The licensee failed to meet these requirements on March 2 when an individual entered the Unit 1 drywell without a dosimeter and remained in the area for approximately 10 minutes. The inspectors noted that the licensee had met part of the monitoring requirements of TS 5.7.2.d.3 during the drywell entry, in that a health physics technicians accompanied the individual and monitored radiation levels as they worked. This item is described in licensee corrective action program AR 56719, Individual Entered LHRA Without Electronic Dosimeter.

Inspection Report# : [2001005\(pdf\)](#)

---

## Public Radiation Safety

---

## Physical Protection

**Significance:**  Sep 29, 2001

Identified By: Licensee

Item Type: NCV NonCited Violation

### **FAILURE TO SUSPEND UNESCORTED ACCESS FOR AN EMPLOYEE WHOSE ACCESS HAD BEEN DENIED DUE TO AN ONGOING INVESTIGATION.**

An access control violation of security procedures was identified by the licensee. Brunswick operating license condition 2D, the Brunswick Physical Security Plan, and security implementing procedures SEC-NGGC-2130, Revision 10 and Operating Security Instruction (OSI)-09, Revision 83 require that unescorted access be suspended for individuals who have had their access denied based on an ongoing investigation. From September 19, 2000 through October 4, 2000, an employee whose access had been denied based on an ongoing investigation, continued to maintain the capability of gaining unescorted access to the Brunswick Nuclear Plant.

Inspection Report# : [2001003\(pdf\)](#)

---

## Miscellaneous

**Significance:** N/A Sep 14, 2001

Identified By: NRC

Item Type: FIN Finding

### **PROBLEM IDENTIFICATION AND RESOLUTION**

Based on the results of the inspection, no findings of significance were identified. The implementation of the corrective action program was acceptable. The licensee was effective at identifying problems and placing them into the corrective action program as evidenced by the review of corrective action program documents, corrective action program trend reports, operating experience review items, and items from system health reports. When conditions adverse to quality were identified, the licensee generally identified the appropriate causes, and developed and implemented effective corrective actions. For some complex issues, corrective action documentation did not adequately reflect those actions that were actually taken to correct the problem and prevent repetition. Based on discussions conducted with plant employees from various departments, the inspectors determined that a reluctance to report safety concerns did not exist.

Inspection Report# : [2001008\(pdf\)](#)

**Significance:** N/A Sep 01, 2000

Identified By: NRC

Item Type: FIN Finding

### **PROBLEM IDENTIFICATION AND RESOLUTION**

Based on the results of the inspection, no findings of significance were identified. The implementation of the corrective action program was acceptable with concerns noted. The licensee was generally effective at identifying problems and placing them into the corrective action program as evidenced by the inspectors review of external operating experience, Corrective Action Program Trend Reports, and items from system health reports and through plant tours. However, several instances where the licensee had not initiated condition reports were noted. When conditions adverse to quality were identified, the licensee generally identified the appropriate causes and developed and implemented effective corrective actions. The inspectors determined that the licensee properly classified discrepant conditions, but did not use risk when classifying/assigning prioritization of these items. The licensee's self-assessments and audits were effective in identifying deficiencies in the corrective action program. Based on discussions with plant employees from various departments, the inspectors determined that employees felt free to report safety concerns.

Inspection Report# : [2000007\(pdf\)](#)

Last modified : December 02, 2002

## Brunswick 1

---

### Initiating Events

---

### Mitigating Systems



**Significance:** Dec 28, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Failure to Implement Procedure 0PM-STU500, Service Water Intake Structure Inspection and Cleaning**

Green. An inadequate implementation of Preventive Maintenance Procedure 0PM-STU500, Service Water Intake Structure Inspection and Cleaning, resulted in the 1A Nuclear Service Water (NSW) pump becoming inoperable, with a loss of function, due to the pump's discharge strainer becoming clogged with oyster shells during a diving evolution. A non-cited violation of TS 5.4.1a was identified. This issue was considered to be more than minor because it affected a cornerstone attribute and an associated cornerstone objective. The mitigating systems cornerstone objective to ensure reliability, availability, and capability of systems that respond to initiating events was affected by equipment performance and human error. The finding was determined to be of very low safety significance because the risk was mitigated by the availability of the conventional service water pumps which were utilized in accordance with the abnormal operating procedures to restore service water flow.

Inspection Report# : [2002004\(pdf\)](#)



**Significance:** Sep 28, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

#### **FAILURE TO HAVE INSTALLED FIXED FIRE SUPPRESSION SYSTEMS THAT ARE CAPABLE OF MINIMIZING FIRE DAMAGE TO SAFE SHUTDOWN CABLING DURING FLOOR LEVEL TRANSIENT COMBUSTIBLE FIRES IN THE UNIT 1 AND 2 CSRs**

Green. The licensee failed to install fixed fire suppression systems that were capable of minimizing damage to safe shutdown cabling caused by floor level transient combustible fires in the Unit 1 and Unit 2 Cable Spreading Rooms (CSRs). The systems were determined to be unable to fulfill their intended function of limiting fire damage to the preferred trains of safe shutdown cables and safety-related cables in the CSRs. The finding was of very low safety significance based on the initiating event likelihood for this event in conjunction with the remaining mitigation capability in the Unit 1 and Unit 2 CSRs.

Inspection Report# : [2002003\(pdf\)](#)

---

### Barrier Integrity



**Significance:** Dec 28, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Failure to Implement Procedure 0ENP-54, Building Ventilation Pressure Control Program**

Green. An inadequate implementation of Procedure 0ENP-54, Building Ventilation Pressure Control, resulted in a breach of the control room habitability envelope that exceeded the allowable leakage criteria to maintain both units' control room emergency ventilation (CREV) systems operable. A non-cited violation of Technical Specification (TS) 5.4.1a was identified. This issue was considered to be more than minor because it affected a cornerstone attribute and an associated cornerstone objective. The barrier integrity objective and containment functionality attribute of configuration control and human performance in post-accident and event performance were affected. Additionally, if this issue was left uncorrected, it would have been a more significant safety concern. The finding involved the barrier integrity cornerstone in which the control room barrier was degraded and represented a degradation of the barrier function of the control room against smoke and a toxic atmosphere. This issue was evaluated to be very low safety significant. The impact of chlorine gas intrusion (toxic atmosphere) into the control room during the period the door was blocked open was limited to the human factors concern of control room response while wearing breathing apparatus. Also, the CREV systems for both units were returned to operable status within the TS allowed time frame. Operator actions of interest were those required to respond to an initiating event that happened during the short time of vulnerability.

Inspection Report# : [2002004\(pdf\)](#)

---

## Emergency Preparedness

---

## Occupational Radiation Safety

**Significance:** Mar 30, 2002

Identified By: Licensee

Item Type: NCV NonCited Violation

**FAILURE TO MEET TS PERSONNEL RADIOLOGICAL MONITORING REQUIREMENTS**

Technical Specification (TS) 5.7.2 prescribes licensee requirements for personnel entering high radiation areas with dose rates greater than 1.0 rem/hour (at 30 centimeters from the radiation source or from any surface penetrated by the radiation), but less than 500 rads/hour (at 1 meter from the radiation source or from any surface penetrated by the radiation). TS Section 5.7.2.d prescribes acceptable monitoring requirements for personnel entering such an area. The licensee failed to meet these requirements on March 2 when an individual entered the Unit 1 drywell without a dosimeter and remained in the area for approximately 10 minutes. The inspectors noted that the licensee had met part of the monitoring requirements of TS 5.7.2.d.3 during the drywell entry, in that a health physics technicians accompanied the individual and monitored radiation levels as they worked. This item is described in licensee corrective action program AR 56719, Individual Entered LHRA Without Electronic Dosimeter.

Inspection Report# : [2001005\(pdf\)](#)

---

## Public Radiation Safety

---

## Physical Protection

---

## Miscellaneous

Last modified : March 25, 2003

# Brunswick 1

## 1Q/2003 Plant Inspection Findings

---

### Initiating Events

---

### Mitigating Systems

**Significance:**  Dec 28, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Failure to Implement Procedure 0PM-STU500, Service Water Intake Structure Inspection and Cleaning**

Green. An inadequate implementation of Preventive Maintenance Procedure 0PM-STU500, Service Water Intake Structure Inspection and Cleaning, resulted in the 1A Nuclear Service Water (NSW) pump becoming inoperable, with a loss of function, due to the pump's discharge strainer becoming clogged with oyster shells during a diving evolution. A non-cited violation of TS 5.4.1a was identified. This issue was considered to be more than minor because it affected a cornerstone attribute and an associated cornerstone objective. The mitigating systems cornerstone objective to ensure reliability, availability, and capability of systems that respond to initiating events was affected by equipment performance and human error. The finding was determined to be of very low safety significant because the risk was mitigated by the availability of the conventional service water pumps which were utilized in accordance with the abnormal operating procedures to restore service water flow.

Inspection Report# : [2002004\(pdf\)](#)

**Significance:**  Sep 28, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

#### **FAILURE TO HAVE INSTALLED FIXED FIRE SUPPRESSION SYSTEMS THAT ARE CAPABLE OF MINIMIZING FIRE DAMAGE TO SAFE SHUTDOWN CABLING DURING FLOOR LEVEL TRANSIENT COMBUSTIBLE FIRES IN THE UNIT 1 AND 2 CSRs**

Green. The licensee failed to install fixed fire suppression systems that were capable of minimizing damage to safe shutdown cabling caused by floor level transient combustible fires in the Unit 1 and Unit 2 Cable Spreading Rooms (CSRs). The systems were determined to be unable to fulfill their intended function of limiting fire damage to the preferred trains of safe shutdown cables and safety-related cables in the CSRs. The finding was of very low safety significance based on the initiating event likelihood for this event in conjunction with the remaining mitigation capability in the Unit 1 and Unit 2 CSRs.

Inspection Report# : [2002003\(pdf\)](#)

---

### Barrier Integrity



**Significance:** Dec 28, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Implement Procedure 0ENP-54, Building Ventilation Pressure Control Program**

Green. An inadequate implementation of Procedure 0ENP-54, Building Ventilation Pressure Control, resulted in a breach of the control room habitability envelope that exceeded the allowable leakage criteria to maintain both units' control room emergency ventilation (CREV) systems operable. A non-cited violation of Technical Specification (TS) 5.4.1a was identified. This issue was considered to be more than minor because it affected a cornerstone attribute and an associated cornerstone objective. The barrier integrity objective and containment functionality attribute of configuration control and human performance in post-accident and event performance were affected. Additionally, if this issue was left uncorrected, it would have been a more significant safety concern. The finding involved the barrier integrity cornerstone in which the control room barrier was degraded and represented a degradation of the barrier function of the control room against smoke and a toxic atmosphere. This issue was evaluated to be very low safety significant. The impact of chlorine gas intrusion (toxic atmosphere) into the control room during the period the door was blocked open was limited to the human factors concern of control room response while wearing breathing apparatus. Also, the CREV systems for both units were returned to operable status within the TS allowed time frame. Operator actions of interest were those required to respond to an initiating event that happened during the short time of vulnerability.

Inspection Report# : [2002004\(pdf\)](#)

---

## **Emergency Preparedness**

---

## **Occupational Radiation Safety**

---

## **Public Radiation Safety**

---

## **Physical Protection**

---

## **Miscellaneous**

Last modified : May 30, 2003

# Brunswick 1

## 2Q/2003 Plant Inspection Findings

---

### Initiating Events

---

### Mitigating Systems

**Significance:**  Dec 28, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Failure to Implement Procedure 0PM-STU500, Service Water Intake Structure Inspection and Cleaning**

Green. An inadequate implementation of Preventive Maintenance Procedure 0PM-STU500, Service Water Intake Structure Inspection and Cleaning, resulted in the 1A Nuclear Service Water (NSW) pump becoming inoperable, with a loss of function, due to the pump's discharge strainer becoming clogged with oyster shells during a diving evolution. A non-cited violation of TS 5.4.1a was identified. This issue was considered to be more than minor because it affected a cornerstone attribute and an associated cornerstone objective. The mitigating systems cornerstone objective to ensure reliability, availability, and capability of systems that respond to initiating events was affected by equipment performance and human error. The finding was determined to be of very low safety significant because the risk was mitigated by the availability of the conventional service water pumps which were utilized in accordance with the abnormal operating procedures to restore service water flow.

Inspection Report# : [2002004\(pdf\)](#)

**Significance:**  Sep 28, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

#### **FAILURE TO HAVE INSTALLED FIXED FIRE SUPPRESSION SYSTEMS THAT ARE CAPABLE OF MINIMIZING FIRE DAMAGE TO SAFE SHUTDOWN CABLING DURING FLOOR LEVEL TRANSIENT COMBUSTIBLE FIRES IN THE UNIT 1 AND 2 CSRs**

Green. The licensee failed to install fixed fire suppression systems that were capable of minimizing damage to safe shutdown cabling caused by floor level transient combustible fires in the Unit 1 and Unit 2 Cable Spreading Rooms (CSRs). The systems were determined to be unable to fulfill their intended function of limiting fire damage to the preferred trains of safe shutdown cables and safety-related cables in the CSRs. The finding was of very low safety significance based on the initiating event likelihood for this event in conjunction with the remaining mitigation capability in the Unit 1 and Unit 2 CSRs.

Inspection Report# : [2002003\(pdf\)](#)

---

### Barrier Integrity



**Significance:** Dec 28, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Implement Procedure 0ENP-54, Building Ventilation Pressure Control Program**

Green. An inadequate implementation of Procedure 0ENP-54, Building Ventilation Pressure Control, resulted in a breach of the control room habitability envelope that exceeded the allowable leakage criteria to maintain both units' control room emergency ventilation (CREV) systems operable. A non-cited violation of Technical Specification (TS) 5.4.1a was identified. This issue was considered to be more than minor because it affected a cornerstone attribute and an associated cornerstone objective. The barrier integrity objective and containment functionality attribute of configuration control and human performance in post-accident and event performance were affected. Additionally, if this issue was left uncorrected, it would have been a more significant safety concern. The finding involved the barrier integrity cornerstone in which the control room barrier was degraded and represented a degradation of the barrier function of the control room against smoke and a toxic atmosphere. This issue was evaluated to be very low safety significant. The impact of chlorine gas intrusion (toxic atmosphere) into the control room during the period the door was blocked open was limited to the human factors concern of control room response while wearing breathing apparatus. Also, the CREV systems for both units were returned to operable status within the TS allowed time frame. Operator actions of interest were those required to respond to an initiating event that happened during the short time of vulnerability.

Inspection Report# : [2002004\(pdf\)](#)

---

## **Emergency Preparedness**

---

## **Occupational Radiation Safety**

---

## **Public Radiation Safety**

---

## **Physical Protection**

---

## **Miscellaneous**

Last modified : September 04, 2003

# Brunswick 1

## 3Q/2003 Plant Inspection Findings

---

### Initiating Events

---

### Mitigating Systems

**Significance:**  Sep 20, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

#### **INADEQUATE CORRECTIVE ACTIONS FOR SERVICE WATER STRAINER BLOWDOWN LINE CLOGGING**

The inspectors identified a non-cited violation for the licensee's failure to comply with 10 CFR 50, Appendix B, Criterion XVI. This violation is related to inadequate corrective actions to prevent recurring nuclear and conventional service water pump functional failures caused by clogging of the associated pump's strainer due to marine growth in the service water intake bays. This resulted in six failures in twelve months.

This finding is greater than minor because it resulted in an increase in the likelihood of loss of nuclear and conventional service water initiating events. In addition, the finding affected the operability, availability, and reliability of the nuclear and conventional service water pumps. The finding is of very low safety significance because redundancy existed in the nuclear and conventional service water systems and the relatively short duration of unavailability of the pumps.

Inspection Report# : [2003005\(pdf\)](#)

**Significance:**  Dec 28, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Failure to Implement Procedure 0PM-STU500, Service Water Intake Structure Inspection and Cleaning**

Green. An inadequate implementation of Preventive Maintenance Procedure 0PM-STU500, Service Water Intake Structure Inspection and Cleaning, resulted in the 1A Nuclear Service Water (NSW) pump becoming inoperable, with a loss of function, due to the pump's discharge strainer becoming clogged with oyster shells during a diving evolution. A non-cited violation of TS 5.4.1a was identified. This issue was considered to be more than minor because it affected a cornerstone attribute and an associated cornerstone objective. The mitigating systems cornerstone objective to ensure reliability, availability, and capability of systems that respond to initiating events was affected by equipment performance and human error. The finding was determined to be of very low safety significant because the risk was mitigated by the availability of the conventional service water pumps which were utilized in accordance with the abnormal operating procedures to restore service water flow.

Inspection Report# : [2002004\(pdf\)](#)

---

## Barrier Integrity

**Significance:**  Dec 28, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Implement Procedure 0ENP-54, Building Ventilation Pressure Control Program**

Green. An inadequate implementation of Procedure 0ENP-54, Building Ventilation Pressure Control, resulted in a breach of the control room habitability envelope that exceeded the allowable leakage criteria to maintain both units' control room emergency ventilation (CREV) systems operable. A non-cited violation of Technical Specification (TS) 5.4.1a was identified. This issue was considered to be more than minor because it affected a cornerstone attribute and an associated cornerstone objective. The barrier integrity objective and containment functionality attribute of configuration control and human performance in post-accident and event performance were affected. Additionally, if this issue was left uncorrected, it would have been a more significant safety concern. The finding involved the barrier integrity cornerstone in which the control room barrier was degraded and represented a degradation of the barrier function of the control room against smoke and a toxic atmosphere. This issue was evaluated to be very low safety significant. The impact of chlorine gas intrusion (toxic atmosphere) into the control room during the period the door was blocked open was limited to the human factors concern of control room response while wearing breathing apparatus. Also, the CREV systems for both units were returned to operable status within the TS allowed time frame. Operator actions of interest were those required to respond to an initiating event that happened during the short time of vulnerability.

Inspection Report# : [2002004\(pdf\)](#)

---

## Emergency Preparedness

---

## Occupational Radiation Safety

---

## Public Radiation Safety

---

## Physical Protection

---

## Miscellaneous

Last modified : December 01, 2003

# Brunswick 1

## 4Q/2003 Plant Inspection Findings

---

### Initiating Events

---

### Mitigating Systems

**Significance:**  Sep 20, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

#### **INADEQUATE CORRECTIVE ACTIONS FOR SERVICE WATER STRAINER BLOWDOWN LINE CLOGGING**

The inspectors identified a non-cited violation for the licensee's failure to comply with 10 CFR 50, Appendix B, Criterion XVI. This violation is related to inadequate corrective actions to prevent recurring nuclear and conventional service water pump functional failures caused by clogging of the associated pump's strainer due to marine growth in the service water intake bays. This resulted in six failures in twelve months.

This finding is greater than minor because it resulted in an increase in the likelihood of loss of nuclear and conventional service water initiating events. In addition, the finding affected the operability, availability, and reliability of the nuclear and conventional service water pumps. The finding is of very low safety significance because redundancy existed in the nuclear and conventional service water systems and the relatively short duration of unavailability of the pumps.

Inspection Report# : [2003005\(pdf\)](#)

---

### Barrier Integrity

---

### Emergency Preparedness

---

### Occupational Radiation Safety

---

### Public Radiation Safety

---

## Physical Protection

---

### Miscellaneous

**Significance:** N/A Nov 21, 2003

Identified By: NRC

Item Type: FIN Finding

#### **PROBLEM IDENTIFICATION & RESOLUTION INSPECTION RESULTS**

The licensee was effective at identifying problems at a low threshold and entering them into the corrective action program. The licensee prioritized issues and performed adequate evaluations that were technically accurate and of sufficient depth. Corrective actions developed and implemented for problems were appropriate for the safety-significance of the issue. The licensee's self-assessments and audits were effective in identifying deficiencies. Based on discussions conducted with licensee employees and a review of station activities, the inspectors did not identify any reluctance to report safety concerns.

Inspection Report# : [2003009\(pdf\)](#)

Last modified : March 02, 2004

# Brunswick 1

## 1Q/2004 Plant Inspection Findings

---

### Initiating Events

---

### Mitigating Systems

G**Significance:** Jan 07, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

**INADEQUATE CORRECTIVE ACTIONS FOR EDG JACKET WATER COOLING LEAK RESULTS IN FAILURE TO MEET TECHNICAL SPECIFICATION LCO 3.8.1**

An inspector-identified finding was identified for the failure to take adequate corrective actions for conditions adverse to quality associated with the No. 3 emergency diesel generator (EDG 3) jacket water cooling (JWC) system. This condition resulted in EDG 3 being inoperable from December 8, 2003, until January 7, 2004, which was contrary to the requirements of Technical Specification (TS) Limiting Condition for Operation (LCO) 3.8.1, AC Sources-Operating. One non-cited violation was identified for Unit 1: 10CFR50, Appendix B, Criterion XVI.

This finding is greater than minor because it is associated with the availability and reliability of EDG 3 to mitigate events such as a loss of offsite power. The finding was determined to have very low safety significance (Green) because, although the ability of EDG 3 to mitigate a loss of offsite power event was effected, EDG 3 provides a relatively small amount of the Unit 1 safety-related loads.

Inspection Report# : [2004002\(pdf\)](#)G**Significance:** Sep 20, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

**INADEQUATE CORRECTIVE ACTIONS FOR SERVICE WATER STRAINER BLOWDOWN LINE CLOGGING**

The inspectors identified a non-cited violation for the licensee's failure to comply with 10 CFR 50, Appendix B, Criterion XVI. This violation is related to inadequate corrective actions to prevent recurring nuclear and conventional service water pump functional failures caused by clogging of the associated pump's strainer due to marine growth in the service water intake bays. This resulted in six failures in twelve months.

This finding is greater than minor because it resulted in an increase in the likelihood of loss of nuclear and conventional service water initiating events. In addition, the finding affected the operability, availability, and reliability of the nuclear and conventional service water pumps. The finding is of very low safety significance because redundancy existed in the nuclear and conventional service water systems and the relatively short duration of unavailability of the pumps.

Inspection Report# : [2003005\(pdf\)](#)

---

### Barrier Integrity

---

### Emergency Preparedness

---

### Occupational Radiation Safety

---

### Public Radiation Safety

---

## Physical Protection

---

## Miscellaneous

**Significance:** N/A Nov 21, 2003

Identified By: NRC

Item Type: FIN Finding

### **PROBLEM IDENTIFICATION & RESOLUTION INSPECTION RESULTS**

The licensee was effective at identifying problems at a low threshold and entering them into the corrective action program. The licensee prioritized issues and performed adequate evaluations that were technically accurate and of sufficient depth. Corrective actions developed and implemented for problems were appropriate for the safety-significance of the issue. The licensee's self-assessments and audits were effective in identifying deficiencies. Based on discussions conducted with licensee employees and a review of station activities, the inspectors did not identify any reluctance to report safety concerns.

Inspection Report# : [2003009\(pdf\)](#)

Last modified : May 05, 2004

# Brunswick 1

## 2Q/2004 Plant Inspection Findings

### Initiating Events

### Mitigating Systems

**Significance:**  Jun 19, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Failure to Adequately Consider Vortexing in the Calculation for CST Level for Automatic Transfer of the HPCI Pump Suction**

Green. The inspectors identified a non-cited violation of 10 CFR 50, Appendix B, Criterion III, Design Control, for failure of design calculations to adequately address the potential for air entrainment in the high pressure coolant injection (HPCI) process flow due to vortexing. The Technical Specifications allowable value for the condensate storage tank (CST) level - low function, for automatic HPCI pump suction transfer to the suppression pool, was not adequately supported by these design calculations. The finding is greater than minor because it affects the design control attribute of the mitigating systems cornerstone objective. It is of very low safety significance because the finding is a design deficiency that would not result in loss of the HPCI function, and because the likelihood of having a low level in the CST that would challenge the CST level - low automatic HPCI suction transfer function is very low. In addition, alternate core cooling methods would normally be available, including reactor core isolation cooling as well as automatic depressurization system and low pressure coolant injection.

Inspection Report# : [2004003\(pdf\)](#)

**Significance:**  Jun 19, 2004

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

#### **Failure to Follow EDG Barring Procedure**

Green. A self-revealing Green non-cited violation of Technical Specifications (TS) 5.4.1 was identified for failure to implement a maintenance procedure. Maintenance personnel failed to follow the emergency diesel generator (EDG) barring procedure (predictive maintenance which slowly cranks the engine) by not closing the right bank engine cylinder petcocks while performing the evolution on EDG 1 on June 6, 2004. This resulted in the EDG being inoperable until the condition was discovered when the EDG was started later that day. This finding is greater than minor because it affected the mitigating systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to an event. The finding is of very low safety significance because the EDG was restored to an operable status within the TS limiting condition for operation allowed outage time. The finding was related to the cross-cutting area of human performance because the cause was due to maintenance workers failing to properly follow procedural requirements.

Inspection Report# : [2004003\(pdf\)](#)

**Significance:**  Mar 20, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

#### **INADEQUATE CORRECTIVE ACTIONS FOR EDG JACKET WATER COOLING LEAK RESULTS IN FAILURE TO MEET TECHNICAL SPECIFICATION LCO 3.8.1**

The inspectors identified a non-cited violation for the failure to take adequate corrective actions in accordance with 10CFR50 Appendix B Criterion XXVI, associated with an unrepaired leak in the No. 3 emergency diesel generator (EDG) jacket water cooling (JWC) system. This condition resulted in EDG 3 being inoperable from December 8, 2003, until January 7, 2004.

This finding is greater than minor because it is associated with the availability and reliability of EDG 3 to mitigate events such as a loss of offsite power. The finding was determined to have very low safety significance because, although the ability of EDG 3 to mitigate a loss of offsite power event was affected, EDG 3 provides a relatively small amount of the Unit 1 safety-related loads.

Inspection Report# : [2004002\(pdf\)](#)

**Significance:**  Sep 20, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

#### **INADEQUATE CORRECTIVE ACTIONS FOR SERVICE WATER STRAINER BLOWDOWN LINE CLOGGING**

The inspectors identified a non-cited violation for the licensee's failure to comply with 10 CFR 50, Appendix B, Criterion XVI. This violation is related to inadequate corrective actions to prevent recurring nuclear and conventional service water pump functional failures caused by clogging of the

associated pump's strainer due to marine growth in the service water intake bays. This resulted in six failures in twelve months.

This finding is greater than minor because it resulted in an increase in the likelihood of loss of nuclear and conventional service water initiating events. In addition, the finding affected the operability, availability, and reliability of the nuclear and conventional service water pumps. The finding is of very low safety significance because redundancy existed in the nuclear and conventional service water systems and the relatively short duration of unavailability of the pumps.

Inspection Report# : [2003005\(pdf\)](#)

---

## Barrier Integrity

---

## Emergency Preparedness

---

## Occupational Radiation Safety

---

## Public Radiation Safety

---

## Physical Protection

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

---

## Miscellaneous

**Significance:** N/A Nov 21, 2003

Identified By: NRC

Item Type: FIN Finding

### PROBLEM IDENTIFICATION & RESOLUTION INSPECTION RESULTS

The licensee was effective at identifying problems at a low threshold and entering them into the corrective action program. The licensee prioritized issues and performed adequate evaluations that were technically accurate and of sufficient depth. Corrective actions developed and implemented for problems were appropriate for the safety-significance of the issue. The licensee's self-assessments and audits were effective in identifying deficiencies. Based on discussions conducted with licensee employees and a review of station activities, the inspectors did not identify any reluctance to report safety concerns.

Inspection Report# : [2003009\(pdf\)](#)

Last modified : September 08, 2004

# Brunswick 1

## 3Q/2004 Plant Inspection Findings

---

### Initiating Events

---

### Mitigating Systems

**Significance:**  Jun 19, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Failure to Adequately Consider Vortexing in the Calculation for CST Level for Automatic Transfer of the HPCI Pump Suction**

Green. The inspectors identified a non-cited violation of 10 CFR 50, Appendix B, Criterion III, Design Control, for failure of design calculations to adequately address the potential for air entrainment in the high pressure coolant injection (HPCI) process flow due to vortexing. The Technical Specifications allowable value for the condensate storage tank (CST) level - low function, for automatic HPCI pump suction transfer to the suppression pool, was not adequately supported by these design calculations. The finding is greater than minor because it affects the design control attribute of the mitigating systems cornerstone objective. It is of very low safety significance because the finding is a design deficiency that would not result in loss of the HPCI function, and because the likelihood of having a low level in the CST that would challenge the CST level - low automatic HPCI suction transfer function is very low. In addition, alternate core cooling methods would normally be available, including reactor core isolation cooling as well as automatic depressurization system and low pressure coolant injection.

Inspection Report# : [2004003\(pdf\)](#)

**Significance:**  Jun 19, 2004

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

#### **Failure to Follow EDG Barring Procedure**

Green. A self-revealing Green non-cited violation of Technical Specifications (TS) 5.4.1 was identified for failure to implement a maintenance procedure. Maintenance personnel failed to follow the emergency diesel generator (EDG) barring procedure (predictive maintenance which slowly cranks the engine) by not closing the right bank engine cylinder petcocks while performing the evolution on EDG 1 on June 6, 2004. This resulted in the EDG being inoperable until the condition was discovered when the EDG was started later that day. This finding is greater than minor because it affected the mitigating systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to an event. The finding is of very low safety significance because the EDG was restored to an operable status within the TS limiting condition for operation allowed outage time. The finding was related to the cross-cutting area of human performance because the cause was due to maintenance workers failing to properly follow procedural requirements.

Inspection Report# : [2004003\(pdf\)](#)

**Significance:**  Mar 20, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

#### **INADEQUATE CORRECTIVE ACTIONS FOR EDG JACKET WATER COOLING LEAK RESULTS IN FAILURE TO MEET TECHNICAL SPECIFICATION LCO 3.8.1**

The inspectors identified a non-cited violation for the failure to take adequate corrective actions in accordance with 10CFR50 Appendix B Criterion XVI, associated with an unrepaired leak in the No. 3 emergency diesel generator (EDG) jacket water cooling (JWC) system. This condition resulted in EDG 3 being inoperable from December 8, 2003, until January 7, 2004.

This finding is greater than minor because it is associated with the availability and reliability of EDG 3 to mitigate events such as a loss of offsite power. The finding was determined to have very low safety significance because, although the ability of EDG 3 to mitigate a loss of offsite power event was effected, EDG 3 provides a relatively small amount of the Unit 1 safety-related loads.

Inspection Report# : [2004002\(pdf\)](#)

---

### Barrier Integrity

---

## Emergency Preparedness

---

## Occupational Radiation Safety

---

## Public Radiation Safety

---

## Physical Protection

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

---

## Miscellaneous

**Significance:** N/A Aug 27, 2004

Identified By: NRC

Item Type: FIN Finding

### **Results of Brunswick Unit 1 Loss of Offsite Power Special Inspection**

A special inspection was conducted following the Brunswick Unit 1 Loss of Offsite power on August 14, 2004. The special inspection team (SIT) determined: (1) The cause of the loss-of-offsite power was the internal failure of a switchyard breaker as it responded to a line fault outside the unit's switchyard: that failure led to loss of power on the 1B bus, which caused, in turn, a loss of power to the unit 1 startup transformer, and the loss of both recirculation pumps. (2) The site switchyard design and configuration complied with General Design Criterion 17. The special inspection team noted that changes could be made in the switchyard configuration and some switchyard equipment which could significantly reduce the unit's vulnerability to similar events in the future. The licensee initiated efforts to review and evaluate enhancements. (3) A load-shed permissive HGA relay on emergency bus 1 failed when the relay dust cover prevented the relay armature from actuating. Several loads were not shed from the bus before emergency diesel generator (EDG)-1 picked up the loads on that bus. Upon identifying the relay problem, the licensee corrected the involved relay problem, completed an adequate operability determination of EDG-1 and also performed the Technical Specifications-required common-cause analysis of the other EDGs. (4) To verify that no other important HGA relays had mispositioned dust covers, the licensee examined a larger population of relays in other applications. The initial relay examination identified a number of conditions that needed to be corrected, however, none of those conditions prevented the proper operation of any relay. Because the initial examination had been completed using an informal methodology, the licensee had not developed documentation that was adequate to support an operability determination. Some Operations personnel and management were not aware of how the identified relay conditions had been addressed. The licensee subsequently re-examined the subject relays, using a more formal and approved process. The re-examination was completed and the operability determination was formally documented prior to continuing the unit restart.

Inspection Report# : [2004011\(pdf\)](#)

**Significance:** N/A Nov 21, 2003

Identified By: NRC

Item Type: FIN Finding

### **PROBLEM IDENTIFICATION & RESOLUTION INSPECTION RESULTS**

The licensee was effective at identifying problems at a low threshold and entering them into the corrective action program. The licensee prioritized issues and performed adequate evaluations that were technically accurate and of sufficient depth. Corrective actions developed and implemented for problems were appropriate for the safety-significance of the issue. The licensee's self-assessments and audits were effective in identifying deficiencies. Based on discussions conducted with licensee employees and a review of station activities, the inspectors did not identify any reluctance to report safety concerns.

Inspection Report# : [2003009\(pdf\)](#)

Last modified : December 29, 2004

# Brunswick 1

## 4Q/2004 Plant Inspection Findings

---

### Initiating Events

---

### Mitigating Systems

**Significance:**  Dec 31, 2004

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

#### **Inadequate Storage of Standby Liquid Control System Nitrogen Accumulator Repair Kits**

Green. A self-revealing finding and non-cited violation of 10CFR50, Appendix B, Criterion XIII, was identified for failure to store Unit 1 standby liquid control system (SLC) nitrogen accumulator repair kits in a condition which did not prevent deterioration. The licensee's material evaluation of the commercially dedicated part did not include special storage requirements and, therefore, the parts were stored, from at least 1999 until March 2004, in a condition which made them susceptible to developing leaks along folds in the nitrogen accumulator bladders. This resulted in accumulator nitrogen leakage into the Unit 1 standby liquid control system and was determined to be the cause of the 1 B standby liquid control pump being discovered in an inoperable condition on July 8, 2004.

This finding is more than minor because it is associated with equipment performance and affected the functional capability of the system to respond to initiating events. This finding was evaluated using MC 0609 Appendix A. A Phase 3 Significance Determination Process analysis determined this finding to be of very low safety significance (Green) because the redundant train of the Unit 1 SLC system remained operable. The licensee's corrective actions included replacing all of the affected nitrogen accumulator bladders.

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

**Significance:**  Jun 19, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Failure to Adequately Consider Vortexing in the Calculation for CST Level for Automatic Transfer of the HPCI Pump Suction**

Green. The inspectors identified a non-cited violation of 10 CFR 50, Appendix B, Criterion III, Design Control, for failure of design calculations to adequately address the potential for air entrainment in the high pressure coolant injection (HPCI) process flow due to vortexing. The Technical Specifications allowable value for the condensate storage tank (CST) level - low function, for automatic HPCI pump suction transfer to the suppression pool, was not adequately supported by these design calculations. The finding is greater than minor because it affects the design control attribute of the mitigating systems cornerstone objective. It is of very low safety significance because the finding is a design deficiency that would not result in loss of the HPCI function, and because the likelihood of having a low level in the CST that would challenge the CST level - low automatic HPCI suction transfer function is very low. In addition, alternate core cooling methods would normally be available, including reactor core isolation cooling as well as automatic depressurization system and low pressure coolant injection.

Inspection Report# : [2004003\(pdf\)](#)

**Significance:**  Jun 19, 2004

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

#### **Failure to Follow EDG Barring Procedure**

Green. A self-revealing Green non-cited violation of Technical Specifications (TS) 5.4.1 was identified for failure to implement a maintenance procedure. Maintenance personnel failed to follow the emergency diesel generator (EDG) barring procedure (predictive maintenance which slowly cranks the engine) by not closing the right bank engine cylinder petcocks while performing the evolution on EDG 1 on June 6, 2004. This resulted in the EDG being inoperable until the condition was discovered when the EDG was started later that day. This finding is greater than minor because it affected the mitigating systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to an event. The finding is of very low safety significance because the EDG was restored to an operable status within the TS limiting condition for operation allowed outage time. The finding was related to the cross-cutting area of human performance because the cause was due to maintenance workers failing to properly follow procedural requirements.

Inspection Report# : [2004003\(pdf\)](#)

**Significance:**  Mar 20, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

### **INADEQUATE CORRECTIVE ACTIONS FOR EDG JACKET WATER COOLING LEAK RESULTS IN FAILURE TO MEET TECHNICAL SPECIFICATION LCO 3.8.1**

The inspectors identified a non-cited violation for the failure to take adequate corrective actions in accordance with 10CFR50 Appendix B Criterion XVI, associated with an unrepaired leak in the No. 3 emergency diesel generator (EDG) jacket water cooling (JWC) system. This condition resulted in EDG 3 being inoperable from December 8, 2003, until January 7, 2004.

This finding is greater than minor because it is associated with the availability and reliability of EDG 3 to mitigate events such as a loss of offsite power. The finding was determined to have very low safety significance because, although the ability of EDG 3 to mitigate a loss of offsite power event was effected, EDG 3 provides a relatively small amount of the Unit 1 safety-related loads.

Inspection Report# : [2004002\(pdf\)](#)

---

## **Barrier Integrity**

---

## **Emergency Preparedness**

---

## **Occupational Radiation Safety**

---

## **Public Radiation Safety**

---

## **Physical Protection**

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

---

## **Miscellaneous**

**Significance:** N/A Aug 27, 2004

Identified By: NRC

Item Type: FIN Finding

### **Results of Brunswick Unit 1 Loss of Offsite Power Special Inspection**

A special inspection was conducted following a Brunswick Unit 1 Loss of Offsite power on August 14, 2004. The inspectors determined: (1) The cause of the loss-of-offsite power was the internal failure of a switchyard breaker as it responded to a line fault outside the unit's switchyard: that failure led to loss of power on the 1B bus, which caused, in turn, a loss of power to the unit 1 startup transformer, and the loss of both recirculation pumps. (2) The site switchyard design and configuration complied with General Design Criterion 17. The inspectors noted that changes could be made in the switchyard configuration and some switchyard equipment which could significantly reduce the unit's vulnerability to similar events in the future. The licensee initiated efforts to review and evaluate enhancements. (3) A load-shed permissive HGA relay on emergency bus 1 failed when the relay dust cover prevented the relay armature from actuating. Several loads were not shed from the bus before emergency diesel generator (EDG)-1 picked up the loads on that bus. Upon identifying the relay problem, the licensee corrected the involved relay problem, completed an adequate operability determination of EDG-1 and also performed the Technical Specifications-required common-cause analysis of the other EDGs. (4)To verify that no other important HGA relays had mispositioned dust covers, the licensee examined a larger population of relays in other applications. The initial relay examination identified a number of conditions that needed to be corrected, however, none of those conditions prevented the proper operation of any relay. Because the initial examination had been completed using an informal methodology, the licensee had not developed documentation that was adequate to support an operability determination. Some Operations personnel and management were not aware of how the identified relay conditions had been addressed. The licensee subsequently re-examined the subject relays, using a more formal and approved process. The re-examination was completed and the operability determination was formally documented prior to continuing the unit restart.

Inspection Report# : [2004011\(pdf\)](#)



# Brunswick 1

## 1Q/2005 Plant Inspection Findings

---

### Initiating Events

---

### Mitigating Systems

**Significance:**  Mar 31, 2005

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

#### **Failure to identify Condition Adverse to Quality on Emergency Bus Relay Covers**

Green. A self-revealing finding and non-cited violation of 10CFR50, Appendix B, Criterion XVI, was identified for failure to promptly identify a condition adverse to quality associated with mispositioned relay covers for several General Electric HGA relays on emergency bus E-1. The finding resulted in relay 1-E1-AE7-CL-B, which provides a confirmatory bus strip signal to the emergency diesel generator (EDG) 1 output breaker, being failed in the operated state. This caused emergency diesel generator EDG 1 to be in an inoperable condition from March 29, 2004 until the condition was discovered on August 16, 2004. The finding is greater than minor because it is associated with equipment performance and affected the functional capability of the system to respond to initiating events. The finding was evaluated using NRC Inspection Manual Chapter 0609 Appendix A. A Phase 3 Significance Determination Process analysis determined this finding to be of very low safety significance based on the limited number of hours the EDG load rating would have been exceeded. The finding is related to the cross-cutting area of problem identification and resolution due to the failure to identify a condition adverse to quality.

Inspection Report# : [2005002\(pdf\)](#)

**Significance:**  Dec 31, 2004

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

#### **Inadequate Storage of Standby Liquid Control System Nitrogen Accumulator Repair Kits**

Green. A self-revealing finding and non-cited violation of 10CFR50, Appendix B, Criterion XIII, was identified for failure to store Unit 1 standby liquid control system (SLC) nitrogen accumulator repair kits in a condition which did not prevent deterioration. The licensee's material evaluation of the commercially dedicated part did not include special storage requirements and, therefore, the parts were stored, from at least 1999 until March 2004, in a condition which made them susceptible to developing leaks along folds in the nitrogen accumulator bladders. This resulted in accumulator nitrogen leakage into the Unit 1 standby liquid control system and was determined to be the cause of the 1 B standby liquid control pump being discovered in an inoperable condition on July 8, 2004.

This finding is more than minor because it is associated with equipment performance and affected the functional capability of the system to respond to initiating events. This finding was evaluated using MC 0609 Appendix A. A Phase 3 Significance Determination Process analysis determined this finding to be of very low safety significance (Green) because the redundant train of the Unit 1 SLC system remained operable. The licensee's corrective actions included replacing all of the affected nitrogen accumulator bladders.

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

**Significance:**  Jun 19, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Failure to Adequately Consider Vortexing in the Calculation for CST Level for Automatic Transfer of the HPCI Pump Suction**

Green. The inspectors identified a non-cited violation of 10 CFR 50, Appendix B, Criterion III, Design Control, for failure of design calculations to adequately address the potential for air entrainment in the high pressure coolant injection (HPCI) process flow due to vortexing. The Technical Specifications allowable value for the condensate storage tank (CST) level - low function, for automatic HPCI pump suction transfer to the suppression pool, was not adequately supported by these design calculations. The finding is greater than minor because it affects the design control attribute of the mitigating systems cornerstone objective. It is of very low safety significance because the finding is a design deficiency that would not result in loss of the HPCI function, and because the likelihood of having a low level in the CST that would challenge the CST level - low automatic HPCI suction transfer function is very low. In addition, alternate core cooling methods would normally be available, including reactor core isolation cooling as well as automatic depressurization system and low pressure coolant injection.

Inspection Report# : [2004003\(pdf\)](#)

**Significance:**  Jun 19, 2004

Identified By: Self Disclosing  
Item Type: NCV NonCited Violation

### **Failure to Follow EDG Barring Procedure**

Green. A self-revealing Green non-cited violation of Technical Specifications (TS) 5.4.1 was identified for failure to implement a maintenance procedure. Maintenance personnel failed to follow the emergency diesel generator (EDG) barring procedure (predictive maintenance which slowly cranks the engine) by not closing the right bank engine cylinder petcocks while performing the evolution on EDG 1 on June 6, 2004. This resulted in the EDG being inoperable until the condition was discovered when the EDG was started later that day. This finding is greater than minor because it affected the mitigating systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to an event. The finding is of very low safety significance because the EDG was restored to an operable status within the TS limiting condition for operation allowed outage time. The finding was related to the cross-cutting area of human performance because the cause was due to maintenance workers failing to properly follow procedural requirements.  
Inspection Report# : [2004003\(pdf\)](#)

---

## **Barrier Integrity**

---

## **Emergency Preparedness**

---

## **Occupational Radiation Safety**

---

## **Public Radiation Safety**

---

## **Physical Protection**

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

---

## **Miscellaneous**

**Significance:** N/A Aug 27, 2004

Identified By: NRC  
Item Type: FIN Finding

### **Results of Brunswick Unit 1 Loss of Offsite Power Special Inspection**

A special inspection was conducted following a Brunswick Unit 1 Loss of Offsite power on August 14, 2004. The inspectors determined: (1) The cause of the loss-of-offsite power was the internal failure of a switchyard breaker as it responded to a line fault outside the unit's switchyard: that failure led to loss of power on the 1B bus, which caused, in turn, a loss of power to the unit 1 startup transformer, and the loss of both recirculation pumps. (2) The site switchyard design and configuration complied with General Design Criterion 17. The inspectors noted that changes could be made in the switchyard configuration and some switchyard equipment which could significantly reduce the unit's vulnerability to similar events in the future. The licensee initiated efforts to review and evaluate enhancements. (3) A load-shed permissive HGA relay on emergency bus 1 failed when the relay dust cover prevented the relay armature from actuating. Several loads were not shed from the bus before emergency diesel generator (EDG)-1 picked up the loads on that bus. Upon identifying the relay problem, the licensee corrected the involved relay problem, completed an adequate operability determination of EDG-1 and also performed the Technical Specifications-required common-cause analysis of the other EDGs. (4) To verify that no other important HGA relays had mispositioned dust covers, the licensee examined a larger population of relays in other applications. The initial relay examination identified a number of conditions that needed to be corrected, however, none of those conditions prevented the proper operation of any relay. Because the initial examination had been completed using an informal methodology, the licensee had not developed documentation that was adequate to support an operability determination. Some Operations personnel and management were not aware of how the identified relay conditions had been addressed. The licensee subsequently re-examined the subject relays, using a more formal and approved process. The re-examination was completed and the operability determination was formally documented prior to continuing the unit restart.  
Inspection Report# : [2004011\(pdf\)](#)

Last modified : June 17, 2005

# Brunswick 1

## 2Q/2005 Plant Inspection Findings

---

### Initiating Events

**G****Significance:** Jun 30, 2005

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

**INADEQUATE CONDENSATE SYSTEM OPERATING PROCEDURE**

Green. A self-revealing non-cited violation of Technical Specification (TS) 5.4.1.a. Procedures, was identified for failure to provide adequate condensate system procedural guidance to preclude the reactor feed pumps from tripping on low suction pressure during plant operations. The inadequate procedures contributed to a Unit 2 automatic reactor scram on April 9, 2005, due to low reactor vessel level.

The finding is greater than minor because it is associated with the procedure quality attribute of the Initiating Events Cornerstone and affects the cornerstone objective of limiting the likelihood of events that upset plant stability and challenge critical safety functions during power operations. This finding is of very low safety significance because, although it contributes to the likelihood of a reactor trip, it does not contribute to the likelihood that mitigation equipment or functions would be unavailable.

Inspection Report# : [2005003\(pdf\)](#)**G****Significance:** Jun 30, 2005

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

**INAPPROPRIATE USE OF TECHNICAL SPECIFICATION 3.0.5 IN MODE 5 OPERATIONS**

Green. A self-revealing non-cited violation of Technical Specification (TS) 3.0.5., which allows some inoperable equipment, declared as such through a TS Action, to be returned to service solely for the purpose of demonstrating operability, was identified for failure to properly utilize this TS when returning a control rod to service following maintenance with Unit 1 in Mode 5 (Refueling). This resulted in the failure to meet the required actions of TS 3.9.2, Refuel Position One-Rod-Out Interlock, and TS 3.9.4, Control Rod Position Indication, with the unit in Mode 5.

The finding is greater than minor because it is associated with the equipment configuration control attribute of the Initiating Events Cornerstone and affects the cornerstone objective of limiting the likelihood of events that upset plant stability and challenge critical safety functions while shutdown. This finding is of very low safety significance because, using Appendix G of the SDP, it did not constitute a finding that required quantitative assessment. The cause of this finding is a performance aspect of the human performance cross-cutting area, in that the cause was attributed to operator knowledge of the requirements of TS 3.0.5 and communication errors between Maintenance and Operations.

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

---

### Mitigating Systems

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

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

**Failure to identify Condition Adverse to Quality on Emergency Bus Relay Covers**

Green. A self-revealing finding and non-cited violation of 10CFR50, Appendix B, Criterion XVI, was identified for failure to promptly identify a condition adverse to quality associated with mispositioned relay covers for several General Electric HGA relays on emergency bus E-1. The finding resulted in relay 1-E1-AE7-CL-B, which provides a confirmatory bus strip signal to the emergency diesel generator (EDG) 1 output breaker, being failed in the operated state. This caused emergency diesel generator EDG 1 to be in an inoperable condition from March 29, 2004 until the condition was discovered on August 16, 2004. The finding is greater than minor because it is associated with equipment performance and affected the functional capability of the system to respond to initiating events. The finding was evaluated using NRC Inspection Manual Chapter 0609 Appendix A. A Phase 3 Significance Determination Process analysis determined this finding to be of very low safety significance based on the limited number of hours the EDG load rating would have been exceeded. The finding is related to the cross-cutting area of problem identification and resolution due to the failure to identify a condition adverse to quality.

Inspection Report# : [2005002\(pdf\)](#)**G****Significance:** Dec 31, 2004

Identified By: Self Disclosing  
Item Type: NCV NonCited Violation

### **Inadequate Storage of Standby Liquid Control System Nitrogen Accumulator Repair Kits**

Green. A self-revealing finding and non-cited violation of 10CFR50, Appendix B, Criterion XIII, was identified for failure to store Unit 1 standby liquid control system (SLC) nitrogen accumulator repair kits in a condition which did not prevent deterioration. The licensee's material evaluation of the commercially dedicated part did not include special storage requirements and, therefore, the parts were stored, from at least 1999 until March 2004, in a condition which made them susceptible to developing leaks along folds in the nitrogen accumulator bladders. This resulted in accumulator nitrogen leakage into the Unit 1 standby liquid control system and was determined to be the cause of the 1 B standby liquid control pump being discovered in an inoperable condition on July 8, 2004.

This finding is more than minor because it is associated with equipment performance and affected the functional capability of the system to respond to initiating events. This finding was evaluated using MC 0609 Appendix A. A Phase 3 Significance Determination Process analysis determined this finding to be of very low safety significance (Green) because the redundant train of the Unit 1 SLC system remained operable. The licensee's corrective actions included replacing all of the affected nitrogen accumulator bladders.

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

---

## **Barrier Integrity**

**Significance:**  Jun 30, 2005

Identified By: Self Disclosing  
Item Type: NCV NonCited Violation

### **INADEQUATE DESIGN CONTROL FOR DIGITAL FEEDWATER CONTROL SYSTEM MODIFICATION**

Green. A self-revealing non-cited violation of 10CFR50, Appendix B, Criterion III, Design Control, was identified for failure to assure that Technical Specification (TS) requirements for the feedwater and main turbine high water trip function remained operable with the introduction of a filtered time constant for reactor vessel level. As a result, instrumentation associated with TS 3.3.2.2, Feedwater and Main Turbine High Water Level Trip Instrumentation, were inoperable from April 30, 2004 for Unit 1 and April 30, 2003 for Unit 2 until the time constant filters were removed on April 10, 2005

This finding is greater than minor because it is associated with the design control attribute of the Barrier Integrity Cornerstone and affects the cornerstone objective of providing reasonable assurance that physical design barriers (i.e., fuel cladding) protect the public from radionuclide releases caused by events. This finding is of very low safety significance because it could affect the fuel cladding, but could not effect the integrity of the reactor cooling system. The cause of this finding is identified as a performance aspect of the human performance cross-cutting area, in that the cause was attributed to a lack of sufficient questioning attitude from engineering personnel, related to the impact of a parameter change on all system output responses.

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

---

## **Emergency Preparedness**

---

## **Occupational Radiation Safety**

---

## **Public Radiation Safety**

---

## **Physical Protection**

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

---

## Miscellaneous

**Significance:** N/A Aug 27, 2004

Identified By: NRC

Item Type: FIN Finding

### **Results of Brunswick Unit 1 Loss of Offsite Power Special Inspection**

A special inspection was conducted following a Brunswick Unit 1 Loss of Offsite power on August 14, 2004. The inspectors determined: (1) The cause of the loss-of-offsite power was the internal failure of a switchyard breaker as it responded to a line fault outside the unit's switchyard: that failure led to loss of power on the 1B bus, which caused, in turn, a loss of power to the unit 1 startup transformer, and the loss of both recirculation pumps. (2) The site switchyard design and configuration complied with General Design Criterion 17. The inspectors noted that changes could be made in the switchyard configuration and some switchyard equipment which could significantly reduce the unit's vulnerability to similar events in the future. The licensee initiated efforts to review and evaluate enhancements. (3) A load-shed permissive HGA relay on emergency bus 1 failed when the relay dust cover prevented the relay armature from actuating. Several loads were not shed from the bus before emergency diesel generator (EDG)-1 picked up the loads on that bus. Upon identifying the relay problem, the licensee corrected the involved relay problem, completed an adequate operability determination of EDG-1 and also performed the Technical Specifications-required common-cause analysis of the other EDGs. (4) To verify that no other important HGA relays had mispositioned dust covers, the licensee examined a larger population of relays in other applications. The initial relay examination identified a number of conditions that needed to be corrected, however, none of those conditions prevented the proper operation of any relay. Because the initial examination had been completed using an informal methodology, the licensee had not developed documentation that was adequate to support an operability determination. Some Operations personnel and management were not aware of how the identified relay conditions had been addressed. The licensee subsequently re-examined the subject relays, using a more formal and approved process. The re-examination was completed and the operability determination was formally documented prior to continuing the unit restart. Inspection Report# : [2004011\(pdf\)](#)

Last modified : August 24, 2005

# Brunswick 1

## 3Q/2005 Plant Inspection Findings

---

### Initiating Events



**Significance:** Jun 30, 2005

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

#### **INAPPROPRIATE USE OF TECHNICAL SPECIFICATION 3.0.5 IN MODE 5 OPERATIONS**

Green. A self-revealing non-cited violation of Technical Specification (TS) 3.0.5., which allows some inoperable equipment, declared as such through a TS Action, to be returned to service solely for the purpose of demonstrating operability, was identified for failure to properly utilize this TS when returning a control rod to service following maintenance with Unit 1 in Mode 5 (Refueling). This resulted in the failure to meet the required actions of TS 3.9.2, Refuel Position One-Rod-Out Interlock, and TS 3.9.4, Control Rod Position Indication, with the unit in Mode 5.

The finding is greater than minor because it is associated with the equipment configuration control attribute of the Initiating Events Cornerstone and affects the cornerstone objective of limiting the likelihood of events that upset plant stability and challenge critical safety functions while shutdown. This finding is of very low safety significance because, using Appendix G of the SDP, it did not constitute a finding that required quantitative assessment. The cause of this finding is a performance aspect of the human performance cross-cutting area, in that the cause was attributed to operator knowledge of the requirements of TS 3.0.5 and communication errors between Maintenance and Operations.

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



**Significance:** Jun 30, 2005

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

#### **INADEQUATE CONDENSATE SYSTEM OPERATING PROCEDURE**

Green. A self-revealing non-cited violation of Technical Specification (TS) 5.4.1.a. Procedures, was identified for failure to provide adequate condensate system procedural guidance to preclude the reactor feed pumps from tripping on low suction pressure during plant operations. The inadequate procedures contributed to a Unit 2 automatic reactor scram on April 9, 2005, due to low reactor vessel level.

The finding is greater than minor because it is associated with the procedure quality attribute of the Initiating Events Cornerstone and affects the cornerstone objective of limiting the likelihood of events that upset plant stability and challenge critical safety functions during power operations. This finding is of very low safety significance because, although it contributes to the likelihood of a reactor trip, it does not contribute to the likelihood that mitigation equipment or functions would be unavailable.

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

---

### Mitigating Systems



**Significance:** Sep 30, 2005

Identified By: Self-Revealing

Item Type: FIN Finding

#### **Failure to Properly Control the EDG Control Switch**

Green. A self-revealing finding was identified for failure to properly control the emergency diesel generator control switch to assure reliability of the offsite power source to the plant's emergency buses. As a result, Brunswick Units 1 and 2 experienced a loss of power to emergency bus E-1 on May 12, 2005 when it's feeder breaker from the offsite power source opened following a voltage transient initiated by a fault on another emergency bus. The licensee entered this issue into the corrective action program.

This finding is greater than minor because it is associated with the operating equipment lineup attribute of the Mitigating Systems Cornerstone and affects the cornerstone objective of ensuring the reliability of systems that respond to initiating events to prevent undesirable consequences. The finding is of very low safety significance because it did not represent an actual loss of safety function of a single train for greater than the TS allowed outage time.

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



**Significance:** Aug 12, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Generate an A/R for Abnormal Conditions Identified in Work Orders**

A non-cited violation (NCV) of 10CFR50, Appendix B, Criterion XVI was identified because the licensee failed to promptly identify a condition adverse to quality in that licensee personnel failed to generate an Action Request (A/R) for abnormal conditions identified in the comment section of work orders associated with OPM-GEN005, "Diesel Generator Electrical Inspections."

This finding is greater than minor because it is associated with the reactor safety Mitigating System Cornerstone and affects the configuration control attribute of 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). A phase one evaluation determined that the performance deficiency was of very low safety significance because the abnormal conditions did not effect the operability of the affected components. This finding also involved the cross-cutting aspects of problem identification and resolution (PI&R) in that the licensee failed to properly identify or address these issues in the corrective action system. [An additional example of this NCV was identified in IR 05000325,324/2005004 with the additional title of Failure to Identify a Vulnerability to Spurious Tripping of EDG during the Start Sequence.]

Inspection Report# : [2005010\(pdf\)](#)

**G**

**Significance:** Mar 31, 2005

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

**Failure to identify Condition Adverse to Quality on Emergency Bus Relay Covers**

Green. A self-revealing finding and non-cited violation of 10CFR50, Appendix B, Criterion XVI, was identified for failure to promptly identify a condition adverse to quality associated with mispositioned relay covers for several General Electric HGA relays on emergency bus E-1. The finding resulted in relay 1-E1-AE7-CL-B, which provides a confirmatory bus strip signal to the emergency diesel generator (EDG) 1 output breaker, being failed in the operated state. This caused emergency diesel generator EDG 1 to be in an inoperable condition from March 29, 2004 until the condition was discovered on August 16, 2004. The finding is greater than minor because it is associated with equipment performance and affected the functional capability of the system to respond to initiating events. The finding was evaluated using NRC Inspection Manual Chapter 0609 Appendix A. A Phase 3 Significance Determination Process analysis determined this finding to be of very low safety significance based on the limited number of hours the EDG load rating would have been exceeded. The finding is related to the cross-cutting area of problem identification and resolution due to the failure to identify a condition adverse to quality.

Inspection Report# : [2005002\(pdf\)](#)

**G**

**Significance:** Dec 31, 2004

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

**Inadequate Storage of Standby Liquid Control System Nitrogen Accumulator Repair Kits**

Green. A self-revealing finding and non-cited violation of 10CFR50, Appendix B, Criterion XIII, was identified for failure to store Unit 1 standby liquid control system (SLC) nitrogen accumulator repair kits in a condition which did not prevent deterioration. The licensee's material evaluation of the commercially dedicated part did not include special storage requirements and, therefore, the parts were stored, from at least 1999 until March 2004, in a condition which made them susceptible to developing leaks along folds in the nitrogen accumulator bladders. This resulted in accumulator nitrogen leakage into the Unit 1 standby liquid control system and was determined to be the cause of the 1 B standby liquid control pump being discovered in an inoperable condition on July 8, 2004.

This finding is more than minor because it is associated with equipment performance and affected the functional capability of the system to respond to initiating events. This finding was evaluated using MC 0609 Appendix A. A Phase 3 Significance Determination Process analysis determined this finding to be of very low safety significance (Green) because the redundant train of the Unit 1 SLC system remained operable. The licensee's corrective actions included replacing all of the affected nitrogen accumulator bladders.

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

## Barrier Integrity

**G**

**Significance:** Jun 30, 2005

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

**INADEQUATE DESIGN CONTROL FOR DIGITAL FEEDWATER CONTROL SYSTEM MODIFICATION**

Green. A self-revealing non-cited violation of 10CFR50, Appendix B, Criterion III, Design Control, was identified for failure to assure that Technical Specification (TS) requirements for the feedwater and main turbine high water trip function remained operable with the introduction of a filtered time constant for reactor vessel level. As a result, instrumentation associated with TS 3.3.2.2, Feedwater and Main Turbine High Water Level Trip Instrumentation, were inoperable from April 30, 2004 for Unit 1 and April 30, 2003 for Unit 2 until the time constant filters were removed on April 10, 2005

This finding is greater than minor because it is associated with the design control attribute of the Barrier Integrity Cornerstone and affects the cornerstone objective of providing reasonable assurance that physical design barriers (i.e., fuel cladding) protect the public from radionuclide releases caused by events. This finding is of very low safety significance because it could affect the fuel cladding, but could not effect the integrity of the reactor cooling system. The cause of this finding is identified as a performance aspect of the human performance cross-cutting area, in that the cause was attributed to a lack of sufficient questioning attitude from engineering personnel, related to the impact of a parameter change on all system output responses.

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

---

## **Emergency Preparedness**

---

## **Occupational Radiation Safety**

---

## **Public Radiation Safety**

---

## **Physical Protection**

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

---

## **Miscellaneous**

Last modified : November 30, 2005

# Brunswick 1

## 4Q/2005 Plant Inspection Findings

---

### Initiating Events

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

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

**Inadequate Clearance Order Causes Condensate System Transient**

Green. A self-revealing non-cited violation of Technical Specification 5.4.1, Administrative Controls (Procedures), was identified for failure to establish an adequate clearance order procedure in preparation for maintenance activities on the Unit 1 B condensate booster pump minimum flow valve. Implementation of this inadequate clearance order procedure on November 9, 2005 resulted in a reduction in condensate system pressure and a plant transient which challenged control room operators. The licensee entered the issue into the corrective action program for resolution. Immediate actions were the operators entered the appropriate abnormal operating procedure and stabilized the plant. In addition, a root cause investigation was performed and the responsible individuals were coached relative to their performance.

This finding is greater than minor because it is associated with system configuration control and affected the Initiating Events Cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during power operations. Although the event contributed to the likelihood of a reactor trip, the finding is of very low safety significance because it did not contribute to the likelihood that mitigation equipment or functions would be unavailable. The cause of this finding is identified as a performance aspect of the human performance cross-cutting area, in that personnel taking shortcuts to expedite the writing of the clearance order procedure contributed to the transient.

Inspection Report# : [2005005\(pdf\)](#)**G****Significance:** Jun 30, 2005

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

**INAPPROPRIATE USE OF TECHNICAL SPECIFICATION 3.0.5 IN MODE 5 OPERATIONS**

Green. A self-revealing non-cited violation of Technical Specification (TS) 3.0.5., which allows some inoperable equipment, declared as such through a TS Action, to be returned to service solely for the purpose of demonstrating operability, was identified for failure to properly utilize this TS when returning a control rod to service following maintenance with Unit 1 in Mode 5 (Refueling). This resulted in the failure to meet the required actions of TS 3.9.2, Refuel Position One-Rod-Out Interlock, and TS 3.9.4, Control Rod Position Indication, with the unit in Mode 5.

The finding is greater than minor because it is associated with the equipment configuration control attribute of the Initiating Events Cornerstone and affects the cornerstone objective of limiting the likelihood of events that upset plant stability and challenge critical safety functions while shutdown. This finding is of very low safety significance because, using Appendix G of the SDP, it did not constitute a finding that required quantitative assessment. The cause of this finding is a performance aspect of the human performance cross-cutting area, in that the cause was attributed to operator knowledge of the requirements of TS 3.0.5 and communication errors between Maintenance and Operations.

Inspection Report# : [2005003\(pdf\)](#)**G****Significance:** Jun 30, 2005

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

**INADEQUATE CONDENSATE SYSTEM OPERATING PROCEDURE**

Green. A self-revealing non-cited violation of Technical Specification (TS) 5.4.1.a. Procedures, was identified for failure to provide adequate condensate system procedural guidance to preclude the reactor feed pumps from tripping on low suction pressure during plant operations. The inadequate procedures contributed to a Unit 2 automatic reactor scram on April 9, 2005, due to low reactor vessel level.

The finding is greater than minor because it is associated with the procedure quality attribute of the Initiating Events Cornerstone and affects the cornerstone objective of limiting the likelihood of events that upset plant stability and challenge critical safety functions during power operations. This finding is of very low safety significance because, although it contributes to the likelihood of a reactor trip, it does not contribute to the likelihood that mitigation equipment or functions would be unavailable.

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

---

## Mitigating Systems

**Significance:**  Nov 30, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

### Inadequate Procedural Controls for RHR System Venting

Green. A Green NRC identified, non-cited violation (NCV) of Technical Specification (TS) 5.4.1.a was identified for failure to establish written procedures to direct venting of the residual heat removal (RHR) system in response to increasing system pressure. Instead, system venting was directed through informal communications, such as e-mails and telephone calls. The licensee entered the deficiency associated with lack of procedural guidance into their Action Request Program for resolution.

This finding is more than minor because it affected the ability of the licensee to properly control the venting of the RHR system and was associated with the Mitigating Systems Cornerstone and the respective attribute of procedure quality. The finding is of very low safety significance because there was no actual loss of safety function. A contributing cause of the finding is related to the cross-cutting element of problem identification and resolution.

Inspection Report# : [2005007\(pdf\)](#)

**Significance:**  Sep 30, 2005

Identified By: Self-Revealing

Item Type: FIN Finding

### Failure to Properly Control the EDG Control Switch

Green. A self-revealing finding was identified for failure to properly control the emergency diesel generator control switch to assure reliability of the offsite power source to the plant's emergency buses. As a result, Brunswick Units 1 and 2 experienced a loss of power to emergency bus E-1 on May 12, 2005 when it's feeder breaker from the offsite power source opened following a voltage transient initiated by a fault on another emergency bus. The licensee entered this issue into the corrective action program.

This finding is greater than minor because it is associated with the operating equipment lineup attribute of the Mitigating Systems Cornerstone and affects the cornerstone objective of ensuring the reliability of systems that respond to initiating events to prevent undesirable consequences. The finding is of very low safety significance because it did not represent an actual loss of safety function of a single train for greater than the TS allowed outage time.

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

**Significance:**  Aug 12, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

### Failure to Generate an A/R for Abnormal Conditions Identified in Work Orders

A non-cited violation (NCV) of 10CFR50, Appendix B, Criterion XVI was identified because the licensee failed to promptly identify a condition adverse to quality in that licensee personnel failed to generate an Action Request (A/R) for abnormal conditions identified in the comment section of work orders associated with OPM-GEN005, "Diesel Generator Electrical Inspections."

This finding is greater than minor because it is associated with the reactor safety Mitigating System Cornerstone and affects the configuration control attribute of 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). A phase one evaluation determined that the performance deficiency was of very low safety significance because the abnormal conditions did not effect the operability of the affected components. This finding also involved the cross-cutting aspects of problem identification and resolution (PI&R) in that the licensee failed to properly identify or address these issues in the corrective action system. [An additional example of this NCV was identified in IR 05000325,324/2005004 with the additional title of Failure to Identify a Vulnerability to Spurious Tripping of EDG during the Start Sequence.]

Inspection Report# : [2005010\(pdf\)](#)

**Significance:**  Mar 31, 2005

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

### Failure to identify Condition Adverse to Quality on Emergency Bus Relay Covers

Green. A self-revealing finding and non-cited violation of 10CFR50, Appendix B, Criterion XVI, was identified for failure to promptly identify a condition adverse to quality associated with mispositioned relay covers for several General Electric HGA relays on emergency bus E-1. The finding resulted in relay 1-E1-AE7-CL-B, which provides a confirmatory bus strip signal to the emergency diesel generator (EDG) 1 output breaker, being failed in the operated state. This caused emergency diesel generator EDG 1 to be in an inoperable condition from March 29, 2004 until the condition was discovered on August 16, 2004. The finding is greater than minor because it is associated with equipment performance and affected the functional capability of the system to respond to initiating events. The finding was evaluated using NRC Inspection Manual Chapter 0609 Appendix A. A Phase 3 Significance Determination Process analysis determined this finding to be of very low safety significance based on the limited number of hours the EDG load rating would have been exceeded. The finding is related to the cross-

cutting area of problem identification and resolution due to the failure to identify a condition adverse to quality.  
Inspection Report# : [2005002\(pdf\)](#)

---

## Barrier Integrity

**Significance:** **G** Jun 30, 2005

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

### INADEQUATE DESIGN CONTROL FOR DIGITAL FEEDWATER CONTROL SYSTEM MODIFICATION

Green. A self-revealing non-cited violation of 10CFR50, Appendix B, Criterion III, Design Control, was identified for failure to assure that Technical Specification (TS) requirements for the feedwater and main turbine high water trip function remained operable with the introduction of a filtered time constant for reactor vessel level. As a result, instrumentation associated with TS 3.3.2.2, Feedwater and Main Turbine High Water Level Trip Instrumentation, were inoperable from April 30, 2004 for Unit 1 and April 30, 2003 for Unit 2 until the time constant filters were removed on April 10, 2005

This finding is greater than minor because it is associated with the design control attribute of the Barrier Integrity Cornerstone and affects the cornerstone objective of providing reasonable assurance that physical design barriers (i.e., fuel cladding) protect the public from radionuclide releases caused by events. This finding is of very low safety significance because it could affect the fuel cladding, but could not effect the integrity of the reactor cooling system. The cause of this finding is identified as a performance aspect of the human performance cross-cutting area, in that the cause was attributed to a lack of sufficient questioning attitude from engineering personnel, related to the impact of a parameter change on all system output responses.

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

---

## Emergency Preparedness

---

## Occupational Radiation Safety

---

## Public Radiation Safety

---

## Physical Protection

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

---

## Miscellaneous

**Significance:** N/A Dec 16, 2005

Identified By: NRC

Item Type: FIN Finding

### PROBLEM IDENTIFICATION AND RESOLUTION

The inspectors determined that the licensee was effective in identifying problems and entering them into the Corrective Action Program (CAP). One example was noted where new action requests/nuclear condition reports (ARs/NCRs) were not written for current failures, instead the issue was tracked with an old NCR. Problem evaluation and corrective action implementation were generally effective with deficiencies noted in corrective action timeliness and in the quality and timeliness of investigations. The inspectors noted several examples where significant adverse conditions had recurred, indicating that all root/contributing causes had not been determined or that corrective actions had not provided timely resolution. Significant investigations were ongoing and recent CAP process changes were initiated by management to address these issues. The inspectors did not identify any new CAP problems not already being addressed by the licensee. The inspectors determined that the

site staff felt free to raise issues and that management wanted issues placed into the CAP for resolution. Some engineering department staffing and CAP workload distribution concerns were noted in the employee concerns program (ECP). The ECP coordinator and management were already addressing the underlying issues related to these concerns and their potential affect on plant equipment. The inspectors did not identify any reluctance to report safety concerns.

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

Last modified : March 03, 2006

# Brunswick 1

## 1Q/2006 Plant Inspection Findings

---

### Initiating Events

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

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

**Failure to Follow Procedure Resulting in Condensate System Transient**

A self-revealing non-cited violation of Technical Specification 5.4.1, Administrative Controls (Procedures), was identified for failure to properly implement requirements for procedure adherence when rinsing a Unit 1 condensate deep bed demineralizer. Procedure steps for starting a third condensate pump when rinsing a condensate deep bed demineralizer at high power were marked N/A (not applicable) and the procedure was performed prior to obtaining supervisor concurrence. As a result, performance of the rinsing procedure on January 4, 2006, resulted in a reduction in condensate system pressure and a plant transient which challenged control room operators. The licensee entered the issue into the corrective action program for resolution. Operators took immediate actions by entering the appropriate abnormal operating procedure and stabilized the plant. In addition, a root cause investigation was performed and the responsible individuals were coached relative to their performance.

This finding is greater than minor because it is associated with system configuration control and affected the Initiating Events Cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during power operations. Although the event contributed to the likelihood of a reactor trip, the finding is of very low safety significance because it did not contribute to the likelihood that mitigation equipment or functions would be unavailable. The cause of this finding is inadequate use of a condensate system procedure and inadequate adherence to an administrative procedure, and is therefore, identified as a performance aspect of the Human Performance cross-cutting area. (Section 40A2.2).

Inspection Report# : [2006002\(pdf\)](#)**G****Significance:** Dec 31, 2005

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

**Inadequate Clearance Order Causes Condensate System Transient**

Green. A self-revealing non-cited violation of Technical Specification 5.4.1, Administrative Controls (Procedures), was identified for failure to establish an adequate clearance order procedure in preparation for maintenance activities on the Unit 1 B condensate booster pump minimum flow valve. Implementation of this inadequate clearance order procedure on November 9, 2005 resulted in a reduction in condensate system pressure and a plant transient which challenged control room operators. The licensee entered the issue into the corrective action program for resolution. Immediate actions were the operators entered the appropriate abnormal operating procedure and stabilized the plant. In addition, a root cause investigation was performed and the responsible individuals were coached relative to their performance.

This finding is greater than minor because it is associated with system configuration control and affected the Initiating Events Cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during power operations. Although the event contributed to the likelihood of a reactor trip, the finding is of very low safety significance because it did not contribute to the likelihood that mitigation equipment or functions would be unavailable. The cause of this finding is identified as a performance aspect of the human performance cross-cutting area, in that personnel taking shortcuts to expedite the writing of the clearance order procedure contributed to the transient.

Inspection Report# : [2005005\(pdf\)](#)**G****Significance:** Jun 30, 2005

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

**INAPPROPRIATE USE OF TECHNICAL SPECIFICATION 3.0.5 IN MODE 5 OPERATIONS**

Green. A self-revealing non-cited violation of Technical Specification (TS) 3.0.5., which allows some inoperable equipment, declared as such through a TS Action, to be returned to service solely for the purpose of demonstrating operability, was identified for failure to properly utilize this TS when returning a control rod to service following maintenance with Unit 1 in Mode 5 (Refueling). This resulted in the failure to meet the required actions of TS 3.9.2, Refuel Position One-Rod-Out Interlock, and TS 3.9.4, Control Rod Position Indication, with the unit in Mode 5.

The finding is greater than minor because it is associated with the equipment configuration control attribute of the Initiating Events Cornerstone

and affects the cornerstone objective of limiting the likelihood of events that upset plant stability and challenge critical safety functions while shutdown. This finding is of very low safety significance because, using Appendix G of the SDP, it did not constitute a finding that required quantitative assessment. The cause of this finding is a performance aspect of the human performance cross-cutting area, in that the cause was attributed to operator knowledge of the requirements of TS 3.0.5 and communication errors between Maintenance and Operations.

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

**G**

**Significance:** Jun 30, 2005

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

#### **INADEQUATE CONDENSATE SYSTEM OPERATING PROCEDURE**

Green. A self-revealing non-cited violation of Technical Specification (TS) 5.4.1.a. Procedures, was identified for failure to provide adequate condensate system procedural guidance to preclude the reactor feed pumps from tripping on low suction pressure during plant operations. The inadequate procedures contributed to a Unit 2 automatic reactor scram on April 9, 2005, due to low reactor vessel level.

The finding is greater than minor because it is associated with the procedure quality attribute of the Initiating Events Cornerstone and affects the cornerstone objective of limiting the likelihood of events that upset plant stability and challenge critical safety functions during power operations. This finding is of very low safety significance because, although it contributes to the likelihood of a reactor trip, it does not contribute to the likelihood that mitigation equipment or functions would be unavailable.

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

---

## Mitigating Systems

**G**

**Significance:** Mar 31, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Failure to Appropriately Evaluate Core Spray Header Piping Flaw**

An NRC-identified non-cited violation of Technical Specification 3.5.1, Emergency Core Cooling Systems (ECCS) and Reactor Core Isolation Cooling System, was identified for failure to appropriately evaluate and take corrective measures for a pre-existing flaw on a Unit 1 core spray loop B pipe weld (in-vessel) in accordance with Boiling Water Reactor Vessel and Internals Project guidelines which was committed to by the licensee. This resulted in the Unit 1 core spray loop B subsystem being inoperable for an indeterminate amount of time. The licensee entered the issue into the corrective action program, reevaluated the flaw and implemented a permanent repair of the pipe weld.

This finding is greater than minor because it is associated with core spray system equipment performance and affected the Mitigating Systems Cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. This finding was determined to be of very low safety significance based on core spray loop B being conservatively assumed to be capable of mitigating all analyzed pipe breaks during the time period assumed, except the large break LOCA core damage sequence (Section 1R22).

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

**G**

**Significance:** Nov 30, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Inadequate Procedural Controls for RHR System Venting**

Green. A Green NRC identified, non-cited violation (NCV) of Technical Specification (TS) 5.4.1.a was identified for failure to establish written procedures to direct venting of the residual heat removal (RHR) system in response to increasing system pressure. Instead, system venting was directed through informal communications, such as e-mails and telephone calls. The licensee entered the deficiency associated with lack of procedural guidance into their Action Request Program for resolution.

This finding is more than minor because it affected the ability of the licensee to properly control the venting of the RHR system and was associated with the Mitigating Systems Cornerstone and the respective attribute of procedure quality. The finding is of very low safety significance because there was no actual loss of safety function. A contributing cause of the finding is related to the cross-cutting element of problem identification and resolution.

Inspection Report# : [2005007\(pdf\)](#)

**G**

**Significance:** Sep 30, 2005

Identified By: Self-Revealing

Item Type: FIN Finding

**Failure to Properly Control the EDG Control Switch**

Green. A self-revealing finding was identified for failure to properly control the emergency diesel generator control switch to assure reliability of the offsite power source to the plant's emergency buses. As a result, Brunswick Units 1 and 2 experienced a loss of power to emergency bus E-1 on May 12, 2005 when it's feeder breaker from the offsite power source opened following a voltage transient initiated by a fault on another emergency bus. The licensee entered this issue into the corrective action program.

This finding is greater than minor because it is associated with the operating equipment lineup attribute of the Mitigating Systems Cornerstone and affects the cornerstone objective of ensuring the reliability of systems that respond to initiating events to prevent undesirable consequences. The finding is of very low safety significance because it did not represent an actual loss of safety function of a single train for greater than the TS allowed outage time.

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

**G**

**Significance:** Aug 12, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Generate an A/R for Abnormal Conditions Identified in Work Orders**

A non-cited violation (NCV) of 10CFR50, Appendix B, Criterion XVI was identified because the licensee failed to promptly identify a condition adverse to quality in that licensee personnel failed to generate an Action Request (A/R) for abnormal conditions identified in the comment section of work orders associated with OPM-GEN005, "Diesel Generator Electrical Inspections."

This finding is greater than minor because it is associated with the reactor safety Mitigating System Cornerstone and affects the configuration control attribute of 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). A phase one evaluation determined that the performance deficiency was of very low safety significance because the abnormal conditions did not effect the operability of the affected components. This finding also involved the cross-cutting aspects of problem identification and resolution (PI&R) in that the licensee failed to properly identify or address these issues in the corrective action system. [An additional example of this NCV was identified in IR 05000325,324/2005004 with the additional title of Failure to Identify a Vulnerability to Spurious Tripping of EDG during the Start Sequence.]

Inspection Report# : [2005010\(pdf\)](#)

---

## Barrier Integrity

**G**

**Significance:** Jun 30, 2005

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

**INADEQUATE DESIGN CONTROL FOR DIGITAL FEEDWATER CONTROL SYSTEM MODIFICATION**

Green. A self-revealing non-cited violation of 10CFR50, Appendix B, Criterion III, Design Control, was identified for failure to assure that Technical Specification (TS) requirements for the feedwater and main turbine high water trip function remained operable with the introduction of a filtered time constant for reactor vessel level. As a result, instrumentation associated with TS 3.3.2.2, Feedwater and Main Turbine High Water Level Trip Instrumentation, were inoperable from April 30, 2004 for Unit 1 and April 30, 2003 for Unit 2 until the time constant filters were removed on April 10, 2005

This finding is greater than minor because it is associated with the design control attribute of the Barrier Integrity Cornerstone and affects the cornerstone objective of providing reasonable assurance that physical design barriers (i.e., fuel cladding) protect the public from radionuclide releases caused by events. This finding is of very low safety significance because it could affect the fuel cladding, but could not effect the integrity of the reactor cooling system. The cause of this finding is identified as a performance aspect of the human performance cross-cutting area, in that the cause was attributed to a lack of sufficient questioning attitude from engineering personnel, related to the impact of a parameter change on all system output responses.

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

---

## Emergency Preparedness

---

## Occupational Radiation Safety

---

## Public Radiation Safety

---

### Physical Protection

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

---

### Miscellaneous

**Significance:** N/A Dec 16, 2005

Identified By: NRC

Item Type: FIN Finding

#### **PROBLEM IDENTIFICATION AND RESOLUTION**

The inspectors determined that the licensee was effective in identifying problems and entering them into the Corrective Action Program (CAP). One example was noted where new action requests/nuclear condition reports (ARs/NCRs) were not written for current failures, instead the issue was tracked with an old NCR. Problem evaluation and corrective action implementation were generally effective with deficiencies noted in corrective action timeliness and in the quality and timeliness of investigations. The inspectors noted several examples where significant adverse conditions had recurred, indicating that all root/contributing causes had not been determined or that corrective actions had not provided timely resolution. Significant investigations were ongoing and recent CAP process changes were initiated by management to address these issues. The inspectors did not identify any new CAP problems not already being addressed by the licensee. The inspectors determined that the site staff felt free to raise issues and that management wanted issues placed into the CAP for resolution. Some engineering department staffing and CAP workload distribution concerns were noted in the employee concerns program (ECP). The ECP coordinator and management were already addressing the underlying issues related to these concerns and their potential affect on plant equipment. The inspectors did not identify any reluctance to report safety concerns.

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

Last modified : May 25, 2006

## Brunswick 1

### 2Q/2006 Plant Inspection Findings

---

#### Initiating Events

G**Significance:** Mar 31, 2006

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

**Failure to Follow Procedure Resulting in Condensate System Transient**

A self-revealing non-cited violation of Technical Specification 5.4.1, Administrative Controls (Procedures), was identified for failure to properly implement requirements for procedure adherence when rinsing a Unit 1 condensate deep bed demineralizer. Procedure steps for starting a third condensate pump when rinsing a condensate deep bed demineralizer at high power were marked N/A (not applicable) and the procedure was performed prior to obtaining supervisor concurrence. As a result, performance of the rinsing procedure on January 4, 2006, resulted in a reduction in condensate system pressure and a plant transient which challenged control room operators. The licensee entered the issue into the corrective action program for resolution. Operators took immediate actions by entering the appropriate abnormal operating procedure and stabilized the plant. In addition, a root cause investigation was performed and the responsible individuals were coached relative to their performance.

This finding is greater than minor because it is associated with system configuration control and affected the Initiating Events Cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during power operations. Although the event contributed to the likelihood of a reactor trip, the finding is of very low safety significance because it did not contribute to the likelihood that mitigation equipment or functions would be unavailable. The cause of this finding is inadequate use of a condensate system procedure and inadequate adherence to a administrative procedure, and is therefore, identified as a performance aspect of the Human Performance cross-cutting area. (Section 40A2.2).

Inspection Report# : [2006002\(pdf\)](#)G**Significance:** Dec 31, 2005

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

**Inadequate Clearance Order Causes Condensate System Transient**

Green. A self-revealing non-cited violation of Technical Specification 5.4.1, Administrative Controls (Procedures), was identified for failure to establish an adequate clearance order procedure in preparation for maintenance activities on the Unit 1 B condensate booster pump minimum flow valve. Implementation of this inadequate clearance order procedure on November 9, 2005 resulted in a reduction in condensate system pressure and a plant transient which challenged control room operators. The licensee entered the issue into the corrective action program for resolution. Immediate actions were the operators entered the appropriate abnormal operating procedure and stabilized the plant. In addition, a root cause investigation was performed and the responsible individuals were coached relative to their performance.

This finding is greater than minor because it is associated with system configuration control and affected the Initiating Events Cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during power operations. Although the event contributed to the likelihood of a reactor trip, the finding is of very low safety significance because it did not contribute to the likelihood that mitigation equipment or functions would be unavailable. The cause of this finding is identified as a performance aspect of the human performance cross-cutting area, in that personnel taking shortcuts to expedite the writing of the clearance order procedure contributed to the transient.

Inspection Report# : [2005005\(pdf\)](#)

---

#### Mitigating Systems

G**Significance:** Mar 31, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Appropriately Evaluate Core Spray Header Piping Flaw**

An NRC-identified non-cited violation of Technical Specification 3.5.1, Emergency Core Cooling Systems (ECCS) and Reactor Core Isolation Cooling System, was identified for failure to appropriately evaluate and take corrective measures for a pre-existing flaw on a Unit 1 core spray loop B pipe weld (in-vessel) in accordance with Boiling Water Reactor Vessel and Internals Project guidelines which was committed to by the licensee. This resulted in the Unit 1 core spray loop B subsystem being inoperable for an indeterminate amount of time. The licensee entered the issue into the corrective action program, reevaluated the flaw and implemented a permanent repair of the pipe weld.

This finding is greater than minor because it is associated with core spray system equipment performance and affected the Mitigating Systems Cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. This finding was determined to be of very low safety significance based on core spray loop B being conservatively assumed to be capable of mitigating all analyzed pipe breaks during the time period assumed, except the large break LOCA core damage sequence (Section 1R22).

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



**Significance:** Nov 30, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Inadequate Procedural Controls for RHR System Venting**

Green. A Green NRC identified, non-cited violation (NCV) of Technical Specification (TS) 5.4.1.a was identified for failure to establish written procedures to direct venting of the residual heat removal (RHR) system in response to increasing system pressure. Instead, system venting was directed through informal communications, such as e-mails and telephone calls. The licensee entered the deficiency associated with lack of procedural guidance into their Action Request Program for resolution.

This finding is more than minor because it affected the ability of the licensee to properly control the venting of the RHR system and was associated with the Mitigating Systems Cornerstone and the respective attribute of procedure quality. The finding is of very low safety significance because there was no actual loss of safety function. A contributing cause of the finding is related to the cross-cutting element of problem identification and resolution.

Inspection Report# : [2005007\(pdf\)](#)



**Significance:** Sep 30, 2005

Identified By: Self-Revealing

Item Type: FIN Finding

#### **Failure to Properly Control the EDG Control Switch**

Green. A self-revealing finding was identified for failure to properly control the emergency diesel generator control switch to assure reliability of the offsite power source to the plant's emergency buses. As a result, Brunswick Units 1 and 2 experienced a loss of power to emergency bus E-1 on May 12, 2005 when it's feeder breaker from the offsite power source opened following a voltage transient initiated by a fault on another emergency bus. The licensee entered this issue into the corrective action program.

This finding is greater than minor because it is associated with the operating equipment lineup attribute of the Mitigating Systems Cornerstone and affects the cornerstone objective of ensuring the reliability of systems that respond to initiating events to prevent undesirable consequences. The finding is of very low safety significance because it did not represent an actual loss of safety function of a single train for greater than the TS allowed outage time.

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



**Significance:** Aug 12, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Failure to Generate an A/R for Abnormal Conditions Identified in Work Orders**

A non-cited violation (NCV) of 10CFR50, Appendix B, Criterion XVI was identified because the licensee failed to promptly identify a condition adverse to quality in that licensee personnel failed to generate an Action Request (A/R) for abnormal conditions identified in the comment section of work orders associated with OPM-GEN005, "Diesel Generator Electrical Inspections."

This finding is greater than minor because it is associated with the reactor safety Mitigating System Cornerstone and affects the configuration control attribute of 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). A phase one evaluation determined that the performance deficiency was of very low safety significance because the abnormal conditions did not effect the operability of the affected components. This finding also involved the cross-cutting aspects of problem identification and resolution (PI&R) in that the licensee failed to properly identify or address these issues in the corrective action system. [An additional example of this NCV was identified in IR 05000325,324/2005004 with the additional title of Failure to Identify a Vulnerability to Spurious Tripping of EDG during the Start Sequence.]

Inspection Report# : [2005010\(pdf\)](#)

## Emergency Preparedness

---

## Occupational Radiation Safety

---

## Public Radiation Safety

---

## Physical Protection

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

---

## Miscellaneous

**Significance:** N/A Dec 16, 2005

Identified By: NRC

Item Type: FIN Finding

### **PROBLEM IDENTIFICATION AND RESOLUTION**

The inspectors determined that the licensee was effective in identifying problems and entering them into the Corrective Action Program (CAP). One example was noted where new action requests/nuclear condition reports (ARs/NCRs) were not written for current failures, instead the issue was tracked with an old NCR. Problem evaluation and corrective action implementation were generally effective with deficiencies noted in corrective action timeliness and in the quality and timeliness of investigations. The inspectors noted several examples where significant adverse conditions had recurred, indicating that all root/contributing causes had not been determined or that corrective actions had not provided timely resolution.

Significant investigations were ongoing and recent CAP process changes were initiated by management to address these issues. The inspectors did not identify any new CAP problems not already being addressed by the licensee. The inspectors determined that the site staff felt free to raise issues and that management wanted issues placed into the CAP for resolution. Some engineering department staffing and CAP workload distribution concerns were noted in the employee concerns program (ECP). The ECP coordinator and management were already addressing the underlying issues related to these concerns and their potential affect on plant equipment. The inspectors did not identify any reluctance to report safety concerns.

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

Last modified : August 02, 2006

# Brunswick 1

## 3Q/2006 Plant Inspection Findings

---

### Initiating Events

**Significance:**  Mar 31, 2006

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

#### **Failure to Follow Procedure Resulting in Condensate System Transient**

A self-revealing non-cited violation of Technical Specification 5.4.1, Administrative Controls (Procedures), was identified for failure to properly implement requirements for procedure adherence when rinsing a Unit 1 condensate deep bed demineralizer. Procedure steps for starting a third condensate pump when rinsing a condensate deep bed demineralizer at high power were marked N/A (not applicable) and the procedure was performed prior to obtaining supervisor concurrence. As a result, performance of the rinsing procedure on January 4, 2006, resulted in a reduction in condensate system pressure and a plant transient which challenged control room operators. The licensee entered the issue into the corrective action program for resolution. Operators took immediate actions by entering the appropriate abnormal operating procedure and stabilized the plant. In addition, a root cause investigation was performed and the responsible individuals were coached relative to their performance.

This finding is greater than minor because it is associated with system configuration control and affected the Initiating Events Cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during power operations. Although the event contributed to the likelihood of a reactor trip, the finding is of very low safety significance because it did not contribute to the likelihood that mitigation equipment or functions would be unavailable. The cause of this finding is inadequate use of a condensate system procedure and inadequate adherence to an administrative procedure, and is therefore, identified as a performance aspect of the Human Performance cross-cutting area. (Section 4OA2.2).

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

**Significance:**  Dec 31, 2005

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

#### **Inadequate Clearance Order Causes Condensate System Transient**

Green. A self-revealing non-cited violation of Technical Specification 5.4.1, Administrative Controls (Procedures), was identified for failure to establish an adequate clearance order procedure in preparation for maintenance activities on the Unit 1 B condensate booster pump minimum flow valve. Implementation of this inadequate clearance order procedure on November 9, 2005 resulted in a reduction in condensate system pressure and a plant transient which challenged control room operators. The licensee entered the issue into the corrective action program for resolution. Immediate actions were the operators entered the appropriate abnormal operating procedure and stabilized the plant. In addition, a root cause investigation was performed and the responsible individuals were coached relative to their performance.

This finding is greater than minor because it is associated with system configuration control and affected the Initiating Events Cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during power operations. Although the event contributed to the likelihood of a reactor trip, the finding is of very low safety significance because it did not contribute to the likelihood that mitigation equipment or functions would be unavailable. The cause of this finding is identified as a performance aspect of the human performance cross-cutting area, in that personnel taking shortcuts to expedite the writing of the clearance order procedure contributed to the transient.

Inspection Report# : [2005005\(pdf\)](#)

---

## Mitigating Systems

**Significance:**  Mar 31, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Appropriately Evaluate Core Spray Header Piping Flaw**

An NRC-identified non-cited violation of Technical Specification 3.5.1, Emergency Core Cooling Systems (ECCS) and Reactor Core Isolation Cooling System, was identified for failure to appropriately evaluate and take corrective measures for a pre-existing flaw on a Unit 1 core spray loop B pipe weld (in-vessel) in accordance with Boiling Water Reactor Vessel and Internals Project guidelines which was committed to by the licensee. This resulted in the Unit 1 core spray loop B subsystem being inoperable for an indeterminate amount of time. The licensee entered the issue into the corrective action program, reevaluated the flaw and implemented a permanent repair of the pipe weld.

This finding is greater than minor because it is associated with core spray system equipment performance and affected the Mitigating Systems Cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. This finding was determined to be of very low safety significance based on core spray loop B being conservatively assumed to be capable of mitigating all analyzed pipe breaks during the time period assumed, except the large break LOCA core damage sequence (Section 1R22).

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

**Significance:**  Nov 30, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

### **Inadequate Procedural Controls for RHR System Venting**

Green. A Green NRC identified, non-cited violation (NCV) of Technical Specification (TS) 5.4.1.a was identified for failure to establish written procedures to direct venting of the residual heat removal (RHR) system in response to increasing system pressure. Instead, system venting was directed through informal communications, such as e-mails and telephone calls. The licensee entered the deficiency associated with lack of procedural guidance into their Action Request Program for resolution.

This finding is more than minor because it affected the ability of the licensee to properly control the venting of the RHR system and was associated with the Mitigating Systems Cornerstone and the respective attribute of procedure quality. The finding is of very low safety significance because there was no actual loss of safety function. A contributing cause of the finding is related to the cross-cutting element of problem identification and resolution.

Inspection Report# : [2005007\(pdf\)](#)

---

## Barrier Integrity

**Significance:**  Sep 30, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Follow Condenser Air Removal and Off-gas Recombiner System Procedure**

An NRC-identified non-cited violation of Technical Specification 5.4.1, Administrative Controls (Procedures), was identified for the failure to adhere to procedure requirements when operators injected service air into the steam jet air ejectors and the offgas flowpath. The initial condition that the service air injection was needed for continued hydrogen water chemistry operation was not met. As a result of this procedure adherence deficiency, the licensee had reduced the ability to monitor for actual fuel cladding damage. The licensee entered the issue into the corrective action program, secured air injection to the steam jet air ejector, and deleted the instructions which allowed service air injection to the steam jet air ejectors.

This finding is more than minor because it involved adherence to procedures associated with fuel cladding integrity and affected the Barrier Integrity Cornerstone to provide reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. The finding was determined to be of very low safety significance because it was only associated with the ability to monitor fuel barrier integrity. This finding was related to the cross-cutting area of Human Performance because the cause was due to failure to adhere to procedures.

Inspection Report# : [2006004\(pdf\)](#)

---

## 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

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

---

## Miscellaneous

**Significance:** N/A Dec 16, 2005

Identified By: NRC

Item Type: FIN Finding

### **PROBLEM IDENTIFICATION AND RESOLUTION**

The inspectors determined that the licensee was effective in identifying problems and entering them into the Corrective Action Program (CAP). One example was noted where new action requests/nuclear condition reports (ARs/NCRs) were not

written for current failures, instead the issue was tracked with an old NCR. Problem evaluation and corrective action implementation were generally effective with deficiencies noted in corrective action timeliness and in the quality and timeliness of investigations. The inspectors noted several examples where significant adverse conditions had recurred, indicating that all root/contributing causes had not been determined or that corrective actions had not provided timely resolution. Significant investigations were ongoing and recent CAP process changes were initiated by management to address these issues. The inspectors did not identify any new CAP problems not already being addressed by the licensee. The inspectors determined that the site staff felt free to raise issues and that management wanted issues placed into the CAP for resolution. Some engineering department staffing and CAP workload distribution concerns were noted in the employee concerns program (ECP). The ECP coordinator and management were already addressing the underlying issues related to these concerns and their potential affect on plant equipment. The inspectors did not identify any reluctance to report safety concerns.

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

Last modified : December 21, 2006

# Brunswick 1

## 4Q/2006 Plant Inspection Findings

---

### Initiating Events

**Significance:**  Mar 31, 2006

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

#### **Failure to Follow Procedure Resulting in Condensate System Transient**

A self-revealing non-cited violation of Technical Specification 5.4.1, Administrative Controls (Procedures), was identified for failure to properly implement requirements for procedure adherence when rinsing a Unit 1 condensate deep bed demineralizer. Procedure steps for starting a third condensate pump when rinsing a condensate deep bed demineralizer at high power were marked N/A (not applicable) and the procedure was performed prior to obtaining supervisor concurrence. As a result, performance of the rinsing procedure on January 4, 2006, resulted in a reduction in condensate system pressure and a plant transient which challenged control room operators. The licensee entered the issue into the corrective action program for resolution. Operators took immediate actions by entering the appropriate abnormal operating procedure and stabilized the plant. In addition, a root cause investigation was performed and the responsible individuals were coached relative to their performance.

This finding is greater than minor because it is associated with system configuration control and affected the Initiating Events Cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during power operations. Although the event contributed to the likelihood of a reactor trip, the finding is of very low safety significance because it did not contribute to the likelihood that mitigation equipment or functions would be unavailable. The cause of this finding is inadequate use of a condensate system procedure and inadequate adherence to an administrative procedure, and is therefore, identified as a performance aspect of the Human Performance cross-cutting area. (Section 4OA2.2).

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

---

### Mitigating Systems

**Significance:**  Dec 31, 2006

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

#### **Failure to Follow Work Management Process**

A self-revealing non-cited violation of Technical Specification 5.4.1, Administrative Controls (Procedures), was identified for failing to follow the work management process for the performance of minor maintenance. Minor maintenance was performed on a Unit 1 instrument air isolation valve to a control rod hydraulic control unit without obtaining senior reactor operator approval. During the maintenance, the valve was inadvertently closed which isolated air to the hydraulic control unit and the associated control rod scrambled. As a result, control room operators were challenged by the reactivity event and subsequent power maneuvers to restore the control rod to the proper position. This issue was entered into the corrective action program for resolution.

The finding was more than minor because it is 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 functions during power operations. This finding is of very low safety significance because it did not contribute to both the likelihood of a reactor trip and the likelihood that mitigating equipment or functions would not be available. This finding had a crosscutting aspect of Human Performance because the control of the work did not keep operations personnel apprised of

work status or the potential operational impact of the work activities (Section 1R12.2).

Inspection Report# : [2006005](#) (*pdf*)

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

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Failure to Appropriately Evaluate Core Spray Header Piping Flaw**

An NRC-identified non-cited violation of Technical Specification 3.5.1, Emergency Core Cooling Systems (ECCS) and Reactor Core Isolation Cooling System, was identified for failure to appropriately evaluate and take corrective measures for a pre-existing flaw on a Unit 1 core spray loop B pipe weld (in-vessel) in accordance with Boiling Water Reactor Vessel and Internals Project guidelines which was committed to by the licensee. This resulted in the Unit 1 core spray loop B subsystem being inoperable for an indeterminate amount of time. The licensee entered the issue into the corrective action program, reevaluated the flaw and implemented a permanent repair of the pipe weld.

This finding is greater than minor because it is associated with core spray system equipment performance and affected the Mitigating Systems Cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. This finding was determined to be of very low safety significance based on core spray loop B being conservatively assumed to be capable of mitigating all analyzed pipe breaks during the time period assumed, except the large break LOCA core damage sequence (Section 1R22).

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

---

## **Barrier Integrity**

**Significance:**  Sep 30, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Failure to Follow Condenser Air Removal and Off-gas Recombiner System Procedure**

An NRC-identified non-cited violation of Technical Specification 5.4.1, Administrative Controls (Procedures), was identified for the failure to adhere to procedure requirements when operators injected service air into the steam jet air ejectors and the offgas flowpath. The initial condition that the service air injection was needed for continued hydrogen

water chemistry operation was not met. As a result of this procedure adherence deficiency, the licensee had reduced the ability to monitor for actual fuel cladding damage. The licensee entered the issue into the corrective action program, secured air injection to the steam jet air ejector, and deleted the instructions which allowed service air injection to the steam jet air ejectors.

This finding is more than minor because it involved adherence to procedures associated with fuel cladding integrity and affected the Barrier Integrity Cornerstone to provide reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. The finding was determined to be of very low safety significance because it was only associated with the ability to monitor fuel barrier integrity. This finding was related to the cross-cutting area of Human Performance because the cause was due to failure to adhere to procedures.

Inspection Report# : [2006004](#) (*pdf*)

---

## Emergency Preparedness

Significance: **G** 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

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

---

## Miscellaneous

Last modified : March 01, 2007

# Brunswick 1

## 1Q/2007 Plant Inspection Findings

---

### Initiating Events

---

### Mitigating Systems

**Significance:** **W** Feb 28, 2007

Identified By: NRC

Item Type: VIO Violation

#### **Failure to Meet TS 3.8.1, AC Sources-Operating**

A preliminary White finding with an apparent violation (AV) of Technical Specification (TS) 3.8.1, AC Sources-Operating, was identified for Unit 1. The finding involved inadequate corrective actions to prevent a repeat failure of the #9 main crankshaft bearing on EDG #1, a failure to follow the foreign material exclusion control procedure during maintenance performed on EDG #1, and the failure to promptly identify and implement adequate actions to prevent emergency diesel generator (EDG) #1 from tripping on low lubricating oil pressure. The finding was determined to be a Green non-cited violation for Unit 2. The difference in risk significance between the units is due to differences in electric bus loads. This finding has a cross-cutting aspect in the area of Problem Identification and Resolution, in that lubricating oil strainer high differential pressure due to clogging by fibrous lint material was not promptly identified as a condition adverse to quality in a timely manner commensurate with the potential safety significance.

This finding is more than minor because it is associated with the availability and reliability of EDG #1 to mitigate events such as a loss of offsite power (LOOP) and primarily affected the Mitigating System Cornerstone for Units 1 and 2. Because the finding also affected the Initiating Events Cornerstone (i.e., LOOP with Loss of One AC Division) and represented an actual loss of safety function of EDG #1 for greater than the TS allowed outage time for one EDG (i.e., seven days), a Significance Determination Process Phase 2 analysis was performed. The dominant core damage sequence in the Phase 2 was LOOP and LOOP with Loss of One AC Division. The results of the Phase 2 analysis required a Phase 3 evaluation. Phase 3 assessments for Units 1 and 2 were performed with the assumption that EDG # 1 was out of service for 130 hours. The Phase 3 analysis results for the internal event initiators calculated a change in Core Damage Frequency (delta CDF) of 1.3E-6 / year for Unit 1 and CDF of 1.57E-7 for Unit 2. In addition, evaluation of external event initiators and large early release frequency (LERF) for both units did not change the color. The finding is of low to moderate safety significance (White) for Unit 1, and is of very low safety significance (Green) for Unit 2. (IR 05000325,324/2007-008 dated February 28, 2007)

The finding was determined to be of low to moderate safety significance (White) based on assuming a loss of offsite power initiating event and EDG #1 being in a degraded condition for approximately 3 days and in a nonfunctional condition for approximately 5 days.

(IR 05000325, 324/2007-009 dated April 20, 2007)

Inspection Report# : [2007008](#) (*pdf*)

**Significance:** **G** Dec 31, 2006

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

#### **Failure to Follow Work Management Process**

A self-revealing non-cited violation of Technical Specification 5.4.1, Administrative Controls (Procedures), was identified for failing to follow the work management process for the performance of minor maintenance. Minor maintenance was performed on a Unit 1 instrument air isolation valve to a control rod hydraulic control unit without obtaining senior reactor

operator approval. During the maintenance, the valve was inadvertently closed which isolated air to the hydraulic control unit and the associated control rod scrambled. As a result, control room operators were challenged by the reactivity event and subsequent power maneuvers to restore the control rod to the proper position. This issue was entered into the corrective action program for resolution.

The finding was more than minor because it is 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 functions during power operations. This finding is of very low safety significance because it did not contribute to both the likelihood of a reactor trip and the likelihood that mitigating equipment or functions would not be available. This finding had a crosscutting aspect of Human Performance because the control of the work did not keep operations personnel apprised of work status or the potential operational impact of the work activities (Section 1R12.2).

Inspection Report# : [2006005](#) (*pdf*)

**Significance:**  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*)

---

## **Barrier Integrity**

**Significance:**  Sep 30, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Follow Condenser Air Removal and Off-gas Recombiner System Procedure**

An NRC-identified non-cited violation of Technical Specification 5.4.1, Administrative Controls (Procedures), was identified for the failure to adhere to procedure requirements when operators injected service air into the steam jet air ejectors and the offgas flowpath. The initial condition that the service air injection was needed for continued hydrogen water chemistry operation was not met. As a result of this procedure adherence deficiency, the licensee had reduced the ability to monitor for actual fuel cladding damage. The licensee entered the issue into the corrective action program, secured air injection to the steam jet air ejector, and deleted the instructions which allowed service air injection to the steam jet air ejectors.

This finding is more than minor because it involved adherence to procedures associated with fuel cladding integrity and affected the Barrier Integrity Cornerstone to provide reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. The finding was determined to be of very low safety significance because it was only associated with the ability to monitor fuel barrier integrity. This finding was related to the cross-cutting area of Human Performance because the cause was due to failure to adhere to procedures.

Inspection Report# : [2006004](#) (*pdf*)

---

## 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

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

---

## 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 : June 01, 2007

# Brunswick 1

## 2Q/2007 Plant Inspection Findings

---

### Initiating Events

---

### Mitigating Systems

**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:** **W** Feb 28, 2007

Identified By: NRC

Item Type: VIO Violation

#### Failure to Meet TS 3.8.1, AC Sources-Operating

A preliminary White finding with an apparent violation (AV) of Technical Specification (TS) 3.8.1, AC Sources-Operating, was identified for Unit 1. The finding involved inadequate corrective actions to prevent a repeat failure of the #9 main crankshaft bearing on EDG #1, a failure to follow the foreign material exclusion control procedure during maintenance performed on EDG #1, and the failure to promptly identify and implement adequate actions to prevent emergency diesel generator (EDG) #1 from tripping on low lubricating oil pressure. The finding was determined to be a Green non-cited violation for Unit 2. The difference in risk significance between the units is due to differences in electric bus loads. This finding has a cross-cutting aspect in the area of Problem Identification and Resolution, in that lubricating oil strainer high differential pressure due to clogging by fibrous lint material was not promptly identified as a condition adverse to quality in a timely manner commensurate with the potential safety significance.

This finding is more than minor because it is associated with the availability and reliability of EDG #1 to mitigate events such as a loss of offsite power (LOOP) and primarily affected the Mitigating System Cornerstone for Units 1 and 2. Because the finding also affected the Initiating Events Cornerstone (i.e., LOOP with Loss of One AC Division) and represented an actual loss of safety function of EDG #1 for greater than the TS allowed outage time for one EDG (i.e., seven days), a Significance Determination Process Phase 2 analysis was performed. The dominant core damage

sequence in the Phase 2 was LOOP and LOOP with Loss of One AC Division. The results of the Phase 2 analysis required a Phase 3 evaluation. Phase 3 assessments for Units 1 and 2 were performed with the assumption that EDG # 1 was out of service for 130 hours. The Phase 3 analysis results for the internal event initiators calculated a change in Core Damage Frequency (delta CDF) of 1.3E-6 / year for Unit 1 and CDF of 1.57E-7 for Unit 2. In addition, evaluation of external event initiators and large early release frequency (LERF) for both units did not change the color. The finding is of low to moderate safety significance (White) for Unit 1, and is of very low safety significance (Green) for Unit 2.

(IR 05000325,324/2007-008 dated February 28, 2007)

The finding was determined to be of low to moderate safety significance (White) based on assuming a loss of offsite power initiating event and EDG #1 being in a degraded condition for approximately 3 days and in a nonfunctional condition for approximately 5 days.

(IR 05000325, 324/2007-009 dated April 20, 2007)

Inspection Report# : [2007008](#) (*pdf*)

**G**

**Significance:** Dec 31, 2006

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

#### **Failure to Follow Work Management Process**

A self-revealing non-cited violation of Technical Specification 5.4.1, Administrative Controls (Procedures), was identified for failing to follow the work management process for the performance of minor maintenance. Minor maintenance was performed on a Unit 1 instrument air isolation valve to a control rod hydraulic control unit without obtaining senior reactor operator approval. During the maintenance, the valve was inadvertently closed which isolated air to the hydraulic control unit and the associated control rod scrambled. As a result, control room operators were challenged by the reactivity event and subsequent power maneuvers to restore the control rod to the proper position. This issue was entered into the corrective action program for resolution.

The finding was more than minor because it is 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 functions during power operations. This finding is of very low safety significance because it did not contribute to both the likelihood of a reactor trip and the likelihood that mitigating equipment or functions would not be available. This finding had a crosscutting aspect of Human Performance because the control of the work did not keep operations personnel apprised of work status or the potential operational impact of the work activities (Section 1R12.2).

Inspection Report# : [2006005](#) (*pdf*)

**G**

**Significance:** 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).

## Barrier Integrity

**Significance:**  Sep 30, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Follow Condenser Air Removal and Off-gas Recombiner System Procedure**

An NRC-identified non-cited violation of Technical Specification 5.4.1, Administrative Controls (Procedures), was identified for the failure to adhere to procedure requirements when operators injected service air into the steam jet air ejectors and the offgas flowpath. The initial condition that the service air injection was needed for continued hydrogen water chemistry operation was not met. As a result of this procedure adherence deficiency, the licensee had reduced the ability to monitor for actual fuel cladding damage. The licensee entered the issue into the corrective action program, secured air injection to the steam jet air ejector, and deleted the instructions which allowed service air injection to the steam jet air ejectors.

This finding is more than minor because it involved adherence to procedures associated with fuel cladding integrity and affected the Barrier Integrity Cornerstone to provide reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. The finding was determined to be of very low safety significance because it was only associated with the ability to monitor fuel barrier integrity. This finding was related to the cross-cutting area of Human Performance because the cause was due to failure to adhere to procedures.

Inspection Report# : [2006004](#) (pdf)

---

## 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

# Brunswick 1

## 3Q/2007 Plant Inspection Findings

---

### Initiating Events

---

### Mitigating Systems

**Significance:**  Aug 30, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Goal Setting and Monitoring not Performed for an Emergency Diesel Generator**

The team identified a Green non-cited violation (NCV) of 10 CFR 50.65 (maintenance rule) for failure to demonstrate that the performance or condition of structures, systems, or components is being effectively controlled through the performance of appropriate preventive maintenance. An inadequate maintenance rule evaluation was performed after an emergency diesel generator exceeded its maintenance rule (a)(2) performance criteria and, as a result, goal setting and monitoring was not performed as required by Paragraph (a)(1) of the maintenance rule.

This finding was more than minor because it was associated with the equipment performance attribute and affected the Mitigating Systems Cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The lack of proper attention by the maintenance rule program to the degraded performance of Emergency Diesel Generator 3 allowed degraded performance to continue for all emergency diesel generators. This finding was of very low safety significance because it was not a design or qualification deficiency, did not directly result in an actual loss of safety function for a system or train, and was not risk significant due to a seismic, fire, flooding, or severe weather initiating event. The cause of the finding directly involved the cross-cutting area of human performance, in the decision making component under the aspect of using conservative assumptions because the expert panel decided to keep Emergency Diesel Generator 3 under maintenance rule Paragraph (a)(2) without fully supporting that conclusion. The licensee made this decision even though other evidence indicated that preventive maintenance was not effectively controlling Emergency Diesel Generator 3 performance [H.1(b)].

Inspection Report# : [2007010](#) (*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:** **W** Feb 28, 2007

Identified By: NRC

Item Type: VIO Violation

**Failure to Meet TS 3.8.1, AC Sources-Operating**

A preliminary White finding with an apparent violation (AV) of Technical Specification (TS) 3.8.1, AC Sources-Operating, was identified for Unit 1. The finding involved inadequate corrective actions to prevent a repeat failure of the #9 main crankshaft bearing on EDG #1, a failure to follow the foreign material exclusion control procedure during maintenance performed on EDG #1, and the failure to promptly identify and implement adequate actions to prevent emergency diesel generator (EDG) #1 from tripping on low lubricating oil pressure. The finding was determined to be a Green non-cited violation for Unit 2. The difference in risk significance between the units is due to differences in electric bus loads. This finding has a cross-cutting aspect in the area of Problem Identification and Resolution, in that lubricating oil strainer high differential pressure due to clogging by fibrous lint material was not promptly identified as a condition adverse to quality in a timely manner commensurate with the potential safety significance.

This finding is more than minor because it is associated with the availability and reliability of EDG #1 to mitigate events such as a loss of offsite power (LOOP) and primarily affected the Mitigating System Cornerstone for Units 1 and 2. Because the finding also affected the Initiating Events Cornerstone (i.e., LOOP with Loss of One AC Division) and represented an actual loss of safety function of EDG #1 for greater than the TS allowed outage time for one EDG (i.e., seven days), a Significance Determination Process Phase 2 analysis was performed. The dominant core damage sequence in the Phase 2 was LOOP and LOOP with Loss of One AC Division. The results of the Phase 2 analysis required a Phase 3 evaluation. Phase 3 assessments for Units 1 and 2 were performed with the assumption that EDG #1 was out of service for 130 hours. The Phase 3 analysis results for the internal event initiators calculated a change in Core Damage Frequency (delta CDF) of  $1.3E-6$  / year for Unit 1 and CDF of  $1.57E-7$  for Unit 2. In addition, evaluation of external event initiators and large early release frequency (LERF) for both units did not change the color. The finding is of low to moderate safety significance (White) for Unit 1, and is of very low safety significance (Green) for Unit 2.

(IR 05000325,324/2007-008 dated February 28, 2007)

The finding was determined to be of low to moderate safety significance (White) based on assuming a loss of offsite power initiating event and EDG #1 being in a degraded condition for approximately 3 days and in a nonfunctional condition for approximately 5 days.

(IR 05000325, 324/2007-009 dated April 20, 2007)

Inspection Report# : [2007008](#) (*pdf*)

**Significance:** **G** Dec 31, 2006

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

**Failure to Follow Work Management Process**

A self-revealing non-cited violation of Technical Specification 5.4.1, Administrative Controls (Procedures), was identified for failing to follow the work management process for the performance of minor maintenance. Minor maintenance was performed on a Unit 1 instrument air isolation valve to a control rod hydraulic control unit without obtaining senior reactor operator approval. During the maintenance, the valve was inadvertently closed which isolated air to the hydraulic control unit and the associated control rod scrambled. As a result, control room operators were challenged by the reactivity event and subsequent power maneuvers to restore the control rod to the proper position. This issue was entered into the corrective action program for resolution.

The finding was more than minor because it is 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 functions during power operations. This finding is of very low safety significance because it did not contribute to both the likelihood of a reactor trip and the likelihood that mitigating equipment or functions would not be available. This finding had a crosscutting aspect of Human Performance because the control of the work did not keep operations personnel apprised of work status or the potential operational impact of the work activities (Section 1R12.2).

Inspection Report# : [2006005](#) (*pdf*)

**Significance:**  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*)

---

## **Barrier Integrity**

---

## **Emergency Preparedness**

---

## **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 : December 07, 2007

# Brunswick 1

## 4Q/2007 Plant Inspection Findings

---

### Initiating Events

---

### Mitigating Systems

**Significance:**  Oct 15, 2007

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

#### **Inadequate Corrective Action for Fisher Model 9100 Unbonded Butterfly Valve Failures**

The inspectors identified an NCV of 10 CFR 50 Appendix B, Criterion XVI, for failure to promptly identify and correct a condition adverse to quality related to foreign material in the service water system (SW) resulting from Fisher butterfly valve rubber lining failures. There had been a number of failures of Fisher butterfly valve rubber linings since 1985 including a Unit 1 failure in 2004 and a Unit 2 failure in 2005. The examples in 2004 and 2005 were examples where valve lining material was missing from Fisher valves and all the material was not accounted for and removed from the SW system. On August 16, 2007, the licensee detected reduced flow from the 1B Residual Heat Removal (RHR) room cooler and on August 18, 2007, identified foreign material in the inlet piping to the cooler. Additional rubber lining material was also found in the 1 A RHR room cooler. An additional example of Fisher valve foreign material in the SW system was noted in 2005 in the Unit 2 2B Turbine Building Component Cooling Water Heat Exchanger. The licensee entered this issue into the corrective action program.

The failure to maintain the SW system free of foreign material was considered a performance deficiency and a finding in the mitigating systems cornerstone. This finding is greater than minor because it affected the availability and reliability of the RHR room coolers which support the emergency core cooling equipment used to mitigate the consequences of an accident. Although related to degradation in the service water system, the finding is of very low safety significance because the licensee detected the change in SW flow and removed the material prior to the flow reduction reaching the minimum required flow for accident mitigation. There was no loss of safety function from either train of service water. This finding has an appropriate and timely corrective action aspect in the cross-cutting area of problem identification and resolution because the licensee failed to recognize the foreign material as a condition adverse to quality and implement timely corrective action to locate the source of and remove all the material from the SW system

Inspection Report# : [2007011](#) (*pdf*)

**Significance:**  Oct 15, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Inadequate Loose Parts Analysis / Operability Evaluation for Fisher Butterfly Valve Taper Pin**

The inspectors identified an NCV of 10 CFR 50 Appendix B, Criterion V, for an inadequate loose parts analysis / operability evaluation performed following the failure of SW valve 1-SW-V105 to open on July 26, 2005, due to the loss of both taper pins which connected the stem to the valve disc. Inadequate testing of the impact of a butterfly valve taper pin on an operating RHR SW booster pump and incorrect communication of the results of this testing led to returning the SW system to service without retrieving the second taper pin. The pin was later retrieved when on August 21, 2007, the pin caused a failure of the 1D RHR SW booster pump. The licensee entered the issue into the corrective action program, removed the pin from the pump, replaced the motor and returned the pump to operable status.

The inadequate loose parts analysis / operability evaluation for the missing SW butterfly valve taper pin was considered as a performance deficiency and a finding in the mitigating systems cornerstone. This finding is greater than minor because it affected the reliability and availability attribute of one RHR SW booster pump, a mitigating

system component. The finding was of very low safety significance because only one RHR SW booster pump was affected, it did not represent a loss of a safety function of either train of service water. This finding has a thorough evaluation of an identified problem in the cross-cutting area of problem identification and resolution because the licensee failed to thoroughly evaluate the condition adverse to quality which resulted in additional unavailability of the 1D RHR SW booster pump.

Inspection Report# : [2007011](#) (*pdf*)

**Significance:**  Aug 30, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

### **Goal Setting and Monitoring not Performed for an Emergency Diesel Generator**

The team identified a Green non-cited violation (NCV) of 10 CFR 50.65 (maintenance rule) for failure to demonstrate that the performance or condition of structures, systems, or components is being effectively controlled through the performance of appropriate preventive maintenance. An inadequate maintenance rule evaluation was performed after an emergency diesel generator exceeded its maintenance rule (a)(2) performance criteria and, as a result, goal setting and monitoring was not performed as required by Paragraph (a)(1) of the maintenance rule.

This finding was more than minor because it was associated with the equipment performance attribute and affected the Mitigating Systems Cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The lack of proper attention by the maintenance rule program to the degraded performance of Emergency Diesel Generator 3 allowed degraded performance to continue for all emergency diesel generators. This finding was of very low safety significance because it was not a design or qualification deficiency, did not directly result in an actual loss of safety function for a system or train, and was not risk significant due to a seismic, fire, flooding, or severe weather initiating event. The cause of the finding directly involved the cross-cutting area of human performance, in the decision making component under the aspect of using conservative assumptions because the expert panel decided to keep Emergency Diesel Generator 3 under maintenance rule Paragraph (a)(2) without fully supporting that conclusion. The licensee made this decision even though other evidence indicated that preventive maintenance was not effectively controlling Emergency Diesel Generator 3 performance [H.1(b)].

Inspection Report# : [2007010](#) (*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*)

**W**

Feb 28, 2007

**Significance:**

Identified By: NRC

Item Type: VIO Violation

**Failure to Meet TS 3.8.1, AC Sources-Operating**

A preliminary White finding with an apparent violation (AV) of Technical Specification (TS) 3.8.1, AC Sources-Operating, was identified for Unit 1. The finding involved inadequate corrective actions to prevent a repeat failure of the #9 main crankshaft bearing on EDG #1, a failure to follow the foreign material exclusion control procedure during maintenance performed on EDG #1, and the failure to promptly identify and implement adequate actions to prevent emergency diesel generator (EDG) #1 from tripping on low lubricating oil pressure. The finding was determined to be a Green non-cited violation for Unit 2. The difference in risk significance between the units is due to differences in electric bus loads. This finding has a cross-cutting aspect in the area of Problem Identification and Resolution, in that lubricating oil strainer high differential pressure due to clogging by fibrous lint material was not promptly identified as a condition adverse to quality in a timely manner commensurate with the potential safety significance.

This finding is more than minor because it is associated with the availability and reliability of EDG #1 to mitigate events such as a loss of offsite power (LOOP) and primarily affected the Mitigating System Cornerstone for Units 1 and 2. Because the finding also affected the Initiating Events Cornerstone (i.e., LOOP with Loss of One AC Division) and represented an actual loss of safety function of EDG #1 for greater than the TS allowed outage time for one EDG (i.e., seven days), a Significance Determination Process Phase 2 analysis was performed. The dominant core damage sequence in the Phase 2 was LOOP and LOOP with Loss of One AC Division. The results of the Phase 2 analysis required a Phase 3 evaluation. Phase 3 assessments for Units 1 and 2 were performed with the assumption that EDG #1 was out of service for 130 hours. The Phase 3 analysis results for the internal event initiators calculated a change in Core Damage Frequency (delta CDF) of  $1.3E-6$  / year for Unit 1 and CDF of  $1.57E-7$  for Unit 2. In addition, evaluation of external event initiators and large early release frequency (LERF) for both units did not change the color. The finding is of low to moderate safety significance (White) for Unit 1, and is of very low safety significance (Green) for Unit 2.

(IR 05000325,324/2007-008 dated February 28, 2007)

The finding was determined to be of low to moderate safety significance (White) based on assuming a loss of offsite power initiating event and EDG #1 being in a degraded condition for approximately 3 days and in a nonfunctional condition for approximately 5 days.

(IR 05000325, 324/2007-009 dated April 20, 2007)

Inspection Report# : [2007008](#) (pdf)

---

## Barrier Integrity

---

---

## Emergency Preparedness

---

---

## 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 : February 04, 2008

# Brunswick 1

## 1Q/2008 Plant Inspection Findings

---

### Initiating Events

---

### Mitigating Systems

**Significance:**  Feb 29, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Failure to Adequately Evaluate and Correct a Condition Adverse to Quality Involving Service Water Fouling of the 1A RHR Heat Exchanger**

The inspectors identified a Green non-cited violation of 10 CFR 50, Appendix B, Criterion XVI, Corrective Action, for the inadequate evaluation and corrective actions to address a condition adverse to quality involving degraded performance of the 1A Residual Heat Removal (RHR) Heat Exchanger (HX) due to Service Water (SW) fouling. The licensee documented this issue in their corrective action program as nuclear condition report 268318. The licensee also performed an operability evaluation of the RHR system, and instituted compensatory measures until the condition could be corrected during the Spring 2008 Unit 2 outage.

The finding is more than minor because if left uncorrected, the issue would become a more significant safety concern in that the potential existed for making the 1A RHR HX inoperable due to tube sheet fouling. In addition, the inspectors also determined that this issue was associated with the equipment performance attribute of the Mitigating Systems cornerstone and adversely affected 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). The finding was determined to be of very low safety significance because the degraded condition did not actually result in a loss of the RHR system safety system function. 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, in that the licensee did not promptly address an adverse trend in the 1A RHR HX's performance. (P.1.(d))

Inspection Report# : [2008006 \(pdf\)](#)

**Significance:**  Oct 15, 2007

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

#### **Inadequate Corrective Action for Fisher Model 9100 Unbonded Butterfly Valve Failures**

The inspectors identified an NCV of 10 CFR 50 Appendix B, Criterion XVI, for failure to promptly identify and correct a condition adverse to quality related to foreign material in the service water system (SW) resulting from Fisher butterfly valve rubber lining failures. There had been a number of failures of Fisher butterfly valve rubber linings since 1985 including a Unit 1 failure in 2004 and a Unit 2 failure in 2005. The examples in 2004 and 2005 were examples where valve lining material was missing from Fisher valves and all the material was not accounted for and removed from the SW system. On August 16, 2007, the licensee detected reduced flow from the 1B Residual Heat Removal (RHR) room cooler and on August 18, 2007, identified foreign material in the inlet piping to the cooler. Additional rubber lining material was also found in the 1 A RHR room cooler. An additional example of Fisher valve foreign material in the SW system was noted in 2005 in the Unit 2 2B Turbine Building Component Cooling Water Heat Exchanger. The licensee entered this issue into the corrective action program.

The failure to maintain the SW system free of foreign material was considered a performance deficiency and a finding in the mitigating systems cornerstone. This finding is greater than minor because it affected the availability and reliability of the RHR room coolers which support the emergency core cooling equipment used to mitigate the consequences of an accident. Although related to degradation in the service water system, the finding is of very low

safety significance because the licensee detected the change in SW flow and removed the material prior to the flow reduction reaching the minimum required flow for accident mitigation. There was no loss of safety function from either train of service water. This finding has an appropriate and timely corrective action aspect in the cross-cutting area of problem identification and resolution because the licensee failed to recognize the foreign material as a condition adverse to quality and implement timely corrective action to locate the source of and remove all the material from the SW system

Inspection Report# : [2007011](#) (pdf)

**Significance:**  Oct 15, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

### **Inadequate Loose Parts Analysis / Operability Evaluation for Fisher Butterfly Valve Taper Pin**

The inspectors identified an NCV of 10 CFR 50 Appendix B, Criterion V, for an inadequate loose parts analysis / operability evaluation performed following the failure of SW valve 1-SW-V105 to open on July 26, 2005, due to the loss of both taper pins which connected the stem to the valve disc. Inadequate testing of the impact of a butterfly valve taper pin on an operating RHR SW booster pump and incorrect communication of the results of this testing led to returning the SW system to service without retrieving the second taper pin. The pin was later retrieved when on August 21, 2007, the pin caused a failure of the 1D RHR SW booster pump. The licensee entered the issue into the corrective action program, removed the pin from the pump, replaced the motor and returned the pump to operable status.

The inadequate loose parts analysis / operability evaluation for the missing SW butterfly valve taper pin was considered as a performance deficiency and a finding in the mitigating systems cornerstone. This finding is greater than minor because it affected the reliability and availability attribute of one RHR SW booster pump, a mitigating system component. The finding was of very low safety significance because only one RHR SW booster pump was affected, it did not represent a loss of a safety function of either train of service water. This finding has a thorough evaluation of an identified problem in the cross-cutting area of problem identification and resolution because the licensee failed to thoroughly evaluate the condition adverse to quality which resulted in additional unavailability of the 1D RHR SW booster pump.

Inspection Report# : [2007011](#) (pdf)

**Significance:**  Aug 30, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

### **Goal Setting and Monitoring not Performed for an Emergency Diesel Generator**

The team identified a Green non-cited violation (NCV) of 10 CFR 50.65 (maintenance rule) for failure to demonstrate that the performance or condition of structures, systems, or components is being effectively controlled through the performance of appropriate preventive maintenance. An inadequate maintenance rule evaluation was performed after an emergency diesel generator exceeded its maintenance rule (a)(2) performance criteria and, as a result, goal setting and monitoring was not performed as required by Paragraph (a)(1) of the maintenance rule.

This finding was more than minor because it was associated with the equipment performance attribute and affected the Mitigating Systems Cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The lack of proper attention by the maintenance rule program to the degraded performance of Emergency Diesel Generator 3 allowed degraded performance to continue for all emergency diesel generators. This finding was of very low safety significance because it was not a design or qualification deficiency, did not directly result in an actual loss of safety function for a system or train, and was not risk significant due to a seismic, fire, flooding, or severe weather initiating event. The cause of the finding directly involved the cross-cutting area of human performance, in the decision making component under the aspect of using conservative assumptions because the expert panel decided to keep Emergency Diesel Generator 3 under maintenance rule Paragraph (a)(2) without fully supporting that conclusion. The licensee made this decision even though other evidence indicated that preventive maintenance was not effectively controlling Emergency Diesel Generator 3 performance [H.1(b)].

Inspection Report# : [2007010](#) (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*)

---

## 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))

Inspection Report# : [2008006](#) (*pdf*)

---

## Emergency Preparedness

---

## 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

Last modified : June 05, 2008

# Brunswick 1

## 2Q/2008 Plant Inspection Findings

---

### Initiating Events

---

### Mitigating Systems

**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*)

**Significance:**  Jun 30, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Inadequate Calibration Procedure for the Conventional Service Water Relays**

A self-revealing Green non-cited violation of Technical Specification 5.4.1 was identified for an inadequate procedure used for the calibration of the conventional service water pump logic relays in September 2007. Specifically, procedure OPM-RLY-001, PM GE HFA Relays, used to calibrate the conventional service water (CSW) pump relays was inadequate because the procedure was determined not to be applicable to the relay type. The incorrectly calibrated conventional service water pump relay resulted in improper operation of the conventional service water pump and could have affected proper emergency diesel generator operation during a Loss of Offsite Power (LOOP) Event. The finding is in the licensee's Corrective Action Program (CAP) as AR 245864.

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 contribute to improper emergency diesel generator operation. 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 to calibrate the CSW pump relays. (H.2.(c))

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

**Significance:**  Feb 29, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Adequately Evaluate and Correct a Condition Adverse to Quality Involving Service Water Fouling of the 1A RHR Heat Exchanger**

The inspectors identified a Green non-cited violation of 10 CFR 50, Appendix B, Criterion XVI, Corrective Action, for the inadequate evaluation and corrective actions to address a condition adverse to quality involving degraded performance of the 1A Residual Heat Removal (RHR) Heat Exchanger (HX) due to Service Water (SW) fouling. The licensee documented this issue in their corrective action program as nuclear condition report 268318. The licensee also performed an operability evaluation of the RHR system, and instituted compensatory measures until the condition could be corrected during the Spring 2008 Unit 2 outage.

The finding is more than minor because if left uncorrected, the issue would become a more significant safety concern in that the potential existed for making the 1A RHR HX inoperable due to tube sheet fouling. In addition, the inspectors also determined that this issue was associated with the equipment performance attribute of the Mitigating Systems cornerstone and adversely affected 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). The finding was determined to be of very low safety significance because the degraded condition did not actually result in a loss of the RHR system safety system function. 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, in that the licensee did not promptly address an adverse trend in the 1A RHR HX's performance. (P.1.(d))

Inspection Report# : [2008006](#) (*pdf*)

**Significance:**  Oct 15, 2007

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

**Inadequate Corrective Action for Fisher Model 9100 Unbonded Butterfly Valve Failures**

The inspectors identified an NCV of 10 CFR 50 Appendix B, Criterion XVI, for failure to promptly identify and correct a condition adverse to quality related to foreign material in the service water system (SW) resulting from Fisher butterfly valve rubber lining failures. There had been a number of failures of Fisher butterfly valve rubber linings since 1985 including a Unit 1 failure in 2004 and a Unit 2 failure in 2005. The examples in 2004 and 2005 were examples where valve lining material was missing from Fisher valves and all the material was not accounted for and removed from the SW system. On August 16, 2007, the licensee detected reduced flow from the 1B Residual Heat Removal (RHR) room cooler and on August 18, 2007, identified foreign material in the inlet piping to the cooler. Additional rubber lining material was also found in the 1 A RHR room cooler. An additional example of Fisher valve foreign material in the SW system was noted in 2005 in the Unit 2 2B Turbine Building Component Cooling Water Heat Exchanger. The licensee entered this issue into the corrective action program.

The failure to maintain the SW system free of foreign material was considered a performance deficiency and a finding in the mitigating systems cornerstone. This finding is greater than minor because it affected the availability and reliability of the RHR room coolers which support the emergency core cooling equipment used to mitigate the consequences of an accident. Although related to degradation in the service water system, the finding is of very low safety significance because the licensee detected the change in SW flow and removed the material prior to the flow reduction reaching the minimum required flow for accident mitigation. There was no loss of safety function from either train of service water. This finding has an appropriate and timely corrective action aspect in the cross-cutting area of problem identification and resolution because the licensee failed to recognize the foreign material as a condition adverse to quality and implement timely corrective action to locate the source of and remove all the material from the SW system

Inspection Report# : [2007011](#) (*pdf*)

**Significance:**  Oct 15, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

**Inadequate Loose Parts Analysis / Operability Evaluation for Fisher Butterfly Valve Taper Pin**

The inspectors identified an NCV of 10 CFR 50 Appendix B, Criterion V, for an inadequate loose parts analysis / operability evaluation performed following the failure of SW valve 1-SW-V105 to open on July 26, 2005, due to the loss of both taper pins which connected the stem to the valve disc. Inadequate testing of the impact of a butterfly valve taper pin on an operating RHR SW booster pump and incorrect communication of the results of this testing led to returning the SW system to service without retrieving the second taper pin. The pin was later retrieved when on August 21, 2007, the pin caused a failure of the 1D RHR SW booster pump. The licensee entered the issue into the corrective action program, removed the pin from the pump, replaced the motor and returned the pump to operable status.

The inadequate loose parts analysis / operability evaluation for the missing SW butterfly valve taper pin was considered as a performance deficiency and a finding in the mitigating systems cornerstone. This finding is greater than minor because it affected the reliability and availability attribute of one RHR SW booster pump, a mitigating system component. The finding was of very low safety significance because only one RHR SW booster pump was affected, it did not represent a loss of a safety function of either train of service water. This finding has a thorough evaluation of an identified problem in the cross-cutting area of problem identification and resolution because the licensee failed to thoroughly evaluate the condition adverse to quality which resulted in additional unavailability of the 1D RHR SW booster pump.

Inspection Report# : [2007011](#) (pdf)

**Significance:**  Aug 30, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

### **Goal Setting and Monitoring not Performed for an Emergency Diesel Generator**

The team identified a Green non-cited violation (NCV) of 10 CFR 50.65 (maintenance rule) for failure to demonstrate that the performance or condition of structures, systems, or components is being effectively controlled through the performance of appropriate preventive maintenance. An inadequate maintenance rule evaluation was performed after an emergency diesel generator exceeded its maintenance rule (a)(2) performance criteria and, as a result, goal setting and monitoring was not performed as required by Paragraph (a)(1) of the maintenance rule.

This finding was more than minor because it was associated with the equipment performance attribute and affected the Mitigating Systems Cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The lack of proper attention by the maintenance rule program to the degraded performance of Emergency Diesel Generator 3 allowed degraded performance to continue for all emergency diesel generators. This finding was of very low safety significance because it was not a design or qualification deficiency, did not directly result in an actual loss of safety function for a system or train, and was not risk significant due to a seismic, fire, flooding, or severe weather initiating event. The cause of the finding directly involved the cross-cutting area of human performance, in the decision making component under the aspect of using conservative assumptions because the expert panel decided to keep Emergency Diesel Generator 3 under maintenance rule Paragraph (a)(2) without fully supporting that conclusion. The licensee made this decision even though other evidence indicated that preventive maintenance was not effectively controlling Emergency Diesel Generator 3 performance [H.1(b)].

Inspection Report# : [2007010](#) (pdf)

---

## **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))

Inspection Report# : [2008006](#) (*pdf*)

---

## Emergency Preparedness

---

## Occupational Radiation Safety

---

## 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.

## 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

Last modified : August 29, 2008

# Brunswick 1

## 3Q/2008 Plant Inspection Findings

---

### Initiating Events

---

### Mitigating Systems

**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*)

**Significance:**  Jun 30, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Inadequate Calibration Procedure for the Conventional Service Water Relays**

A self-revealing Green non-cited violation of Technical Specification 5.4.1 was identified for an inadequate procedure used for the calibration of the conventional service water pump logic relays in September 2007. Specifically, procedure 0PM-RLY-001, PM GE HFA Relays, used to calibrate the conventional service water (CSW) pump relays was inadequate because the procedure was determined not to be applicable to the relay type. The incorrectly calibrated conventional service water pump relay resulted in improper operation of the conventional service water pump and could have affected proper emergency diesel generator operation during a Loss of Offsite Power (LOOP) Event. The finding is in the licensee's Corrective Action Program (CAP) as AR 245864.

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 contribute to improper emergency diesel generator operation. 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 to calibrate the CSW pump relays. (H.2.(c))

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

**Significance:**  Feb 29, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Failure to Adequately Evaluate and Correct a Condition Adverse to Quality Involving Service Water Fouling of the 1A RHR Heat Exchanger**

The inspectors identified a Green non-cited violation of 10 CFR 50, Appendix B, Criterion XVI, Corrective Action, for the inadequate evaluation and corrective actions to address a condition adverse to quality involving degraded performance of the 1A Residual Heat Removal (RHR) Heat Exchanger (HX) due to Service Water (SW) fouling. The licensee documented this issue in their corrective action program as nuclear condition report 268318. The licensee also performed an operability evaluation of the RHR system, and instituted compensatory

measures until the condition could be corrected during the Spring 2008 Unit 2 outage.

The finding is more than minor because if left uncorrected, the issue would become a more significant safety concern in that the potential existed for making the 1A RHR HX inoperable due to tube sheet fouling. In addition, the inspectors also determined that this issue was associated with the equipment performance attribute of the Mitigating Systems cornerstone and adversely affected 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). The finding was determined to be of very low safety significance because the degraded condition did not actually result in a loss of the RHR system safety system function. 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, in that the licensee did not promptly address an adverse trend in the 1A RHR HX's performance. (P.1.(d))

Inspection Report# : [2008006](#) (pdf)

**G**

**Significance:** Oct 15, 2007

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

#### **Inadequate Corrective Action for Fisher Model 9100 Unbonded Butterfly Valve Failures**

The inspectors identified an NCV of 10 CFR 50 Appendix B, Criterion XVI, for failure to promptly identify and correct a condition adverse to quality related to foreign material in the service water system (SW) resulting from Fisher butterfly valve rubber lining failures. There had been a number of failures of Fisher butterfly valve rubber linings since 1985 including a Unit 1 failure in 2004 and a Unit 2 failure in 2005. The examples in 2004 and 2005 were examples where valve lining material was missing from Fisher valves and all the material was not accounted for and removed from the SW system. On August 16, 2007, the licensee detected reduced flow from the 1B Residual Heat Removal (RHR) room cooler and on August 18, 2007, identified foreign material in the inlet piping to the cooler. Additional rubber lining material was also found in the 1 A RHR room cooler. An additional example of Fisher valve foreign material in the SW system was noted in 2005 in the Unit 2 2B Turbine Building Component Cooling Water Heat Exchanger. The licensee entered this issue into the corrective action program.

The failure to maintain the SW system free of foreign material was considered a performance deficiency and a finding in the mitigating systems cornerstone. This finding is greater than minor because it affected the availability and reliability of the RHR room coolers which support the emergency core cooling equipment used to mitigate the consequences of an accident. Although related to degradation in the service water system, the finding is of very low safety significance because the licensee detected the change in SW flow and removed the material prior to the flow reduction reaching the minimum required flow for accident mitigation. There was no loss of safety function from either train of service water. This finding has an appropriate and timely corrective action aspect in the cross-cutting area of problem identification and resolution because the licensee failed to recognize the foreign material as a condition adverse to quality and implement timely corrective action to locate the source of and remove all the material from the SW system

Inspection Report# : [2007011](#) (pdf)

**G**

**Significance:** Oct 15, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Inadequate Loose Parts Analysis / Operability Evaluation for Fisher Butterfly Valve Taper Pin**

The inspectors identified an NCV of 10 CFR 50 Appendix B, Criterion V, for an inadequate loose parts analysis / operability evaluation performed following the failure of SW valve 1-SW-V105 to open on July 26, 2005, due to the loss of both taper pins which connected the stem to the valve disc. Inadequate testing of the impact of a butterfly valve taper pin on an operating RHR SW booster pump and incorrect communication of the results of this testing led to returning the SW system to service without retrieving the second taper pin. The pin was later retrieved when on August 21, 2007, the pin caused a failure of the 1D RHR SW booster pump. The licensee entered the issue into the corrective action program, removed the pin from the pump, replaced the motor and returned the pump to operable status.

The inadequate loose parts analysis / operability evaluation for the missing SW butterfly valve taper pin was considered as a performance deficiency and a finding in the mitigating systems cornerstone. This finding is greater than minor because it affected the reliability and availability attribute of one RHR SW booster pump, a mitigating system component. The finding was of very low safety significance because only one RHR SW booster pump was affected, it did not represent a loss of a safety function of either train of service water. This finding has a thorough evaluation of an identified problem in the cross-cutting area of problem identification and resolution because the licensee failed to thoroughly evaluate the condition adverse to quality which resulted in additional unavailability of the 1D RHR SW booster pump.

Inspection Report# : [2007011](#) (pdf)

---

## **Barrier Integrity**

**G**

**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))

Inspection Report# : [2008006](#) (*pdf*)

---

## **Emergency Preparedness**

---

## **Occupational Radiation Safety**

---

## **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*)

---

## **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

Last modified : November 26, 2008

# Brunswick 1

## 4Q/2008 Plant Inspection Findings

---

### Initiating Events

---

### Mitigating Systems

**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*)

**Significance:**  Jun 30, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Inadequate Calibration Procedure for the Conventional Service Water Relays**

A self-revealing Green non-cited violation of Technical Specification 5.4.1 was identified for an inadequate procedure used for the calibration of the conventional service water pump logic relays in September 2007. Specifically, procedure OPM-RLY-001, PM GE HFA Relays, used to calibrate the conventional service water (CSW) pump relays was inadequate because the procedure was determined not to be applicable to the relay type. The incorrectly calibrated conventional service water pump relay resulted in improper operation of the conventional service water pump and could have affected proper emergency diesel generator operation during a Loss of Offsite Power (LOOP) Event. The finding is in the licensee's Corrective Action Program (CAP) as AR 245864.

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 contribute to improper emergency diesel generator operation. 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 to calibrate the CSW pump relays. (H.2.(c))

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

**Significance:**  Feb 29, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Failure to Adequately Evaluate and Correct a Condition Adverse to Quality Involving Service Water Fouling of the 1A RHR Heat Exchanger**

The inspectors identified a Green non-cited violation of 10 CFR 50, Appendix B, Criterion XVI, Corrective Action, for the inadequate evaluation and corrective actions to address a condition adverse to quality involving degraded performance of the 1A Residual Heat Removal (RHR) Heat Exchanger (HX) due to Service Water (SW) fouling. The licensee documented this issue in their corrective action program as nuclear condition report 268318. The licensee also performed an operability evaluation of the RHR system, and instituted compensatory measures until the condition could be corrected during the Spring 2008 Unit 2 outage.

The finding is more than minor because if left uncorrected, the issue would become a more significant safety concern in that the potential existed for making the 1A RHR HX inoperable due to tube sheet fouling. In addition, the inspectors also determined that this issue was associated with the equipment performance attribute of the Mitigating Systems cornerstone and adversely affected 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). The finding was determined to be of very low safety significance because the degraded condition did not actually result in a loss of the RHR system safety system function. 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, in that the licensee did not promptly address an adverse trend in the 1A RHR HX's performance. (P.1.(d))

Inspection Report# : [2008006](#) (*pdf*)

**G****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))

Inspection Report# : [2008006](#) (*pdf*)

---

## Emergency Preparedness

---

## Occupational Radiation Safety

---

## Public Radiation Safety

**G****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*)

---

## 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

Last modified : April 07, 2009

# Brunswick 1

## 1Q/2009 Plant Inspection Findings

---

### Initiating Events

---

### Mitigating Systems

**Significance:**  Mar 31, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Failure to Perform a 10 CFR 50.59 Evaluation for a Plant Modification**

The inspectors identified a severity level IV NCV of 10 CFR 50.59, “Changes, Tests, and Experiments” for failing to perform a written safety evaluation prior to implementing a change to the facility as described in the Updated Final Safety Analysis Report (UFSAR), when the Unit 1 and Unit 2 reactor building instrument air standby compressors were permanently abandoned. The licensee entered the issue into their corrective action program and performed a written safety evaluation of the condition.

The inspectors determined that, until identified by NRC inspectors, the licensee had not performed a 10 CFR 50.59 safety evaluation for the abandonment of the instrument air standby compressors, and this is a performance deficiency. Because this is a violation of 10 CFR 50.59, it is considered to be a violation which potentially impedes or impacts the regulatory process. Therefore, such violations are dispositioned using the traditional enforcement process instead of the Significance Determination Process. This finding was determined to be more than minor because there was a reasonable likelihood that the change requiring a 10 CFR 50.59 safety evaluation would require Commission review and approval prior to implementation in accordance with 10 CFR 50.59(c)(2). This likelihood is based on the increased likelihood of loss of reactor building instrument air, reactor scram, and closure of the outboard MSIVs, which is an occurrence of a malfunction of a structure, system, or component (SSC) that is analyzed in the UFSAR. To determine the significance of the violation, the inspectors completed a significance determination review using IMC 0609, Appendix A, Significance Determination of Reactor Inspection Findings for At Power Situations. The finding impacted the initiating events cornerstone. 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, this finding has very low safety significance. The cause of the finding is not related to a cross-cutting aspect because the performance deficiency is not indicative of current licensee performance.

Inspection Report# : [2009002](#) (*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*)

**Significance:**  Jun 30, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Inadequate Calibration Procedure for the Conventional Service Water Relays**

A self-revealing Green non-cited violation of Technical Specification 5.4.1 was identified for an inadequate procedure used for the calibration of the conventional service water pump logic relays in September 2007. Specifically, procedure OPM-RLY-001, PM GE HFA Relays, used to calibrate the conventional service water (CSW) pump relays was inadequate because the procedure was determined not to be applicable to the relay type. The incorrectly calibrated conventional service water pump relay resulted in improper operation of the conventional service water pump and could have affected proper emergency diesel generator operation during a Loss of Offsite Power (LOOP) Event. The finding is in the licensee's Corrective Action Program (CAP) as AR 245864.

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 contribute to improper emergency diesel generator operation. 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 to calibrate the CSW pump relays. (H.2.(c))

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

---

# Barrier Integrity

**Significance:**  Mar 31, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

## **Failure to Identify and Correct a Condition Adverse to Quality Affecting the Operability of the Standby Gas Treatment Train B**

The inspectors identified a Green non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action" which states in part, that for conditions adverse to quality, measures shall assure that the cause of the condition is determined and corrective action taken. Specifically, the licensee failed to correct a condition that allowed leakage through a penetration seal in the Unit 1 reactor building supply air ventilation room floor onto the 1B standby gas treatment (SBGT) train control panel, rendering the 1B SBGT inoperable. The licensee entered the issue into their corrective action program and repaired the degraded penetration.

The deficiency associated with this event is not adequately sealing the floor penetration in the Unit 1 reactor building supply air ventilation room. The finding is more than minor because it was associated with the containment barrier performance attribute of the barrier integrity cornerstone to provide reasonable assurance that physical design barriers provide protection against radionuclide releases caused by accidents or events. In accordance with Inspection Manual Chapter (IMC) 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," the inspectors conducted a Phase I significance determination process (SDP) screening and determined the finding to be of very low safety significance (Green). The finding was of very low safety significance (Green) because the finding only represents a degradation of the radiological barrier function provided for the SBGT system. The cause of the finding is not related to a cross-cutting aspect because the occurrence was greater than three years ago and is not indicative of current licensee performance.

Inspection Report# : [2009002](#) (*pdf*)

**Significance:**  Mar 31, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

## **Inadequate Maintenance Procedure for the Control Room Air Conditioning and Emergency Ventilation Instrument Air System**

A self-revealing Green NCV of Technical Specification (TS) 5.4.1, Procedures, was identified for inadequate maintenance procedures for the control room air conditioning and emergency ventilation system instrument air dryer. As a result, on January 21, 2009, the control room air conditioning and emergency ventilation instrument air system lost air pressure, rendering the control room air conditioning (AC) system and the control room emergency ventilation (CREV) system inoperable. The licensee entered the issue into their corrective action program and changed maintenance and operating procedures to prevent recurrence.

The failure to implement adequate maintenance procedures for the control room air conditioning and emergency ventilation instrument air system is a performance deficiency. This performance deficiency is more than minor because it is associated with structure, system, and component (SSC), and barrier performance attribute of the Barrier Integrity Cornerstone. It also adversely affected the cornerstone objective of maintaining a radiological barrier for the control room. The finding was determined to be of very low safety significance because it only affected the radiological barrier function of the control room, and does not represent a degradation of the smoke or toxic atmosphere barrier function of the control room. The finding affects the cross-cutting area of human performance, resources component, complete and accurate documentation aspect because the licensee did not incorporate adequate guidance for maintaining the control room AC and CREV instrument air dryer in their maintenance procedures. (H.2.

(c))

Inspection Report# : [2009002](#) (*pdf*)

---

# Emergency Preparedness

---

# Occupational Radiation Safety

---

## 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*)

---

## 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

Last modified : May 28, 2009

# Brunswick 1

## 2Q/2009 Plant Inspection Findings

---

### Initiating Events

**Significance:**  Mar 31, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Failure to Perform a 10 CFR 50.59 Evaluation for a Plant Modification**

The inspectors identified a severity level IV NCV of 10 CFR 50.59, “Changes, Tests, and Experiments” for failing to perform a written safety evaluation prior to implementing a change to the facility as described in the Updated Final Safety Analysis Report (UFSAR), when the Unit 1 and Unit 2 reactor building instrument air standby compressors were permanently abandoned. The licensee entered the issue into their corrective action program and performed a written safety evaluation of the condition.

The inspectors determined that, until identified by NRC inspectors, the licensee had not performed a 10 CFR 50.59 safety evaluation for the abandonment of the instrument air standby compressors, and this is a performance deficiency. Because this is a violation of 10 CFR 50.59, it is considered to be a violation which potentially impedes or impacts the regulatory process. Therefore, such violations are dispositioned using the traditional enforcement process instead of the Significance Determination Process. This finding was determined to be more than minor because there was a reasonable likelihood that the change requiring a 10 CFR 50.59 safety evaluation would require Commission review and approval prior to implementation in accordance with 10 CFR 50.59(c)(2). This likelihood is based on the increased likelihood of loss of reactor building instrument air, reactor scram, and closure of the outboard MSIVs, which is an occurrence of a malfunction of a structure, system, or component (SSC) that is analyzed in the UFSAR. To determine the significance of the violation, the inspectors completed a significance determination review using IMC 0609, Appendix A, Significance Determination of Reactor Inspection Findings for At Power Situations. The finding impacted the initiating events cornerstone. 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, this finding has very low safety significance. The cause of the finding is not related to a cross-cutting aspect because the performance deficiency is not indicative of current licensee performance.

Inspection Report# : [2009002](#) (*pdf*)

---

### Mitigating Systems

**Significance:** TBD May 28, 2009

Identified By: NRC

Item Type: AV Apparent Violation

#### **Inability to Operate the EDGs Locally as Required by the Safe Shutdown Analysis Report**

An apparent violation of 10 CFR 50, Appendix B, Criterion III, Design Control, was identified for failure to correctly translate the design basis into EC 66274 to replace control relays on all four EDGs. Specifically, termination points for linking control power to the EDG lockout relay reset circuitry were incorrectly designated in the EC. This resulted in the wiring for control relays being installed such that the EDGs could not be operated locally as required by the Safe Shutdown Analysis Report. Upon discovery, the licensee initiated Action Request (AR) 292232 and re-wired and tested each affected EDG. The local control function was restored to all EDGs on August 21, 2008.

The failure to correctly translate the design basis into EC66274 is a performance deficiency. This finding is more than minor because it is associated with the reactor safety mitigating system cornerstone attribute of protection against external events, i.e., fire. It also affects the cornerstone objective of ensuring the availability of systems that respond to events in that the EDGs could not be operated locally as required by the Safe Shutdown Analysis Report. This

finding was assessed using the applicable SDP, which resulted in a calculated core damage frequency (CDF) risk increase over the base case between 1E-5 and 1E-6 per year. The dominant accident sequences involved are initiated by a fire situated such as to cause both a loss of offsite power (LOOP) and a forced main control room evacuation. For these dominant accident sequences, the performance deficiency will result in a station blackout (SBO) to either or both units. The exposure period for this condition was one year. As a result, the finding was preliminarily determined to be of low to moderate safety significance (White). The cause of the finding is considered to have a cross-cutting aspect related to accurate design documentation [H.2(c)], as described in the resources component of the human performance cross-cutting area.

Inspection Report# : [2009009](#) (*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*)

---

## **Barrier Integrity**

**Significance:**  Mar 31, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Identify and Correct a Condition Adverse to Quality Affecting the Operability of the Standby Gas Treatment Train B**

The inspectors identified a Green non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action" which states in part, that for conditions adverse to quality, measures shall assure that the cause of the condition is determined and corrective action taken. Specifically, the licensee failed to correct a condition that allowed leakage through a penetration seal in the Unit 1 reactor building supply air ventilation room floor onto the 1B standby gas treatment (SBGT) train control panel, rendering the 1B SBGT inoperable. The licensee entered the issue into their corrective action program and repaired the degraded penetration.

The deficiency associated with this event is not adequately sealing the floor penetration in the Unit 1 reactor building supply air ventilation room. The finding is more than minor because it was associated with the containment barrier performance attribute of the barrier integrity cornerstone to provide reasonable assurance that physical design barriers provide protection against radionuclide releases caused by accidents or events. In accordance with Inspection Manual Chapter (IMC) 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," the inspectors conducted a Phase I significance determination process (SDP) screening and determined

the finding to be of very low safety significance (Green). The finding was of very low safety significance (Green) because the finding only represents a degradation of the radiological barrier function provided for the SBT system. The cause of the finding is not related to a cross-cutting aspect because the occurrence was greater than three years ago and is not indicative of current licensee performance.

Inspection Report# : [2009002](#) (pdf)

**Significance:**  Mar 31, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

### **Inadequate Maintenance Procedure for the Control Room Air Conditioning and Emergency Ventilation Instrument Air System**

A self-revealing Green NCV of Technical Specification (TS) 5.4.1, Procedures, was identified for inadequate maintenance procedures for the control room air conditioning and emergency ventilation system instrument air dryer. As a result, on January 21, 2009, the control room air conditioning and emergency ventilation instrument air system lost air pressure, rendering the control room air conditioning (AC) system and the control room emergency ventilation (CREV) system inoperable. The licensee entered the issue into their corrective action program and changed maintenance and operating procedures to prevent recurrence.

The failure to implement adequate maintenance procedures for the control room air conditioning and emergency ventilation instrument air system is a performance deficiency. This performance deficiency is more than minor because it is associated with structure, system, and component (SSC), and barrier performance attribute of the Barrier Integrity Cornerstone. It also adversely affected the cornerstone objective of maintaining a radiological barrier for the control room. The finding was determined to be of very low safety significance because it only affected the radiological barrier function of the control room, and does not represent a degradation of the smoke or toxic atmosphere barrier function of the control room. The finding affects the cross-cutting area of human performance, resources component, complete and accurate documentation aspect because the licensee did not incorporate adequate guidance for maintaining the control room AC and CREV instrument air dryer in their maintenance procedures. (H.2. (c))

Inspection Report# : [2009002](#) (pdf)

---

## **Emergency Preparedness**

---

## **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

Last modified : August 31, 2009

# Brunswick 1

## 3Q/2009 Plant Inspection Findings

---

### Initiating Events

**Significance:**  Sep 30, 2009

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

#### **Failure to Follow Plant Procedure Caused Loss of E2 Bus**

A self-revealing Green non-cited violation of Technical Specification (TS) 5.4.1, Procedures, was identified when the licensee failed to follow procedure 0PICCNV023, Calibration of Westinghouse & Scientific Columbus Teleductors. During the performance of the calibration, procedural steps were not performed correctly and the E2 electrical bus was inadvertently deenergized, requiring the emergency diesel generator #2 to auto-start and reenergize the bus. Emergency diesel generator #2 auto-started and the E2 bus transferred from off-site power. After the event, the licensee halted the maintenance on the E2 bus instruments and restored off-site power to the E2 bus. The event was entered into the licensee's corrective action program as NCR #344300. The finding was determined to be more than minor because the finding was associated with the Initiating Events Cornerstone attribute of configuration control and affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during power operations.

The finding affected configuration control because correct test switch alignment was not maintained. The finding also affected the cornerstone objective because loss of the E2 bus represented an upset to plant stability. The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1 - Initial Screening and Characterization of findings," Table 4a for the Initiating Events Cornerstone. The finding was determined to be of very low safety significance (Green) because the finding was a transient initiator that did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available. The finding has a cross-cutting aspect in the Human Performance cross cutting area, Work Practices component, because the licensee failed to implement adequate error prevention techniques while performing plant procedure 0PIC-CNV023, Calibration of Westinghouse & Scientific Columbus Teleductors. Specifically, technicians did not utilize adequate error prevention techniques to prevent them from operating the wrong test switch when calibrating instrument 1-E2-AG6-VTR (H.4(a))  
Inspection Report# : [2009004](#) (*pdf*)

**Significance:**  Mar 31, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Failure to Perform a 10 CFR 50.59 Evaluation for a Plant Modification**

The inspectors identified a severity level IV NCV of 10 CFR 50.59, "Changes, Tests, and Experiments" for failing to perform a written safety evaluation prior to implementing a change to the facility as described in the Updated Final Safety Analysis Report (UFSAR), when the Unit 1 and Unit 2 reactor building instrument air standby compressors were permanently abandoned. The licensee entered the issue into their corrective action program and performed a written safety evaluation of the condition.

The inspectors determined that, until identified by NRC inspectors, the licensee had not performed a 10 CFR 50.59 safety evaluation for the abandonment of the instrument air standby compressors, and this is a performance deficiency. Because this is a violation of 10 CFR 50.59, it is considered to be a violation which potentially impedes or impacts the regulatory process. Therefore, such violations are dispositioned using the traditional enforcement process instead of the Significance Determination Process. This finding was determined to be more than minor because there was a reasonable likelihood that the change requiring a 10 CFR 50.59 safety evaluation would require Commission review and approval prior to implementation in accordance with 10 CFR 50.59(c)(2). This likelihood is based on the increased likelihood of loss of reactor building instrument air, reactor scram, and closure of the outboard MSIVs, which is an occurrence of a malfunction of a structure, system, or component (SSC) that is analyzed in the UFSAR.

To determine the significance of the violation, the inspectors completed a significance determination review using IMC 0609, Appendix A, Significance Determination of Reactor Inspection Findings for At Power Situations. The finding impacted the initiating events cornerstone. 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, this finding has very low safety significance. The cause of the finding is not related to a cross-cutting aspect because the performance deficiency is not indicative of current licensee performance.

Inspection Report# : [2009002](#) (*pdf*)

---

## Mitigating Systems

**Significance:**  Sep 30, 2009

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

### **Surveillance Test Performed on Incorrect Loop of RHR**

A self-revealing Green non-cited violation of TS 5.4.1, Procedures, was identified when the licensee failed to follow work order instructions contained in work order 1280322. This work order directed technicians to perform testing on the B loop of the Unit 1 residual heat removal (RHR) system according to procedure 1MST-RHR28R, RHR Time Delay Relay Channel Calibration. Contrary to these work order instructions, portions of the procedure affecting Loop A were performed instead of Loop B. After the technicians completed the A loop section of the procedure, they reported to the control room where operators recognized the error.

Once the error was recognized, the maintenance was stopped and B loop of RHR was returned to operable. This finding was entered into the licensee's corrective action program as NCR #344233.

The finding was determined to be more than minor because the finding was associated with the Mitigating Systems Cornerstone attribute of configuration control and affected the cornerstone objective of to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, as a result of this error on the Loop A RHR relay channels, for a short time, safety interlocks were bypassed on both the low pressure injection coolant (LPCI) outboard injection valve and the RHR heat exchanger bypass valve, and the position of the RHR pump minimum flow bypass valve was changed out of its normal position. The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1 - Initial Screening and Characterization of findings," Table 4a for the Mitigating Systems Cornerstone. The finding was determined to be of very low safety significance (Green) because the finding was not a design or qualification deficiency which resulted in loss of operability or functionality, 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, and did not represent potentially risk significant due to a seismic, flooding, or severe weather initiating event. The finding has a cross-cutting aspect in the Human Performance cross cutting area, Work Practices component, because the licensee failed to ensure surveillance instructions (work order 1280322) were implemented correctly. This resulted in performing a surveillance test on the A loop of the RHR system while the B loop of the RHR system was disabled (H.4(b))

Inspection Report# : [2009004](#) (*pdf*)

**Significance:**  Sep 30, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Establish Adequate Installation Instructions for Emergency Diesel Generator Service Water Expansion Joint Control Units**

The inspectors identified a Green non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the failure to specify an appropriate quality standard for the installation of the control units on the emergency diesel generator jacket water heat exchanger inlet and outlet expansion joints. As a result, threaded fasteners on emergency diesel generators #1 and #4 loosened, creating a potential vulnerability to expansion joint failure. The licensee tightened the control unit bolts on all the emergency diesel generator service water

expansion joints and initiated an engineering change to prevent the fasteners from loosening. This finding was entered into the licensee's corrective action program as NCR #346113.

The finding was determined to be more than minor because the finding, if left uncorrected, would have the potential to lead to a more significant safety concern. Specifically, over time, the hex nuts on the expansion joint control units could loosen to the point of expansion joint failure, leading to a loss of service water to the emergency diesel generators and failure of the emergency diesel generators. The inspectors evaluated the finding in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1 - Initial Screening and Characterization of findings," Table 4a for the Mitigating Systems Cornerstone. The finding was determined to be of very low safety significance (Green) because the finding was a design or qualification deficiency confirmed not to result in loss of operability or functionality. This finding has no cross-cutting aspect because the design deficiency occurred in 2005 and is not indicative of current licensee performance.

Inspection Report# : [2009004](#) (pdf)

**Significance:**  Sep 30, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Failure to Include Risk Significant Maintenance in the Site Risk Profile**

The inspectors identified a Green non-cited violation of 10 CFR Part 50.65 (a)(4), when the licensee removed the severe accident mitigation guideline (SAMG) diesel generators from service without considering the change in the online plant risk. Online plant risk is modeled and communicated to licensee plant personnel via the equipment out of service (EOOS) profile. The change in online risk was not reflected in the EOOS profile when the SAMG diesel generators were out of service from July 6, 2009 to July 8, 2009. Once the deficiency was identified on July 8, 2009, the EOOS profile was updated by the licensee and reflected the SAMG diesel out of service condition. This finding was entered into the licensee's corrective action program as NCR #351002.

The finding was determined to be more than minor because the finding related to maintenance risk assessment and risk management issues. Specifically, the licensee's risk assessment failed to consider risk significant structures, systems, or components that were unavailable during maintenance. The inspectors evaluated the finding in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1 - Initial Screening and Characterization of findings," Table 3a for the Mitigating Systems Cornerstone. The finding was determined to degrade the licensee's assessment and management of risk associated with performing maintenance activities under all plant operation or shutdown conditions. In accordance with Baseline Inspection Procedure (IP) 71111.13, "Maintenance Risk Assessment and Emergent Work Control," and IMC 0609, Appendix K, "Maintenance Risk Assessment and Risk Management Significance Determination Process," the finding was determined to be a maintenance risk assessment issue. Flowchart 1, "Assessment of Risk Deficit," requires the inspectors to determine the risk deficit associated with this issue. The finding was determined to be of very low safety significance because the incremental core damage probability deficit was less than  $1 \times 10^{-6}$ . The regional senior reactor analyst reviewed the information and confirmed that the system was a maintenance rule safety significant system. This finding has a cross-cutting aspect in the area of human performance, work control component, because the licensee did not plan and coordinate work activities consistent with nuclear safety. Specifically, the licensee failed to include risk significant maintenance in the EOOS profile when the SAMG diesel generators were out of service from July 6, 2009 until July 8, 2009 (H.3(a))

Inspection Report# : [2009004](#) (pdf)

**Significance:**  Sep 30, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Capability of Emergency Diesel Generator Ventilation System to Meet Design and Licensing Requirements**

The inspectors identified a Green non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion III, Design Control, for failure to translate a key analytical assumption related to operation of the emergency diesel building back draft and check dampers into specifications and ultimately into the installed hardware. This issue was entered into the licensee's corrective action program as NCR 00259088 with actions to evaluate the ability of the EDGs actual installed equipment to satisfy the intended safety function during and following the design basis tornado event.

Compensatory measures were established to eliminate the concern pending the licensee's determination of the systems capability to mitigate the effects of a tornado event.

This finding was determined to be more than minor because the finding was associated with the Mitigating Systems Cornerstone attribute of Design Control, i.e. initial design. It impacted the cornerstone objective of ensuring the availability, reliability, and capability of the emergency diesel building ventilation to protect the EDG building structure during a design basis tornado event. Due to the deficiencies between the installed hardware and the assumptions in the calculation, the calculation did not ensure the capability of emergency diesel building ventilation system to perform the safety function. This was determined to be a failure to ensure the availability, reliability, and capability of a safety system that responds to an initiating event to prevent undesirable consequences. The licensee subsequently determined from analysis through modeling and testing that the emergency diesel building ventilation system could perform the safety function during a design basis tornado event with the existing hardware installed. The NRC reviewed this analysis and the results that determined that the existing condition did not result in the loss of the system safety function. The inspectors assessed the finding using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1 - Initial Screening and Characterization of findings," Table 4a for the Mitigating Systems Cornerstone. The finding was determined to be of very low safety significance (Green) because there was not an actual loss of safety system function based upon the inspector's verification of the Progress Energy analysis of the emergency diesel building ventilation system. The cause of the finding is not related to a cross-cutting aspect because the occurrence was greater than three years ago and is not indicative of current licensee performance.

Inspection Report# : [2009004](#) (*pdf*)

**Significance:** **W** Jun 17, 2009

Identified By: NRC

Item Type: VIO Violation

#### **Inability to Operate the EDGs Locally as Required by the Safe Shutdown Analysis Report**

A violation of 10 CFR 50, Appendix B, Criterion III, Design Control, was identified for failure to correctly translate the design basis into EC 66274 to replace control relays on all four EDGs. Specifically, termination points for linking control power to the EDG lockout relay reset circuitry were incorrectly designated in the EC. This resulted in the wiring for control relays being installed such that the EDGs could not be operated locally as required by the Safe Shutdown Analysis Report. Upon discovery, the licensee initiated Action Request (AR) 292232 and re-wired and tested each affected EDG. The local control function was restored to all EDGs on August 21, 2008.

The failure to correctly translate the design basis into EC66274 is a performance deficiency. This finding is more than minor because it is associated with the reactor safety mitigating system cornerstone attribute of protection against external events, i.e., fire. It also affects the cornerstone objective of ensuring the availability of systems that respond to events in that the EDGs could not be operated locally as required by the Safe Shutdown Analysis Report. This finding was assessed using the applicable SDP, which resulted in a calculated core damage frequency (CDF) risk increase over the base case between 1E-5 and 1E-6 per year. The dominant accident sequences involved are initiated by a fire situated such as to cause both a loss of offsite power (LOOP) and a forced main control room evacuation. For these dominant accident sequences, the performance deficiency will result in a station blackout (SBO) to either or both units. The exposure period for this condition was one year. As a result, the finding was preliminarily determined to be of low to moderate safety significance (White). The cause of the finding is considered to have a cross-cutting aspect related to accurate design documentation [H.2(c)], as described in the resources component of the human performance cross-cutting area.

Inspection Report# : [2009010](#) (*pdf*)

Inspection Report# : [2009009](#) (*pdf*)

**Significance:** **G** 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*)

---

## Barrier Integrity

**Significance:**  Mar 31, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Identify and Correct a Condition Adverse to Quality Affecting the Operability of the Standby Gas Treatment Train B**

The inspectors identified a Green non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action" which states in part, that for conditions adverse to quality, measures shall assure that the cause of the condition is determined and corrective action taken. Specifically, the licensee failed to correct a condition that allowed leakage through a penetration seal in the Unit 1 reactor building supply air ventilation room floor onto the 1B standby gas treatment (SBGT) train control panel, rendering the 1B SBGT inoperable. The licensee entered the issue into their corrective action program and repaired the degraded penetration.

The deficiency associated with this event is not adequately sealing the floor penetration in the Unit 1 reactor building supply air ventilation room. The finding is more than minor because it was associated with the containment barrier performance attribute of the barrier integrity cornerstone to provide reasonable assurance that physical design barriers provide protection against radionuclide releases caused by accidents or events. In accordance with Inspection Manual Chapter (IMC) 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," the inspectors conducted a Phase I significance determination process (SDP) screening and determined the finding to be of very low safety significance (Green). The finding was of very low safety significance (Green) because the finding only represents a degradation of the radiological barrier function provided for the SBGT system. The cause of the finding is not related to a cross-cutting aspect because the occurrence was greater than three years ago and is not indicative of current licensee performance.

Inspection Report# : [2009002](#) (*pdf*)

**Significance:**  Mar 31, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

### **Inadequate Maintenance Procedure for the Control Room Air Conditioning and Emergency Ventilation Instrument Air System**

A self-revealing Green NCV of Technical Specification (TS) 5.4.1, Procedures, was identified for inadequate maintenance procedures for the control room air conditioning and emergency ventilation system instrument air dryer. As a result, on January 21, 2009, the control room air conditioning and emergency ventilation instrument air system lost air pressure, rendering the control room air conditioning (AC) system and the control room emergency ventilation (CREV) system inoperable. The licensee entered the issue into their corrective action program and changed maintenance and operating procedures to prevent recurrence.

The failure to implement adequate maintenance procedures for the control room air conditioning and emergency ventilation instrument air system is a performance deficiency. This performance deficiency is more than minor because it is associated with structure, system, and component (SSC), and barrier performance attribute of the Barrier Integrity Cornerstone. It also adversely affected the cornerstone objective of maintaining a radiological barrier for the control room. The finding was determined to be of very low safety significance because it only affected the radiological barrier function of the control room, and does not represent a degradation of the smoke or toxic atmosphere barrier function of the control room. The finding affects the cross-cutting area of human performance, resources component, complete and accurate documentation aspect because the licensee did not incorporate adequate guidance for maintaining the control room AC and CREV instrument air dryer in their maintenance procedures. (H.2. (c))

Inspection Report# : [2009002](#) (*pdf*)

---

## Emergency Preparedness

---

## 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 May 08, 2009

Identified By: NRC

Item Type: FIN Finding

### **Brunswick PI&R Summary**

The inspection team concluded that, in general, problems were adequately identified, prioritized, and evaluated; and effective corrective actions were implemented. Site management was actively involved in the corrective action program (CAP) and focused appropriate attention on significant plant issues. The team found that employees were encouraged by management to initiate ARs to address plant issues.

The licensee was effective at identifying problems and entering them into the CAP for resolution, as evidenced by the relatively few deficiencies identified by the NRC that had not been previously identified by the licensee during the review period. The threshold for initiating action requests (ARs) was appropriately low, as evidenced by the type of problems identified and large number of ARs entered annually into the CAP. Action requests normally provided complete and accurate characterization of the problem. However, the team identified two minor equipment issues during system walkdowns involving selected risk-significant safety-related systems, which were not already entered into the CAP.

Generally, prioritization and evaluation of issues were adequate consistent with the licensee's CAP guidance. Formal root cause evaluations for significant problems were adequate, and corrective actions specified for problems did address the cause of the problems. The age and extensions for completing evaluations were closely monitored by plant management, both for high priority nuclear condition reports (NCRs), as well as for adverse conditions of less significant priority. Also, the technical adequacy and depth of evaluations (e.g., root cause investigations) were typically adequate. However, the team identified a minor issue associated with the problem evaluation of a risk significant system, which could have resulted in unresolved issues with incomplete corrective actions.

Corrective actions were generally effective, timely, and commensurate with the safety significance of the issues. However, the team identified two minor issues associated with inadequate and untimely corrective actions that allowed potential unresolved conditions adverse to quality to remain uncorrected involving degraded equipment performance. This example of inadequate corrective actions did not represent a significant safety concern but reflected a lack of attention to detail in the implementation of corrective actions and preventive maintenance activities.

The operating experience program was effective in screening operating experience for applicability to the plant, entering items determined to be applicable into the CAP, and taking adequate corrective actions to address the issues. External and internal operating experience was adequately utilized and considered as part of formal root cause evaluations for supporting the development of lessons learned and corrective actions for CAP issues. However, the team identified an example where a Significant Adverse Condition Investigation report did not evaluate the applicable operating experience as directed by the licensee's investigation procedure.

The licensee's audits and self-assessments were critical and effective in 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 the effectiveness of the CAP.

Based on general discussions with licensee employees during the inspection, targeted interviews with plant personnel, and reviews of selected employee concerns records, the inspectors determined that personnel at the site felt free to raise safety concerns to management and use the CAP as well as the employee concerns program to resolve those concerns.

Inspection Report# : [2009006](#) (*pdf*)

Last modified : December 10, 2009

# Brunswick 1

## 4Q/2009 Plant Inspection Findings

---

### Initiating Events

**Significance:**  Sep 30, 2009

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

#### **Failure to Follow Plant Procedure Caused Loss of E2 Bus**

A self-revealing Green non-cited violation of Technical Specification (TS) 5.4.1, Procedures, was identified when the licensee failed to follow procedure 0PICCNV023, Calibration of Westinghouse & Scientific Columbus Teleductors. During the performance of the calibration, procedural steps were not performed correctly and the E2 electrical bus was inadvertently deenergized, requiring the emergency diesel generator #2 to auto-start and reenergize the bus. Emergency diesel generator #2 auto-started and the E2 bus transferred from off-site power. After the event, the licensee halted the maintenance on the E2 bus instruments and restored off-site power to the E2 bus. The event was entered into the licensee's corrective action program as NCR #344300. The finding was determined to be more than minor because the finding was associated with the Initiating Events Cornerstone attribute of configuration control and affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during power operations.

The finding affected configuration control because correct test switch alignment was not maintained. The finding also affected the cornerstone objective because loss of the E2 bus represented an upset to plant stability. The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1 - Initial Screening and Characterization of findings," Table 4a for the Initiating Events Cornerstone. The finding was determined to be of very low safety significance (Green) because the finding was a transient initiator that did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available. The finding has a cross-cutting aspect in the Human Performance cross cutting area, Work Practices component, because the licensee failed to implement adequate error prevention techniques while performing plant procedure 0PIC-CNV023, Calibration of Westinghouse & Scientific Columbus Teleductors. Specifically, technicians did not utilize adequate error prevention techniques to prevent them from operating the wrong test switch when calibrating instrument 1-E2-AG6-VTR (H.4(a))

Inspection Report# : [2009004](#) (*pdf*)

**Significance:**  Mar 31, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Failure to Perform a 10 CFR 50.59 Evaluation for a Plant Modification**

The inspectors identified a severity level IV NCV of 10 CFR 50.59, "Changes, Tests, and Experiments" for failing to perform a written safety evaluation prior to implementing a change to the facility as described in the Updated Final Safety Analysis Report (UFSAR), when the Unit 1 and Unit 2 reactor building instrument air standby compressors were permanently abandoned. The licensee entered the issue into their corrective action program and performed a written safety evaluation of the condition.

The inspectors determined that, until identified by NRC inspectors, the licensee had not performed a 10 CFR 50.59 safety evaluation for the abandonment of the instrument air standby compressors, and this is a performance deficiency. Because this is a violation of 10 CFR 50.59, it is considered to be a violation which potentially impedes or impacts the regulatory process. Therefore, such violations are dispositioned using the traditional enforcement process instead of the Significance Determination Process. This finding was determined to be more than minor because there was a reasonable likelihood that the change requiring a 10 CFR 50.59 safety evaluation would require Commission review and approval prior to implementation in accordance with 10 CFR 50.59(c)(2). This likelihood is based on the increased likelihood of loss of reactor building instrument air, reactor scram, and closure of the outboard MSIVs, which is an occurrence of a malfunction of a structure, system, or component (SSC) that is analyzed in the UFSAR.

To determine the significance of the violation, the inspectors completed a significance determination review using IMC 0609, Appendix A, Significance Determination of Reactor Inspection Findings for At Power Situations. The finding impacted the initiating events cornerstone. 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, this finding has very low safety significance. The cause of the finding is not related to a cross-cutting aspect because the performance deficiency is not indicative of current licensee performance.

Inspection Report# : [2009002](#) (pdf)

---

## Mitigating Systems

**Significance:**  Dec 31, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure To Identify and Correct Degraded Fire Protection Sprinklers**

The inspectors identified a Green non-cited violation of Brunswick Steam Electric Plant (BSEP) Unit 1 Updated Facility Operating License DPR-71, and the Unit 2 Updated Facility Operating License DPR-62, Condition 2.B.(6), for the licensee's failure to identify and correct degraded fire suppression system sprinklers per the licensee's fire protection program procedures. Procedure, OPT-34.6.4.1, "Sprinkler And Spray System Visual Inspection: RX1, RX2, SW, RW, WT, and DG Buildings," directs the licensee to verify the physical integrity of the spray and sprinkler piping and the absence of sprinkler obstruction or damage for the Unit 1 Reactor Building, Unit 2 Reactor Building, Service Water Building, Radwaste Building, Water Treatment Building, and Diesel Generator Building. After NRC inspectors identified the degraded sprinklers, the licensee re-performed the procedure and identified 40 spray shields to be noncompliant with the procedure's acceptance criteria. Once identified, the licensee initiated compensatory fire watches. Corrective actions also included replacing or repairing the defective spray shields. This finding was entered into the licensee's corrective action program as NCR #357183.

Failure to follow procedure OPT-34.6.4.1, "Sprinkler And Spray System Visual Inspection: RX1, RX2, SW, RW, WT, and DG Buildings" was a performance deficiency. The finding was determined to be more than minor because it affected the Mitigating Systems cornerstone objective of availability, reliability, and capability of the fixed fire suppression systems and was associated with the protection against external factors (fire) attribute. Specifically, this failure could affect the ability of the water sprinkler system to respond to a fire because the affected sprinklers' spray patterns are reduced and less effective. The issue was determined to be of very low safety significance (Green) using Manual Chapter (MC) 0609, Appendix F, Attachment 1, because the category of fixed fire suppression was evaluated as having low degradation. The system had low degradation because the sprinkler system is expected to display nearly the same level of effectiveness and reliability as it would, had the degradation not been present. The finding has a procedural compliance cross-cutting aspect in the Work Practices component of the Human Performance cross cutting area, because the licensee failed to ensure procedural instructions (procedure OPT-34.6.4.1) were implemented correctly. H.4(b)

Inspection Report# : [2009005](#) (pdf)

**Significance:**  Dec 31, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure To Adequately Implement Design Control Measures For The Fire Protection Program**

The inspectors identified a Green non-cited violation of BSEP Unit 1 Updated Facility Operating License DPR-71, and the Unit 2 Updated Facility Operating License DPR-62, Condition 2.B.(6), for the licensee's failure to implement adequate design control measures for the fire protection program. Plant drawings which specify the configuration of fire suppression sprinklers are inconsistent and inadequate in that they do not provide complete details for sprinkler spray shields. Dimensions for spray shields on some drawings are incomplete because they don't list all of the necessary critical dimensions. Therefore, some ceiling-level spray shields were incorrectly installed and extended below the sprinklers' fusible links. This would have delayed sprinkler response in a fire. After the identification of this design control issue, the licensee implemented corrective actions which included repairing or replacing the degraded sprinklers. This finding was entered into the licensee's corrective action program as NCR #367339.

The licensee's failure to adequately implement design control measures for the fire protection program as required by the operating license (condition 2.B(6)) was a performance deficiency. The finding was determined to be more than minor because it affected the Mitigating Systems cornerstone objective of availability, reliability, and capability of the fixed fire suppression systems and was associated with the design control and protection against external factors (fire) attribute. Specifically, this failure could affect the ability of the water sprinkler system to respond to a fire because the incorrectly installed spray shields delay the ceiling-level sprinklers' response times. The issue was determined to be of very low safety significance (Green) using MC 0609, Appendix F, Attachment 1, because the category of fixed fire suppression was evaluated as having low degradation. The system had low degradation because the sprinkler system is expected to display nearly the same level of effectiveness and reliability as it would, had the degradation not been present. This finding has no cross-cutting aspect because the design drawing deficiency occurred when the plants were licensed and it is not indicative of current licensee performance.

Inspection Report# : [2009005](#) (pdf)

**Significance:**  Dec 31, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

### **Inadequately Monitored Maintenance Rule MOV**

The inspectors identified a Green NCV of 10 CFR 50.65(a)(1), Requirements for monitoring the effectiveness of maintenance at nuclear power plants, for the licensee's failure to monitor the performance or condition of motor-operated valve (MOV) MS-V28 in a manner sufficient to provide reasonable assurance that it was capable of fulfilling its intended functions. As a result, the licensee did not recognize that the valve was incapable of opening against design differential pressure and failed to take appropriate corrective actions to ensure that the valve could fulfill its emergency operating procedure (EOP) function. After the issue was identified, the licensee altered its operating procedures to compensate for the valve not opening against design differential pressure and entered it into their corrective action program (AR #356800).

The failure to adequately monitor the performance or condition of MOV MS-V28 in a manner to provide reasonable assurance that the valve was capable of fulfilling its intended function is a performance deficiency. The performance deficiency was more than minor because it is associated with the Mitigating Systems cornerstone attribute of equipment performance, and affected 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 performance deficiency affected the reliability of the MOV MS-V-28 and its use in EOPs to restore feed to the reactor. Inspectors evaluated the finding using NRC IMC 0609, Significance Determination Process, Appendix A. Since the finding represents an actual loss of a function of non-Technical Specifications equipment designated as risk-significant for greater than 24 hours, the finding required a phase two significance analysis. The Brunswick phase 2 SDP spreadsheet indicated that the finding was greater than green but did not detail to the cases requiring MS-V28 operation therefore a phase 3 SDP analysis was completed by a regional SRA.

The phase 3 SDP analysis was performed in accordance with NRC Inspection Manual Chapter 0609 appendix A utilizing the NRC SPAR model and output from the licensee's full scope PRA model. The result was a risk increase for the finding of  $<1E-6$  for core damage frequency (cdf) and  $<1E-7$  for large early release frequency (LERF). The dominant sequences were transient initiators with spurious level instrument generated main steam isolation valve (MSIV) closure and the inability to restore main feedwater due to the performance deficiency coupled with failure to achieve successful depressurization and use of low pressure makeup systems leading to core damage. The risk was mitigated by the low initiating event frequency for transient conditions which would allow MSIV reopening and recovery of main feedwater. The availability of low pressure injection systems was also a factor reducing the risk. The result of the phase 3 analysis was that the finding was characterized as having very low safety significance, a Green finding. The cause of this finding was directly related to the problem evaluation cross-cutting aspect in the corrective action program component of the Problem Identification and Resolution cross-cutting area because the licensee failed to adequately evaluate the failure of MS-V28 in November 2008. (P.1(c)).

Inspection Report# : [2009005](#) (pdf)

**Significance:**  Oct 20, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

## **Inadequate Maintenance Instructions for Maintaining Cleanliness During Emergency Diesel Generator Governor Maintenance**

Green. The inspectors identified a Green NCV of Technical Specification (TS) 5.4.1, Procedures, for inadequate cleanliness and flushing procedures for maintaining cleanliness during maintenance on the emergency diesel generator (EDG) governors. This procedural inadequacy resulted in a failure of the emergency diesel generator #4 governor on September 19, 2009. The licensee entered the issue into their corrective action program and replaced the failed governor.

The finding was determined to be more than minor because it is associated with equipment performance and procedure quality attributes of the Mitigating Systems Cornerstone. It also adversely affected 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 reliability of EDG #4 was reduced because it was susceptible to fouling due to the foreign material in the governor. The finding was evaluated for significance using NRC Manual Chapter 0609, Appendix A, Determining the Significance of Reactor Inspection Findings for At-Power Situations. Using Table 4a of Appendix A to MC 0609, the finding was determined to be of very low safety significance (Green) because the failure of EDG #4 did not represent a loss of safety function, did not represent a loss of EDG #4 operability for greater than its technical specification allowed outage time, and does not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. The finding affects the cross-cutting area of human performance, resources component, complete and accurate documentation aspect because the licensee did not incorporate adequate guidance for maintaining cleanliness of the EDG governor in their maintenance procedures. (H.2(c))

Inspection Report# : [2009011](#) (*pdf*)

**Significance:**  Sep 30, 2009

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

### **Surveillance Test Performed on Incorrect Loop of RHR**

A self-revealing Green non-cited violation of TS 5.4.1, Procedures, was identified when the licensee failed to follow work order instructions contained in work order 1280322. This work order directed technicians to perform testing on the B loop of the Unit 1 residual heat removal (RHR) system according to procedure 1MST-RHR28R, RHR Time Delay Relay Channel Calibration. Contrary to these work order instructions, portions of the procedure affecting Loop A were performed instead of Loop B. After the technicians completed the A loop section of the procedure, they reported to the control room where operators recognized the error.

Once the error was recognized, the maintenance was stopped and B loop of RHR was returned to operable. This finding was entered into the licensee's corrective action program as NCR #344233.

The finding was determined to be more than minor because the finding was associated with the Mitigating Systems Cornerstone attribute of configuration control and affected the cornerstone objective of to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, as a result of this error on the Loop A RHR relay channels, for a short time, safety interlocks were bypassed on both the low pressure injection coolant (LPCI) outboard injection valve and the RHR heat exchanger bypass valve, and the position of the RHR pump minimum flow bypass valve was changed out of its normal position. The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1 - Initial Screening and Characterization of findings," Table 4a for the Mitigating Systems Cornerstone. The finding was determined to be of very low safety significance (Green) because the finding was not a design or qualification deficiency which resulted in loss of operability or functionality, 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, and did not represent potentially risk significant due to a seismic, flooding, or severe weather initiating event. The finding has a cross-cutting aspect in the Human Performance cross cutting area, Work Practices component, because the licensee failed to ensure surveillance instructions (work order 1280322) were implemented correctly. This resulted in performing a surveillance test on the A loop of the RHR system while the B loop of the RHR system was disabled (H.4(b))

Inspection Report# : [2009004](#) (*pdf*)

**Significance:** G Sep 30, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Establish Adequate Installation Instructions for Emergency Diesel Generator Service Water Expansion Joint Control Units**

The inspectors identified a Green non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the failure to specify an appropriate quality standard for the installation of the control units on the emergency diesel generator jacket water heat exchanger inlet and outlet expansion joints. As a result, threaded fasteners on emergency diesel generators #1 and #4 loosened, creating a potential vulnerability to expansion joint failure. The licensee tightened the control unit bolts on all the emergency diesel generator service water expansion joints and initiated an engineering change to prevent the fasteners from loosening. This finding was entered into the licensee's corrective action program as NCR #346113.

The finding was determined to be more than minor because the finding, if left uncorrected, would have the potential to lead to a more significant safety concern. Specifically, over time, the hex nuts on the expansion joint control units could loosen to the point of expansion joint failure, leading to a loss of service water to the emergency diesel generators and failure of the emergency diesel generators. The inspectors evaluated the finding in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1 - Initial Screening and Characterization of findings," Table 4a for the Mitigating Systems Cornerstone. The finding was determined to be of very low safety significance (Green) because the finding was a design or qualification deficiency confirmed not to result in loss of operability or functionality. This finding has no cross-cutting aspect because the design deficiency occurred in 2005 and is not indicative of current licensee performance.

Inspection Report# : [2009004](#) (pdf)

**Significance:** G Sep 30, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Include Risk Significant Maintenance in the Site Risk Profile**

The inspectors identified a Green non-cited violation of 10 CFR Part 50.65 (a)(4), when the licensee removed the severe accident mitigation guideline (SAMG) diesel generators from service without considering the change in the online plant risk. Online plant risk is modeled and communicated to licensee plant personnel via the equipment out of service (EOOS) profile. The change in online risk was not reflected in the EOOS profile when the SAMG diesel generators were out of service from July 6, 2009 to July 8, 2009. Once the deficiency was identified on July 8, 2009, the EOOS profile was updated by the licensee and reflected the SAMG diesel out of service condition. This finding was entered into the licensee's corrective action program as NCR #351002.

The finding was determined to be more than minor because the finding related to maintenance risk assessment and risk management issues. Specifically, the licensee's risk assessment failed to consider risk significant structures, systems, or components that were unavailable during maintenance. The inspectors evaluated the finding in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1 - Initial Screening and Characterization of findings," Table 3a for the Mitigating Systems Cornerstone. The finding was determined to degrade the licensee's assessment and management of risk associated with performing maintenance activities under all plant operation or shutdown conditions. In accordance with Baseline Inspection Procedure (IP) 7111.13, "Maintenance Risk Assessment and Emergent Work Control," and IMC 0609, Appendix K, "Maintenance Risk Assessment and Risk Management Significance Determination Process," the finding was determined to be a maintenance risk assessment issue. Flowchart 1, "Assessment of Risk Deficit," requires the inspectors to determine the risk deficit associated with this issue. The finding was determined to be of very low safety significance because the incremental core damage probability deficit was less than  $1 \times 10^{-6}$ . The regional senior reactor analyst reviewed the information and confirmed that the system was a maintenance rule safety significant system. This finding has a cross-cutting aspect in the area of human performance, work control component, because the licensee did not plan and coordinate work activities consistent with nuclear safety. Specifically, the licensee failed to include risk significant maintenance in the EOOS profile when the SAMG diesel generators were out of service from July 6, 2009 until July 8, 2009 (H.3(a))

Inspection Report# : [2009004](#) (pdf)

**Significance:** **G** Sep 30, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

**Capability of Emergency Diesel Generator Ventilation System to Meet Design and Licensing Requirements**

The inspectors identified a Green non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion III, Design Control, for failure to translate a key analytical assumption related to operation of the emergency diesel building back draft and check dampers into specifications and ultimately into the installed hardware. This issue was entered into the licensee's corrective action program as NCR 00259088 with actions to evaluate the ability of the EDGs actual installed equipment to satisfy the intended safety function during and following the design basis tornado event. Compensatory measures were established to eliminate the concern pending the licensee's determination of the systems capability to mitigate the effects of a tornado event.

This finding was determined to be more than minor because the finding was associated with the Mitigating Systems Cornerstone attribute of Design Control, i.e. initial design. It impacted the cornerstone objective of ensuring the availability, reliability, and capability of the emergency diesel building ventilation to protect the EDG building structure during a design basis tornado event. Due to the deficiencies between the installed hardware and the assumptions in the calculation, the calculation did not ensure the capability of emergency diesel building ventilation system to perform the safety function. This was determined to be a failure to ensure the availability, reliability, and capability of a safety system that responds to an initiating event to prevent undesirable consequences. The licensee subsequently determined from analysis through modeling and testing that the emergency diesel building ventilation system could perform the safety function during a design basis tornado event with the existing hardware installed. The NRC reviewed this analysis and the results that determined that the existing condition did not result in the loss of the system safety function. The inspectors assessed the finding using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1 - Initial Screening and Characterization of findings," Table 4a for the Mitigating Systems Cornerstone. The finding was determined to be of very low safety significance (Green) because there was not an actual loss of safety system function based upon the inspector's verification of the Progress Energy analysis of the emergency diesel building ventilation system. The cause of the finding is not related to a cross-cutting aspect because the occurrence was greater than three years ago and is not indicative of current licensee performance.

Inspection Report# : [2009004](#) (*pdf*)

**Significance:** **W** Jun 17, 2009

Identified By: NRC

Item Type: VIO Violation

**Inability to Operate the EDGs Locally as Required by the Safe Shutdown Analysis Report**

A violation of 10 CFR 50, Appendix B, Criterion III, Design Control, was identified for failure to correctly translate the design basis into EC 66274 to replace control relays on all four EDGs. Specifically, termination points for linking control power to the EDG lockout relay reset circuitry were incorrectly designated in the EC. This resulted in the wiring for control relays being installed such that the EDGs could not be operated locally as required by the Safe Shutdown Analysis Report. Upon discovery, the licensee initiated Action Request (AR) 292232 and re-wired and tested each affected EDG. The local control function was restored to all EDGs on August 21, 2008.

The failure to correctly translate the design basis into EC66274 is a performance deficiency. This finding is more than minor because it is associated with the reactor safety mitigating system cornerstone attribute of protection against external events, i.e., fire. It also affects the cornerstone objective of ensuring the availability of systems that respond to events in that the EDGs could not be operated locally as required by the Safe Shutdown Analysis Report. This finding was assessed using the applicable SDP, which resulted in a calculated core damage frequency (CDF) risk increase over the base case between 1E-5 and 1E-6 per year. The dominant accident sequences involved are initiated by a fire situated such as to cause both a loss of offsite power (LOOP) and a forced main control room evacuation. For these dominant accident sequences, the performance deficiency will result in a station blackout (SBO) to either or both units. The exposure period for this condition was one year. As a result, the finding was preliminarily determined to be of low to moderate safety significance (White). The cause of the finding is considered to have a cross-cutting aspect related to accurate design documentation [H.2(c)], as described in the resources component of the human performance cross-cutting area.

Inspection Report# : [2009009](#) (pdf)

Inspection Report# : [2009010](#) (pdf)

---

## Barrier Integrity

**Significance:**  Mar 31, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Identify and Correct a Condition Adverse to Quality Affecting the Operability of the Standby Gas Treatment Train B**

The inspectors identified a Green non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action" which states in part, that for conditions adverse to quality, measures shall assure that the cause of the condition is determined and corrective action taken. Specifically, the licensee failed to correct a condition that allowed leakage through a penetration seal in the Unit 1 reactor building supply air ventilation room floor onto the 1B standby gas treatment (SBGT) train control panel, rendering the 1B SBGT inoperable. The licensee entered the issue into their corrective action program and repaired the degraded penetration.

The deficiency associated with this event is not adequately sealing the floor penetration in the Unit 1 reactor building supply air ventilation room. The finding is more than minor because it was associated with the containment barrier performance attribute of the barrier integrity cornerstone to provide reasonable assurance that physical design barriers provide protection against radionuclide releases caused by accidents or events. In accordance with Inspection Manual Chapter (IMC) 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," the inspectors conducted a Phase I significance determination process (SDP) screening and determined the finding to be of very low safety significance (Green). The finding was of very low safety significance (Green) because the finding only represents a degradation of the radiological barrier function provided for the SBGT system. The cause of the finding is not related to a cross-cutting aspect because the occurrence was greater than three years ago and is not indicative of current licensee performance.

Inspection Report# : [2009002](#) (pdf)

**Significance:**  Mar 31, 2009

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

### **Inadequate Maintenance Procedure for the Control Room Air Conditioning and Emergency Ventilation Instrument Air System**

A self-revealing Green NCV of Technical Specification (TS) 5.4.1, Procedures, was identified for inadequate maintenance procedures for the control room air conditioning and emergency ventilation system instrument air dryer. As a result, on January 21, 2009, the control room air conditioning and emergency ventilation instrument air system lost air pressure, rendering the control room air conditioning (AC) system and the control room emergency ventilation (CREV) system inoperable. The licensee entered the issue into their corrective action program and changed maintenance and operating procedures to prevent recurrence.

The failure to implement adequate maintenance procedures for the control room air conditioning and emergency ventilation instrument air system is a performance deficiency. This performance deficiency is more than minor because it is associated with structure, system, and component (SSC), and barrier performance attribute of the Barrier Integrity Cornerstone. It also adversely affected the cornerstone objective of maintaining a radiological barrier for the control room. The finding was determined to be of very low safety significance because it only affected the radiological barrier function of the control room, and does not represent a degradation of the smoke or toxic atmosphere barrier function of the control room. The finding affects the cross-cutting area of human performance, resources component, complete and accurate documentation aspect because the licensee did not incorporate adequate guidance for maintaining the control room AC and CREV instrument air dryer in their maintenance procedures. (H.2. (c))

Inspection Report# : [2009002](#) (pdf)

---

## Emergency Preparedness

---

## 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 May 08, 2009

Identified By: NRC

Item Type: FIN Finding

### **Brunswick PI&R Summary**

The inspection team concluded that, in general, problems were adequately identified, prioritized, and evaluated; and effective corrective actions were implemented. Site management was actively involved in the corrective action program (CAP) and focused appropriate attention on significant plant issues. The team found that employees were encouraged by management to initiate ARs to address plant issues.

The licensee was effective at identifying problems and entering them into the CAP for resolution, as evidenced by the relatively few deficiencies identified by the NRC that had not been previously identified by the licensee during the review period. The threshold for initiating action requests (ARs) was appropriately low, as evidenced by the type of problems identified and large number of ARs entered annually into the CAP. Action requests normally provided complete and accurate characterization of the problem. However, the team identified two minor equipment issues during system walkdowns involving selected risk-significant safety-related systems, which were not already entered into the CAP.

Generally, prioritization and evaluation of issues were adequate consistent with the licensee's CAP guidance. Formal root cause evaluations for significant problems were adequate, and corrective actions specified for problems did address the cause of the problems. The age and extensions for completing evaluations were closely monitored by plant management, both for high priority nuclear condition reports (NCRs), as well as for adverse conditions of less significant priority. Also, the technical adequacy and depth of evaluations (e.g., root cause investigations) were typically adequate. However, the team identified a minor issue associated with the problem evaluation of a risk significant system, which could have resulted in unresolved issues with incomplete corrective actions.

Corrective actions were generally effective, timely, and commensurate with the safety significance of the issues. However, the team identified two minor issues associated with inadequate and untimely corrective actions that allowed potential unresolved conditions adverse to quality to remain uncorrected involving degraded equipment performance. This example of inadequate corrective actions did not represent a significant safety concern but reflected a lack of attention to detail in the implementation of corrective actions and preventive maintenance activities.

The operating experience program was effective in screening operating experience for applicability to the plant, entering items determined to be applicable into the CAP, and taking adequate corrective actions to address the issues. External and internal operating experience was adequately utilized and considered as part of formal root cause evaluations for supporting the development of lessons learned and corrective actions for CAP issues. However, the team identified an example where a Significant Adverse Condition Investigation report did not evaluate the applicable operating experience as directed by the licensee's investigation procedure.

The licensee's audits and self-assessments were critical and effective in 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 the effectiveness of the CAP.

Based on general discussions with licensee employees during the inspection, targeted interviews with plant personnel, and reviews of selected employee concerns records, the inspectors determined that personnel at the site felt free to raise safety concerns to management and use the CAP as well as the employee concerns program to resolve those concerns.

Inspection Report# : [2009006](#) (*pdf*)

Last modified : March 01, 2010

# Brunswick 1

## 1Q/2010 Plant Inspection Findings

---

### Initiating Events

**Significance:** G Mar 31, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Inadequate Risk Evaluation for Removing the 1A South Condenser from Service**

The inspectors identified a Green NCV of 10 CFR Part 50.65 (a)(4), Requirements for monitoring the Effectiveness of Maintenance at Nuclear Power Plants, after Unit 1 experienced a loss of normal reactor feedwater as a result of an abnormal plant configuration during shutdown of the reactor on February 26, 2010.

The licensee did not adequately manage the increase in risk that resulted when the 1B reactor feed pump (RFP) was made unavailable while the 1A south condenser was isolated in the hours leading up to the reactor shutdown. This plant configuration led to a high level in the 1A south condenser hotwell soon after the reactor shutdown, which prevented adequate draining of the 1A RFP turbine casing, and led to the loss of the 1A RFP. After the loss of normal feedwater to the reactor, the licensee restored reactor level using the reactor core isolation cooling (RCIC) system. The licensee entered the issue into its corrective action program (AR #383636).

The failure to adequately evaluate and manage risk associated with equipment configuration during the Unit 1 shutdown is a performance deficiency. This finding is more than minor because it is associated with the initiating events cornerstone attribute of configuration control and it adversely affected the cornerstone objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions. Specifically, plant stability was upset by the loss of normal feedwater to the reactor. In accordance with IMC 0609, Appendix K, Maintenance Risk Assessment and Risk Management Significance Determination Process, this finding is of very low safety significance (Green) because the Incremental Core Damage Probability Deficit is the licensee did not appropriately plan work activities by incorporating risk insights (H.3(a)). Specifically, activities scheduled prior to the reactor shutdown were not properly evaluated to determine their impact on the normal reactor feedwater system.

Inspection Report# : [2010002](#) (*pdf*)

**Significance:** G Sep 30, 2009

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

#### **Failure to Follow Plant Procedure Caused Loss of E2 Bus**

A self-revealing Green non-cited violation of Technical Specification (TS) 5.4.1, Procedures, was identified when the licensee failed to follow procedure 0PICCNV023, Calibration of Westinghouse & Scientific Columbus Teleductors. During the performance of the calibration, procedural steps were not performed correctly and the E2 electrical bus was inadvertently deenergized, requiring the emergency diesel generator #2 to auto-start and reenergize the bus. Emergency diesel generator #2 auto-started and the E2 bus transferred from off-site power. After the event, the licensee halted the maintenance on the E2 bus instruments and restored off-site power to the E2 bus. The event was entered into the licensee's corrective action program as NCR #344300. The finding was determined to be more than minor because the finding was associated with the Initiating Events Cornerstone attribute of configuration control and affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during power operations.

The finding affected configuration control because correct test switch alignment was not maintained. The finding also affected the cornerstone objective because loss of the E2 bus represented an upset to plant stability. The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1 - Initial Screening and Characterization of findings," Table 4a for the Initiating Events Cornerstone. The finding was determined to be of very low safety significance (Green) because the finding was a transient initiator that did not contribute to both the likelihood of a

reactor trip and the likelihood that mitigation equipment or functions would not be available. The finding has a cross-cutting aspect in the Human Performance cross cutting area, Work Practices component, because the licensee failed to implement adequate error prevention techniques while performing plant procedure 0PIC-CNV023, Calibration of Westinghouse & Scientific Columbus Teleductors. Specifically, technicians did not utilize adequate error prevention techniques to prevent them from operating the wrong test switch when calibrating instrument 1-E2-AG6-VTR (H.4(a))  
Inspection Report# : [2009004](#) (pdf)

---

## Mitigating Systems

**Significance:**  Mar 31, 2010

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

### **Failure to Follow Procedures During Reactor Head Disassembly**

A self-revealing Green NCV of Technical Specifications (TS) 5.4.1, Procedures, was identified when reactor head piping was disconnected prior to swapping shutdown range reactor water level transmitters resulting in inaccurate water level indication. The plant procedure for disconnection of the reactor head piping, 0SMP-RPV501, Reactor Vessel Disassembly, used in conjunction with 0GP-06, Cold Shutdown to Refueling, specifies that prior to removal of head piping, the Shutdown Range Reactor Water Level Transmitters shall be swapped from level transmitters, B21-LT-N027A and B21-LT-N027B, to level transmitters, B21-LT-7468A and B21-LT-7468B. Contrary to this requirement, the common reference leg to the level indicators was disconnected prior to swapping transmitters which resulted in loss of accurate indication of current reactor vessel water level. The licensee reinstalled the disconnected piping, refilled the reference legs for the transmitters, and entered the issue into their corrective action program (AR #383779).

The disconnection of the reference leg flange of the reactor vessel head piping prior to realignment of level instrumentation as required by plant procedures is a performance deficiency. The performance deficiency was more than minor because it is associated with the configuration control attribute of the Mitigating Systems cornerstone because it inappropriately altered the reactor level instrumentation reference leg piping. It affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inaccurate level indication degraded the operator's ability to control the reactor vessel water level in the prescribed procedural band and would inhibit their ability to diagnose and prevent loss of residual heat removal (RHR) scenario. In accordance with NRC Inspection Manual Chapter (IMC) 0609, Appendix G, "Shutdown Operations Significance Determination Process," Attachment 1, Checklist 8, the inspectors conducted a Phase 1 SDP screening and determined the finding required a Phase 2 analysis. The Phase 2 analysis determined the finding is of very low safety significance (Green) because adequate mitigation capability was maintained. The cause of this finding was directly related to the supervisory and management oversight cross-cutting aspect in the work practices component of the Human Performance cross-cutting area because plant supervisors failed to ensure an adequate pre-job brief, failed to enforce proper communications methods at the job site, and failed to properly supervise workers executing procedure steps (H.4(c)).  
Inspection Report# : [2010002](#) (pdf)

**Significance:**  Dec 31, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure To Identify and Correct Degraded Fire Protection Sprinklers**

The inspectors identified a Green non-cited violation of Brunswick Steam Electric Plant (BSEP) Unit 1 Updated Facility Operating License DPR-71, and the Unit 2 Updated Facility Operating License DPR-62, Condition 2.B.(6), for the licensee's failure to identify and correct degraded fire suppression system sprinklers per the licensee's fire protection program procedures. Procedure, 0PT-34.6.4.1, "Sprinkler And Spray System Visual Inspection: RX1, RX2, SW, RW, WT, and DG Buildings," directs the licensee to verify the physical integrity of the spray and sprinkler piping and the absence of sprinkler obstruction or damage for the Unit 1 Reactor Building, Unit 2 Reactor Building,

Service Water Building, Radwaste Building, Water Treatment Building, and Diesel Generator Building. After NRC inspectors identified the degraded sprinklers, the licensee re-performed the procedure and identified 40 spray shields to be noncompliant with the procedure's acceptance criteria. Once identified, the licensee initiated compensatory fire watches. Corrective actions also included replacing or repairing the defective spray shields. This finding was entered into the licensee's corrective action program as NCR #357183.

Failure to follow procedure OPT-34.6.4.1, "Sprinkler And Spray System Visual Inspection: RX1, RX2, SW, RW, WT, and DG Buildings" was a performance deficiency. The finding was determined to be more than minor because it affected the Mitigating Systems cornerstone objective of availability, reliability, and capability of the fixed fire suppression systems and was associated with the protection against external factors (fire) attribute. Specifically, this failure could affect the ability of the water sprinkler system to respond to a fire because the affected sprinklers' spray patterns are reduced and less effective. The issue was determined to be of very low safety significance (Green) using Manual Chapter (MC) 0609, Appendix F, Attachment 1, because the category of fixed fire suppression was evaluated as having low degradation. The system had low degradation because the sprinkler system is expected to display nearly the same level of effectiveness and reliability as it would, had the degradation not been present. The finding has a procedural compliance cross-cutting aspect in the Work Practices component of the Human Performance cross cutting area, because the licensee failed to ensure procedural instructions (procedure OPT-34.6.4.1) were implemented correctly. H.4(b)

Inspection Report# : [2009005](#) (pdf)

**Significance:**  Dec 31, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Failure To Adequately Implement Design Control Measures For The Fire Protection Program**

The inspectors identified a Green non-cited violation of BSEP Unit 1 Updated Facility Operating License DPR-71, and the Unit 2 Updated Facility Operating License DPR-62, Condition 2.B.(6), for the licensee's failure to implement adequate design control measures for the fire protection program. Plant drawings which specify the configuration of fire suppression sprinklers are inconsistent and inadequate in that they do not provide complete details for sprinkler spray shields. Dimensions for spray shields on some drawings are incomplete because they don't list all of the necessary critical dimensions. Therefore, some ceiling-level spray shields were incorrectly installed and extended below the sprinklers' fusible links. This would have delayed sprinkler response in a fire. After the identification of this design control issue, the licensee implemented corrective actions which included repairing or replacing the degraded sprinklers. This finding was entered into the licensee's corrective action program as NCR #367339.

The licensee's failure to adequately implement design control measures for the fire protection program as required by the operating license (condition 2.B(6)) was a performance deficiency. The finding was determined to be more than minor because it affected the Mitigating Systems cornerstone objective of availability, reliability, and capability of the fixed fire suppression systems and was associated with the design control and protection against external factors (fire) attribute. Specifically, this failure could affect the ability of the water sprinkler system to respond to a fire because the incorrectly installed spray shields delay the ceiling-level sprinklers' response times. The issue was determined to be of very low safety significance (Green) using MC 0609, Appendix F, Attachment 1, because the category of fixed fire suppression was evaluated as having low degradation. The system had low degradation because the sprinkler system is expected to display nearly the same level of effectiveness and reliability as it would, had the degradation not been present. This finding has no cross-cutting aspect because the design drawing deficiency occurred when the plants were licensed and it is not indicative of current licensee performance.

Inspection Report# : [2009005](#) (pdf)

**Significance:**  Dec 31, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Inadequately Monitored Maintenance Rule MOV**

The inspectors identified a Green NCV of 10 CFR 50.65(a)(1), Requirements for monitoring the effectiveness of maintenance at nuclear power plants, for the licensee's failure to monitor the performance or condition of motor-operated valve (MOV) MS-V28 in a manner sufficient to provide reasonable assurance that it was capable of fulfilling its intended functions. As a result, the licensee did not recognize that the valve was incapable of opening against design differential pressure and failed to take appropriate corrective actions to ensure that the valve could fulfill its

emergency operating procedure (EOP) function. After the issue was identified, the licensee altered its operating procedures to compensate for the valve not opening against design differential pressure and entered it into their corrective action program (AR #356800).

The failure to adequately monitor the performance or condition of MOV MS-V28 in a manner to provide reasonable assurance that the valve was capable of fulfilling its intended function is a performance deficiency. The performance deficiency was more than minor because it is associated with the Mitigating Systems cornerstone attribute of equipment performance, and affected 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 performance deficiency affected the reliability of the MOV MS-V-28 and its use in EOPs to restore feed to the reactor. Inspectors evaluated the finding using NRC IMC 0609, Significance Determination Process, Appendix A. Since the finding represents an actual loss of a function of non-Technical Specifications equipment designated as risk-significant for greater than 24 hours, the finding required a phase two significance analysis. The Brunswick phase 2 SDP spreadsheet indicated that the finding was greater than green but did not detail to the cases requiring MS-V28 operation therefore a phase 3 SDP analysis was completed by a regional SRA.

The phase 3 SDP analysis was performed in accordance with NRC Inspection Manual Chapter 0609 appendix A utilizing the NRC SPAR model and output from the licensee's full scope PRA model. The result was a risk increase for the finding of  $<1E-6$  for core damage frequency (cdf) and  $<1E-7$  for large early release frequency (LERF). The dominant sequences were transient initiators with spurious level instrument generated main steam isolation valve (MSIV) closure and the inability to restore main feedwater due to the performance deficiency coupled with failure to achieve successful depressurization and use of low pressure makeup systems leading to core damage. The risk was mitigated by the low initiating event frequency for transient conditions which would allow MSIV reopening and recovery of main feedwater. The availability of low pressure injection systems was also a factor reducing the risk. The result of the phase 3 analysis was that the finding was characterized as having very low safety significance, a Green finding. The cause of this finding was directly related to the problem evaluation cross-cutting aspect in the corrective action program component of the Problem Identification and Resolution cross-cutting area because the licensee failed to adequately evaluate the failure of MS-V28 in November 2008. (P.1(c)).

Inspection Report# : [2009005](#) (pdf)

**Significance:**  Oct 20, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

### **Inadequate Maintenance Instructions for Maintaining Cleanliness During Emergency Diesel Generator Governor Maintenance**

Green. The inspectors identified a Green NCV of Technical Specification (TS) 5.4.1, Procedures, for inadequate cleanliness and flushing procedures for maintaining cleanliness during maintenance on the emergency diesel generator (EDG) governors. This procedural inadequacy resulted in a failure of the emergency diesel generator #4 governor on September 19, 2009. The licensee entered the issue into their corrective action program and replaced the failed governor.

The finding was determined to be more than minor because it is associated with equipment performance and procedure quality attributes of the Mitigating Systems Cornerstone. It also adversely affected 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 reliability of EDG #4 was reduced because it was susceptible to fouling due to the foreign material in the governor. The finding was evaluated for significance using NRC Manual Chapter 0609, Appendix A, Determining the Significance of Reactor Inspection Findings for At-Power Situations. Using Table 4a of Appendix A to MC 0609, the finding was determined to be of very low safety significance (Green) because the failure of EDG #4 did not represent a loss of safety function, did not represent a loss of EDG #4 operability for greater than its technical specification allowed outage time, and does not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. The finding affects the cross-cutting area of human performance, resources component, complete and accurate documentation aspect because the licensee did not incorporate adequate guidance for maintaining cleanliness of the EDG governor in their maintenance procedures. (H.2(c))

Inspection Report# : [2009011](#) (pdf)

**Significance:** **G** Sep 30, 2009

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

### **Surveillance Test Performed on Incorrect Loop of RHR**

A self-revealing Green non-cited violation of TS 5.4.1, Procedures, was identified when the licensee failed to follow work order instructions contained in work order 1280322. This work order directed technicians to perform testing on the B loop of the Unit 1 residual heat removal (RHR) system according to procedure 1MST-RHR28R, RHR Time Delay Relay Channel Calibration. Contrary to these work order instructions, portions of the procedure affecting Loop A were performed instead of Loop B. After the technicians completed the A loop section of the procedure, they reported to the control room where operators recognized the error. Once the error was recognized, the maintenance was stopped and B loop of RHR was returned to operable. This finding was entered into the licensee's corrective action program as NCR #344233.

The finding was determined to be more than minor because the finding was associated with the Mitigating Systems Cornerstone attribute of configuration control and affected the cornerstone objective of to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, as a result of this error on the Loop A RHR relay channels, for a short time, safety interlocks were bypassed on both the low pressure injection coolant (LPCI) outboard injection valve and the RHR heat exchanger bypass valve, and the position of the RHR pump minimum flow bypass valve was changed out of its normal position. The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1 - Initial Screening and Characterization of findings," Table 4a for the Mitigating Systems Cornerstone. The finding was determined to be of very low safety significance (Green) because the finding was not a design or qualification deficiency which resulted in loss of operability or functionality, 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, and did not represent potentially risk significant due to a seismic, flooding, or severe weather initiating event. The finding has a cross-cutting aspect in the Human Performance cross cutting area, Work Practices component, because the licensee failed to ensure surveillance instructions (work order 1280322) were implemented correctly. This resulted in performing a surveillance test on the A loop of the RHR system while the B loop of the RHR system was disabled (H.4(b))

Inspection Report# : [2009004](#) (*pdf*)

**Significance:** **G** Sep 30, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Establish Adequate Installation Instructions for Emergency Diesel Generator Service Water Expansion Joint Control Units**

The inspectors identified a Green non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the failure to specify an appropriate quality standard for the installation of the control units on the emergency diesel generator jacket water heat exchanger inlet and outlet expansion joints. As a result, threaded fasteners on emergency diesel generators #1 and #4 loosened, creating a potential vulnerability to expansion joint failure. The licensee tightened the control unit bolts on all the emergency diesel generator service water expansion joints and initiated an engineering change to prevent the fasteners from loosening. This finding was entered into the licensee's corrective action program as NCR #346113.

The finding was determined to be more than minor because the finding, if left uncorrected, would have the potential to lead to a more significant safety concern. Specifically, over time, the hex nuts on the expansion joint control units could loosen to the point of expansion joint failure, leading to a loss of service water to the emergency diesel generators and failure of the emergency diesel generators. The inspectors evaluated the finding in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1 - Initial Screening and Characterization of findings," Table 4a for the Mitigating Systems Cornerstone. The finding was determined to be of very low safety significance (Green) because the finding was a design or qualification deficiency confirmed not to result in loss of operability or functionality. This finding has no cross-cutting aspect because the design deficiency occurred in 2005 and is not indicative of current licensee performance.

**Significance:**  Sep 30, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Include Risk Significant Maintenance in the Site Risk Profile**

The inspectors identified a Green non-cited violation of 10 CFR Part 50.65 (a)(4), when the licensee removed the severe accident mitigation guideline (SAMG) diesel generators from service without considering the change in the online plant risk. Online plant risk is modeled and communicated to licensee plant personnel via the equipment out of service (EOOS) profile. The change in online risk was not reflected in the EOOS profile when the SAMG diesel generators were out of service from July 6, 2009 to July 8, 2009. Once the deficiency was identified on July 8, 2009, the EOOS profile was updated by the licensee and reflected the SAMG diesel out of service condition. This finding was entered into the licensee's corrective action program as NCR #351002.

The finding was determined to be more than minor because the finding related to maintenance risk assessment and risk management issues. Specifically, the licensee's risk assessment failed to consider risk significant structures, systems, or components that were unavailable during maintenance. The inspectors evaluated the finding in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1 - Initial Screening and Characterization of findings," Table 3a for the Mitigating Systems Cornerstone. The finding was determined to degrade the licensee's assessment and management of risk associated with performing maintenance activities under all plant operation or shutdown conditions. In accordance with Baseline Inspection Procedure (IP) 71111.13, "Maintenance Risk Assessment and Emergent Work Control," and IMC 0609, Appendix K, "Maintenance Risk Assessment and Risk Management Significance Determination Process," the finding was determined to be a maintenance risk assessment issue. Flowchart 1, "Assessment of Risk Deficit," requires the inspectors to determine the risk deficit associated with this issue. The finding was determined to be of very low safety significance because the incremental core damage probability deficit was less than  $1 \times 10^{-6}$ . The regional senior reactor analyst reviewed the information and confirmed that the system was a maintenance rule safety significant system. This finding has a cross-cutting aspect in the area of human performance, work control component, because the licensee did not plan and coordinate work activities consistent with nuclear safety. Specifically, the licensee failed to include risk significant maintenance in the EOOS profile when the SAMG diesel generators were out of service from July 6, 2009 until July 8, 2009 (H.3(a))

Inspection Report# : [2009004](#) (pdf)

**Significance:**  Sep 30, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

**Capability of Emergency Diesel Generator Ventilation System to Meet Design and Licensing Requirements**

The inspectors identified a Green non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion III, Design Control, for failure to translate a key analytical assumption related to operation of the emergency diesel building back draft and check dampers into specifications and ultimately into the installed hardware. This issue was entered into the licensee's corrective action program as NCR 00259088 with actions to evaluate the ability of the EDGs actual installed equipment to satisfy the intended safety function during and following the design basis tornado event. Compensatory measures were established to eliminate the concern pending the licensee's determination of the systems capability to mitigate the effects of a tornado event.

This finding was determined to be more than minor because the finding was associated with the Mitigating Systems Cornerstone attribute of Design Control, i.e. initial design. It impacted the cornerstone objective of ensuring the availability, reliability, and capability of the emergency diesel building ventilation to protect the EDG building structure during a design basis tornado event. Due to the deficiencies between the installed hardware and the assumptions in the calculation, the calculation did not ensure the capability of emergency diesel building ventilation system to perform the safety function. This was determined to be a failure to ensure the availability, reliability, and capability of a safety system that responds to an initiating event to prevent undesirable consequences. The licensee subsequently determined from analysis through modeling and testing that the emergency diesel building ventilation system could perform the safety function during a design basis tornado event with the existing hardware installed. The NRC reviewed this analysis and the results that determined

that the existing condition did not result in the loss of the system safety function. The inspectors assessed the finding using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1 - Initial Screening and Characterization of findings," Table 4a for the Mitigating Systems Cornerstone. The finding was determined to be of very low safety significance (Green) because there was not an actual loss of safety system function based upon the inspector's verification of the Progress Energy analysis of the emergency diesel building ventilation system. The cause of the finding is not related to a cross-cutting aspect because the occurrence was greater than three years ago and is not indicative of current licensee performance.

Inspection Report# : [2009004](#) (*pdf*)

**Significance:** **W** May 28, 2009

Identified By: NRC

Item Type: VIO Violation

### **Inability to Operate the EDGs Locally as Required by the Safe Shutdown Analysis Report**

A violation of 10 CFR 50, Appendix B, Criterion III, Design Control, was identified for failure to correctly translate the design basis into EC 66274 to replace control relays on all four EDGs. Specifically, termination points for linking control power to the EDG lockout relay reset circuitry were incorrectly designated in the EC. This resulted in the wiring for control relays being installed such that the EDGs could not be operated locally as required by the Safe Shutdown Analysis Report. Upon discovery, the licensee initiated Action Request (AR) 292232 and re-wired and tested each affected EDG. The local control function was restored to all EDGs on August 21, 2008.

The failure to correctly translate the design basis into EC66274 is a performance deficiency. This finding is more than minor because it is associated with the reactor safety mitigating system cornerstone attribute of protection against external events, i.e., fire. It also affects the cornerstone objective of ensuring the availability of systems that respond to events in that the EDGs could not be operated locally as required by the Safe Shutdown Analysis Report. This finding was assessed using the applicable SDP, which resulted in a calculated core damage frequency (CDF) risk increase over the base case between 1E-5 and 1E-6 per year. The dominant accident sequences involved are initiated by a fire situated such as to cause both a loss of offsite power (LOOP) and a forced main control room evacuation. For these dominant accident sequences, the performance deficiency will result in a station blackout (SBO) to either or both units. The exposure period for this condition was one year. As a result, the finding was preliminarily determined to be of low to moderate safety significance (White). The cause of the finding is considered to have a cross-cutting aspect related to accurate design documentation [H.2(c)], as described in the resources component of the human performance cross-cutting area.

Inspection Report# : [2010006](#) (*pdf*)

Inspection Report# : [2009009](#) (*pdf*)

Inspection Report# : [2009010](#) (*pdf*)

---

## **Barrier Integrity**

---

## **Emergency Preparedness**

---

## **Occupational Radiation Safety**

---

## **Public Radiation Safety**

**Significance:** **G** Mar 31, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Ensure Representative Sampling of Particulate Effluents Released from the Reactor Building Roof Vent**

The inspectors identified a Green NCV of 10 CFR 20.1302(a) for failure to ensure surveys of particulate radioactive materials in effluents released to unrestricted areas from the reactor building roof vent were adequate to demonstrate compliance with dose limits for individual members of the public. This issue was initially identified as an unresolved item following an inspection in June 2008. The licensee entered the issue into its corrective action program (AR #292216 and AR #393340). The licensee is currently investigating this issue to identify applicable corrective actions.

The failure to ensure that the reactor building roof vent effluents were adequately monitored is a performance deficiency. This finding is more than minor because it is associated with the Public Radiation Safety cornerstone attribute of Plant Facilities/Equipment and Instrumentation (Process Radiation Monitors) and adversely affects the cornerstone objective. Specifically, the cornerstone objective of providing assurance that adequate protection of public health and safety from exposure to radioactive materials released into the public domain as a result of routine civilian reactor operation was affected because the licensee did not ensure that reactor building effluents were accurately monitored. The finding was evaluated using the Public Radiation Safety SDP and determined to be of very low safety significance (Green). The finding, which involved the effluent release program, was determined to be of very low safety significance (Green) because it was not a failure to implement the effluent program and did not result in public dose exceeding the 10 CFR 50 Appendix I criterion or 10 CFR 20.1301 (e). This finding does not have a cross-cutting aspect because the failure to evaluate the effect of line losses on particulate sampling is a historical issue.

Inspection Report# : [2010002](#) (*pdf*)

---

## **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 May 08, 2009

Identified By: NRC

Item Type: FIN Finding

### **Brunswick PI&R Summary**

The inspection team concluded that, in general, problems were adequately identified, prioritized, and evaluated; and effective corrective actions were implemented. Site management was actively involved in the corrective action program (CAP) and focused appropriate attention on significant plant issues. The team found that employees were encouraged by management to initiate ARs to address plant issues.

The licensee was effective at identifying problems and entering them into the CAP for resolution, as evidenced by the relatively few deficiencies identified by the NRC that had not been previously identified by the licensee during the review period. The threshold for initiating action requests (ARs) was appropriately low, as evidenced by the type of problems identified and large number of ARs entered annually into the CAP. Action requests normally provided complete and accurate characterization of the problem. However, the team identified two minor equipment issues during system walkdowns involving selected risk-significant safety-related systems, which were not already entered into the CAP.

Generally, prioritization and evaluation of issues were adequate consistent with the licensee's CAP guidance. Formal root cause evaluations for significant problems were adequate, and corrective actions specified for problems did address the cause of the problems. The age and extensions for completing evaluations were closely monitored by plant management, both for high priority nuclear condition reports (NCRs), as well as for adverse conditions of less significant priority. Also, the technical adequacy and depth of evaluations (e.g., root cause investigations) were typically adequate. However, the team identified a minor issue associated with the problem evaluation of a risk significant system, which could have resulted in unresolved issues with incomplete corrective actions.

Corrective actions were generally effective, timely, and commensurate with the safety significance of the issues. However, the team identified two minor issues associated with inadequate and untimely corrective actions that allowed potential unresolved conditions adverse to quality to remain uncorrected involving degraded equipment performance. This example of inadequate corrective actions did not represent a significant safety concern but reflected a lack of attention to detail in the implementation of corrective actions and preventive maintenance activities.

The operating experience program was effective in screening operating experience for applicability to the plant, entering items determined to be applicable into the CAP, and taking adequate corrective actions to address the issues. External and internal operating experience was adequately utilized and considered as part of formal root cause evaluations for supporting the development of lessons learned and corrective actions for CAP issues. However, the team identified an example where a Significant Adverse Condition Investigation report did not evaluate the applicable operating experience as directed by the licensee's investigation procedure.

The licensee's audits and self-assessments were critical and effective in 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 the effectiveness of the CAP.

Based on general discussions with licensee employees during the inspection, targeted interviews with plant personnel, and reviews of selected employee concerns records, the inspectors determined that personnel at the site felt free to raise safety concerns to management and use the CAP as well as the employee concerns program to resolve those concerns.

Inspection Report# : [2009006](#) (*pdf*)

Last modified : May 26, 2010

# Brunswick 1

## 2Q/2010 Plant Inspection Findings

---

### Initiating Events

**Significance:**  Jun 30, 2010

Identified By: Self-Revealing

Item Type: FIN Finding

#### **Inadequate Design Change Results in an Automatic Reactor Scram**

Green. A self-revealing Green finding was identified for an inadequate design change to the Unit 1 feedwater flow instrument sensing lines (Plant Modification (PM) 77-039). As a result of the inadequate design change, pressure pulsation dampeners (snubbers) were installed in the feed flow instrument sensing lines which prevented the instruments from detecting a loss of feed flow in time to prevent a reactor scram by initiating a recirculation pump runback. This was revealed after a loss of the 1B reactor feed pump (RFP) and a reactor low level scram on May 5, 2010. After the scram, the licensee adjusted the snubbers so that they respond properly to changes in feed flow and entered the issue into their corrective action program (AR #397712).

The inadequate design change implemented by PM 77-039 was a performance deficiency. The finding was more than minor because it was associated with the initiating events cornerstone attribute of design control, and it affected the associated cornerstone objective to limit the likelihood of those events that upset plant stability and that challenge critical safety functions during shutdown, as well as during power operations. Specifically, the performance deficiency caused a reactor scram. Using the Inspection Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, inspectors concluded that the transient initiator did not contribute to both the likelihood of a reactor trip and to the likelihood that mitigation equipment or functions would not be available. As a result, the issue was of very low safety significance (Green). The cause of this finding has no cross-cutting aspect because the modification took place in 1977 and is not indicative of current licensee performance.

Inspection Report# : [2010003](#) (*pdf*)

**Significance:**  Mar 31, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Inadequate Risk Evaluation for Removing the 1A South Condenser from Service**

The inspectors identified a Green NCV of 10 CFR Part 50.65 (a)(4), Requirements for monitoring the Effectiveness of Maintenance at Nuclear Power Plants, after Unit 1 experienced a loss of normal reactor feedwater as a result of an abnormal plant configuration during shutdown of the reactor on February 26, 2010.

The licensee did not adequately manage the increase in risk that resulted when the 1B reactor feed pump (RFP) was made unavailable while the 1A south condenser was isolated in the hours leading up to the reactor shutdown. This plant configuration led to a high level in the 1A south condenser hotwell soon after the reactor shutdown, which prevented adequate draining of the 1A RFP turbine casing, and led to the loss of the 1A RFP. After the loss of normal feedwater to the reactor, the licensee restored reactor level using the reactor core isolation cooling (RCIC) system. The licensee entered the issue into its corrective action program (AR #383636).

The failure to adequately evaluate and manage risk associated with equipment configuration during the Unit 1 shutdown is a performance deficiency. This finding is more than minor because it is associated with the initiating events cornerstone attribute of configuration control and it adversely affected the cornerstone objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions. Specifically, plant stability was upset by the loss of normal feedwater to the reactor. In accordance with IMC 0609, Appendix K, Maintenance Risk Assessment and Risk Management Significance Determination Process, this finding is of very low safety significance (Green) because the Incremental Core Damage Probability Deficit is the licensee did not appropriately plan work activities by incorporating risk insights (H.3(a)). Specifically, activities scheduled prior to the reactor

shutdown were not properly evaluated to determine their impact on the normal reactor feedwater system.

Inspection Report# : [2010002](#) (*pdf*)

**Significance:**  Sep 30, 2009

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

### **Failure to Follow Plant Procedure Caused Loss of E2 Bus**

A self-revealing Green non-cited violation of Technical Specification (TS) 5.4.1, Procedures, was identified when the licensee failed to follow procedure 0PICCNV023, Calibration of Westinghouse & Scientific Columbus Teleductors. During the performance of the calibration, procedural steps were not performed correctly and the E2 electrical bus was inadvertently deenergized, requiring the emergency diesel generator #2 to auto-start and reenergize the bus. Emergency diesel generator #2 auto-started and the E2 bus transferred from off-site power. After the event, the licensee halted the maintenance on the E2 bus instruments and restored off-site power to the E2 bus. The event was entered into the licensee's corrective action program as NCR #344300. The finding was determined to be more than minor because the finding was associated with the Initiating Events Cornerstone attribute of configuration control and affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during power operations.

The finding affected configuration control because correct test switch alignment was not maintained. The finding also affected the cornerstone objective because loss of the E2 bus represented an upset to plant stability. The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1 - Initial Screening and Characterization of findings," Table 4a for the Initiating Events Cornerstone. The finding was determined to be of very low safety significance (Green) because the finding was a transient initiator that did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available. The finding has a cross-cutting aspect in the Human Performance cross cutting area, Work Practices component, because the licensee failed to implement adequate error prevention techniques while performing plant procedure 0PIC-CNV023, Calibration of Westinghouse & Scientific Columbus Teleductors. Specifically, technicians did not utilize adequate error prevention techniques to prevent them from operating the wrong test switch when calibrating instrument 1-E2-AG6-VTR (H.4(a))

Inspection Report# : [2009004](#) (*pdf*)

---

## **Mitigating Systems**

**Significance:**  Mar 31, 2010

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

### **Failure to Follow Procedures During Reactor Head Disassembly**

A self-revealing Green NCV of Technical Specifications (TS) 5.4.1, Procedures, was identified when reactor head piping was disconnected prior to swapping shutdown range reactor water level transmitters resulting in inaccurate water level indication. The plant procedure for disconnection of the reactor head piping, 0SMP-RPV501, Reactor Vessel Disassembly, used in conjunction with 0GP-06, Cold Shutdown to Refueling, specifies that prior to removal of head piping, the Shutdown Range Reactor Water Level Transmitters shall be swapped from level transmitters, B21-LT-N027A and B21-LT-N027B, to level transmitters, B21-LT-7468A and B21-LT-7468B. Contrary to this requirement, the common reference leg to the level indicators was disconnected prior to swapping transmitters which resulted in loss of accurate indication of current reactor vessel water level. The licensee reinstalled the disconnected piping, refilled the reference legs for the transmitters, and entered the issue into their corrective action program (AR #383779).

The disconnection of the reference leg flange of the reactor vessel head piping prior to realignment of level instrumentation as required by plant procedures is a performance deficiency. The performance deficiency was more than minor because it is associated with the configuration control attribute of the Mitigating Systems cornerstone because it inappropriately altered the reactor level instrumentation reference leg piping. It affected the

cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inaccurate level indication degraded the operator's ability to control the reactor vessel water level in the prescribed procedural band and would inhibit their ability to diagnose and prevent loss of residual heat removal (RHR) scenario. In accordance with NRC Inspection Manual Chapter (IMC) 0609, Appendix G, "Shutdown Operations Significance Determination Process," Attachment 1, Checklist 8, the inspectors conducted a Phase 1 SDP screening and determined the finding required a Phase 2 analysis. The Phase 2 analysis determined the finding is of very low safety significance (Green) because adequate mitigation capability was maintained. The cause of this finding was directly related to the supervisory and management oversight cross-cutting aspect in the work practices component of the Human Performance cross-cutting area because plant supervisors failed to ensure an adequate pre-job brief, failed to enforce proper communications methods at the job site, and failed to properly supervise workers executing procedure steps (H.4(c)).  
Inspection Report# : [2010002](#) (pdf)

**Significance:** **G** Dec 31, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure To Identify and Correct Degraded Fire Protection Sprinklers**

The inspectors identified a Green non-cited violation of Brunswick Steam Electric Plant (BSEP) Unit 1 Updated Facility Operating License DPR-71, and the Unit 2 Updated Facility Operating License DPR-62, Condition 2.B.(6), for the licensee's failure to identify and correct degraded fire suppression system sprinklers per the licensee's fire protection program procedures. Procedure, OPT-34.6.4.1, "Sprinkler And Spray System Visual Inspection: RX1, RX2, SW, RW, WT, and DG Buildings," directs the licensee to verify the physical integrity of the spray and sprinkler piping and the absence of sprinkler obstruction or damage for the Unit 1 Reactor Building, Unit 2 Reactor Building, Service Water Building, Radwaste Building, Water Treatment Building, and Diesel Generator Building. After NRC inspectors identified the degraded sprinklers, the licensee re-performed the procedure and identified 40 spray shields to be noncompliant with the procedure's acceptance criteria. Once identified, the licensee initiated compensatory fire watches. Corrective actions also included replacing or repairing the defective spray shields. This finding was entered into the licensee's corrective action program as NCR #357183.

Failure to follow procedure OPT-34.6.4.1, "Sprinkler And Spray System Visual Inspection: RX1, RX2, SW, RW, WT, and DG Buildings" was a performance deficiency. The finding was determined to be more than minor because it affected the Mitigating Systems cornerstone objective of availability, reliability, and capability of the fixed fire suppression systems and was associated with the protection against external factors (fire) attribute. Specifically, this failure could affect the ability of the water sprinkler system to respond to a fire because the affected sprinklers' spray patterns are reduced and less effective. The issue was determined to be of very low safety significance (Green) using Manual Chapter (MC) 0609, Appendix F, Attachment 1, because the category of fixed fire suppression was evaluated as having low degradation. The system had low degradation because the sprinkler system is expected to display nearly the same level of effectiveness and reliability as it would, had the degradation not been present. The finding has a procedural compliance cross-cutting aspect in the Work Practices component of the Human Performance cross cutting area, because the licensee failed to ensure procedural instructions (procedure OPT-34.6.4.1) were implemented correctly. H.4(b)

Inspection Report# : [2009005](#) (pdf)

**Significance:** **G** Dec 31, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure To Adequately Implement Design Control Measures For The Fire Protection Program**

The inspectors identified a Green non-cited violation of BSEP Unit 1 Updated Facility Operating License DPR-71, and the Unit 2 Updated Facility Operating License DPR-62, Condition 2.B.(6), for the licensee's failure to implement adequate design control measures for the fire protection program. Plant drawings which specify the configuration of fire suppression sprinklers are inconsistent and inadequate in that they do not provide complete details for sprinkler spray shields. Dimensions for spray shields on some drawings are incomplete because they don't list all of the necessary critical dimensions. Therefore, some ceiling-level spray shields were incorrectly installed and extended below the sprinklers' fusible links. This would have delayed sprinkler response in a fire. After the identification of this design control issue, the licensee implemented corrective actions which included repairing or replacing the degraded

sprinklers. This finding was entered into the licensee's corrective action program as NCR #367339.

The licensee's failure to adequately implement design control measures for the fire protection program as required by the operating license (condition 2.B(6)) was a performance deficiency. The finding was determined to be more than minor because it affected the Mitigating Systems cornerstone objective of availability, reliability, and capability of the fixed fire suppression systems and was associated with the design control and protection against external factors (fire) attribute. Specifically, this failure could affect the ability of the water sprinkler system to respond to a fire because the incorrectly installed spray shields delay the ceiling-level sprinklers' response times. The issue was determined to be of very low safety significance (Green) using MC 0609, Appendix F, Attachment 1, because the category of fixed fire suppression was evaluated as having low degradation. The system had low degradation because the sprinkler system is expected to display nearly the same level of effectiveness and reliability as it would, had the degradation not been present. This finding has no cross-cutting aspect because the design drawing deficiency occurred when the plants were licensed and it is not indicative of current licensee performance.

Inspection Report# : [2009005](#) (pdf)

**Significance:**  Dec 31, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

### **Inadequately Monitored Maintenance Rule MOV**

The inspectors identified a Green NCV of 10 CFR 50.65(a)(1), Requirements for monitoring the effectiveness of maintenance at nuclear power plants, for the licensee's failure to monitor the performance or condition of motor-operated valve (MOV) MS-V28 in a manner sufficient to provide reasonable assurance that it was capable of fulfilling its intended functions. As a result, the licensee did not recognize that the valve was incapable of opening against design differential pressure and failed to take appropriate corrective actions to ensure that the valve could fulfill its emergency operating procedure (EOP) function. After the issue was identified, the licensee altered its operating procedures to compensate for the valve not opening against design differential pressure and entered it into their corrective action program (AR #356800).

The failure to adequately monitor the performance or condition of MOV MS-V28 in a manner to provide reasonable assurance that the valve was capable of fulfilling its intended function is a performance deficiency. The performance deficiency was more than minor because it is associated with the Mitigating Systems cornerstone attribute of equipment performance, and affected 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 performance deficiency affected the reliability of the MOV MS-V-28 and its use in EOPs to restore feed to the reactor. Inspectors evaluated the finding using NRC IMC 0609, Significance Determination Process, Appendix A. Since the finding represents an actual loss of a function of non-Technical Specifications equipment designated as risk-significant for greater than 24 hours, the finding required a phase two significance analysis. The Brunswick phase 2 SDP spreadsheet indicated that the finding was greater than green but did not detail to the cases requiring MS-V28 operation therefore a phase 3 SDP analysis was completed by a regional SRA.

The phase 3 SDP analysis was performed in accordance with NRC Inspection Manual Chapter 0609 appendix A utilizing the NRC SPAR model and output from the licensee's full scope PRA model. The result was a risk increase for the finding of  $<1E-6$  for core damage frequency (cdf) and  $<1E-7$  for large early release frequency (LERF). The dominant sequences were transient initiators with spurious level instrument generated main steam isolation valve (MSIV) closure and the inability to restore main feedwater due to the performance deficiency coupled with failure to achieve successful depressurization and use of low pressure makeup systems leading to core damage. The risk was mitigated by the low initiating event frequency for transient conditions which would allow MSIV reopening and recovery of main feedwater. The availability of low pressure injection systems was also a factor reducing the risk. The result of the phase 3 analysis was that the finding was characterized as having very low safety significance, a Green finding. The cause of this finding was directly related to the problem evaluation cross-cutting aspect in the corrective action program component of the Problem Identification and Resolution cross-cutting area because the licensee failed to adequately evaluate the failure of MS-V28 in November 2008. (P.1(c)).

Inspection Report# : [2009005](#) (pdf)

**Significance:**  Oct 20, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

### **Inadequate Maintenance Instructions for Maintaining Cleanliness During Emergency Diesel Generator Governor Maintenance**

Green. The inspectors identified a Green NCV of Technical Specification (TS) 5.4.1, Procedures, for inadequate cleanliness and flushing procedures for maintaining cleanliness during maintenance on the emergency diesel generator (EDG) governors. This procedural inadequacy resulted in a failure of the emergency diesel generator #4 governor on September 19, 2009. The licensee entered the issue into their corrective action program and replaced the failed governor.

The finding was determined to be more than minor because it is associated with equipment performance and procedure quality attributes of the Mitigating Systems Cornerstone. It also adversely affected 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 reliability of EDG #4 was reduced because it was susceptible to fouling due to the foreign material in the governor. The finding was evaluated for significance using NRC Manual Chapter 0609, Appendix A, Determining the Significance of Reactor Inspection Findings for At-Power Situations. Using Table 4a of Appendix A to MC 0609, the finding was determined to be of very low safety significance (Green) because the failure of EDG #4 did not represent a loss of safety function, did not represent a loss of EDG #4 operability for greater than its technical specification allowed outage time, and does not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. The finding affects the cross-cutting area of human performance, resources component, complete and accurate documentation aspect because the licensee did not incorporate adequate guidance for maintaining cleanliness of the EDG governor in their maintenance procedures. (H.2(c))

Inspection Report# : [2009011](#) (pdf)

**Significance:**  Sep 30, 2009

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

### **Surveillance Test Performed on Incorrect Loop of RHR**

A self-revealing Green non-cited violation of TS 5.4.1, Procedures, was identified when the licensee failed to follow work order instructions contained in work order 1280322. This work order directed technicians to perform testing on the B loop of the Unit 1 residual heat removal (RHR) system according to procedure 1MST-RHR28R, RHR Time Delay Relay Channel Calibration. Contrary to these work order instructions, portions of the procedure affecting Loop A were performed instead of Loop B. After the technicians completed the A loop section of the procedure, they reported to the control room where operators recognized the error. Once the error was recognized, the maintenance was stopped and B loop of RHR was returned to operable. This finding was entered into the licensee's corrective action program as NCR #344233.

The finding was determined to be more than minor because the finding was associated with the Mitigating Systems Cornerstone attribute of configuration control and affected the cornerstone objective of to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, as a result of this error on the Loop A RHR relay channels, for a short time, safety interlocks were bypassed on both the low pressure injection coolant (LPCI) outboard injection valve and the RHR heat exchanger bypass valve, and the position of the RHR pump minimum flow bypass valve was changed out of its normal position. The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1 - Initial Screening and Characterization of findings," Table 4a for the Mitigating Systems Cornerstone. The finding was determined to be of very low safety significance (Green) because the finding was not a design or qualification deficiency which resulted in loss of operability or functionality, 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, and did not represent potentially risk significant due to a seismic, flooding, or severe weather initiating event. The finding has a cross-cutting aspect in the Human Performance cross cutting area, Work Practices component, because the licensee failed to ensure surveillance instructions (work order 1280322) were implemented correctly. This resulted in performing a surveillance test on the A loop of the RHR system while the B loop of the RHR system was disabled (H.4(b))

Inspection Report# : [2009004](#) (pdf)

**Significance:** G Sep 30, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Establish Adequate Installation Instructions for Emergency Diesel Generator Service Water Expansion Joint Control Units**

The inspectors identified a Green non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the failure to specify an appropriate quality standard for the installation of the control units on the emergency diesel generator jacket water heat exchanger inlet and outlet expansion joints. As a result, threaded fasteners on emergency diesel generators #1 and #4 loosened, creating a potential vulnerability to expansion joint failure. The licensee tightened the control unit bolts on all the emergency diesel generator service water expansion joints and initiated an engineering change to prevent the fasteners from loosening. This finding was entered into the licensee's corrective action program as NCR #346113.

The finding was determined to be more than minor because the finding, if left uncorrected, would have the potential to lead to a more significant safety concern. Specifically, over time, the hex nuts on the expansion joint control units could loosen to the point of expansion joint failure, leading to a loss of service water to the emergency diesel generators and failure of the emergency diesel generators. The inspectors evaluated the finding in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1 - Initial Screening and Characterization of findings," Table 4a for the Mitigating Systems Cornerstone. The finding was determined to be of very low safety significance (Green) because the finding was a design or qualification deficiency confirmed not to result in loss of operability or functionality. This finding has no cross-cutting aspect because the design deficiency occurred in 2005 and is not indicative of current licensee performance.

Inspection Report# : [2009004](#) (pdf)

**Significance:** G Sep 30, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Include Risk Significant Maintenance in the Site Risk Profile**

The inspectors identified a Green non-cited violation of 10 CFR Part 50.65 (a)(4), when the licensee removed the severe accident mitigation guideline (SAMG) diesel generators from service without considering the change in the online plant risk. Online plant risk is modeled and communicated to licensee plant personnel via the equipment out of service (EOOS) profile. The change in online risk was not reflected in the EOOS profile when the SAMG diesel generators were out of service from July 6, 2009 to July 8, 2009. Once the deficiency was identified on July 8, 2009, the EOOS profile was updated by the licensee and reflected the SAMG diesel out of service condition. This finding was entered into the licensee's corrective action program as NCR #351002.

The finding was determined to be more than minor because the finding related to maintenance risk assessment and risk management issues. Specifically, the licensee's risk assessment failed to consider risk significant structures, systems, or components that were unavailable during maintenance. The inspectors evaluated the finding in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1 - Initial Screening and Characterization of findings," Table 3a for the Mitigating Systems Cornerstone. The finding was determined to degrade the licensee's assessment and management of risk associated with performing maintenance activities under all plant operation or shutdown conditions. In accordance with Baseline Inspection Procedure (IP) 7111.13, "Maintenance Risk Assessment and Emergent Work Control," and IMC 0609, Appendix K, "Maintenance Risk Assessment and Risk Management Significance Determination Process," the finding was determined to be a maintenance risk assessment issue. Flowchart 1, "Assessment of Risk Deficit," requires the inspectors to determine the risk deficit associated with this issue. The finding was determined to be of very low safety significance because the incremental core damage probability deficit was less than  $1 \times 10^{-6}$ . The regional senior reactor analyst reviewed the information and confirmed that the system was a maintenance rule safety significant system. This finding has a cross-cutting aspect in the area of human performance, work control component, because the licensee did not plan and coordinate work activities consistent with nuclear safety. Specifically, the licensee failed to include risk significant maintenance in the EOOS profile when the SAMG diesel generators were out of service from July 6, 2009 until July 8, 2009 (H.3(a))

Inspection Report# : [2009004](#) (pdf)

**Significance:**  Sep 30, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

### **Capability of Emergency Diesel Generator Ventilation System to Meet Design and Licensing Requirements**

The inspectors identified a Green non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion III, Design Control, for failure to translate a key analytical assumption related to operation of the emergency diesel building back draft and check dampers into specifications and ultimately into the installed hardware. This issue was entered into the licensee's corrective action program as NCR 00259088 with actions to evaluate the ability of the EDGs actual installed equipment to satisfy the intended safety function during and following the design basis tornado event. Compensatory measures were established to eliminate the concern pending the licensee's determination of the systems capability to mitigate the effects of a tornado event.

This finding was determined to be more than minor because the finding was associated with the Mitigating Systems Cornerstone attribute of Design Control, i.e. initial design. It impacted the cornerstone objective of ensuring the availability, reliability, and capability of the emergency diesel building ventilation to protect the EDG building structure during a design basis tornado event. Due to the deficiencies between the installed hardware and the assumptions in the calculation, the calculation did not ensure the capability of emergency diesel building ventilation system to perform the safety function. This was determined to be a failure to ensure the availability, reliability, and capability of a safety system that responds to an initiating event to prevent undesirable consequences. The licensee subsequently determined from analysis through modeling and testing that the emergency diesel building ventilation system could perform the safety function during a design basis tornado event with the existing hardware installed. The NRC reviewed this analysis and the results that determined that the existing condition did not result in the loss of the system safety function. The inspectors assessed the finding using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1 - Initial Screening and Characterization of findings," Table 4a for the Mitigating Systems Cornerstone. The finding was determined to be of very low safety significance (Green) because there was not an actual loss of safety system function based upon the inspector's verification of the Progress Energy analysis of the emergency diesel building ventilation system. The cause of the finding is not related to a cross-cutting aspect because the occurrence was greater than three years ago and is not indicative of current licensee performance.

Inspection Report# : [2009004](#) (*pdf*)

---

## **Barrier Integrity**

---

## **Emergency Preparedness**

---

## **Occupational Radiation Safety**

---

## **Public Radiation Safety**

**Significance:**  Mar 31, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Ensure Representative Sampling of Particulate Effluents Released from the Reactor Building Roof Vent**

The inspectors identified a Green NCV of 10 CFR 20.1302(a) for failure to ensure surveys of particulate radioactive

materials in effluents released to unrestricted areas from the reactor building roof vent were adequate to demonstrate compliance with dose limits for individual members of the public. This issue was initially identified as an unresolved item following an inspection in June 2008. The licensee entered the issue into its corrective action program (AR #292216 and AR #393340). The licensee is currently investigating this issue to identify applicable corrective actions.

The failure to ensure that the reactor building roof vent effluents were adequately monitored is a performance deficiency. This finding is more than minor because it is associated with the Public Radiation Safety cornerstone attribute of Plant Facilities/Equipment and Instrumentation (Process Radiation Monitors) and adversely affects the cornerstone objective. Specifically, the cornerstone objective of providing assurance that adequate protection of public health and safety from exposure to radioactive materials released into the public domain as a result of routine civilian reactor operation was affected because the licensee did not ensure that reactor building effluents were accurately monitored. The finding was evaluated using the Public Radiation Safety SDP and determined to be of very low safety significance (Green). The finding, which involved the effluent release program, was determined to be of very low safety significance (Green) because it was not a failure to implement the effluent program and did not result in public dose exceeding the 10 CFR 50 Appendix I criterion or 10 CFR 20.1301 (e). This finding does not have a cross-cutting aspect because the failure to evaluate the effect of line losses on particulate sampling is a historical issue.

Inspection Report# : [2010002](#) (*pdf*)

---

## 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

Last modified : September 02, 2010

# Brunswick 1

## 3Q/2010 Plant Inspection Findings

---

### Initiating Events

**Significance:**  Jun 30, 2010

Identified By: Self-Revealing

Item Type: FIN Finding

#### **Inadequate Design Change Results in an Automatic Reactor Scram**

Green. A self-revealing Green finding was identified for an inadequate design change to the Unit 1 feedwater flow instrument sensing lines (Plant Modification (PM) 77-039). As a result of the inadequate design change, pressure pulsation dampeners (snubbers) were installed in the feed flow instrument sensing lines which prevented the instruments from detecting a loss of feed flow in time to prevent a reactor scram by initiating a recirculation pump runback. This was revealed after a loss of the 1B reactor feed pump (RFP) and a reactor low level scram on May 5, 2010. After the scram, the licensee adjusted the snubbers so that they respond properly to changes in feed flow and entered the issue into their corrective action program (AR #397712).

The inadequate design change implemented by PM 77-039 was a performance deficiency. The finding was more than minor because it was associated with the initiating events cornerstone attribute of design control, and it affected the associated cornerstone objective to limit the likelihood of those events that upset plant stability and that challenge critical safety functions during shutdown, as well as during power operations. Specifically, the performance deficiency caused a reactor scram. Using the Inspection Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, inspectors concluded that the transient initiator did not contribute to both the likelihood of a reactor trip and to the likelihood that mitigation equipment or functions would not be available. As a result, the issue was of very low safety significance (Green). The cause of this finding has no cross-cutting aspect because the modification took place in 1977 and is not indicative of current licensee performance.

Inspection Report# : [2010003](#) (*pdf*)

**Significance:**  Mar 31, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Inadequate Risk Evaluation for Removing the 1A South Condenser from Service**

The inspectors identified a Green NCV of 10 CFR Part 50.65 (a)(4), Requirements for monitoring the Effectiveness of Maintenance at Nuclear Power Plants, after Unit 1 experienced a loss of normal reactor feedwater as a result of an abnormal plant configuration during shutdown of the reactor on February 26, 2010.

The licensee did not adequately manage the increase in risk that resulted when the 1B reactor feed pump (RFP) was made unavailable while the 1A south condenser was isolated in the hours leading up to the reactor shutdown. This plant configuration led to a high level in the 1A south condenser hotwell soon after the reactor shutdown, which prevented adequate draining of the 1A RFP turbine casing, and led to the loss of the 1A RFP. After the loss of normal feedwater to the reactor, the licensee restored reactor level using the reactor core isolation cooling (RCIC) system. The licensee entered the issue into its corrective action program (AR #383636).

The failure to adequately evaluate and manage risk associated with equipment configuration during the Unit 1 shutdown is a performance deficiency. This finding is more than minor because it is associated with the initiating events cornerstone attribute of configuration control and it adversely affected the cornerstone objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions. Specifically, plant stability was upset by the loss of normal feedwater to the reactor. In accordance with IMC 0609, Appendix K, Maintenance Risk Assessment and Risk Management Significance Determination Process, this finding is of very low safety significance (Green) because the Incremental Core Damage Probability Deficit is the licensee did not appropriately plan work activities by incorporating risk insights (H.3(a)). Specifically, activities scheduled prior to the reactor

shutdown were not properly evaluated to determine their impact on the normal reactor feedwater system.

Inspection Report# : [2010002](#) (*pdf*)

---

## Mitigating Systems

**Significance:**  Mar 31, 2010

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

### **Failure to Follow Procedures During Reactor Head Disassembly**

A self-revealing Green NCV of Technical Specifications (TS) 5.4.1, Procedures, was identified when reactor head piping was disconnected prior to swapping shutdown range reactor water level transmitters resulting in inaccurate water level indication. The plant procedure for disconnection of the reactor head piping, 0SMP-RPV501, Reactor Vessel Disassembly, used in conjunction with 0GP-06, Cold Shutdown to Refueling, specifies that prior to removal of head piping, the Shutdown Range Reactor Water Level Transmitters shall be swapped from level transmitters, B21-LT-N027A and B21-LT-N027B, to level transmitters, B21-LT-7468A and B21-LT-7468B. Contrary to this requirement, the common reference leg to the level indicators was disconnected prior to swapping transmitters which resulted in loss of accurate indication of current reactor vessel water level. The licensee reinstalled the disconnected piping, refilled the reference legs for the transmitters, and entered the issue into their corrective action program (AR #383779).

The disconnection of the reference leg flange of the reactor vessel head piping prior to realignment of level instrumentation as required by plant procedures is a performance deficiency. The performance deficiency was more than minor because it is associated with the configuration control attribute of the Mitigating Systems cornerstone because it inappropriately altered the reactor level instrumentation reference leg piping. It affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inaccurate level indication degraded the operator's ability to control the reactor vessel water level in the prescribed procedural band and would inhibit their ability to diagnose and prevent loss of residual heat removal (RHR) scenario. In accordance with NRC Inspection Manual Chapter (IMC) 0609, Appendix G, "Shutdown Operations Significance Determination Process," Attachment 1, Checklist 8, the inspectors conducted a Phase 1 SDP screening and determined the finding required a Phase 2 analysis. The Phase 2 analysis determined the finding is of very low safety significance (Green) because adequate mitigation capability was maintained. The cause of this finding was directly related to the supervisory and management oversight cross-cutting aspect in the work practices component of the Human Performance cross-cutting area because plant supervisors failed to ensure an adequate pre-job brief, failed to enforce proper communications methods at the job site, and failed to properly supervise workers executing procedure steps (H.4(c)).

Inspection Report# : [2010002](#) (*pdf*)

**Significance:**  Dec 31, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure To Identify and Correct Degraded Fire Protection Sprinklers**

The inspectors identified a Green non-cited violation of Brunswick Steam Electric Plant (BSEP) Unit 1 Updated Facility Operating License DPR-71, and the Unit 2 Updated Facility Operating License DPR-62, Condition 2.B.(6), for the licensee's failure to identify and correct degraded fire suppression system sprinklers per the licensee's fire protection program procedures. Procedure, OPT-34.6.4.1, "Sprinkler And Spray System Visual Inspection: RX1, RX2, SW, RW, WT, and DG Buildings," directs the licensee to verify the physical integrity of the spray and sprinkler piping and the absence of sprinkler obstruction or damage for the Unit 1 Reactor Building, Unit 2 Reactor Building, Service Water Building, Radwaste Building, Water Treatment Building, and Diesel Generator Building. After NRC inspectors identified the degraded sprinklers, the licensee re-performed the procedure and identified 40 spray shields to be noncompliant with the procedure's acceptance criteria. Once identified, the licensee initiated compensatory fire watches. Corrective actions also included replacing or repairing the defective spray shields. This finding was entered into the licensee's corrective action program as NCR #357183.

Failure to follow procedure OPT-34.6.4.1, "Sprinkler And Spray System Visual Inspection: RX1, RX2, SW, RW, WT, and DG Buildings" was a performance deficiency. The finding was determined to be more than minor because it affected the Mitigating Systems cornerstone objective of availability, reliability, and capability of the fixed fire suppression systems and was associated with the protection against external factors (fire) attribute. Specifically, this failure could affect the ability of the water sprinkler system to respond to a fire because the affected sprinklers' spray patterns are reduced and less effective. The issue was determined to be of very low safety significance (Green) using Manual Chapter (MC) 0609, Appendix F, Attachment 1, because the category of fixed fire suppression was evaluated as having low degradation. The system had low degradation because the sprinkler system is expected to display nearly the same level of effectiveness and reliability as it would, had the degradation not been present. The finding has a procedural compliance cross-cutting aspect in the Work Practices component of the Human Performance cross cutting area, because the licensee failed to ensure procedural instructions (procedure OPT-34.6.4.1) were implemented correctly. H.4(b)

Inspection Report# : [2009005](#) (pdf)

**Significance:**  Dec 31, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure To Adequately Implement Design Control Measures For The Fire Protection Program**

The inspectors identified a Green non-cited violation of BSEP Unit 1 Updated Facility Operating License DPR-71, and the Unit 2 Updated Facility Operating License DPR-62, Condition 2.B.(6), for the licensee's failure to implement adequate design control measures for the fire protection program. Plant drawings which specify the configuration of fire suppression sprinklers are inconsistent and inadequate in that they do not provide complete details for sprinkler spray shields. Dimensions for spray shields on some drawings are incomplete because they don't list all of the necessary critical dimensions. Therefore, some ceiling-level spray shields were incorrectly installed and extended below the sprinklers' fusible links. This would have delayed sprinkler response in a fire. After the identification of this design control issue, the licensee implemented corrective actions which included repairing or replacing the degraded sprinklers. This finding was entered into the licensee's corrective action program as NCR #367339.

The licensee's failure to adequately implement design control measures for the fire protection program as required by the operating license (condition 2.B(6)) was a performance deficiency. The finding was determined to be more than minor because it affected the Mitigating Systems cornerstone objective of availability, reliability, and capability of the fixed fire suppression systems and was associated with the design control and protection against external factors (fire) attribute. Specifically, this failure could affect the ability of the water sprinkler system to respond to a fire because the incorrectly installed spray shields delay the ceiling-level sprinklers' response times. The issue was determined to be of very low safety significance (Green) using MC 0609, Appendix F, Attachment 1, because the category of fixed fire suppression was evaluated as having low degradation. The system had low degradation because the sprinkler system is expected to display nearly the same level of effectiveness and reliability as it would, had the degradation not been present. This finding has no cross-cutting aspect because the design drawing deficiency occurred when the plants were licensed and it is not indicative of current licensee performance.

Inspection Report# : [2009005](#) (pdf)

**Significance:**  Dec 31, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

### **Inadequately Monitored Maintenance Rule MOV**

The inspectors identified a Green NCV of 10 CFR 50.65(a)(1), Requirements for monitoring the effectiveness of maintenance at nuclear power plants, for the licensee's failure to monitor the performance or condition of motor-operated valve (MOV) MS-V28 in a manner sufficient to provide reasonable assurance that it was capable of fulfilling its intended functions. As a result, the licensee did not recognize that the valve was incapable of opening against design differential pressure and failed to take appropriate corrective actions to ensure that the valve could fulfill its emergency operating procedure (EOP) function. After the issue was identified, the licensee altered its operating procedures to compensate for the valve not opening against design differential pressure and entered it into their corrective action program (AR #356800).

The failure to adequately monitor the performance or condition of MOV MS-V28 in a manner to provide reasonable assurance that the valve was capable of fulfilling its intended function is a performance deficiency. The performance

deficiency was more than minor because it is associated with the Mitigating Systems cornerstone attribute of equipment performance, and affected 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 performance deficiency affected the reliability of the MOV MS-V-28 and its use in EOPs to restore feed to the reactor. Inspectors evaluated the finding using NRC IMC 0609, Significance Determination Process, Appendix A. Since the finding represents an actual loss of a function of non-Technical Specifications equipment designated as risk-significant for greater than 24 hours, the finding required a phase two significance analysis. The Brunswick phase 2 SDP spreadsheet indicated that the finding was greater than green but did not detail to the cases requiring MS-V28 operation therefore a phase 3 SDP analysis was completed by a regional SRA.

The phase 3 SDP analysis was performed in accordance with NRC Inspection Manual Chapter 0609 appendix A utilizing the NRC SPAR model and output from the licensee's full scope PRA model. The result was a risk increase for the finding of  $<1E-6$  for core damage frequency (cdf) and  $<1E-7$  for large early release frequency (LERF). The dominant sequences were transient initiators with spurious level instrument generated main steam isolation valve (MSIV) closure and the inability to restore main feedwater due to the performance deficiency coupled with failure to achieve successful depressurization and use of low pressure makeup systems leading to core damage. The risk was mitigated by the low initiating event frequency for transient conditions which would allow MSIV reopening and recovery of main feedwater. The availability of low pressure injection systems was also a factor reducing the risk. The result of the phase 3 analysis was that the finding was characterized as having very low safety significance, a Green finding. The cause of this finding was directly related to the problem evaluation cross-cutting aspect in the corrective action program component of the Problem Identification and Resolution cross-cutting area because the licensee failed to adequately evaluate the failure of MS-V28 in November 2008. (P.1(c)).

Inspection Report# : [2009005](#) (pdf)

**Significance:**  Oct 20, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

### **Inadequate Maintenance Instructions for Maintaining Cleanliness During Emergency Diesel Generator Governor Maintenance**

Green. The inspectors identified a Green NCV of Technical Specification (TS) 5.4.1, Procedures, for inadequate cleanliness and flushing procedures for maintaining cleanliness during maintenance on the emergency diesel generator (EDG) governors. This procedural inadequacy resulted in a failure of the emergency diesel generator #4 governor on September 19, 2009. The licensee entered the issue into their corrective action program and replaced the failed governor.

The finding was determined to be more than minor because it is associated with equipment performance and procedure quality attributes of the Mitigating Systems Cornerstone. It also adversely affected 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 reliability of EDG #4 was reduced because it was susceptible to fouling due to the foreign material in the governor. The finding was evaluated for significance using NRC Manual Chapter 0609, Appendix A, Determining the Significance of Reactor Inspection Findings for At-Power Situations. Using Table 4a of Appendix A to MC 0609, the finding was determined to be of very low safety significance (Green) because the failure of EDG #4 did not represent a loss of safety function, did not represent a loss of EDG #4 operability for greater than its technical specification allowed outage time, and does not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. The finding affects the cross-cutting area of human performance, resources component, complete and accurate documentation aspect because the licensee did not incorporate adequate guidance for maintaining cleanliness of the EDG governor in their maintenance procedures. (H.2(c))

Inspection Report# : [2009011](#) (pdf)

---

## **Barrier Integrity**

---

# Emergency Preparedness

**Significance:** **W** Sep 17, 2010

Identified By: NRC

Item Type: AV Apparent Violation

## **Failure to timely augment on-shift staffing**

An NRC-identified, low to moderate safety significance (White), apparent violation (AV) of 10 CFR 50.54(q) was identified in that the licensee failed to meet the requirements of 10 CFR 50.47(b)(2). The Technical Support Center (TSC), Operations Support Center (OSC), and Emergency Operations Facility (EOF) were not activated until approximately two and one-half hours after the Alert declaration due to delays in the notification and response of the Brunswick emergency response organization (ERO).

10 CFR 50.54(q) requires that the facility shall follow and maintain in effect Emergency Plans which meet the standards in 10 CFR 50.47(b). 10 CFR 50.47(b)(2), states, "On-shift facility licensee responsibilities for emergency response are unambiguously defined, adequate staffing to provide initial facility accident response in key functional areas is maintained at all times, timely augmentation of response capabilities is available and the interfaces among various onsite response activities and offsite support and response activities are specified." Brunswick Plant Emergency Procedures OPEP-02.6.12, OPEP-02.6.26, and OPEP-02.6.27 require activation of the OSC, TSC and EOF respectively within 60 – 75 minutes following the declaration of an ALERT or higher emergency classification. Contrary to the above, on June 6, 2010, the Brunswick Steam Electric Plant ERO failed to provide initial facility accident response through timely augmentation of on-shift staffing after declaration of an alert at Brunswick. This resulted in the delay of OSC, TSC, and EOF activation by 75 minutes.

The licensee's failure to maintain its emergency plan in effect is a performance deficiency and an apparent violation (AV) of 10 CFR 50.54(q). The cause of this finding was directly related to the cross-cutting aspect of, "The licensee conducts self-assessments at an appropriate frequency; such assessments are of sufficient depth, are comprehensive, are appropriately objective, and are self-critical. The licensee periodically assesses the effectiveness of oversight groups and programs such as CAP, and policies." P.3(a)

Inspection Report# : [2010007](#) (*pdf*)

**Significance:** **G** Sep 17, 2010

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

## **Failure to timely activate ERDS**

A self-revealing, very low safety significance (Green), non-cited violation (NCV) of 10 CFR 50.72(a)(4) was identified. The Emergency Response Data System (ERDS) was not activated until 80 minutes after the Alert declaration due to a lack of on-shift staffing experience and inadequate procedural guidance.

10 CFR 50.72(a)(4), states, "The licensee shall activate the Emergency Response Data System (ERDS) as soon as possible but not later than one hour after declaring an Emergency Class of alert, site area emergency, or general emergency. The ERDS may also be activated by the licensee during emergency drills or exercises if the licensee's computer system has the capability to transmit the exercise data." Contrary to the above, on June 6, 2010, the Brunswick ERO failed to activate the Emergency Response Data System within one hour after declaring an alert at the Brunswick Steam Electric Plant.

Inspection Report# : [2010007](#) (*pdf*)

---

# Occupational Radiation Safety

---

# Public Radiation Safety

**Significance:**  Mar 31, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

## **Failure to Ensure Representative Sampling of Particulate Effluents Released from the Reactor Building Roof Vent**

The inspectors identified a Green NCV of 10 CFR 20.1302(a) for failure to ensure surveys of particulate radioactive materials in effluents released to unrestricted areas from the reactor building roof vent were adequate to demonstrate compliance with dose limits for individual members of the public. This issue was initially identified as an unresolved item following an inspection in June 2008. The licensee entered the issue into its corrective action program (AR #292216 and AR #393340). The licensee is currently investigating this issue to identify applicable corrective actions.

The failure to ensure that the reactor building roof vent effluents were adequately monitored is a performance deficiency. This finding is more than minor because it is associated with the Public Radiation Safety cornerstone attribute of Plant Facilities/Equipment and Instrumentation (Process Radiation Monitors) and adversely affects the cornerstone objective. Specifically, the cornerstone objective of providing assurance that adequate protection of public health and safety from exposure to radioactive materials released into the public domain as a result of routine civilian reactor operation was affected because the licensee did not ensure that reactor building effluents were accurately monitored. The finding was evaluated using the Public Radiation Safety SDP and determined to be of very low safety significance (Green). The finding, which involved the effluent release program, was determined to be of very low safety significance (Green) because it was not a failure to implement the effluent program and did not result in public dose exceeding the 10 CFR 50 Appendix I criterion or 10 CFR 20.1301 (e). This finding does not have a cross-cutting aspect because the failure to evaluate the effect of line losses on particulate sampling is a historical issue.

Inspection Report# : [2010002](#) (*pdf*)

---

## **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**

Last modified : November 29, 2010

# Brunswick 1

## 4Q/2010 Plant Inspection Findings

---

### Initiating Events

**Significance:**  Jun 30, 2010

Identified By: Self-Revealing

Item Type: FIN Finding

#### **Inadequate Design Change Results in an Automatic Reactor Scram**

Green. A self-revealing Green finding was identified for an inadequate design change to the Unit 1 feedwater flow instrument sensing lines (Plant Modification (PM) 77-039). As a result of the inadequate design change, pressure pulsation dampeners (snubbers) were installed in the feed flow instrument sensing lines which prevented the instruments from detecting a loss of feed flow in time to prevent a reactor scram by initiating a recirculation pump runback. This was revealed after a loss of the 1B reactor feed pump (RFP) and a reactor low level scram on May 5, 2010. After the scram, the licensee adjusted the snubbers so that they respond properly to changes in feed flow and entered the issue into their corrective action program (AR #397712).

The inadequate design change implemented by PM 77-039 was a performance deficiency. The finding was more than minor because it was associated with the initiating events cornerstone attribute of design control, and it affected the associated cornerstone objective to limit the likelihood of those events that upset plant stability and that challenge critical safety functions during shutdown, as well as during power operations. Specifically, the performance deficiency caused a reactor scram. Using the Inspection Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, inspectors concluded that the transient initiator did not contribute to both the likelihood of a reactor trip and to the likelihood that mitigation equipment or functions would not be available. As a result, the issue was of very low safety significance (Green). The cause of this finding has no cross-cutting aspect because the modification took place in 1977 and is not indicative of current licensee performance.

Inspection Report# : [2010003](#) (*pdf*)

**Significance:**  Mar 31, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Inadequate Risk Evaluation for Removing the 1A South Condenser from Service**

The inspectors identified a Green NCV of 10 CFR Part 50.65 (a)(4), Requirements for monitoring the Effectiveness of Maintenance at Nuclear Power Plants, after Unit 1 experienced a loss of normal reactor feedwater as a result of an abnormal plant configuration during shutdown of the reactor on February 26, 2010.

The licensee did not adequately manage the increase in risk that resulted when the 1B reactor feed pump (RFP) was made unavailable while the 1A south condenser was isolated in the hours leading up to the reactor shutdown. This plant configuration led to a high level in the 1A south condenser hotwell soon after the reactor shutdown, which prevented adequate draining of the 1A RFP turbine casing, and led to the loss of the 1A RFP. After the loss of normal feedwater to the reactor, the licensee restored reactor level using the reactor core isolation cooling (RCIC) system. The licensee entered the issue into its corrective action program (AR #383636).

The failure to adequately evaluate and manage risk associated with equipment configuration during the Unit 1 shutdown is a performance deficiency. This finding is more than minor because it is associated with the initiating events cornerstone attribute of configuration control and it adversely affected the cornerstone objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions. Specifically, plant stability was upset by the loss of normal feedwater to the reactor. In accordance with IMC 0609, Appendix K, Maintenance Risk Assessment and Risk Management Significance Determination Process, this finding is of very low safety significance (Green) because the Incremental Core Damage Probability Deficit is the licensee did not appropriately plan work activities by incorporating risk insights (H.3(a)). Specifically, activities scheduled prior to the reactor

shutdown were not properly evaluated to determine their impact on the normal reactor feedwater system.

Inspection Report# : [2010002](#) (*pdf*)

---

## Mitigating Systems

**Significance:** **G** Mar 31, 2010

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

### **Failure to Follow Procedures During Reactor Head Disassembly**

A self-revealing Green NCV of Technical Specifications (TS) 5.4.1, Procedures, was identified when reactor head piping was disconnected prior to swapping shutdown range reactor water level transmitters resulting in inaccurate water level indication. The plant procedure for disconnection of the reactor head piping, 0SMP-RPV501, Reactor Vessel Disassembly, used in conjunction with 0GP-06, Cold Shutdown to Refueling, specifies that prior to removal of head piping, the Shutdown Range Reactor Water Level Transmitters shall be swapped from level transmitters, B21-LT-N027A and B21-LT-N027B, to level transmitters, B21-LT-7468A and B21-LT-7468B. Contrary to this requirement, the common reference leg to the level indicators was disconnected prior to swapping transmitters which resulted in loss of accurate indication of current reactor vessel water level. The licensee reinstalled the disconnected piping, refilled the reference legs for the transmitters, and entered the issue into their corrective action program (AR #383779).

The disconnection of the reference leg flange of the reactor vessel head piping prior to realignment of level instrumentation as required by plant procedures is a performance deficiency. The performance deficiency was more than minor because it is associated with the configuration control attribute of the Mitigating Systems cornerstone because it inappropriately altered the reactor level instrumentation reference leg piping. It affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inaccurate level indication degraded the operator's ability to control the reactor vessel water level in the prescribed procedural band and would inhibit their ability to diagnose and prevent loss of residual heat removal (RHR) scenario. In accordance with NRC Inspection Manual Chapter (IMC) 0609, Appendix G, "Shutdown Operations Significance Determination Process," Attachment 1, Checklist 8, the inspectors conducted a Phase 1 SDP screening and determined the finding required a Phase 2 analysis. The Phase 2 analysis determined the finding is of very low safety significance (Green) because adequate mitigation capability was maintained. The cause of this finding was directly related to the supervisory and management oversight cross-cutting aspect in the work practices component of the Human Performance cross-cutting area because plant supervisors failed to ensure an adequate pre-job brief, failed to enforce proper communications methods at the job site, and failed to properly supervise workers executing procedure steps (H.4(c)).

Inspection Report# : [2010002](#) (*pdf*)

---

## Barrier Integrity

---

## Emergency Preparedness

**Significance:** **W** Sep 17, 2010

Identified By: NRC

Item Type: VIO Violation

### **Failure to timely augment on-shift staffing**

An NRC-identified, low to moderate safety significance (White), apparent violation (AV) of 10 CFR 50.54(q) was identified in that the licensee failed to meet the requirements of 10 CFR 50.47(b)(2). The Technical Support Center

(TSC), Operations Support Center (OSC), and Emergency Operations Facility (EOF) were not activated until approximately two and one-half hours after the Alert declaration due to delays in the notification and response of the Brunswick emergency response organization (ERO).

10 CFR 50.54(q) requires that the facility shall follow and maintain in effect Emergency Plans which meet the standards in 10 CFR 50.47(b). 10 CFR 50.47(b)(2), states, "On-shift facility licensee responsibilities for emergency response are unambiguously defined, adequate staffing to provide initial facility accident response in key functional areas is maintained at all times, timely augmentation of response capabilities is available and the interfaces among various onsite response activities and offsite support and response activities are specified." Brunswick Plant Emergency Procedures OPEP-02.6.12, OPEP-02.6.26, and OPEP-02.6.27 require activation of the OSC, TSC and EOF respectively within 60 – 75 minutes following the declaration of an ALERT or higher emergency classification. Contrary to the above, on June 6, 2010, the Brunswick Steam Electric Plant ERO failed to provide initial facility accident response through timely augmentation of on-shift staffing after declaration of an alert at Brunswick. This resulted in the delay of OSC, TSC, and EOF activation by 75 minutes.

The licensee's failure to maintain its emergency plan in effect is a performance deficiency and an apparent violation (AV) of 10 CFR 50.54(q). The cause of this finding was directly related to the cross-cutting aspect of, "The licensee conducts self-assessments at an appropriate frequency; such assessments are of sufficient depth, are comprehensive, are appropriately objective, and are self-critical. The licensee periodically assesses the effectiveness of oversight groups and programs such as CAP, and policies." P.3(a)

Inspection Report# : [2010007](#) (*pdf*)

Inspection Report# : [2010010](#) (*pdf*)

**Significance:**  Sep 17, 2010

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

**Failure to timely activate ERDS**

A self-revealing, very low safety significance (Green), non-cited violation (NCV) of 10 CFR 50.72(a)(4) was identified. The Emergency Response Data System (ERDS) was not activated until 80 minutes after the Alert declaration due to a lack of on-shift staffing experience and inadequate procedural guidance.

10 CFR 50.72(a)(4), states, "The licensee shall activate the Emergency Response Data System (ERDS) as soon as possible but not later than one hour after declaring an Emergency Class of alert, site area emergency, or general emergency. The ERDS may also be activated by the licensee during emergency drills or exercises if the licensee's computer system has the capability to transmit the exercise data." Contrary to the above, on June 6, 2010, the Brunswick ERO failed to activate the Emergency Response Data System within one hour after declaring an alert at the Brunswick Steam Electric Plant.

Inspection Report# : [2010007](#) (*pdf*)

---

## Occupational Radiation Safety

---

## Public Radiation Safety

**Significance:**  Mar 31, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Ensure Representative Sampling of Particulate Effluents Released from the Reactor Building Roof Vent**

The inspectors identified a Green NCV of 10 CFR 20.1302(a) for failure to ensure surveys of particulate radioactive materials in effluents released to unrestricted areas from the reactor building roof vent were adequate to demonstrate compliance with dose limits for individual members of the public. This issue was initially identified as an unresolved item following an inspection in June 2008. The licensee entered the issue into its corrective action program (AR #292216 and AR #393340). The licensee is currently investigating this issue to identify applicable corrective actions.

The failure to ensure that the reactor building roof vent effluents were adequately monitored is a performance deficiency. This finding is more than minor because it is associated with the Public Radiation Safety cornerstone attribute of Plant Facilities/Equipment and Instrumentation (Process Radiation Monitors) and adversely affects the cornerstone objective. Specifically, the cornerstone objective of providing assurance that adequate protection of public health and safety from exposure to radioactive materials released into the public domain as a result of routine civilian reactor operation was affected because the licensee did not ensure that reactor building effluents were accurately monitored. The finding was evaluated using the Public Radiation Safety SDP and determined to be of very low safety significance (Green). The finding, which involved the effluent release program, was determined to be of very low safety significance (Green) because it was not a failure to implement the effluent program and did not result in public dose exceeding the 10 CFR 50 Appendix I criterion or 10 CFR 20.1301 (e). This finding does not have a cross-cutting aspect because the failure to evaluate the effect of line losses on particulate sampling is a historical issue.

Inspection Report# : [2010002](#) (*pdf*)

---

## 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

Last modified : March 03, 2011

# Brunswick 1

## 1Q/2011 Plant Inspection Findings

---

### Initiating Events

**Significance:** G Jun 30, 2010

Identified By: Self-Revealing

Item Type: FIN Finding

#### **Inadequate Design Change Results in an Automatic Reactor Scram**

Green. A self-revealing Green finding was identified for an inadequate design change to the Unit 1 feedwater flow instrument sensing lines (Plant Modification (PM) 77-039). As a result of the inadequate design change, pressure pulsation dampeners (snubbers) were installed in the feed flow instrument sensing lines which prevented the instruments from detecting a loss of feed flow in time to prevent a reactor scram by initiating a recirculation pump runback. This was revealed after a loss of the 1B reactor feed pump (RFP) and a reactor low level scram on May 5, 2010. After the scram, the licensee adjusted the snubbers so that they respond properly to changes in feed flow and entered the issue into their corrective action program (AR #397712).

The inadequate design change implemented by PM 77-039 was a performance deficiency. The finding was more than minor because it was associated with the initiating events cornerstone attribute of design control, and it affected the associated cornerstone objective to limit the likelihood of those events that upset plant stability and that challenge critical safety functions during shutdown, as well as during power operations. Specifically, the performance deficiency caused a reactor scram. Using the Inspection Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, inspectors concluded that the transient initiator did not contribute to both the likelihood of a reactor trip and to the likelihood that mitigation equipment or functions would not be available. As a result, the issue was of very low safety significance (Green). The cause of this finding has no cross-cutting aspect because the modification took place in 1977 and is not indicative of current licensee performance.

Inspection Report# : [2010003](#) (*pdf*)

---

### Mitigating Systems

**Significance:** TBD Mar 31, 2011

Identified By: Self-Revealing

Item Type: AV Apparent Violation

#### **Failure to adequately evaluate and correct a condition adverse to quality involving a manufacturing defect of Barton Model 199 dual dampener differential pressure units**

A self-revealing Apparent Violation (AV) of 10 CFR Part 50, Appendix B, Criterion XVI, Corrective Action was identified for failure to promptly correct a condition adverse to quality regarding a manufacturing defect of a Barton Model 199 dual dampener differential pressure unit (DPU) used in the 1B residual heat removal (RHR) loop. Specifically, the licensee failed to replace the DPU after the vendor determined that the manufacturing process was incorrect and could lead to a slow response of the component in safety-related applications. This led to a failure of the RHR system 1B loop minimum flow bypass valve, 1-E11-F007B, to operate on February 18, 2011. The failure of the defective DPU was tracked as NCR 448471 in the corrective action program, and the licensee replaced the defective DPU.

The inspectors determined that the licensee's failure to promptly correct a condition adverse to quality regarding a manufacturing defect for Barton Model 199 dual dampener DPUs was a performance deficiency. The finding is more than minor because it is associated with the equipment performance attribute of the Mitigating Systems Cornerstone and adversely affected 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 corrosion

buildup in the DPU used in the control of the position of the minimum flow bypass valve for the 1B RHR loop had degraded, such that the availability and reliability of the 1B RHR loop was adversely affected. This finding was evaluated using Inspection Manual Chapter 0609, Significance Determination Process (SDP), Phase 1 Worksheet for mitigating systems. The finding required phase two and phase three SDP analyses by a regional senior analyst because the 1B loop of RHR was assumed to be inoperable for longer than its technical specification (TS) allowed outage time. The significance of this finding is designated as To Be Determined (TBD) until the safety characterization has been completed. This finding does not have a cross-cutting aspect because the performance deficiency occurred greater than three years ago and does not reflect current licensee performance. (Section 1R15)

Inspection Report# : [2011002](#) (*pdf*)

---

## Barrier Integrity

---

## Emergency Preparedness

**Significance:** **W** Sep 17, 2010

Identified By: NRC

Item Type: VIO Violation

### Failure to timely augment on-shift staffing

An NRC-identified, low to moderate safety significance (White), apparent violation (AV) of 10 CFR 50.54(q) was identified in that the licensee failed to meet the requirements of 10 CFR 50.47(b)(2). The Technical Support Center (TSC), Operations Support Center (OSC), and Emergency Operations Facility (EOF) were not activated until approximately two and one-half hours after the Alert declaration due to delays in the notification and response of the Brunswick emergency response organization (ERO).

10 CFR 50.54(q) requires that the facility shall follow and maintain in effect Emergency Plans which meet the standards in 10 CFR 50.47(b). 10 CFR 50.47(b)(2), states, "On-shift facility licensee responsibilities for emergency response are unambiguously defined, adequate staffing to provide initial facility accident response in key functional areas is maintained at all times, timely augmentation of response capabilities is available and the interfaces among various onsite response activities and offsite support and response activities are specified." Brunswick Plant Emergency Procedures OPEP-02.6.12, OPEP-02.6.26, and OPEP-02.6.27 require activation of the OSC, TSC and EOF respectively within 60 – 75 minutes following the declaration of an ALERT or higher emergency classification. Contrary to the above, on June 6, 2010, the Brunswick Steam Electric Plant ERO failed to provide initial facility accident response through timely augmentation of on-shift staffing after declaration of an alert at Brunswick. This resulted in the delay of OSC, TSC, and EOF activation by 75 minutes.

The licensee's failure to maintain its emergency plan in effect is a performance deficiency and an apparent violation (AV) of 10 CFR 50.54(q). The cause of this finding was directly related to the cross-cutting aspect of, "The licensee conducts self-assessments at an appropriate frequency; such assessments are of sufficient depth, are comprehensive, are appropriately objective, and are self-critical. The licensee periodically assesses the effectiveness of oversight groups and programs such as CAP, and policies." P.3(a)

Inspection Report# : [2010010](#) (*pdf*)

Inspection Report# : [2010007](#) (*pdf*)

**Significance:** **G** Sep 17, 2010

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

### Failure to timely activate ERDS

A self-revealing, very low safety significance (Green), non-cited violation (NCV) of 10 CFR 50.72(a)(4) was

identified. The Emergency Response Data System (ERDS) was not activated until 80 minutes after the Alert declaration due to a lack of on-shift staffing experience and inadequate procedural guidance.

10 CFR 50.72(a)(4), states, “The licensee shall activate the Emergency Response Data System (ERDS) as soon as possible but not later than one hour after declaring an Emergency Class of alert, site area emergency, or general emergency. The ERDS may also be activated by the licensee during emergency drills or exercises if the licensee's computer system has the capability to transmit the exercise data.” Contrary to the above, on June 6, 2010, the Brunswick ERO failed to activate the Emergency Response Data System within one hour after declaring an alert at the Brunswick Steam Electric Plant.

Inspection Report# : [2010007](#) (*pdf*)

---

## Occupational Radiation Safety

**Significance:**  Mar 31, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to follow procedures for analyzing radiological air samples for the presence of alpha emitters**

The inspectors identified a non-cited violation (NCV) of Technical Specification (TS) 5.4.1, Procedures, for the failure of the licensee to perform initial alpha activity analysis of air samples indicating greater than 0.3 Derived Air Concentration (DAC) beta-gamma activity on an approved alpha counter. Section 9.5.12.h of procedure HPS-NGGC-0024, Alpha Monitoring Guidelines, Rev. 3, states that if gamma scan results indicate the airborne activity is equal to or greater than the beta-gamma DAC-Fraction Action level of 0.3 DAC; (1) perform an initial alpha count on the air sample using a counter approved for air samples; and (2) assess and document the results per site-specific procedures. Contrary to this requirement, on March 10, 11, and 21, 2011, the licensee did not perform an initial alpha count on air samples using a counter approved for air samples and assess and document the results for gamma scan results that exceeded 0.3 DAC. Specifically, air samples for those selected work activities identified DAC concentrations of 0.6589, 0.3152 and 1.45. Licensee corrective actions included instructions to workers to ensure procedural adherence for sample analysis and changes to the software program to prompt the workers to do the sample analysis when the threshold limits were met or exceeded. The licensee entered the issue into its corrective action program as NCR 455307.

This finding is greater than minor because it was associated with the Occupational Radiation Safety Cornerstone attribute of Program and Process (Monitoring and Radiation Protection Controls) and adversely affects the cornerstone objective of ensuring adequate protection of worker health and safety from exposure to radiation from airborne radioactive material during routine civilian nuclear reactor operation. Failure to identify potentially significant contributors to internal dose could lead to unmonitored occupational exposures. The finding was evaluated using IMC 0609, Appendix C, “Occupational Radiation SDP” and was determined to be of very low safety significance (Green) because it was not related to As Low As Reasonably Achievable (ALARA) Planning and the ability to assess dose was not compromised during these instances. In addition, it did not involve overexposure or substantial potential for overexposure because of the relatively low alpha source term in the areas where the surveys were performed. This conclusion was drawn from the results of beta/gamma and alpha smear surveys performed at those selected work locations. However, if left uncorrected, unmonitored internal exposure could have occurred. The cause of this finding was directly related to the cross-cutting aspect of maintaining effective interfaces between work groups in the Work Control component of the Human Performance area. [H.3(b)]. (Section 2RS1)

Inspection Report# : [2011002](#) (*pdf*)

---

## 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

Last modified : June 07, 2011

# Brunswick 1

## 2Q/2011 Plant Inspection Findings

---

### Initiating Events

---

### Mitigating Systems

**Significance:**  Jun 30, 2011

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

#### **Failure To Adequately Evaluate And Correct A Condition Adverse To Quality Involving A Manufacturing Defect Of Barton Model 199 Dual Dampener Differential Pressure Units**

•Green. A self revealing non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, “Corrective Action” was identified for failure to promptly correct a condition adverse to quality regarding a manufacturing defect of a Barton Model 199 dual dampener differential pressure unit (DPU) used in the 1B residual heat removal (RHR) loop. Specifically, the licensee failed to replace the DPU after the vendor determined that the manufacturing process was incorrect and could lead to a slow response of the component in safety-related applications. This led to a failure of the RHR system 1B loop minimum flow bypass valve, 1-E11-F007B, to operate on February 18, 2011. The failure of the defective DPU was tracked as NCR 448471 in the corrective action program, and the licensee replaced the defective DPU.

The inspectors determined that the licensee’s failure to promptly correct a condition adverse to quality regarding a manufacturing defect for Barton Model 199 dual dampener DPUs was a performance deficiency. The finding is more than minor because it is associated with the equipment performance attribute of the Mitigating Systems Cornerstone and adversely affected 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 corrosion buildup in the DPU used in the control of the position of the minimum flow bypass valve for the 1B RHR loop had degraded, such that the availability and reliability of the 1B RHR loop was adversely affected. This finding was evaluated using Inspection Manual Chapter 0609, “Significance Determination Process,” Phase 1 Worksheet for mitigating systems. The finding required phase two and phase three SDP analyses by a regional Senior Reactor Analyst (SRA) because the 1B loop of RHR was assumed to be inoperable for longer than its Technical Specifications (TS) allowed outage time. The SRA performed a phase three analysis using the NRC’s site-specific risk model. Common cause factors were not propagated to the other loop of RHR during the modeling because of the prior instrument changes in the other loop. Operator recovery for the impact of the failed instrument was deemed to be credible, because the valve’s hand switch remained functional, and was evaluated using the SPAR-H methodology. The short duration of non-functionality since the last known proper functioning of the instrument, combined with the high likelihood of operator recovery, and the lack of an increase in common cause failures resulted in a finding that is characterized as Green. This finding does not have a cross-cutting aspect because the performance deficiency occurred greater than three years ago and does not reflect current licensee performance.

Inspection Report# : [2011003](#) (*pdf*)

**Significance:**  Jan 21, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Failure to Analyze MOV Operation with Transient Voltages**

Green. The team identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, “Design Control,” for the licensee’s failure to use conservative motor control center (MCC) voltage inputs when calculating motor actuator output torque and control circuit voltages for safety-related motor operator valve (MOV) motors that would be

required to operate during design bases events. Specifically, the licensee used steady state MCC voltages instead of more limiting transient voltages that would occur during design bases load sequencing. The licensee entered these issues into their corrective action program as NCRs 427745 and 429541 and performed additional analyses to demonstrate operability of the MOVs.

The licensee's failure to evaluate MOV motor actuator output torque using transient MCC voltages, and the failure to evaluate whether those MOVs would have adequate control power voltage was a performance deficiency. The performance deficiency was more than minor because it is associated with the mitigating systems cornerstone attribute of design control 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 use of non-conservative voltage inputs for MOV calculations could result in the failure of the components to perform their design bases functions during an event. The inspectors conducted a Phase 1 SDP in accordance with IMC 0609.04, "Initial Screening and Characterization of Findings," and determined the finding to be of very low safety significance (Green) because it was a design deficiency confirmed not to result in the loss of operability or functionality, did not represent the loss of a system function, and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. The finding directly involved the cross-cutting aspect of procedural compliance and personnel follow procedures within the Work Practices component of the Human Resources area [H.4(b)].  
Inspection Report# : [2010008](#) (*pdf*)

**Significance:**  Jan 21, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Failure to Promptly Identify and Correct Isolation Override Circuitry Testing Deficiencies**

Green. The team identified a non-cited violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," for the licensee's failure to assure that conditions adverse to quality, such as deficiencies, were promptly identified and corrected. Specifically, after identifying that the Unit 1 and 2 isolation override switches associated with the hardened wet well (Torus) vents should have been scoped in the maintenance rule, the licensee failed to ensure the circuitry was monitored for functionality. Because the circuitry was not monitored, a relay in the Unit 1 circuitry degraded unacceptably without the licensee's knowledge. This finding does not present an immediate safety concern because as an immediate corrective action the failed relay in the Unit 1 control circuitry was replaced. The licensee entered the issue into their corrective action program as NCR 428054.

The licensee's failure to identify that the isolation override control switches were not being tested in the manner that they would be operated in the EOPs was a performance deficiency. The performance deficiency was more than minor because it is associated with the mitigating systems cornerstone attribute of equipment performance 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, not testing the isolation override circuitry resulted in a failed component going undetected that adversely impacted the ability to mitigate an event with the hardened wet well vent.

Using Manual Chapter Attachment 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," the inspectors determined the finding required a Phase 2 analysis because the finding represented an actual loss of safety function of non-Technical Specification equipment designated as risk significant for greater than 24 hours. The Phase 2 analysis determined that this finding was potentially greater than green; therefore, a Phase 3 analysis was performed by a regional senior reactor analyst (SRA). The SRA determined the change in risk through use of the plant specific risk model. The function of the wet well vents was modeled, but the model did not include the ability to supply air manually to the air operated valve as a backup to the control room switches. A human reliability analysis was performed, and model adjustments were made so the performance deficiency's impact could be analyzed, given the backup method was available. This backup method's availability resulted in the findings risk increase to be low enough to be considered a Green SDP item. A cross-cutting aspect was not identified because the finding does not represent current performance.

Inspection Report# : [2010008](#) (*pdf*)

**Significance:**  Jan 21, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Perform Appropriate Corrective Actions for Deficiencies with Opening a Service Water Valve**

Green. The team identified a non-cited violation of Technical Specification (TS) 5.4.1, Procedures, for the licensee's failure to maintain adequate abnormal operating procedures (AOP) for opening a service water cross-tie valve during a loss of offsite power (LOOP) event. The valve would not open against system differential pressure (dp) and the licensee's corrective actions did not address the valve's manipulation in AOPs. The licensee entered the issue into their corrective action program as NCR 428809.

After discovering the difficulty of opening the service water cross-tie valves against a maximum differential pressure, the licensee's failure to provide appropriate procedural guidance to assure the operation of the valves during a LOOP event was a performance deficiency. The performance deficiency was more than minor because it is associated with the mitigating systems cornerstone attribute of equipment performance and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences because the SW-V146 valve would not open against a system pressure of 75 psid; and, if this condition was left uncorrected, the ability to complete required operator actions in procedures 0AOP18.0 and 0AOP36.1 during a LOOP would be adversely affected. Using Manual Chapter Attachment 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," the inspectors determined the finding required a Phase 2 analysis because the finding represented an actual loss of safety function of non-Technical Specification equipment designated as risk significant for greater than 24 hours. The Phase 2 analysis determined that this finding was potentially greater than green; therefore, a Phase 3 analysis was performed by a regional senior reactor analyst (SRA). The SRA determined the combined risk associated with the valve's function to provide alternate flow to safety-related heat exchangers was very low. In addition, there was a good chance of operator recovery due to the long time period that was available before manipulation of the valve was required. These factors resulted in a risk value corresponding to a Green finding. The finding directly involved the cross-cutting aspect of thoroughness of evaluation within the Corrective Action Program component of the Problem Identification and Resolution area [P.1(c)].  
Inspection Report# : [2010008](#) (*pdf*)

---

## **Barrier Integrity**

---

## **Emergency Preparedness**

**Significance:** **W** Sep 17, 2010

Identified By: NRC

Item Type: VIO Violation

### **Failure to timely augment on-shift staffing**

An NRC-identified, low to moderate safety significance (White), apparent violation (AV) of 10 CFR 50.54(q) was identified in that the licensee failed to meet the requirements of 10 CFR 50.47(b)(2). The Technical Support Center (TSC), Operations Support Center (OSC), and Emergency Operations Facility (EOF) were not activated until approximately two and one-half hours after the Alert declaration due to delays in the notification and response of the Brunswick emergency response organization (ERO).

10 CFR 50.54(q) requires that the facility shall follow and maintain in effect Emergency Plans which meet the standards in 10 CFR 50.47(b). 10 CFR 50.47(b)(2), states, "On-shift facility licensee responsibilities for emergency response are unambiguously defined, adequate staffing to provide initial facility accident response in key functional areas is maintained at all times, timely augmentation of response capabilities is available and the interfaces among various onsite response activities and offsite support and response activities are specified." Brunswick Plant Emergency Procedures 0PEP-02.6.12, 0PEP-02.6.26, and 0PEP-02.6.27 require activation of the OSC, TSC and EOF respectively within 60 – 75 minutes following the declaration of an ALERT or higher emergency classification. Contrary to the above, on June 6, 2010, the Brunswick Steam Electric Plant ERO failed to provide initial facility accident response through timely augmentation of on-shift staffing after declaration of an alert at Brunswick. This

resulted in the delay of OSC, TSC, and EOF activation by 75 minutes.

The licensee's failure to maintain its emergency plan in effect is a performance deficiency and an apparent violation (AV) of 10 CFR 50.54(q). The cause of this finding was directly related to the cross-cutting aspect of, "The licensee conducts self-assessments at an appropriate frequency; such assessments are of sufficient depth, are comprehensive, are appropriately objective, and are self-critical. The licensee periodically assesses the effectiveness of oversight groups and programs such as CAP, and policies." P.3(a)

Inspection Report# : [2010010](#) (pdf)

Inspection Report# : [2010007](#) (pdf)

Inspection Report# : [2011009](#) (pdf)

**Significance:**  Sep 17, 2010

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

### **Failure to timely activate ERDS**

A self-revealing, very low safety significance (Green), non-cited violation (NCV) of 10 CFR 50.72(a)(4) was identified. The Emergency Response Data System (ERDS) was not activated until 80 minutes after the Alert declaration due to a lack of on-shift staffing experience and inadequate procedural guidance.

10 CFR 50.72(a)(4), states, "The licensee shall activate the Emergency Response Data System (ERDS) as soon as possible but not later than one hour after declaring an Emergency Class of alert, site area emergency, or general emergency. The ERDS may also be activated by the licensee during emergency drills or exercises if the licensee's computer system has the capability to transmit the exercise data." Contrary to the above, on June 6, 2010, the Brunswick ERO failed to activate the Emergency Response Data System within one hour after declaring an alert at the Brunswick Steam Electric Plant.

Inspection Report# : [2010007](#) (pdf)

---

## **Occupational Radiation Safety**

**Significance:**  Mar 31, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to follow procedures for analyzing radiological air samples for the presence of alpha emitters**

The inspectors identified a non-cited violation (NCV) of Technical Specification (TS) 5.4.1, Procedures, for the failure of the licensee to perform initial alpha activity analysis of air samples indicating greater than 0.3 Derived Air Concentration (DAC) beta-gamma activity on an approved alpha counter. Section 9.5.12.h of procedure HPS-NGGC-0024, Alpha Monitoring Guidelines, Rev. 3, states that if gamma scan results indicate the airborne activity is equal to or greater than the beta-gamma DAC-Fraction Action level of 0.3 DAC; (1) perform an initial alpha count on the air sample using a counter approved for air samples; and (2) assess and document the results per site-specific procedures. Contrary to this requirement, on March 10, 11, and 21, 2011, the licensee did not perform an initial alpha count on air samples using a counter approved for air samples and assess and document the results for gamma scan results that exceeded 0.3 DAC. Specifically, air samples for those selected work activities identified DAC concentrations of 0.6589, 0.3152 and 1.45. Licensee corrective actions included instructions to workers to ensure procedural adherence for sample analysis and changes to the software program to prompt the workers to do the sample analysis when the threshold limits were met or exceeded. The licensee entered the issue into its corrective action program as NCR 455307.

This finding is greater than minor because it was associated with the Occupational Radiation Safety Cornerstone attribute of Program and Process (Monitoring and Radiation Protection Controls) and adversely affects the cornerstone objective of ensuring adequate protection of worker health and safety from exposure to radiation from airborne radioactive material during routine civilian nuclear reactor operation. Failure to identify potentially

significant contributors to internal dose could lead to unmonitored occupational exposures. The finding was evaluated using IMC 0609, Appendix C, “Occupational Radiation SDP” and was determined to be of very low safety significance (Green) because it was not related to As Low As Reasonably Achievable (ALARA) Planning and the ability to assess dose was not compromised during these instances. In addition, it did not involve overexposure or substantial potential for overexposure because of the relatively low alpha source term in the areas where the surveys were performed. This conclusion was drawn from the results of beta/gamma and alpha smear surveys performed at those selected work locations. However, if left uncorrected, unmonitored internal exposure could have occurred. The cause of this finding was directly related to the cross-cutting aspect of maintaining effective interfaces between work groups in the Work Control component of the Human Performance area. [H.3(b)]. (Section 2RS1)

Inspection Report# : [2011002](#) (*pdf*)

---

## 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

Last modified : October 14, 2011

# Brunswick 1

## 3Q/2011 Plant Inspection Findings

---

### Initiating Events

---

### Mitigating Systems

**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*)

**Significance:**  Jun 30, 2011

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

#### **Failure To Adequately Evaluate And Correct A Condition Adverse To Quality Involving A Manufacturing Defect Of Barton Model 199 Dual Dampener Differential Pressure Units**

•Green. A self revealing non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action" was identified for failure to promptly correct a condition adverse to quality regarding a manufacturing defect of a Barton Model 199 dual dampener differential pressure unit (DPU) used in the 1B residual heat removal (RHR) loop. Specifically, the licensee failed to replace the DPU after the vendor determined that the manufacturing process was incorrect and could lead to a slow response of the component in safety-related applications. This led to a failure of the RHR system 1B loop minimum flow bypass valve, 1-E11-F007B, to operate on February 18, 2011. The failure of the defective DPU was tracked as NCR 448471 in the corrective action program, and the licensee replaced the defective DPU.

The inspectors determined that the licensee's failure to promptly correct a condition adverse to quality regarding a manufacturing defect for Barton Model 199 dual dampener DPUs was a performance deficiency. The finding is more than minor because it is associated with the equipment performance attribute of the Mitigating Systems Cornerstone and adversely affected 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 corrosion buildup in the DPU used in the control of the position of the minimum flow bypass valve for the 1B RHR loop had degraded, such that the availability and reliability of the 1B RHR loop was adversely affected. This finding was evaluated using Inspection Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet for mitigating systems. The finding required phase two and phase three SDP analyses by a regional Senior Reactor Analyst (SRA) because the 1B loop of RHR was assumed to be inoperable for longer than its Technical Specifications (TS) allowed outage time. The SRA performed a phase three analysis using the NRC's site-specific risk model. Common cause factors were not propagated to the other loop of RHR during the modeling because of the prior instrument changes in the other loop. Operator recovery for the impact of the failed instrument was deemed to be credible, because the valve's hand switch remained functional, and was evaluated using the SPAR-H methodology. The short duration of non-functionality since the last known proper functioning of the instrument, combined with the high likelihood of operator recovery, and the lack of an increase in common cause failures resulted in a finding that is characterized as Green. This finding does not have a cross-cutting aspect because the performance deficiency occurred greater than three years ago and does not reflect current licensee performance.

Inspection Report# : [2011003](#) (*pdf*)

**Significance:**  Jan 21, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Failure to Analyze MOV Operation with Transient Voltages**

Green. The team identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the licensee's failure to use conservative motor control center (MCC) voltage inputs when calculating motor actuator output torque and control circuit voltages for safety-related motor operator valve (MOV) motors that would be required to operate during design bases events. Specifically, the licensee used steady state MCC voltages instead of more limiting transient voltages that would occur during design bases load sequencing.

The licensee entered these issues into their corrective action program as NCRs 427745 and 429541 and performed additional analyses to demonstrate operability of the MOVs.

The licensee's failure to evaluate MOV motor actuator output torque using transient MCC voltages, and the failure to evaluate whether those MOVs would have adequate control power voltage was a performance deficiency. The performance deficiency was more than minor because it is associated with the mitigating systems cornerstone attribute of design control 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 use of non-conservative voltage inputs for MOV calculations could result in the failure of the components to perform their design bases functions during an event. The inspectors conducted a Phase 1 SDP in accordance with IMC 0609.04, "Initial Screening and Characterization of Findings," and determined the finding to be of very low safety significance (Green) because it was a design deficiency confirmed not to result in the loss of operability or functionality, did not represent the loss of a system function, and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. The finding directly involved the cross-cutting aspect of procedural compliance and personnel follow procedures within the Work Practices component of the Human Resources area [H.4(b)].

Inspection Report# : [2010008](#) (*pdf*)

**Significance:**  Jan 21, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Failure to Promptly Identify and Correct Isolation Override Circuitry Testing Deficiencies**

Green. The team identified a non-cited violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," for the licensee's failure to assure that conditions adverse to quality, such as deficiencies, were promptly identified and corrected. Specifically, after identifying that the Unit 1 and 2 isolation override switches associated with the hardened

wet well (Torus) vents should have been scoped in the maintenance rule, the licensee failed to ensure the circuitry was monitored for functionality. Because the circuitry was not monitored, a relay in the Unit 1 circuitry degraded unacceptably without the licensee's knowledge. This finding does not present an immediate safety concern because as an immediate corrective action the failed relay in the Unit 1 control circuitry was replaced. The licensee entered the issue into their corrective action program as NCR 428054.

The licensee's failure to identify that the isolation override control switches were not being tested in the manner that they would be operated in the EOPs was a performance deficiency. The performance deficiency was more than minor because it is associated with the mitigating systems cornerstone attribute of equipment performance 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, not testing the isolation override circuitry resulted in a failed component going undetected that adversely impacted the ability to mitigate an event with the hardened wet well vent.

Using Manual Chapter Attachment 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," the inspectors determined the finding required a Phase 2 analysis because the finding represented an actual loss of safety function of non-Technical Specification equipment designated as risk significant for greater than 24 hours. The Phase 2 analysis determined that this finding was potentially greater than green; therefore, a Phase 3 analysis was performed by a regional senior reactor analyst (SRA). The SRA determined the change in risk through use of the plant specific risk model. The function of the wet well vents was modeled, but the model did not include the ability to supply air manually to the air operated valve as a backup to the control room switches. A human reliability analysis was performed, and model adjustments were made so the performance deficiency's impact could be analyzed, given the backup method was available. This backup method's availability resulted in the findings risk increase to be low enough to be considered a Green SDP item. A cross-cutting aspect was not identified because the finding does not represent current performance.

Inspection Report# : [2010008](#) (pdf)

**Significance:** G Jan 21, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Perform Appropriate Corrective Actions for Deficiencies with Opening a Service Water Valve**

Green. The team identified a non-cited violation of Technical Specification (TS) 5.4.1, Procedures, for the licensee's failure to maintain adequate abnormal operating procedures (AOP) for opening a service water cross-tie valve during a loss of offsite power (LOOP) event. The valve would not open against system differential pressure (dp) and the licensee's corrective actions did not address the valve's manipulation in AOPs. The licensee entered the issue into their corrective action program as NCR 428809.

After discovering the difficulty of opening the service water cross-tie valves against a maximum differential pressure, the licensee's failure to provide appropriate procedural guidance to assure the operation of the valves during a LOOP event was a performance deficiency. The performance deficiency was more than minor because it is associated with the mitigating systems cornerstone attribute of equipment performance and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences because the SW-V146 valve would not open against a system pressure of 75 psid; and, if this condition was left uncorrected, the ability to complete required operator actions in procedures 0AOP18.0 and 0AOP36.1 during a LOOP would be adversely affected. Using Manual Chapter Attachment 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," the inspectors determined the finding required a Phase 2 analysis because the finding represented an actual loss of safety function of non-Technical Specification equipment designated as risk significant for greater than 24 hours. The Phase 2 analysis determined that this finding was potentially greater than green; therefore, a Phase 3 analysis was performed by a regional senior reactor analyst (SRA). The SRA determined the combined risk associated with the valve's function to provide alternate flow to safety-related heat exchangers was very low. In addition, there was a good chance of operator recovery due to the long time period that was available before manipulation of the valve was required. These factors resulted in a risk value corresponding to a Green finding. The finding directly involved the cross-cutting aspect of thoroughness of evaluation within the Corrective Action Program component of the Problem Identification and Resolution area [P.1(c)].

Inspection Report# : [2010008](#) (pdf)

---

## Barrier Integrity

---

## Emergency Preparedness

---

## Occupational Radiation Safety

**Significance:**  Mar 31, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to follow procedures for analyzing radiological air samples for the presence of alpha emitters**

The inspectors identified a non-cited violation (NCV) of Technical Specification (TS) 5.4.1, Procedures, for the failure of the licensee to perform initial alpha activity analysis of air samples indicating greater than 0.3 Derived Air Concentration (DAC) beta-gamma activity on an approved alpha counter. Section 9.5.12.h of procedure HPS-NGGC-0024, Alpha Monitoring Guidelines, Rev. 3, states that if gamma scan results indicate the airborne activity is equal to or greater than the beta-gamma DAC-Fraction Action level of 0.3 DAC; (1) perform an initial alpha count on the air sample using a counter approved for air samples; and (2) assess and document the results per site-specific procedures. Contrary to this requirement, on March 10, 11, and 21, 2011, the licensee did not perform an initial alpha count on air samples using a counter approved for air samples and assess and document the results for gamma scan results that exceeded 0.3 DAC. Specifically, air samples for those selected work activities identified DAC concentrations of 0.6589, 0.3152 and 1.45. Licensee corrective actions included instructions to workers to ensure procedural adherence for sample analysis and changes to the software program to prompt the workers to do the sample analysis when the threshold limits were met or exceeded. The licensee entered the issue into its corrective action program as NCR 455307.

This finding is greater than minor because it was associated with the Occupational Radiation Safety Cornerstone attribute of Program and Process (Monitoring and Radiation Protection Controls) and adversely affects the cornerstone objective of ensuring adequate protection of worker health and safety from exposure to radiation from airborne radioactive material during routine civilian nuclear reactor operation. Failure to identify potentially significant contributors to internal dose could lead to unmonitored occupational exposures. The finding was evaluated using IMC 0609, Appendix C, "Occupational Radiation SDP" and was determined to be of very low safety significance (Green) because it was not related to As Low As Reasonably Achievable (ALARA) Planning and the ability to assess dose was not compromised during these instances. In addition, it did not involve overexposure or substantial potential for overexposure because of the relatively low alpha source term in the areas where the surveys were performed. This conclusion was drawn from the results of beta/gamma and alpha smear surveys performed at those selected work locations. However, if left uncorrected, unmonitored internal exposure could have occurred. The cause of this finding was directly related to the cross-cutting aspect of maintaining effective interfaces between work groups in the Work Control component of the Human Performance area. [H.3(b)]. (Section 2RS1)

Inspection Report# : [2011002](#) (*pdf*)

---

## 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

Last modified : January 04, 2012

# Brunswick 1

## 4Q/2011 Plant Inspection Findings

---

### Initiating Events

---

### Mitigating Systems

**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: 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)

**Significance:**  Jun 30, 2011

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

#### **Failure To Adequately Evaluate And Correct A Condition Adverse To Quality Involving A Manufacturing Defect Of Barton Model 199 Dual Dampener Differential Pressure Units**

•Green. A self revealing non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action" was identified for failure to promptly correct a condition adverse to quality regarding a manufacturing defect of a Barton Model 199 dual dampener differential pressure unit (DPU) used in the 1B residual heat removal (RHR) loop. Specifically, the licensee failed to replace the DPU after the vendor determined that the manufacturing process was incorrect and could lead to a slow response of the component in safety-related applications. This led to a failure of the RHR system 1B loop minimum flow bypass valve, 1-E11-F007B, to operate on February 18, 2011. The failure of the defective DPU was tracked as NCR 448471 in the corrective action program, and the licensee replaced the defective DPU.

The inspectors determined that the licensee's failure to promptly correct a condition adverse to quality regarding a

manufacturing defect for Barton Model 199 dual dampener DPUs was a performance deficiency. The finding is more than minor because it is associated with the equipment performance attribute of the Mitigating Systems Cornerstone and adversely affected 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 corrosion buildup in the DPU used in the control of the position of the minimum flow bypass valve for the 1B RHR loop had degraded, such that the availability and reliability of the 1B RHR loop was adversely affected. This finding was evaluated using Inspection Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet for mitigating systems. The finding required phase two and phase three SDP analyses by a regional Senior Reactor Analyst (SRA) because the 1B loop of RHR was assumed to be inoperable for longer than its Technical Specifications (TS) allowed outage time. The SRA performed a phase three analysis using the NRC's site-specific risk model. Common cause factors were not propagated to the other loop of RHR during the modeling because of the prior instrument changes in the other loop. Operator recovery for the impact of the failed instrument was deemed to be credible, because the valve's hand switch remained functional, and was evaluated using the SPAR-H methodology. The short duration of non-functionality since the last known proper functioning of the instrument, combined with the high likelihood of operator recovery, and the lack of an increase in common cause failures resulted in a finding that is characterized as Green. This finding does not have a cross-cutting aspect because the performance deficiency occurred greater than three years ago and does not reflect current licensee performance.

Inspection Report# : [2011003](#) (pdf)

**Significance:**  Jan 21, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Failure to Analyze MOV Operation with Transient Voltages**

Green. The team identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the licensee's failure to use conservative motor control center (MCC) voltage inputs when calculating motor actuator output torque and control circuit voltages for safety-related motor operator valve (MOV) motors that would be required to operate during design bases events. Specifically, the licensee used steady state MCC voltages instead of more limiting transient voltages that would occur during design bases load sequencing.

The licensee entered these issues into their corrective action program as NCRs 427745 and 429541 and performed additional analyses to demonstrate operability of the MOVs.

The licensee's failure to evaluate MOV motor actuator output torque using transient MCC voltages, and the failure to evaluate whether those MOVs would have adequate control power voltage was a performance deficiency. The performance deficiency was more than minor because it is associated with the mitigating systems cornerstone attribute of design control 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 use of non-conservative voltage inputs for MOV calculations could result in the failure of the components to perform their design bases functions during an event. The inspectors conducted a Phase 1 SDP in accordance with IMC 0609.04, "Initial Screening and Characterization of Findings," and determined the finding to be of very low safety significance (Green) because it was a design deficiency confirmed not to result in the loss of operability or functionality, did not represent the loss of a system function, and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. The finding directly involved the cross-cutting aspect of procedural compliance and personnel follow procedures within the Work Practices component of the Human Resources area [H.4(b)].

Inspection Report# : [2010008](#) (pdf)

**Significance:**  Jan 21, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Failure to Promptly Identify and Correct Isolation Override Circuitry Testing Deficiencies**

Green. The team identified a non-cited violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," for the licensee's failure to assure that conditions adverse to quality, such as deficiencies, were promptly identified and corrected. Specifically, after identifying that the Unit 1 and 2 isolation override switches associated with the hardened wet well (Torus) vents should have been scoped in the maintenance rule, the licensee failed to ensure the circuitry was monitored for functionality. Because the circuitry was not monitored, a relay in the Unit 1 circuitry degraded

unacceptably without the licensee's knowledge. This finding does not present an immediate safety concern because as an immediate corrective action the failed relay in the Unit 1 control circuitry was replaced. The licensee entered the issue into their corrective action program as NCR 428054.

The licensee's failure to identify that the isolation override control switches were not being tested in the manner that they would be operated in the EOPs was a performance deficiency. The performance deficiency was more than minor because it is associated with the mitigating systems cornerstone attribute of equipment performance 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, not testing the isolation override circuitry resulted in a failed component going undetected that adversely impacted the ability to mitigate an event with the hardened wet well vent.

Using Manual Chapter Attachment 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," the inspectors determined the finding required a Phase 2 analysis because the finding represented an actual loss of safety function of non-Technical Specification equipment designated as risk significant for greater than 24 hours. The Phase 2 analysis determined that this finding was potentially greater than green; therefore, a Phase 3 analysis was performed by a regional senior reactor analyst (SRA). The SRA determined the change in risk through use of the plant specific risk model. The function of the wet well vents was modeled, but the model did not include the ability to supply air manually to the air operated valve as a backup to the control room switches. A human reliability analysis was performed, and model adjustments were made so the performance deficiency's impact could be analyzed, given the backup method was available. This backup method's availability resulted in the findings risk increase to be low enough to be considered a Green SDP item. A cross-cutting aspect was not identified because the finding does not represent current performance.

Inspection Report# : [2010008](#) (pdf)

**Significance:**  Jan 21, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Perform Appropriate Corrective Actions for Deficiencies with Opening a Service Water Valve**

Green. The team identified a non-cited violation of Technical Specification (TS) 5.4.1, Procedures, for the licensee's failure to maintain adequate abnormal operating procedures (AOP) for opening a service water cross-tie valve during a loss of offsite power (LOOP) event. The valve would not open against system differential pressure (dp) and the licensee's corrective actions did not address the valve's manipulation in AOPs. The licensee entered the issue into their corrective action program as NCR 428809.

After discovering the difficulty of opening the service water cross-tie valves against a maximum differential pressure, the licensee's failure to provide appropriate procedural guidance to assure the operation of the valves during a LOOP event was a performance deficiency. The performance deficiency was more than minor because it is associated with the mitigating systems cornerstone attribute of equipment performance and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences because the SW-V146 valve would not open against a system pressure of 75 psid; and, if this condition was left uncorrected, the ability to complete required operator actions in procedures 0AOP18.0 and 0AOP36.1 during a LOOP would be adversely affected. Using Manual Chapter Attachment 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," the inspectors determined the finding required a Phase 2 analysis because the finding represented an actual loss of safety function of non-Technical Specification equipment designated as risk significant for greater than 24 hours. The Phase 2 analysis determined that this finding was potentially greater than green; therefore, a Phase 3 analysis was performed by a regional senior reactor analyst (SRA). The SRA determined the combined risk associated with the valve's function to provide alternate flow to safety-related heat exchangers was very low. In addition, there was a good chance of operator recovery due to the long time period that was available before manipulation of the valve was required. These factors resulted in a risk value corresponding to a Green finding. The finding directly involved the cross-cutting aspect of thoroughness of evaluation within the Corrective Action Program component of the Problem Identification and Resolution area [P.1(c)].

Inspection Report# : [2010008](#) (pdf)

---

# Barrier Integrity

---

## Emergency Preparedness

---

## Occupational Radiation Safety

**Significance:**  Mar 31, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to follow procedures for analyzing radiological air samples for the presence of alpha emitters**

The inspectors identified a non-cited violation (NCV) of Technical Specification (TS) 5.4.1, Procedures, for the failure of the licensee to perform initial alpha activity analysis of air samples indicating greater than 0.3 Derived Air Concentration (DAC) beta-gamma activity on an approved alpha counter. Section 9.5.12.h of procedure HPS-NGGC-0024, Alpha Monitoring Guidelines, Rev. 3, states that if gamma scan results indicate the airborne activity is equal to or greater than the beta-gamma DAC-Fraction Action level of 0.3 DAC; (1) perform an initial alpha count on the air sample using a counter approved for air samples; and (2) assess and document the results per site-specific procedures. Contrary to this requirement, on March 10, 11, and 21, 2011, the licensee did not perform an initial alpha count on air samples using a counter approved for air samples and assess and document the results for gamma scan results that exceeded 0.3 DAC. Specifically, air samples for those selected work activities identified DAC concentrations of 0.6589, 0.3152 and 1.45. Licensee corrective actions included instructions to workers to ensure procedural adherence for sample analysis and changes to the software program to prompt the workers to do the sample analysis when the threshold limits were met or exceeded. The licensee entered the issue into its corrective action program as NCR 455307.

This finding is greater than minor because it was associated with the Occupational Radiation Safety Cornerstone attribute of Program and Process (Monitoring and Radiation Protection Controls) and adversely affects the cornerstone objective of ensuring adequate protection of worker health and safety from exposure to radiation from airborne radioactive material during routine civilian nuclear reactor operation. Failure to identify potentially significant contributors to internal dose could lead to unmonitored occupational exposures. The finding was evaluated using IMC 0609, Appendix C, "Occupational Radiation SDP" and was determined to be of very low safety significance (Green) because it was not related to As Low As Reasonably Achievable (ALARA) Planning and the ability to assess dose was not compromised during these instances. In addition, it did not involve overexposure or substantial potential for overexposure because of the relatively low alpha source term in the areas where the surveys were performed. This conclusion was drawn from the results of beta/gamma and alpha smear surveys performed at those selected work locations. However, if left uncorrected, unmonitored internal exposure could have occurred. The cause of this finding was directly related to the cross-cutting aspect of maintaining effective interfaces between work groups in the Work Control component of the Human Performance area. [H.3(b)]. (Section 2RS1)

Inspection Report# : [2011002](#) (*pdf*)

---

## 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

Last modified : March 02, 2012

# Brunswick 1

## 1Q/2012 Plant Inspection Findings

---

### Initiating Events

---

### Mitigating Systems

**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# : [2011014](#) (pdf)

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

**Significance:**  Jun 30, 2011

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

#### **Failure To Adequately Evaluate And Correct A Condition Adverse To Quality Involving A Manufacturing Defect Of Barton Model 199 Dual Dampener Differential Pressure Units**

•Green. A self revealing non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action" was identified for failure to promptly correct a condition adverse to quality regarding a manufacturing defect of a Barton Model 199 dual dampener differential pressure unit (DPU) used in the 1B residual heat removal (RHR) loop. Specifically, the licensee failed to replace the DPU after the vendor determined that the manufacturing process was incorrect and could lead to a slow response of the component in safety-related applications. This led to a failure of the RHR system 1B loop minimum flow bypass valve, 1-E11-F007B, to operate on February 18, 2011. The failure of the defective DPU was tracked as NCR 448471 in the corrective action program, and the licensee replaced the defective DPU.

The inspectors determined that the licensee's failure to promptly correct a condition adverse to quality regarding a

manufacturing defect for Barton Model 199 dual dampener DPUs was a performance deficiency. The finding is more than minor because it is associated with the equipment performance attribute of the Mitigating Systems Cornerstone and adversely affected 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 corrosion buildup in the DPU used in the control of the position of the minimum flow bypass valve for the 1B RHR loop had degraded, such that the availability and reliability of the 1B RHR loop was adversely affected. This finding was evaluated using Inspection Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet for mitigating systems. The finding required phase two and phase three SDP analyses by a regional Senior Reactor Analyst (SRA) because the 1B loop of RHR was assumed to be inoperable for longer than its Technical Specifications (TS) allowed outage time. The SRA performed a phase three analysis using the NRC's site-specific risk model. Common cause factors were not propagated to the other loop of RHR during the modeling because of the prior instrument changes in the other loop. Operator recovery for the impact of the failed instrument was deemed to be credible, because the valve's hand switch remained functional, and was evaluated using the SPAR-H methodology. The short duration of non-functionality since the last known proper functioning of the instrument, combined with the high likelihood of operator recovery, and the lack of an increase in common cause failures resulted in a finding that is characterized as Green. This finding does not have a cross-cutting aspect because the performance deficiency occurred greater than three years ago and does not reflect current licensee performance.

Inspection Report# : [2011003](#) (*pdf*)

---

## **Barrier Integrity**

---

## **Emergency Preparedness**

---

## **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**

Last modified : May 29, 2012

# Brunswick 1

## 2Q/2012 Plant Inspection Findings

---

### Initiating Events

**Significance:** **G** Jun 30, 2012

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

#### **Failure to follow plant procedure caused loss of E1 bus**

A self-revealing Green NCV of Technical Specification (TS) 5.4.1, Procedures, was identified when the licensee failed to follow procedure 0MST-DG11R, Diesel Generator 1 Loading Test. During the preparation for the test, procedural steps were not performed correctly and the E1 electrical bus was inadvertently de-energized, requiring emergency diesel generator (EDG) 1 to auto-start and re-energize the bus. Once EDG 1 was supplying power to bus E1, the licensee exited from the surveillance procedure and restored offsite power to bus E1. The licensee entered the issue into their corrective action program as Action Request (AR) 529330.

The inspectors determined that the failure to follow procedure 0MST-DG11R, Diesel Generator 1 Loading Test, was a performance deficiency. The finding was determined to be more than minor because the finding was associated with the Initiating Events Cornerstone attribute of human performance and affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, loss of the E1 bus adversely affected the shut down unit's defense-in-depth for the electrical power availability key safety function. Since Unit 1 was shut down at the time of the event, the finding's significance with regard to Unit 1 was evaluated using IMC 0609 Appendix G, Shutdown Operations Significance Determination Process. Since one offsite transmission network remained available to Unit 1 during the event, per Checklist 7 of IMC 0609 Appendix G, Attachment 1, the finding did not require a quantitative assessment. Therefore, the finding is of very low safety significance (Green) for Unit 1. Unit 2 was at power and was also affected by the finding. IMC 0609 Attachment 0609.04, Phase 1 - Initial Screening and Characterization of Findings, Table 4a for the Initiating Events Cornerstone was used to determine that the finding is of very low safety significance (Green) because the finding is a transient initiator that did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available. The finding has a cross-cutting aspect in the Human Performance cross-cutting area, Work Practices component, because the licensee failed to implement adequate error prevention techniques while performing plant procedure 0MST-DG11R, Diesel Generator 1 Loading Test. Specifically, technicians did not utilize adequate error prevention techniques to prevent them from connecting test recorders incorrectly, H.4(a). (4OA3)

Inspection Report# : [2012003](#) (*pdf*)

---

### Mitigating Systems

**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# : [2011014](#) (pdf)

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

---

## Barrier Integrity

**Significance:**  Mar 31, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Identify and Correct a Refrigerant Leak in the Instrument Air Dryer System**

A self-revealing non-cited violation of 10 CFR 50 Appendix B, Criteria XVI, Corrective Action, was identified for the licensee's failure to promptly identify and correct a condition adverse to quality related to the Control Room Air Conditioning (AC) system and the Control Room Emergency Ventilation (CREV) system. Specifically, the licensee failed to identify and correct a slow refrigerant leak in the instrument air dryer in the control building HVAC instrument air system, rendering both the control room AC and CREV systems inoperable. Upon discovery, the instrument air dryer was bypassed, air pressure was restored, and the control room AC and CREV systems were restored. The licensee entered this issue into the corrective action program as Action Request (AR) 502214.

The failure to identify and correct the slowly lowering refrigerant pressure was a performance deficiency. This finding was more than minor because it was associated with the structure, system, and component (SSC) and barrier performance attribute of the Barrier Integrity Cornerstone. It also adversely affected the cornerstone objective of maintaining a radiological barrier for the control room. Specifically, the finding led to a loss of all air conditioning and filtering capability of control room air. The significance determination process was completed in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1 – Initial Screening and Characterization of Findings, Table 4a for the Barrier Integrity Cornerstone. The finding was determined to be of very low safety significance (Green) because it only affected the radiological barrier function of the control room, and does not represent a degradation of the smoke or toxic atmosphere barrier function of the control room. 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)]

Inspection Report# : [2012002](#) (pdf)

---

## Emergency Preparedness

---

# Occupational Radiation Safety

---

## Public Radiation Safety

---

### Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the [cover letters](#) to security inspection reports may be viewed.

---

### Miscellaneous

Last modified : September 12, 2012

## Brunswick 1

### 3Q/2012 Plant Inspection Findings

---

## Initiating Events

**Significance:** G Jun 30, 2012

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

### **Failure to follow plant procedure caused loss of E1 bus**

A self-revealing Green NCV of Technical Specification (TS) 5.4.1, Procedures, was identified when the licensee failed to follow procedure 0MST-DG11R, Diesel Generator 1 Loading Test. During the preparation for the test, procedural steps were not performed correctly and the E1 electrical bus was inadvertently de-energized, requiring emergency diesel generator (EDG) 1 to auto-start and re-energize the bus. Once EDG 1 was supplying power to bus E1, the licensee exited from the surveillance procedure and restored offsite power to bus E1. The licensee entered the issue into their corrective action program as Action Request (AR) 529330.

The inspectors determined that the failure to follow procedure 0MST-DG11R, Diesel Generator 1 Loading Test, was a performance deficiency. The finding was determined to be more than minor because the finding was associated with the Initiating Events Cornerstone attribute of human performance and affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, loss of the E1 bus adversely affected the shut down unit's defense-in-depth for the electrical power availability key safety function. Since Unit 1 was shut down at the time of the event, the finding's significance with regard to Unit 1 was evaluated using IMC 0609 Appendix G, Shutdown Operations Significance Determination Process. Since one offsite transmission network remained available to Unit 1 during the event, per Checklist 7 of IMC 0609 Appendix G, Attachment 1, the finding did not require a quantitative assessment. Therefore, the finding is of very low safety significance (Green) for Unit 1. Unit 2 was at power and was also affected by the finding. IMC 0609 Attachment 0609.04, Phase 1 - Initial Screening and Characterization of Findings, Table 4a for the Initiating Events Cornerstone was used to determine that the finding is of very low safety significance (Green) because the finding is a transient initiator that did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available. The finding has a cross-cutting aspect in the Human Performance cross-cutting area, Work Practices component, because the licensee failed to implement adequate error prevention techniques while performing plant procedure 0MST-DG11R, Diesel Generator 1 Loading Test. Specifically, technicians did not utilize adequate error prevention techniques to prevent them from connecting test recorders incorrectly, H.4(a). (4OA3)

Inspection Report# : [2012003](#) (*pdf*)

---

## Mitigating Systems

**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# : [2011014](#) (pdf)

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

## Barrier Integrity

**Significance:** G Sep 30, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Maintain Secondary Containment Operable During an OPDRV Activity**

The inspectors identified a Green non-cited violation (NCV) of TS 3.6.4.1, Secondary Containment because the licensee did not maintain secondary containment operable as required during a maintenance activity considered an operation with a potential for draining the reactor vessel (OPDRV). Once questioned by the inspectors, the licensee restored secondary containment, developed an Operation standing instruction 12-052 to treat the activity as an OPDRV and placed this issue into its corrective action program (CAP) as AR 562188.

The failure to maintain secondary containment operable while Unit 1 was in Mode 4 with an OPDRV in progress was a performance deficiency. The finding was more than minor because it was associated with the configuration control attribute of the Barrier Integrity Cornerstone, and adversely affected the cornerstone objective to provide reasonable assurance that physical design barriers (fuel cladding, reactor coolant system, and containment) protect the public from radionuclide releases caused by accidents or events because the Unit 1 secondary containment boundary was not preserved or maintained. The inspectors evaluated the finding using Inspection Manual Chapter (IMC) 0609, Attachment 4, Phase 1 - Initial Screening and Characterization of Findings, which required an analysis using IMC 0609 Appendix G since the reactor was in Mode 4 (cold shutdown). The finding was determined to be of very low safety significance (Green) according to IMC 0609 Appendix G, Attachment 1, Checklist 6, since a quantitative assessment (Phase 2 or Phase 3 evaluation) was not required. Specifically, the inspectors determined that the licensee maintained adequate mitigation capability for reactor vessel water level inventory and an event did not occur that could be characterized as a loss of control. The cause of this finding was directly related to the cross-cutting aspect of Accurate Procedures in the Resources component of the Human Performance area, because the licensee did not consider the recirculation pump seal replacement activity to be OPDRV based on procedural guidance that contains exclusions to what are considered OPDRV activities. [H.2(c)]

Inspection Report# : [2012004](#) (*pdf*)

**Significance:** G Mar 31, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Identify and Correct a Refrigerant Leak in the Instrument Air Dryer System**

A self-revealing non-cited violation of 10 CFR 50 Appendix B, Criteria XVI, Corrective Action, was identified for the licensee's failure to promptly identify and correct a condition adverse to quality related to the Control Room Air Conditioning (AC) system and the Control Room Emergency Ventilation (CREV) system. Specifically, the licensee failed to identify and correct a slow refrigerant leak in the instrument air dryer in the control building HVAC instrument air system, rendering both the control room AC and CREV systems inoperable. Upon discovery, the instrument air dryer was bypassed, air pressure was restored, and the control room AC and CREV systems were restored. The licensee entered this issue into the corrective action program as Action Request (AR) 502214. The failure to identify and correct the slowly lowering refrigerant pressure was a performance deficiency. This finding was more than minor because it was associated with the structure, system, and component (SSC) and barrier performance attribute of the Barrier Integrity Cornerstone. It also adversely affected the cornerstone objective of maintaining a radiological barrier for the control room. Specifically, the finding led to a loss of all air conditioning and filtering capability of control room air. The significance determination process was completed in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1 – Initial Screening and Characterization of Findings, Table 4a for the Barrier Integrity Cornerstone. The finding

was determined to be of very low safety significance (Green) because it only affected the radiological barrier function of the control room, and does not represent a degradation of the smoke or toxic atmosphere barrier function of the control room. 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)]

Inspection Report# : [2012002](#) (*pdf*)

---

## Emergency Preparedness

**Significance:** G Sep 30, 2012

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

### **Failure to Maintain Reliability and Availability of Emergency Response Equipment for Emergency Response Facilities**

A self-revealing Green NCV of 10 CFR 50.54(q)(2) was identified for the licensee's failure to properly evaluate or consider the impact to emergency response facilities of design change ESR98-00436 which was implemented in 1999. This resulted in the loss of Emergency Response Facility Information System (ERFIS), Emergency Response Data System (ERDS), Safety Parameter Display System (SPDS), and all displays including radiation monitors for the emergency response facilities. Specifically, the licensee failed to ensure that adequate emergency response facilities and equipment were available as required by the Brunswick Nuclear Plant Radiological Emergency Plan, Section 1.3.1.3 revision 80 and 10 CFR 50.47(b)(8). This issue was captured in the licensee's CAP as AR 542704.

The licensee's failure to properly evaluate or consider the impact to emergency response facilities of design change ESR98-00436 which was implemented in 1999 was a performance deficiency. Specifically, the licensee introduced a single point failure mode which did not meet the design requirements specified in their Design Basis Document (DBD 60) sections 3.6.7.2 and 3.6.7.3. This resulted in the licensee's failure to ensure that adequate emergency response facilities and equipment were available as delineated in the Updated Final Safety Analysis Report (UFSAR) Section 7.7.1.9, and required by the Brunswick Nuclear Plant Radiological Emergency Plan, Section 1.3.1.3, revision 80, and 10 CFR 50.47(b)(8). The finding was more than minor because it adversely affected the Emergency Preparedness Cornerstone objective of ensuring that the licensee was capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. Specifically, the Facilities and Equipment attribute was affected during the time when the ERFIS, ERDS, SPDS, and all displays including radiation monitors for the emergency response facilities were degraded, and as a result did not meet 10 CFR 50.47(b)(8) Planning Standard program element, adequate emergency facilities and equipment to support the emergency response are provided and maintained. The finding was assessed for significance in accordance with NRC IMC 0609, Appendix B Emergency Preparedness Significance Determination Process. Attachment 2 of Appendix B, Failure to Comply Significance Logic is as follows: Failure to comply; Loss of Risk Significant Planning Standard Function (RSPS), No; RSPS Degraded Function, No; Loss of Planning Standard Function, No; the result is a Green finding. The inspectors determined that this resulted in a very low safety significance finding (Green). No cross-cutting aspect was assigned to this finding because the performance deficiency occurred more than three years ago and is not reflective of current plant performance.

Inspection Report# : [2012004](#) (*pdf*)

---

## Occupational Radiation Safety

## Public Radiation Safety

---

### Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the [cover letters](#) to security inspection reports may be viewed.

---

### Miscellaneous

Last modified : November 30, 2012

# Brunswick 1

## 4Q/2012 Plant Inspection Findings

---

### Initiating Events

**Significance:** G Dec 31, 2012

Identified By: NRC

Item Type: FIN Finding

#### **Inadequate Maintenance Procedure for Fluorescent Lights over Safety-related Equipment**

•Green. The inspectors identified a Green finding for the licensee not having an adequate procedure for maintenance on fluorescent lights over safety-related equipment. Specifically, between plant startup and August 29, 2012, the licensee did not have instructions for closing S-hooks on fluorescent lights over safety related equipment during maintenance on the fluorescent lights. This resulted in over 40 S-hooks open in safety-related buildings which could result in fluorescent lights falling and impacting safety-related equipment during a seismic event. The licensee's corrective actions included closing the open S-hooks and adding instructions for closing S-hooks to work order (WO) 431558. The licensee entered this issue into the CAP as NCR 551646.

The performance deficiency associated with this finding was the failure of the licensee to have an adequate procedure for maintenance on fluorescent lights over safety-related equipment. The finding was more than minor because if left uncorrected, the deficiencies could lead to a more significant safety concern. If left uncorrected, the failure to provide procedural guidance to close the S-hooks on fluorescent lights over safety-related equipment could lead to fluorescent lights falling on safety-related instruments during a seismic event resulting in a reactor trip. This finding is also associated with the design control attribute of the Initiating Events Systems Cornerstone. Using IMC 0609, Appendix A, issued June 19, 2012, The Significance Determination Process (SDP) for Findings At-Power, the inspectors determined the finding was of very low safety significance because the finding did not affect the design or qualification of a mitigating SSC, the finding did not represent a loss of system and/or function, the finding did not represent an actual loss of a function of a single train for greater than the TS allowed outage time, the finding did not represent an actual loss of a function of one or more non-TS trains of equipment, and did not screen as potentially risk-significant due to a seismic event since both S-hooks on one fluorescent light were not considered to be completely failed or unavailable, and the finding did not involve the total loss of any safety function. The finding has a cross-cutting aspect in the area of problem identification and resolution associated with the CAP attribute because the licensee did not identify the open S-hook issue completely, accurately, and in a timely manner commensurate with their safety significance during the Fukushima walkdowns. [P.1(a)] (Section 40A5)

Inspection Report# : [2012005](#) (*pdf*)

**Significance:** G Jun 30, 2012

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

#### **Failure to follow plant procedure caused loss of E1 bus**

A self-revealing Green NCV of Technical Specification (TS) 5.4.1, Procedures, was identified when the licensee failed to follow procedure 0MST-DG11R, Diesel Generator 1 Loading Test. During the preparation for the test, procedural steps were not performed correctly and the E1 electrical bus was inadvertently de-energized, requiring emergency diesel generator (EDG) 1 to auto-start and re-energize the bus. Once EDG 1 was supplying power to bus E1, the licensee exited from the surveillance procedure and restored offsite power to bus E1. The licensee entered the issue into their corrective action program as Action Request (AR) 529330.

The inspectors determined that the failure to follow procedure 0MST-DG11R, Diesel Generator 1 Loading Test, was a performance deficiency. The finding was determined to be more than minor because the finding was associated with the Initiating Events Cornerstone attribute of human performance and affected the cornerstone objective to limit the

likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, loss of the E1 bus adversely affected the shut down unit's defense-in-depth for the electrical power availability key safety function. Since Unit 1 was shut down at the time of the event, the finding's significance with regard to Unit 1 was evaluated using IMC 0609 Appendix G, Shutdown Operations Significance Determination Process. Since one offsite transmission network remained available to Unit 1 during the event, per Checklist 7 of IMC 0609 Appendix G, Attachment 1, the finding did not require a quantitative assessment. Therefore, the finding is of very low safety significance (Green) for Unit 1. Unit 2 was at power and was also affected by the finding. IMC 0609 Attachment 0609.04, Phase 1 - Initial Screening and Characterization of Findings, Table 4a for the Initiating Events Cornerstone was used to determine that the finding is of very low safety significance (Green) because the finding is a transient initiator that did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available. The finding has a cross-cutting aspect in the Human Performance cross-cutting area, Work Practices component, because the licensee failed to implement adequate error prevention techniques while performing plant procedure 0MST-DG11R, Diesel Generator 1 Loading Test. Specifically, technicians did not utilize adequate error prevention techniques to prevent them from connecting test recorders incorrectly, H.4(a). (40A3)

Inspection Report# : [2012003](#) (*pdf*)

---

## Mitigating Systems

**Significance:** G Dec 31, 2012

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

### **Inadequate Maintenance Procedure for the EDG Jacket Water Pump Wear Ring Tolerances**

•Green. A self-revealing Green NCV of Technical Specification (TS) 5.4.1a, Procedures, was identified because the licensee did not have an adequate maintenance procedure to perform work on the emergency diesel generator (EDG) 3 engine-driven jacket water pump (JWP). Specifically, between July 25, 1992 and November 15, 2012, Procedure 0CM ENG528, Gould Engine Driven Jacket Water Pump Model 3736, did not provide the correct tolerances for the EDG JWP wear rings, resulting in the JWP seizure. The licensee's corrective actions included replacing the casing wear rings with wear rings with the correct tolerance and revising Procedure 0CM-ENG528. The licensee entered this issue into the corrective action program (CAP) as nuclear condition report (NCR) 572546.

The performance deficiency associated with this finding was the failure of the licensee to have an adequate procedure for maintenance on the EDG 3 engine-driven JWP. The finding was more than minor because it was associated with the procedure quality attribute of the Mitigating Systems Cornerstone and affects the cornerstone objective of ensuring the availability and reliability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the inadequate procedure resulted in reduced availability of EDG 3 to repair the engine-driven JWP and reduced reliability of the jacket water system during operation. Using IMC 0609, Appendix A, issued June 19, 2012, The Significance Determination Process (SDP) for Findings At-Power, the inspectors determined the finding was of very low safety significance because the finding did not affect the design or qualification of a mitigating structure, system and component (SSC), the finding did not represent a loss of system and/or function, the finding did not represent an actual loss of a function of a single train for greater than the TS allowed outage time, the finding did not represent an actual loss of a function of one or more non-TS trains of equipment, and did not screen as potentially risk-significant due to a seismic, flooding, or severe weather initiating event. The finding does not have a cross-cutting aspect since the performance deficiency is not indicative of current plant performance. Procedure 0CM-ENG528 included the incorrect tolerances since July 25, 1992. (Section 1R19)

Inspection Report# : [2012005](#) (*pdf*)

**Significance:** G Dec 31, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

**Inadequate Design of EDG 2 ASSD Switch A1**

•Green. The inspectors identified a Green NCV of 10 CFR 50 Appendix B, Criterion III, Design Control, for failure to assure that the design basis for EDG 2 Alternate Safe Shutdown (ASSD) Switch A1 was correctly translated into specifications and drawings. Specifically, between original EDG 2 installation and September 1, 2012, a wiring discrepancy existed associated with EDG 2 ASSD Switch A1 which resulted in an induced fault that could have impacted the ability to locally control EDG 2 during certain fire scenarios. The licensee's corrective actions included correcting the EDG 2 control circuit wiring to ensure it was in accordance with the existing approved design and returning EDG 2 to operable status. The licensee entered this issue into the CAP as NCR 557897.

The performance deficiency associated with this finding was the failure to assure that the design basis for EDG 2 ASSD Switch A1 was correctly translated into specifications and drawings. The finding was more than minor because it was associated with the protection against external factors (i.e. fire) 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. Specifically, an induced fault could have impacted the ability to locally control EDG 2 during certain fire scenarios. Using IMC 0609, Attachment 4, issued June 19, 2012, Initial Characterization of Findings, and IMC 0609, Appendix F, Attachment 1, Part 1: Application of Fire Protection SDP Phase 1 Worksheet, the results of this evaluation required further significance evaluation. A phase 3 analysis was performed by a regional SRA in accordance with NRC IMC 0609 Appendix F. The finding affected the capability to achieve alternate safe shutdown for Unit 1. The result of the analysis was an increase in core damage frequency of  $<1E-6$ /year a GREEN finding of very low safety significance. The finding does not have a cross-cutting aspect since the performance deficiency is not indicative of current plant performance. The EDG 2 ASSD Switch A1 wiring discrepancy has existed since original EDG installation. (Section 4OA3)

Inspection Report# : [2012005](#) (pdf)**Barrier Integrity**Significance: **G** Sep 30, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Maintain Secondary Containment Operable During an OPDRV Activity**

The inspectors identified a Green non-cited violation (NCV) of TS 3.6.4.1, Secondary Containment because the licensee did not maintain secondary containment operable as required during a maintenance activity considered an operation with a potential for draining the reactor vessel (OPDRV). Once questioned by the inspectors, the licensee restored secondary containment, developed an Operation standing instruction 12-052 to treat the activity as an OPDRV and placed this issue into its corrective action program (CAP) as AR 562188.

The failure to maintain secondary containment operable while Unit 1 was in Mode 4 with an OPDRV in progress was a performance deficiency. The finding was more than minor because it was associated with the configuration control attribute of the Barrier Integrity Cornerstone, and adversely affected the cornerstone objective to provide reasonable assurance that physical design barriers (fuel cladding, reactor coolant system, and containment) protect the public from radionuclide releases caused by accidents or events because the Unit 1 secondary containment boundary was not preserved or maintained. The inspectors evaluated the finding using Inspection Manual Chapter (IMC) 0609, Attachment 4, Phase 1 - Initial Screening and Characterization of Findings, which required an analysis using IMC 0609 Appendix G since the reactor was in Mode 4 (cold shutdown). The finding was determined to be of very low safety significance (Green) according to IMC 0609 Appendix G, Attachment 1, Checklist 6, since a quantitative assessment (Phase 2 or Phase 3 evaluation) was not required. Specifically, the inspectors determined that the licensee maintained adequate mitigation capability for reactor vessel water level inventory and an event did not occur that could be characterized as a loss of control. The cause of this finding was directly related to the cross-cutting aspect of Accurate Procedures in the Resources component of the Human Performance area, because the licensee did not consider the recirculation pump seal replacement activity to be OPDRV based on procedural guidance that contains exclusions to what are considered OPDRV activities. [H.2(c)]

Inspection Report# : [2012004](#) (*pdf*)

**Significance:** G Mar 31, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Identify and Correct a Refrigerant Leak in the Instrument Air Dryer System**

A self-revealing non-cited violation of 10 CFR 50 Appendix B, Criteria XVI, Corrective Action, was identified for the licensee's failure to promptly identify and correct a condition adverse to quality related to the Control Room Air Conditioning (AC) system and the Control Room Emergency Ventilation (CREV) system. Specifically, the licensee failed to identify and correct a slow refrigerant leak in the instrument air dryer in the control building HVAC instrument air system, rendering both the control room AC and CREV systems inoperable. Upon discovery, the instrument air dryer was bypassed, air pressure was restored, and the control room AC and CREV systems were restored. The licensee entered this issue into the corrective action program as Action Request (AR) 502214.

The failure to identify and correct the slowly lowering refrigerant pressure was a performance deficiency. This finding was more than minor because it was associated with the structure, system, and component (SSC) and barrier performance attribute of the Barrier Integrity Cornerstone. It also adversely affected the cornerstone objective of maintaining a radiological barrier for the control room. Specifically, the finding led to a loss of all air conditioning and filtering capability of control room air. The significance determination process was completed in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1 – Initial Screening and Characterization of Findings, Table 4a for the Barrier Integrity Cornerstone. The finding was determined to be of very low safety significance (Green) because it only affected the radiological barrier function of the control room, and does not represent a degradation of the smoke or toxic atmosphere barrier function of the control room. 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)]

Inspection Report# : [2012002](#) (*pdf*)

---

## **Emergency Preparedness**

**Significance:** G Sep 30, 2012

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

### **Failure to Maintain Reliability and Availability of Emergency Response Equipment for Emergency Response Facilities**

A self-revealing Green NCV of 10 CFR 50.54(q)(2) was identified for the licensee's failure to properly evaluate or consider the impact to emergency response facilities of design change ESR98-00436 which was implemented in 1999. This resulted in the loss of Emergency Response Facility Information System (ERFIS), Emergency Response Data System (ERDS), Safety Parameter Display System (SPDS), and all displays including radiation monitors for the emergency response facilities. Specifically, the licensee failed to ensure that adequate emergency response facilities and equipment were available as required by the Brunswick Nuclear Plant Radiological Emergency Plan, Section 1.3.1.3 revision 80 and 10 CFR 50.47(b)(8). This issue was captured in the licensee's CAP as AR 542704.

The licensee's failure to properly evaluate or consider the impact to emergency response facilities of design change ESR98-00436 which was implemented in 1999 was a performance deficiency. Specifically, the licensee introduced a single point failure mode which did not meet the design requirements specified in their Design Basis Document (DBD 60) sections 3.6.7.2 and 3.6.7.3. This resulted in the licensee's failure to ensure that adequate emergency response facilities and equipment were available as delineated in the Updated Final Safety Analysis Report (UFSAR) Section 7.7.1.9, and required by the Brunswick Nuclear Plant Radiological Emergency Plan, Section 1.3.1.3, revision 80, and 10 CFR 50.47(b)(8). The finding was more than minor because it adversely affected the Emergency Preparedness Cornerstone objective of ensuring that the licensee was capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. Specifically, the Facilities and Equipment

attribute was affected during the time when the ERFIS, ERDS, SPDS, and all displays including radiation monitors for the emergency response facilities were degraded, and as a result did not meet 10 CFR 50.47(b)(8) Planning Standard program element, adequate emergency facilities and equipment to support the emergency response are provided and maintained. The finding was assessed for significance in accordance with NRC IMC 0609, Appendix B Emergency Preparedness Significance Determination Process. Attachment 2 of Appendix B, Failure to Comply Significance Logic is as follows: Failure to comply; Loss of Risk Significant Planning Standard Function (RSPS), No; RSPS Degraded Function, No; Loss of Planning Standard Function, No; the result is a Green finding. The inspectors determined that this resulted in a very low safety significance finding (Green). No cross-cutting aspect was assigned to this finding because the performance deficiency occurred more than three years ago and is not reflective of current plant performance.

Inspection Report# : [2012004](#) (*pdf*)

---

## Occupational Radiation Safety

---

## Public Radiation Safety

---

## Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the [cover letters](#) to security inspection reports may be viewed.

---

## Miscellaneous

Last modified : February 28, 2013

# Brunswick 1

## 1Q/2013 Plant Inspection Findings

---

### Initiating Events

**Significance:** G Mar 31, 2013

Identified By: NRC

Item Type: FIN Finding

**Failure to Follow Procedure for Variable Frequency Drive Reactor Recirculation Pump Design Modification.**

An NRC-identified Green finding was identified for the failure of the licensee to follow Procedure EGR-NGGC-0005, Engineering Change (EC), when performing the variable frequency drive (VFD) modification for the reactor recirculation pumps (RRPs). Specifically, between April 4, 2010 and the present, the licensee inappropriately used a Rapid Field Release (RFR) to revise the power supplies for the relays in the VFD system without re-evaluating the EC, the 10 CFR 50.59 Screen/Evaluation, and the Failure Modes and Effects Analysis (FMEA). This resulted in a new failure mode on a loss of the power supply causing a RRP runback and placing the plant in a flow transient, and a loss of cooling to the RRP seals. The licensee entered this issue into the corrective action program (CAP) as nuclear condition report (NCR) 581202.

The performance deficiency associated with this finding was the failure of the licensee to follow Procedure EGR-NGGC-0005, Engineering Change (EC), when performing the VFD modification for the RRP. The finding was more than minor because it was associated with the design control attribute of the Initiating Events Cornerstone and affects the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the VFD modification inappropriately causes a RRP runback on a loss of 480 VAC and core flow instability, and a loss of cooling to the RRP seals. Using IMC 0609, Appendix A, issued June 19, 2012, The SDP for Findings At-Power, the inspectors determined the finding was of very low safety significance because as a transient initiator due to the RRP runback, the finding did not cause a reactor trip and the loss of mitigation equipment relied upon to transition the plant from the onset of the trip to a stable shutdown condition. The inspectors determined the finding was also of very low safety significance because as a loss of coolant accident (LOCA) initiator, after a reasonable assessment of degradation, the finding would not result in exceeding the reactor coolant system leak rate for a small break LOCA or likely affect other systems used to mitigate a LOCA resulting in a total loss of their function. The finding has a cross-cutting aspect in the area of human performance associated with the work control attribute because the licensee did not appropriately coordinate work activities by incorporating actions to address the impact of changes to the work scope, associated with the VFD modification, on the plant. [H.3(b)]

Inspection Report# : [2013002](#) (*pdf*)

**Significance:** G Dec 31, 2012

Identified By: NRC

Item Type: FIN Finding

**Inadequate Maintenance Procedure for Fluorescent Lights over Safety-related Equipment**

•Green. The inspectors identified a Green finding for the licensee not having an adequate procedure for maintenance on fluorescent lights over safety-related equipment. Specifically, between plant startup and August 29, 2012, the licensee did not have instructions for closing S-hooks on fluorescent lights over safety related equipment during maintenance on the fluorescent lights. This resulted in over 40 S-hooks open in safety-related buildings which could result in fluorescent lights falling and impacting safety-related equipment during a seismic event. The licensee's

corrective actions included closing the open S-hooks and adding instructions for closing S-hooks to work order (WO) 431558. The licensee entered this issue into the CAP as NCR 551646.

The performance deficiency associated with this finding was the failure of the licensee to have an adequate procedure for maintenance on fluorescent lights over safety-related equipment. The finding was more than minor because if left uncorrected, the deficiencies could lead to a more significant safety concern. If left uncorrected, the failure to provide procedural guidance to close the S-hooks on fluorescent lights over safety-related equipment could lead to fluorescent lights falling on safety-related instruments during a seismic event resulting in a reactor trip. This finding is also associated with the design control attribute of the Initiating Events Systems Cornerstone. Using IMC 0609, Appendix A, issued June 19, 2012, The Significance Determination Process (SDP) for Findings At-Power, the inspectors determined the finding was of very low safety significance because the finding did not affect the design or qualification of a mitigating SSC, the finding did not represent a loss of system and/or function, the finding did not represent an actual loss of a function of a single train for greater than the TS allowed outage time, the finding did not represent an actual loss of a function of one or more non-TS trains of equipment, and did not screen as potentially risk-significant due to a seismic event since both S-hooks on one fluorescent light were not considered to be completely failed or unavailable, and the finding did not involve the total loss of any safety function. The finding has a cross-cutting aspect in the area of problem identification and resolution associated with the CAP attribute because the licensee did not identify the open S-hook issue completely, accurately, and in a timely manner commensurate with their safety significance during the Fukushima walkdowns. [P.1(a)] (Section 40A5)

Inspection Report# : [2012005](#) (pdf)

**Significance:**  Jun 30, 2012

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

**Failure to follow plant procedure caused loss of E1 bus**

A self-revealing Green NCV of Technical Specification (TS) 5.4.1, Procedures, was identified when the licensee failed to follow procedure 0MST-DG11R, Diesel Generator 1 Loading Test. During the preparation for the test, procedural steps were not performed correctly and the E1 electrical bus was inadvertently de-energized, requiring emergency diesel generator (EDG) 1 to auto-start and re-energize the bus. Once EDG 1 was supplying power to bus E1, the licensee exited from the surveillance procedure and restored offsite power to bus E1. The licensee entered the issue into their corrective action program as Action Request (AR) 529330.

The inspectors determined that the failure to follow procedure 0MST-DG11R, Diesel Generator 1 Loading Test, was a performance deficiency. The finding was determined to be more than minor because the finding was associated with the Initiating Events Cornerstone attribute of human performance and affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, loss of the E1 bus adversely affected the shut down unit's defense-in-depth for the electrical power availability key safety function. Since Unit 1 was shut down at the time of the event, the finding's significance with regard to Unit 1 was evaluated using IMC 0609 Appendix G, Shutdown Operations Significance Determination Process. Since one offsite transmission network remained available to Unit 1 during the event, per Checklist 7 of IMC 0609 Appendix G, Attachment 1, the finding did not require a quantitative assessment. Therefore, the finding is of very low safety significance (Green) for Unit 1. Unit 2 was at power and was also affected by the finding. IMC 0609 Attachment 0609.04, Phase 1 - Initial Screening and Characterization of Findings, Table 4a for the Initiating Events Cornerstone was used to determine that the finding is of very low safety significance (Green) because the finding is a transient initiator that did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available. The finding has a cross-cutting aspect in the Human Performance cross-cutting area, Work Practices component, because the licensee failed to implement adequate error prevention techniques while performing plant procedure 0MST-DG11R, Diesel Generator 1 Loading

Test. Specifically, technicians did not utilize adequate error prevention techniques to prevent them from connecting test recorders incorrectly, H.4(a). (40A3)

Inspection Report# : [2012003](#) (pdf)

---

## Mitigating Systems

**Significance:**  Dec 31, 2012

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

### **Inadequate Maintenance Procedure for the EDG Jacket Water Pump Wear Ring Tolerances**

•Green. A self-revealing Green NCV of Technical Specification (TS) 5.4.1a, Procedures, was identified because the licensee did not have an adequate maintenance procedure to perform work on the emergency diesel generator (EDG) 3 engine-driven jacket water pump (JWP). Specifically, between July 25, 1992 and November 15, 2012, Procedure 0CM ENG528, Gould Engine Driven Jacket Water Pump Model 3736, did not provide the correct tolerances for the EDG JWP wear rings, resulting in the JWP seizure. The licensee's corrective actions included replacing the casing wear rings with wear rings with the correct tolerance and revising Procedure 0CM-ENG528. The licensee entered this issue into the corrective action program (CAP) as nuclear condition report (NCR) 572546.

The performance deficiency associated with this finding was the failure of the licensee to have an adequate procedure for maintenance on the EDG 3 engine-driven JWP. The finding was more than minor because it was associated with the procedure quality attribute of the Mitigating Systems Cornerstone and affects the cornerstone objective of ensuring the availability and reliability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the inadequate procedure resulted in reduced availability of EDG 3 to repair the engine-driven JWP and reduced reliability of the jacket water system during operation. Using IMC 0609, Appendix A, issued June 19, 2012, The Significance Determination Process (SDP) for Findings At-Power, the inspectors determined the finding was of very low safety significance because the finding did not affect the design or qualification of a mitigating structure, system and component (SSC), the finding did not represent a loss of system and/or function, the finding did not represent an actual loss of a function of a single train for greater than the TS allowed outage time, the finding did not represent an actual loss of a function of one or more non-TS trains of equipment, and did not screen as potentially risk-significant due to a seismic, flooding, or severe weather initiating event. The finding does not have a cross-cutting aspect since the performance deficiency is not indicative of current plant performance. Procedure 0CM-ENG528 included the incorrect tolerances since July 25, 1992. (Section 1R19)

Inspection Report# : [2012005](#) (pdf)

**Significance:**  Dec 31, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

### **Inadequate Design of EDG 2 ASSD Switch A1**

•Green. The inspectors identified a Green NCV of 10 CFR 50 Appendix B, Criterion III, Design Control, for failure to assure that the design basis for EDG 2 Alternate Safe Shutdown (ASSD) Switch A1 was correctly translated into specifications and drawings. Specifically, between original EDG 2 installation and September 1, 2012, a wiring discrepancy existed associated with EDG 2 ASSD Switch A1 which resulted in an induced fault that could have impacted the ability to locally control EDG 2 during certain fire scenarios. The licensee's corrective actions included

correcting the EDG 2 control circuit wiring to ensure it was in accordance with the existing approved design and returning EDG 2 to operable status. The licensee entered this issue into the CAP as NCR 557897.

The performance deficiency associated with this finding was the failure to assure that the design basis for EDG 2 ASSD Switch A1 was correctly translated into specifications and drawings. The finding was more than minor because it was associated with the protection against external factors (i.e. fire) 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. Specifically, an induced fault could have impacted the ability to locally control EDG 2 during certain fire scenarios. Using IMC 0609, Attachment 4, issued June 19, 2012, Initial Characterization of Findings, and IMC 0609, Appendix F, Attachment 1, Part 1: Application of Fire Protection SDP Phase 1 Worksheet, the results of this evaluation required further significance evaluation. A phase 3 analysis was performed by a regional SRA in accordance with NRC IMC 0609 Appendix F. The finding affected the capability to achieve alternate safe shutdown for Unit 1. The result of the analysis was an increase in core damage frequency of  $<1E-6$ /year a GREEN finding of very low safety significance. The finding does not have a cross-cutting aspect since the performance deficiency is not indicative of current plant performance. The EDG 2 ASSD Switch A1 wiring discrepancy has existed since original EDG installation. (Section 40A3)

Inspection Report# : [2012005](#) (pdf)

## Barrier Integrity

**Significance:**  Sep 30, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Maintain Secondary Containment Operable During an OPDRV Activity**

The inspectors identified a Green non-cited violation (NCV) of TS 3.6.4.1, Secondary Containment because the licensee did not maintain secondary containment operable as required during a maintenance activity considered an operation with a potential for draining the reactor vessel (OPDRV). Once questioned by the inspectors, the licensee restored secondary containment, developed an Operation standing instruction 12-052 to treat the activity as an OPDRV and placed this issue into its corrective action program (CAP) as AR 562188.

The failure to maintain secondary containment operable while Unit 1 was in Mode 4 with an OPDRV in progress was a performance deficiency. The finding was more than minor because it was associated with the configuration control attribute of the Barrier Integrity Cornerstone, and adversely affected the cornerstone objective to provide reasonable assurance that physical design barriers (fuel cladding, reactor coolant system, and containment) protect the public from radionuclide releases caused by accidents or events because the Unit 1 secondary containment boundary was not preserved or maintained. The inspectors evaluated the finding using Inspection Manual Chapter (IMC) 0609, Attachment 4, Phase 1 - Initial Screening and Characterization of Findings, which required an analysis using IMC 0609 Appendix G since the reactor was in Mode 4 (cold shutdown). The finding was determined to be of very low safety significance (Green) according to IMC 0609 Appendix G, Attachment 1, Checklist 6, since a quantitative assessment (Phase 2 or Phase 3 evaluation) was not required. Specifically, the inspectors determined that the licensee maintained adequate mitigation capability for reactor vessel water level inventory and an event did not occur that could be characterized as a loss of control. The cause of this finding was directly related to the cross-cutting aspect of Accurate Procedures in the Resources component of the Human Performance area, because the licensee did not consider the recirculation pump seal replacement activity to be OPDRV based on procedural guidance that contains exclusions to what are considered OPDRV activities. [H.2(c)]

Inspection Report# : [2012004](#) (pdf)

---

## Emergency Preparedness

**Significance:** G Sep 30, 2012

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

### **Failure to Maintain Reliability and Availability of Emergency Response Equipment for Emergency Response Facilities**

A self-revealing Green NCV of 10 CFR 50.54(q)(2) was identified for the licensee's failure to properly evaluate or consider the impact to emergency response facilities of design change ESR98-00436 which was implemented in 1999. This resulted in the loss of Emergency Response Facility Information System (ERFIS), Emergency Response Data System (ERDS), Safety Parameter Display System (SPDS), and all displays including radiation monitors for the emergency response facilities. Specifically, the licensee failed to ensure that adequate emergency response facilities and equipment were available as required by the Brunswick Nuclear Plant Radiological Emergency Plan, Section 1.3.1.3 revision 80 and 10 CFR 50.47(b)(8). This issue was captured in the licensee's CAP as AR 542704.

The licensee's failure to properly evaluate or consider the impact to emergency response facilities of design change ESR98-00436 which was implemented in 1999 was a performance deficiency. Specifically, the licensee introduced a single point failure mode which did not meet the design requirements specified in their Design Basis Document (DBD 60) sections 3.6.7.2 and 3.6.7.3. This resulted in the licensee's failure to ensure that adequate emergency response facilities and equipment were available as delineated in the Updated Final Safety Analysis Report (UFSAR) Section 7.7.1.9, and required by the Brunswick Nuclear Plant Radiological Emergency Plan, Section 1.3.1.3, revision 80, and 10 CFR 50.47(b)(8). The finding was more than minor because it adversely affected the Emergency Preparedness Cornerstone objective of ensuring that the licensee was capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. Specifically, the Facilities and Equipment attribute was affected during the time when the ERFIS, ERDS, SPDS, and all displays including radiation monitors for the emergency response facilities were degraded, and as a result did not meet 10 CFR 50.47(b)(8) Planning Standard program element, adequate emergency facilities and equipment to support the emergency response are provided and maintained. The finding was assessed for significance in accordance with NRC IMC 0609, Appendix B Emergency Preparedness Significance Determination Process. Attachment 2 of Appendix B, Failure to Comply Significance Logic is as follows: Failure to comply; Loss of Risk Significant Planning Standard Function (RSPS), No; RSPS Degraded Function, No; Loss of Planning Standard Function, No; the result is a Green finding. The inspectors determined that this resulted in a very low safety significance finding (Green). No cross-cutting aspect was assigned to this finding because the performance deficiency occurred more than three years ago and is not reflective of current plant performance.

Inspection Report# : [2012004](#) (pdf)

---

## Occupational Radiation Safety

---

## Public Radiation Safety

## Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the [cover letters](#) to security inspection reports may be viewed.

---

## Miscellaneous

Last modified : June 04, 2013

## Brunswick 1

### 2Q/2013 Plant Inspection Findings

---

#### Initiating Events

**Significance:**  Mar 31, 2013

Identified By: NRC

Item Type: FIN Finding

#### **Failure to Follow Procedure for Variable Frequency Drive Reactor Recirculation Pump Design Modification.**

An NRC-identified Green finding was identified for the failure of the licensee to follow Procedure EGR-NGGC-0005, Engineering Change (EC), when performing the variable frequency drive (VFD) modification for the reactor recirculation pumps (RRPs). Specifically, between April 4, 2010 and the present, the licensee inappropriately used a Rapid Field Release (RFR) to revise the power supplies for the relays in the VFD system without re-evaluating the EC, the 10 CFR 50.59 Screen/Evaluation, and the Failure Modes and Effects Analysis (FMEA). This resulted in a new failure mode on a loss of the power supply causing a RRP runback and placing the plant in a flow transient, and a loss of cooling to the RRP seals. The licensee entered this issue into the corrective action program (CAP) as nuclear condition report (NCR) 581202.

The performance deficiency associated with this finding was the failure of the licensee to follow Procedure EGR-NGGC-0005, Engineering Change (EC), when performing the VFD modification for the RRPs. The finding was more than minor because it was associated with the design control attribute of the Initiating Events Cornerstone and affects the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the VFD modification inappropriately causes a RRP runback on a loss of 480 VAC and core flow instability, and a loss of cooling to the RRP seals. Using IMC 0609, Appendix A, issued June 19, 2012, The SDP for Findings At-Power, the inspectors determined the finding was of very low safety significance because as a transient initiator due to the RRP runback, the finding did not cause a reactor trip and the loss of mitigation equipment relied upon to transition the plant from the onset of the trip to a stable shutdown condition. The inspectors determined the finding was also of very low safety significance because as a loss of coolant accident (LOCA) initiator, after a reasonable assessment of degradation, the finding would not result in exceeding the reactor coolant system leak rate for a small break LOCA or likely affect other systems used to mitigate a LOCA resulting in a total loss of their function. The finding has a cross-cutting aspect in the area of human performance associated with the work control attribute because the licensee did not appropriately coordinate work activities by incorporating actions to address the impact of changes to the work scope, associated with the VFD modification, on the plant. [H.3(b)]

Inspection Report# : [2013002](#) (*pdf*)

**Significance:**  Dec 31, 2012

Identified By: NRC

Item Type: FIN Finding

#### **Inadequate Maintenance Procedure for Fluorescent Lights over Safety-related Equipment**

•Green. The inspectors identified a Green finding for the licensee not having an adequate procedure for maintenance on fluorescent lights over safety-related equipment. Specifically, between plant startup and August 29, 2012, the licensee did not have instructions for closing S-hooks on fluorescent lights over safety related equipment during maintenance on the fluorescent lights. This resulted in over 40 S-hooks open in safety-related buildings which could result in fluorescent lights falling and impacting safety-related equipment during a seismic event. The licensee's

corrective actions included closing the open S-hooks and adding instructions for closing S-hooks to work order (WO) 431558. The licensee entered this issue into the CAP as NCR 551646.

The performance deficiency associated with this finding was the failure of the licensee to have an adequate procedure for maintenance on fluorescent lights over safety-related equipment. The finding was more than minor because if left uncorrected, the deficiencies could lead to a more significant safety concern. If left uncorrected, the failure to provide procedural guidance to close the S-hooks on fluorescent lights over safety-related equipment could lead to fluorescent lights falling on safety-related instruments during a seismic event resulting in a reactor trip. This finding is also associated with the design control attribute of the Initiating Events Systems Cornerstone. Using IMC 0609, Appendix A, issued June 19, 2012, The Significance Determination Process (SDP) for Findings At-Power, the inspectors determined the finding was of very low safety significance because the finding did not affect the design or qualification of a mitigating SSC, the finding did not represent a loss of system and/or function, the finding did not represent an actual loss of a function of a single train for greater than the TS allowed outage time, the finding did not represent an actual loss of a function of one or more non-TS trains of equipment, and did not screen as potentially risk-significant due to a seismic event since both S-hooks on one fluorescent light were not considered to be completely failed or unavailable, and the finding did not involve the total loss of any safety function. The finding has a cross-cutting aspect in the area of problem identification and resolution associated with the CAP attribute because the licensee did not identify the open S-hook issue completely, accurately, and in a timely manner commensurate with their safety significance during the Fukushima walkdowns. [P.1(a)] (Section 40A5)

Inspection Report# : [2012005](#) (pdf)

---

## Mitigating Systems

**Significance:**  Jun 30, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Have Adequate Installation and Testing Instructions for the EDG Overspeed Boost Cylinder.**

An NRC-identified Green NCV of 10 CFR 50, Appendix B, Criterion V, Instructions, Procedures, and Drawings, was identified for the failure of the licensee to have adequate installation and testing instructions for the EDG control oil system overspeed boost cylinder and accomplish the installation and testing in accordance with these instructions. The licensee replaced the boost cylinder and returned the EDG to operable. The licensee entered this issue into the corrective action program (CAP) as nuclear condition report (NCR) 567016.

The inspectors determined that the failure to properly install the EDG 3 overspeed boost cylinder and properly test the boost cylinder, to ensure the boost cylinder can perform its design basis function, was a performance deficiency. The finding was more than minor because it was associated with the design control attribute of the Mitigating Systems Cornerstone and affects the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to correctly install and test the EDG 3 overspeed boost cylinder resulted in the failure of EDG 3 to start and EDG 3 being declared inoperable on October 14, 2012. Using IMC 0609, Appendix A, issued June 19, 2012, the SDP for Findings At-Power, the inspectors determined the finding was of very low safety significance (Green) because the finding did not affect the design or qualification of a mitigating SSC, the finding did not represent a loss of system and/or function, the finding did not represent an actual loss of a function of a single train for greater than the TS allowed outage time, the finding did not represent an actual loss of a function of one or more non-TS trains of equipment, 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 in the area of human performance associated with the resources attribute because the licensee did not have complete, accurate and up-to-date design documentation, procedures, and work packages to install and test the EDG 3 overspeed boost cylinder. H.2(c)

Inspection Report# : [2013003](#) (pdf)

**Significance:**  Jun 30, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Adequately Lubricate the 1B Residual Heat Removal Cooler Damper**

• An NRC-identified Green NCV of TS 5.4.1a, Procedures, was identified for the failure of the licensee to follow the procedure to properly lubricate the 1B RHR room cooler damper. The licensee lubricated the damper and returned the room cooler to operable, and entered this issue into the CAP as NCR 607514.

The inspectors determined that the failure of the licensee to properly lubricate the 1B RHR room cooler damper in accordance with Procedure OPM DMP500 was a performance deficiency. The finding was more than minor because it was associated with the human performance attribute of the Mitigating Systems Cornerstone and affects the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to lubricate the 1B RHR room cooler damper resulted in a failure of the cooler fan and damper, and the inoperability of the 1B RHR train. Using IMC 0609, Appendix A, issued June 19, 2012, the SDP for Findings At-Power, the inspectors determined the finding was of very low safety significance (Green) because the finding did not affect the design or qualification of a mitigating SSC, the finding did not represent a loss of system and/or function, the finding did not represent an actual loss of a function of a single train for greater than the TS allowed outage time, the finding did not represent an actual loss of a function of one or more non-TS trains of equipment, 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 in the area of human performance associated with the work practices attribute because the licensee did not define and effectively communicate expectations regarding procedural compliance to Procedure OPM-DMP500 and personnel did not follow this procedure. H.4(b)

Inspection Report# : [2013003](#) (pdf)

**Significance:**  Jun 30, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

**Inadequate Design Control for Allowable Jacket Water Leak Rate**

An NRC-identified Green NCV of 10 CFR 50, Appendix B, Criterion III, Design Control, was identified for the failure of the licensee to verify the adequacy of the design acceptance criteria for jacket water leakage to ensure EDG 3 could meet the design basis mission time of seven days. The licensee's corrective actions include developing a plan to fill the EDG jacket water system to ensure operation of the EDG for seven days. The licensee entered this issue into the CAP as NCR 615491.

The inspectors determined that the failure to ensure sufficient jacket water to the EDGs, with a jacket water leak, for the seven-day mission time, was a performance deficiency. The violation is more than minor because it is associated with the design control attribute of the Mitigating Systems Cornerstone and affects the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the calculational error assuming a four-day mission time versus a seven-day mission time results in a condition where there was reasonable doubt on the capability of an EDG when a jacket water leak exists. Using IMC 0609, Appendix A, issued June 19, 2012, the SDP for Findings At-Power, the inspectors determined the finding screened to a detailed risk evaluation because the finding represented an actual loss of function of at least a

single Train of EDG for greater than the TS Allowed Outage time. The regional SRA performed a Phase 3 analysis on the finding. The time to failure of the EDG due to the leak precluded any internal risk impact, since it exceeded 24 hours to failure. A screening calculation was performed to estimate the impact the finding would have on an extended loss of offsite power from seismic or external flooding. The low likelihood of the seismic or external flood event occurring, combined with the short time the deficiency existed, resulted in a finding of very low safety significance (Green). The finding does not have a cross-cutting aspect since the performance deficiency is not indicative of current plant performance. Engineering evaluation was performed on July 7, 2004.

Inspection Report# : [2013003](#) (*pdf*)

**Significance:** G Dec 31, 2012

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

### **Inadequate Maintenance Procedure for the EDG Jacket Water Pump Wear Ring Tolerances**

•Green. A self-revealing Green NCV of Technical Specification (TS) 5.4.1a, Procedures, was identified because the licensee did not have an adequate maintenance procedure to perform work on the emergency diesel generator (EDG) 3 engine-driven jacket water pump (JWP). Specifically, between July 25, 1992 and November 15, 2012, Procedure OCM ENG528, Gould Engine Driven Jacket Water Pump Model 3736, did not provide the correct tolerances for the EDG JWP wear rings, resulting in the JWP seizure. The licensee's corrective actions included replacing the casing wear rings with wear rings with the correct tolerance and revising Procedure OCM-ENG528. The licensee entered this issue into the corrective action program (CAP) as nuclear condition report (NCR) 572546.

The performance deficiency associated with this finding was the failure of the licensee to have an adequate procedure for maintenance on the EDG 3 engine-driven JWP. The finding was more than minor because it was associated with the procedure quality attribute of the Mitigating Systems Cornerstone and affects the cornerstone objective of ensuring the availability and reliability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the inadequate procedure resulted in reduced availability of EDG 3 to repair the engine-driven JWP and reduced reliability of the jacket water system during operation. Using IMC 0609, Appendix A, issued June 19, 2012, The Significance Determination Process (SDP) for Findings At-Power, the inspectors determined the finding was of very low safety significance because the finding did not affect the design or qualification of a mitigating structure, system and component (SSC), the finding did not represent a loss of system and/or function, the finding did not represent an actual loss of a function of a single train for greater than the TS allowed outage time, the finding did not represent an actual loss of a function of one or more non-TS trains of equipment, and did not screen as potentially risk-significant due to a seismic, flooding, or severe weather initiating event. The finding does not have a cross-cutting aspect since the performance deficiency is not indicative of current plant performance. Procedure OCM-ENG528 included the incorrect tolerances since July 25, 1992. (Section 1R19)

Inspection Report# : [2012005](#) (*pdf*)

**Significance:** G Dec 31, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

### **Inadequate Design of EDG 2 ASSD Switch A1**

•Green. The inspectors identified a Green NCV of 10 CFR 50 Appendix B, Criterion III, Design Control, for failure to assure that the design basis for EDG 2 Alternate Safe Shutdown (ASSD) Switch A1 was correctly translated into specifications and drawings. Specifically, between original EDG 2 installation and September 1, 2012, a wiring discrepancy existed associated with EDG 2 ASSD Switch A1 which resulted in an induced fault that could have impacted the ability to locally control EDG 2 during certain fire scenarios. The licensee's corrective actions included

correcting the EDG 2 control circuit wiring to ensure it was in accordance with the existing approved design and returning EDG 2 to operable status. The licensee entered this issue into the CAP as NCR 557897.

The performance deficiency associated with this finding was the failure to assure that the design basis for EDG 2 ASSD Switch A1 was correctly translated into specifications and drawings. The finding was more than minor because it was associated with the protection against external factors (i.e. fire) 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. Specifically, an induced fault could have impacted the ability to locally control EDG 2 during certain fire scenarios. Using IMC 0609, Attachment 4, issued June 19, 2012, Initial Characterization of Findings, and IMC 0609, Appendix F, Attachment 1, Part 1: Application of Fire Protection SDP Phase 1 Worksheet, the results of this evaluation required further significance evaluation. A phase 3 analysis was performed by a regional SRA in accordance with NRC IMC 0609 Appendix F. The finding affected the capability to achieve alternate safe shutdown for Unit 1. The result of the analysis was an increase in core damage frequency of  $<1E-6$ /year a GREEN finding of very low safety significance. The finding does not have a cross-cutting aspect since the performance deficiency is not indicative of current plant performance. The EDG 2 ASSD Switch A1 wiring discrepancy has existed since original EDG installation. (Section 40A3)

Inspection Report# : [2012005](#) (pdf)

## Barrier Integrity

**Significance:**  Jun 30, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

### **Inadequate Work Order to Perform a Modification to the Control Room Emergency Ventilation System**

An NRC-identified Green non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, Instructions, Procedures, and Drawings, was identified, for the licensee's failure to have an adequate instruction or procedure to perform a modification to the control room emergency ventilation system. The licensee took immediate action to return CREV to service and entered this issue into the CAP as NCR 578363.

The inspectors determined that the failure of the licensee to have an adequate procedure for installing a jumper on the 2A CREV system was a performance deficiency. The finding was more than minor because it was associated with the configuration control attribute of the Barrier Integrity Cornerstone and affects the cornerstone objective to provide reasonable assurance that physical design barriers (fuel cladding, reactor coolant system, and containment) protect the public from radionuclide releases caused by accidents or events. Specifically, the failure to have an adequate procedure to install a jumper on the 2A CREV system resulted in the safety system functional failure of CREV. Using IMC 0609, Appendix A, issued June 19, 2012, the SDP for Findings At-Power, the inspectors determined the finding screened to a detailed risk evaluation because the finding represented a degradation of the radiological barrier function and smoke or toxic atmosphere function of the control room barrier. The regional SRA performed a Phase 3 analysis on the finding. A screening calculation was performed to estimate the impact the finding would have on the facility for conditions that would lead to plant shutdown, or failure of the filtering function of the ventilation system. The low likelihood of failure to recover the system, combined with the short time the deficiency existed, resulted in a finding of very low safety significance (Green). The finding has a cross-cutting aspect in the area of human performance associated with the work control attribute because the licensee did not appropriately coordinate work activities by incorporating the impact of changes to the work scope or activity on the plant when installing a ring lug jumper on the 2A CREV subsystem. H.3(b)

Inspection Report# : [2013003](#) (pdf)

**Significance:** G Sep 30, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Maintain Secondary Containment Operable During an OPDRV Activity**

The inspectors identified a Green non-cited violation (NCV) of TS 3.6.4.1, Secondary Containment because the licensee did not maintain secondary containment operable as required during a maintenance activity considered an operation with a potential for draining the reactor vessel (OPDRV). Once questioned by the inspectors, the licensee restored secondary containment, developed an Operation standing instruction 12-052 to treat the activity as an OPDRV and placed this issue into its corrective action program (CAP) as AR 562188.

The failure to maintain secondary containment operable while Unit 1 was in Mode 4 with an OPDRV in progress was a performance deficiency. The finding was more than minor because it was associated with the configuration control attribute of the Barrier Integrity Cornerstone, and adversely affected the cornerstone objective to provide reasonable assurance that physical design barriers (fuel cladding, reactor coolant system, and containment) protect the public from radionuclide releases caused by accidents or events because the Unit 1 secondary containment boundary was not preserved or maintained. The inspectors evaluated the finding using Inspection Manual Chapter (IMC) 0609, Attachment 4, Phase 1 - Initial Screening and Characterization of Findings, which required an analysis using IMC 0609 Appendix G since the reactor was in Mode 4 (cold shutdown). The finding was determined to be of very low safety significance (Green) according to IMC 0609 Appendix G, Attachment 1, Checklist 6, since a quantitative assessment (Phase 2 or Phase 3 evaluation) was not required. Specifically, the inspectors determined that the licensee maintained adequate mitigation capability for reactor vessel water level inventory and an event did not occur that could be characterized as a loss of control. The cause of this finding was directly related to the cross-cutting aspect of Accurate Procedures in the Resources component of the Human Performance area, because the licensee did not consider the recirculation pump seal replacement activity to be OPDRV based on procedural guidance that contains exclusions to what are considered OPDRV activities. [H.2(c)]

Inspection Report# : [2012004](#) (*pdf*)

## Emergency Preparedness

**Significance:** G Sep 30, 2012

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

**Failure to Maintain Reliability and Availability of Emergency Response Equipment for Emergency Response Facilities**

A self-revealing Green NCV of 10 CFR 50.54(q)(2) was identified for the licensee's failure to properly evaluate or consider the impact to emergency response facilities of design change ESR98-00436 which was implemented in 1999. This resulted in the loss of Emergency Response Facility Information System (ERFIS), Emergency Response Data System (ERDS), Safety Parameter Display System (SPDS), and all displays including radiation monitors for the emergency response facilities. Specifically, the licensee failed to ensure that adequate emergency response facilities and equipment were available as required by the Brunswick Nuclear Plant Radiological Emergency Plan, Section 1.3.1.3 revision 80 and 10 CFR 50.47(b)(8). This issue was captured in the licensee's CAP as AR 542704.

The licensee's failure to properly evaluate or consider the impact to emergency response facilities of design change ESR98-00436 which was implemented in 1999 was a performance deficiency. Specifically, the licensee introduced a single point failure mode which did not meet the design requirements specified in their Design Basis Document (DBD 60) sections 3.6.7.2 and 3.6.7.3. This resulted in the licensee's failure to ensure that adequate emergency response

facilities and equipment were available as delineated in the Updated Final Safety Analysis Report (UFSAR) Section 7.7.1.9, and required by the Brunswick Nuclear Plant Radiological Emergency Plan, Section 1.3.1.3, revision 80, and 10 CFR 50.47(b)(8). The finding was more than minor because it adversely affected the Emergency Preparedness Cornerstone objective of ensuring that the licensee was capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. Specifically, the Facilities and Equipment attribute was affected during the time when the ERFIS, ERDS, SPDS, and all displays including radiation monitors for the emergency response facilities were degraded, and as a result did not meet 10 CFR 50.47(b)(8) Planning Standard program element, adequate emergency facilities and equipment to support the emergency response are provided and maintained. The finding was assessed for significance in accordance with NRC IMC 0609, Appendix B Emergency Preparedness Significance Determination Process. Attachment 2 of Appendix B, Failure to Comply Significance Logic is as follows: Failure to comply; Loss of Risk Significant Planning Standard Function (RSPS), No; RSPS Degraded Function, No; Loss of Planning Standard Function, No; the result is a Green finding. The inspectors determined that this resulted in a very low safety significance finding (Green). No cross-cutting aspect was assigned to this finding because the performance deficiency occurred more than three years ago and is not reflective of current plant performance.

Inspection Report# : [2012004](#) (*pdf*)

---

## Occupational Radiation Safety

---

## Public Radiation Safety

---

## Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the [cover letters](#) to security inspection reports may be viewed.

---

## Miscellaneous

Last modified : September 03, 2013

## Brunswick 1

### 3Q/2013 Plant Inspection Findings

---

#### Initiating Events

**Significance:**  Mar 31, 2013

Identified By: NRC

Item Type: FIN Finding

#### **Failure to Follow Procedure for Variable Frequency Drive Reactor Recirculation Pump Design Modification.**

An NRC-identified Green finding was identified for the failure of the licensee to follow Procedure EGR-NGGC-0005, Engineering Change (EC), when performing the variable frequency drive (VFD) modification for the reactor recirculation pumps (RRPs). Specifically, between April 4, 2010 and the present, the licensee inappropriately used a Rapid Field Release (RFR) to revise the power supplies for the relays in the VFD system without re-evaluating the EC, the 10 CFR 50.59 Screen/Evaluation, and the Failure Modes and Effects Analysis (FMEA). This resulted in a new failure mode on a loss of the power supply causing a RRP runback and placing the plant in a flow transient, and a loss of cooling to the RRP seals. The licensee entered this issue into the corrective action program (CAP) as nuclear condition report (NCR) 581202.

The performance deficiency associated with this finding was the failure of the licensee to follow Procedure EGR-NGGC-0005, Engineering Change (EC), when performing the VFD modification for the RRPs. The finding was more than minor because it was associated with the design control attribute of the Initiating Events Cornerstone and affects the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the VFD modification inappropriately causes a RRP runback on a loss of 480 VAC and core flow instability, and a loss of cooling to the RRP seals. Using IMC 0609, Appendix A, issued June 19, 2012, The SDP for Findings At-Power, the inspectors determined the finding was of very low safety significance because as a transient initiator due to the RRP runback, the finding did not cause a reactor trip and the loss of mitigation equipment relied upon to transition the plant from the onset of the trip to a stable shutdown condition. The inspectors determined the finding was also of very low safety significance because as a loss of coolant accident (LOCA) initiator, after a reasonable assessment of degradation, the finding would not result in exceeding the reactor coolant system leak rate for a small break LOCA or likely affect other systems used to mitigate a LOCA resulting in a total loss of their function. The finding has a cross-cutting aspect in the area of human performance associated with the work control attribute because the licensee did not appropriately coordinate work activities by incorporating actions to address the impact of changes to the work scope, associated with the VFD modification, on the plant. [H.3(b)]

Inspection Report# : [2013002](#) (*pdf*)

**Significance:**  Dec 31, 2012

Identified By: NRC

Item Type: FIN Finding

#### **Inadequate Maintenance Procedure for Fluorescent Lights over Safety-related Equipment**

•Green. The inspectors identified a Green finding for the licensee not having an adequate procedure for maintenance on fluorescent lights over safety-related equipment. Specifically, between plant startup and August 29, 2012, the licensee did not have instructions for closing S-hooks on fluorescent lights over safety related equipment during maintenance on the fluorescent lights. This resulted in over 40 S-hooks open in safety-related buildings which could result in fluorescent lights falling and impacting safety-related equipment during a seismic event. The licensee's

corrective actions included closing the open S-hooks and adding instructions for closing S-hooks to work order (WO) 431558. The licensee entered this issue into the CAP as NCR 551646.

The performance deficiency associated with this finding was the failure of the licensee to have an adequate procedure for maintenance on fluorescent lights over safety-related equipment. The finding was more than minor because if left uncorrected, the deficiencies could lead to a more significant safety concern. If left uncorrected, the failure to provide procedural guidance to close the S-hooks on fluorescent lights over safety-related equipment could lead to fluorescent lights falling on safety-related instruments during a seismic event resulting in a reactor trip. This finding is also associated with the design control attribute of the Initiating Events Systems Cornerstone. Using IMC 0609, Appendix A, issued June 19, 2012, The Significance Determination Process (SDP) for Findings At-Power, the inspectors determined the finding was of very low safety significance because the finding did not affect the design or qualification of a mitigating SSC, the finding did not represent a loss of system and/or function, the finding did not represent an actual loss of a function of a single train for greater than the TS allowed outage time, the finding did not represent an actual loss of a function of one or more non-TS trains of equipment, and did not screen as potentially risk-significant due to a seismic event since both S-hooks on one fluorescent light were not considered to be completely failed or unavailable, and the finding did not involve the total loss of any safety function. The finding has a cross-cutting aspect in the area of problem identification and resolution associated with the CAP attribute because the licensee did not identify the open S-hook issue completely, accurately, and in a timely manner commensurate with their safety significance during the Fukushima walkdowns. [P.1(a)] (Section 40A5)

Inspection Report# : [2012005](#) (*pdf*)

## Mitigating Systems

**Significance:**  Sep 30, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to identify and correct nuclear service water pump shaft degradation**

An NRC identified Green non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion XVI, Corrective Action, was identified for the failure of the licensee to identify and correct a condition adverse to quality (CAQ) on the 1B nuclear service water pump (NSWP). Specifically, between June 26, 2012, and January 12, 2013, the licensee failed to identify or correct the pump shaft degradation on the 1B Nuclear Service Water Pump (NSWP) pump. This resulted in the shaft bearing delaminating and bearing material becoming dislodged and trapped in the pump strainer which caused the 1B NSWP to become inoperable. The licensee replaced the pump shaft and returned the pump to operable. The licensee entered this issue into the corrective action program (CAP) as nuclear condition report (NCR) 582584.

The inspectors determined that the failure of the licensee to identify and correct the 1B NSWP shaft degradation before the pump failed was a performance deficiency. The finding was more than minor because it was associated with the equipment performance attribute of the Mitigating Systems Cornerstone and affects the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the shaft degradation resulted in the 1B NSWP being inoperable. Using IMC 0609, Appendix A, issued June 19, 2012, the SDP for Findings At-Power, the inspectors determined the finding was of very low safety significance (Green) because the finding did not affect the design or qualification of a mitigating structure, system and component (SSC), the finding did not represent a loss of system and/or function, the finding did not represent an actual loss of a function of a single train for greater than the technical specifications (TS) allowed outage time, the finding did not represent an actual loss of a function of one or more non-TS trains of equipment, 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 in the area of problem identification and resolution associated with the CAP attribute because the licensee failed to implement a CAP with a low threshold for identifying issues, specifically the licensee did not enter this issue into the CAP in June 2012. [P.1(a)] (Section 1R15)

Inspection Report# : [2013004](#) (*pdf*)

**Significance:**  Jun 30, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Have Adequate Installation and Testing Instructions for the EDG Overspeed Boost Cylinder.**

An NRC-identified Green NCV of 10 CFR 50, Appendix B, Criterion V, Instructions, Procedures, and Drawings, was identified for the failure of the licensee to have adequate installation and testing instructions for the EDG control oil system overspeed boost cylinder and accomplish the installation and testing in accordance with these instructions. The licensee replaced the boost cylinder and returned the EDG to operable. The licensee entered this issue into the corrective action program (CAP) as nuclear condition report (NCR) 567016.

The inspectors determined that the failure to properly install the EDG 3 overspeed boost cylinder and properly test the boost cylinder, to ensure the boost cylinder can perform its design basis function, was a performance deficiency. The finding was more than minor because it was associated with the design control attribute of the Mitigating Systems Cornerstone and affects the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to correctly install and test the EDG 3 overspeed boost cylinder resulted in the failure of EDG 3 to start and EDG 3 being declared inoperable on October 14, 2012. Using IMC 0609, Appendix A, issued June 19, 2012, the SDP for Findings At-Power, the inspectors determined the finding was of very low safety significance (Green) because the finding did not affect the design or qualification of a mitigating SSC, the finding did not represent a loss of system and/or function, the finding did not represent an actual loss of a function of a single train for greater than the TS allowed outage time, the finding did not represent an actual loss of a function of one or more non-TS trains of equipment, 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 in the area of human performance associated with the resources attribute because the licensee did not have complete, accurate and up-to-date design documentation, procedures, and work packages to install and test the EDG 3 overspeed boost cylinder. H.2(c)

Inspection Report# : [2013003](#) (*pdf*)

**Significance:**  Jun 30, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Adequately Lubricate the 1B Residual Heat Removal Cooler Damper**

• An NRC-identified Green NCV of TS 5.4.1a, Procedures, was identified for the failure of the licensee to follow the procedure to properly lubricate the 1B RHR room cooler damper The licensee lubricated the damper and returned the room cooler to operable, and entered this issue into the CAP as NCR 607514.

The inspectors determined that the failure of the licensee to properly lubricate the 1B RHR room cooler damper in accordance with Procedure OPM DMP500 was a performance deficiency. The finding was more than minor because it was associated with the human performance attribute of the Mitigating Systems Cornerstone and affects the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to lubricate the 1B RHR room cooler damper resulted in a failure of the cooler fan and damper, and the inoperability of the 1B RHR train. Using IMC 0609, Appendix A,

issued June 19, 2012, the SDP for Findings At-Power, the inspectors determined the finding was of very low safety significance (Green) because the finding did not affect the design or qualification of a mitigating SSC, the finding did not represent a loss of system and/or function, the finding did not represent an actual loss of a function of a single train for greater than the TS allowed outage time, the finding did not represent an actual loss of a function of one or more non-TS trains of equipment, 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 in the area of human performance associated with the work practices attribute because the licensee did not define and effectively communicate expectations regarding procedural compliance to Procedure OPM-DMP500 and personnel did not follow this procedure. H.4(b)

Inspection Report# : [2013003](#) (pdf)

**Significance:** G Jun 30, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Inadequate Design Control for Allowable Jacket Water Leak Rate**

An NRC-identified Green NCV of 10 CFR 50, Appendix B, Criterion III, Design Control, was identified for the failure of the licensee to verify the adequacy of the design acceptance criteria for jacket water leakage to ensure EDG 3 could meet the design basis mission time of seven days. The licensee's corrective actions include developing a plan to fill the EDG jacket water system to ensure operation of the EDG for seven days. The licensee entered this issue into the CAP as NCR 615491.

The inspectors determined that the failure to ensure sufficient jacket water to the EDGs, with a jacket water leak, for the seven-day mission time, was a performance deficiency. The violation is more than minor because it is associated with the design control attribute of the Mitigating Systems Cornerstone and affects the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the calculational error assuming a four-day mission time versus a seven-day mission time results in a condition where there was reasonable doubt on the capability of an EDG when a jacket water leak exists. Using IMC 0609, Appendix A, issued June 19, 2012, the SDP for Findings At-Power, the inspectors determined the finding screened to a detailed risk evaluation because the finding represented an actual loss of function of at least a single Train of EDG for greater than the TS Allowed Outage time. The regional SRA performed a Phase 3 analysis on the finding. The time to failure of the EDG due to the leak precluded any internal risk impact, since it exceeded 24 hours to failure. A screening calculation was performed to estimate the impact the finding would have on an extended loss of offsite power from seismic or external flooding. The low likelihood of the seismic or external flood event occurring, combined with the short time the deficiency existed, resulted in a finding of very low safety significance (Green). The finding does not have a cross-cutting aspect since the performance deficiency is not indicative of current plant performance. Engineering evaluation was performed on July 7, 2004.

Inspection Report# : [2013003](#) (pdf)

**Significance:** G Dec 31, 2012

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

#### **Inadequate Maintenance Procedure for the EDG Jacket Water Pump Wear Ring Tolerances**

•Green. A self-revealing Green NCV of Technical Specification (TS) 5.4.1a, Procedures, was identified because the licensee did not have an adequate maintenance procedure to perform work on the emergency diesel generator (EDG) 3 engine-driven jacket water pump (JWP). Specifically, between July 25, 1992 and November 15, 2012, Procedure OCM ENG528, Gould Engine Driven Jacket Water Pump Model 3736, did not provide the correct tolerances for the EDG JWP wear rings, resulting in the JWP seizure. The licensee's corrective actions included replacing the casing wear rings with wear rings with the correct tolerance and revising Procedure OCM-ENG528. The licensee entered this

issue into the corrective action program (CAP) as nuclear condition report (NCR) 572546.

The performance deficiency associated with this finding was the failure of the licensee to have an adequate procedure for maintenance on the EDG 3 engine-driven JWP. The finding was more than minor because it was associated with the procedure quality attribute of the Mitigating Systems Cornerstone and affects the cornerstone objective of ensuring the availability and reliability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the inadequate procedure resulted in reduced availability of EDG 3 to repair the engine-driven JWP and reduced reliability of the jacket water system during operation. Using IMC 0609, Appendix A, issued June 19, 2012, The Significance Determination Process (SDP) for Findings At-Power, the inspectors determined the finding was of very low safety significance because the finding did not affect the design or qualification of a mitigating structure, system and component (SSC), the finding did not represent a loss of system and/or function, the finding did not represent an actual loss of a function of a single train for greater than the TS allowed outage time, the finding did not represent an actual loss of a function of one or more non-TS trains of equipment, and did not screen as potentially risk-significant due to a seismic, flooding, or severe weather initiating event. The finding does not have a cross-cutting aspect since the performance deficiency is not indicative of current plant performance. Procedure 0CM-ENG528 included the incorrect tolerances since July 25, 1992. (Section 1R19)

Inspection Report# : [2012005](#) (*pdf*)

**Significance:** G Dec 31, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Inadequate Design of EDG 2 ASSD Switch A1**

•Green. The inspectors identified a Green NCV of 10 CFR 50 Appendix B, Criterion III, Design Control, for failure to assure that the design basis for EDG 2 Alternate Safe Shutdown (ASSD) Switch A1 was correctly translated into specifications and drawings. Specifically, between original EDG 2 installation and September 1, 2012, a wiring discrepancy existed associated with EDG 2 ASSD Switch A1 which resulted in an induced fault that could have impacted the ability to locally control EDG 2 during certain fire scenarios. The licensee's corrective actions included correcting the EDG 2 control circuit wiring to ensure it was in accordance with the existing approved design and returning EDG 2 to operable status. The licensee entered this issue into the CAP as NCR 557897.

The performance deficiency associated with this finding was the failure to assure that the design basis for EDG 2 ASSD Switch A1 was correctly translated into specifications and drawings. The finding was more than minor because it was associated with the protection against external factors (i.e. fire) 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. Specifically, an induced fault could have impacted the ability to locally control EDG 2 during certain fire scenarios. Using IMC 0609, Attachment 4, issued June 19, 2012, Initial Characterization of Findings, and IMC 0609, Appendix F, Attachment 1, Part 1: Application of Fire Protection SDP Phase 1 Worksheet, the results of this evaluation required further significance evaluation. A phase 3 analysis was performed by a regional SRA in accordance with NRC IMC 0609 Appendix F. The finding affected the capability to achieve alternate safe shutdown for Unit 1. The result of the analysis was an increase in core damage frequency of  $<1E-6$ /year a GREEN finding of very low safety significance. The finding does not have a cross-cutting aspect since the performance deficiency is not indicative of current plant performance. The EDG 2 ASSD Switch A1 wiring discrepancy has existed since original EDG installation. (Section 4OA3)

Inspection Report# : [2012005](#) (*pdf*)

## Barrier Integrity

**Significance:**  Jun 30, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

### **Inadequate Work Order to Perform a Modification to the Control Room Emergency Ventilation System**

An NRC-identified Green non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, Instructions, Procedures, and Drawings, was identified, for the licensee's failure to have an adequate instruction or procedure to perform a modification to the control room emergency ventilation system . The licensee took immediate action to return CREV to service and entered this issue into the CAP as NCR 578363.

The inspectors determined that the failure of the licensee to have an adequate procedure for installing a jumper on the 2A CREV system was a performance deficiency. The finding was more than minor because it was associated with the configuration control attribute of the Barrier Integrity Cornerstone and affects the cornerstone objective to provide reasonable assurance that physical design barriers (fuel cladding, reactor coolant system, and containment) protect the public from radionuclide releases caused by accidents or events. Specifically, the failure to have an adequate procedure to install a jumper on the 2A CREV system resulted in the safety system functional failure of CREV. Using IMC 0609, Appendix A, issued June 19, 2012, the SDP for Findings At-Power, the inspectors determined the finding screened to a detailed risk evaluation because the finding represented a degradation of the radiological barrier function and smoke or toxic atmosphere function of the control room barrier. The regional SRA performed a Phase 3 analysis on the finding. A screening calculation was performed to estimate the impact the finding would have on the facility for conditions that would lead to plant shutdown, or failure of the filtering function of the ventilation system. The low likelihood of failure to recover the system, combined with the short time the deficiency existed, resulted in a finding of very low safety significance (Green). The finding has a cross-cutting aspect in the area of human performance associated with the work control attribute because the licensee did not appropriately coordinate work activities by incorporating the impact of changes to the work scope or activity on the plant when installing a ring lug jumper on the 2A CREV subsystem. H.3(b)

Inspection Report# : [2013003](#) (*pdf*)

---

## Emergency Preparedness

---

## Occupational Radiation Safety

---

## Public Radiation Safety

---

## Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security

Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the [cover letters](#) to security inspection reports may be viewed.

---

## Miscellaneous

Last modified : December 03, 2013

## Brunswick 1

### 4Q/2013 Plant Inspection Findings

---

#### Initiating Events

**Significance:**  Mar 31, 2013

Identified By: NRC

Item Type: FIN Finding

**Failure to Follow Procedure for Variable Frequency Drive Reactor Recirculation Pump Design Modification.**

An NRC-identified Green finding was identified for the failure of the licensee to follow Procedure EGR-NGGC-0005, Engineering Change (EC), when performing the variable frequency drive (VFD) modification for the reactor recirculation pumps (RRPs). Specifically, between April 4, 2010 and the present, the licensee inappropriately used a Rapid Field Release (RFR) to revise the power supplies for the relays in the VFD system without re-evaluating the EC, the 10 CFR 50.59 Screen/Evaluation, and the Failure Modes and Effects Analysis (FMEA). This resulted in a new failure mode on a loss of the power supply causing a RRP runback and placing the plant in a flow transient, and a loss of cooling to the RRP seals. The licensee entered this issue into the corrective action program (CAP) as nuclear condition report (NCR) 581202.

The performance deficiency associated with this finding was the failure of the licensee to follow Procedure EGR-NGGC-0005, Engineering Change (EC), when performing the VFD modification for the RRP. The finding was more than minor because it was associated with the design control attribute of the Initiating Events Cornerstone and affects the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the VFD modification inappropriately causes a RRP runback on a loss of 480 VAC and core flow instability, and a loss of cooling to the RRP seals. Using IMC 0609, Appendix A, issued June 19, 2012, The SDP for Findings At-Power, the inspectors determined the finding was of very low safety significance because as a transient initiator due to the RRP runback, the finding did not cause a reactor trip and the loss of mitigation equipment relied upon to transition the plant from the onset of the trip to a stable shutdown condition. The inspectors determined the finding was also of very low safety significance because as a loss of coolant accident (LOCA) initiator, after a reasonable assessment of degradation, the finding would not result in exceeding the reactor coolant system leak rate for a small break LOCA or likely affect other systems used to mitigate a LOCA resulting in a total loss of their function. The finding has a cross-cutting aspect in the area of human performance associated with the work control attribute because the licensee did not appropriately coordinate work activities by incorporating actions to address the impact of changes to the work scope, associated with the VFD modification, on the plant. [H.3(b)]

Inspection Report# : [2013002](#) (*pdf*)

---

#### Mitigating Systems

**Significance:**  Dec 31, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

**Inadequate Design Control for Required Service Water Flow to the Emergency Diesel Generators**

An NRC-identified Green NCV of 10 CFR Part 50, Appendix B, Criterion III, Design Control, was identified for the

failure of the licensee to verify the adequacy of design of the emergency diesel generator (EDG) service water flow. Specifically, from May 1, 1989, until October 28, 2013, Calculation M-89-0008, contained non-conservative values for EDG maximum loading, service water inlet temperatures, and heat exchanger fouling factor, resulting in a non-conservative calculation for required service water flow to the EDG jacket water heat exchanger, which called into question the operability of EDG 3. The licensee re-performed Calculation M-89-0008 and determined EDG 3 was operable. The licensee entered this issue into the corrective action program (CAP) as nuclear condition report (NCR) 592035.

The inspectors determined that the failure of the licensee to have an accurate calculation for required service water flow to the EDG jacket water heat exchanger was a performance deficiency. The finding was more than minor because it was associated with the design control attribute of the Mitigating Systems Cornerstone and adversely affects the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the non-conservative calculation called into question the operability of EDG 3. Using IMC 0609, Appendix A, issued June 19, 2012, the SDP for Findings At-Power, the inspectors determined the finding was of very low safety significance (Green) because the finding did not affect the design or qualification of a mitigating structures, systems, and components (SSC), the finding did not represent a loss of system and/or function, the finding did not represent an actual loss of a function of a single train for greater than the technical specification (TS) allowed outage time, the finding did not represent an actual loss of a function of one or more non-TS trains of equipment, 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 in the area of human performance associated with the resources attribute because the licensee did not have complete, accurate and up-to-date design documentation for EDG service water flow. Specifically, due to the inspector's questions, Calculation M-89-0008 required revision due to non-conservatism in August 2013 and in November 2013. H.2(c)

Inspection Report# : [2013005](#) (*pdf*)

**Significance:**  Dec 31, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Inadequate Procedure to Perform Preventative Maintenance on the Residual Heat Removal Room Coolers**

A self-revealing Green NCV of TS 5.4.1a, Procedures, was identified for the failure of the licensee to have an adequate procedure for preventative maintenance on the 1B residual heat removal (RHR) room cooler damper limit switch. Specifically, between May 1990 and September 26, 2013, the licensee did not have an adequate preventative maintenance procedure to replace the 1B RHR room cooler damper limit switch and to tighten the paddle arm on the limit switch. This resulted in the failure of the 1B RHR room cooler to start and the inoperability of the 1B RHR train. The licensee replaced the limit switch on the damper, tightened the paddle arm on the limit switch, returned the room cooler to operable, and entered this issue into the CAP as NCR 607986.

The inspectors determined that the failure of the licensee to have an adequate procedure to replace the 1B RHR room cooler limit switch and tighten the limit switch paddle arm was a performance deficiency. The finding was more than minor because it was associated with the equipment performance attribute of the Mitigating Systems Cornerstone and adversely affects the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to replace the limit switch and tighten the limit switch paddle arm resulted in a failure of the cooler fan and damper, and the inoperability of the 1B RHR train. Using IMC 0609, Appendix A, issued June 19, 2012, the SDP for Findings At-Power, the inspectors determined the finding was of very low safety significance (Green) because the finding did not affect the design or qualification of a mitigating SSC, the finding did not represent a loss of system and/or function, the finding did not represent an actual loss of a function of a single train for greater than the TS allowed outage time, the finding did not represent an actual loss of a function of one or more non-TS trains of equipment, and did not screen as potentially risk-significant due to a seismic, flooding, or severe weather initiating event. The finding does not have a cross-cutting

aspect since the performance deficiency is not indicative of current plant performance. Vendor Manual QTR155, NAMCO Controls, which required periodic replacement of the limit switch and checking the limit switch for tightness was provided to the licensee in May 1990.

Inspection Report# : [2013005](#) (*pdf*)

**Significance:**  Oct 23, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

**Inadequate Acceptance Criteria for the Class 1E Station Battery Service Capacity Test Procedure**

The team identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion XI, “Test Control,” for the licensee’s failure to incorporate adequate acceptance criteria in the Class 1E station battery service test procedures. This failure to incorporate adequate acceptance criteria was a performance deficiency. The licensee entered this issue into their corrective action program as nuclear condition reports 632998 and 630621. The licensee performed a prompt determination of operability to verify that the batteries would be capable of supplying the necessary voltage to safety-related direct current loads at the required time intervals specified in design bases calculations.

The performance deficiency was determined to be more than minor because it was associated with the Design Control attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, using an acceptance criterion of 105 volts direct current during the service test could result in incorrectly declaring a Class 1E station battery operable when greater terminal voltages, as specified in design bases calculations, were necessary for safety-related equipment to operate during the first minute of a design basis accident. The team determined the finding to be of very low safety significance (Green) because the finding was a deficiency affecting the design or qualification of a mitigating structure, system, or component which maintained its operability or functionality. The team determined that no cross-cutting aspect was applicable because the finding was not indicative of current licensee performance.

Inspection Report# : [2013007](#) (*pdf*)

**Significance:**  Oct 23, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

**Inadequate DC System Calculations – Three Examples**

The team identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, “Design Control,” with three examples, for the licensee’s failure to properly incorporate the design and licensing bases for the 125 volt direct current system into design calculations. This failure to properly incorporate the design and licensing bases for the 125 volts direct current system into design calculations was a performance deficiency. The licensee entered these issues into their corrective action program as nuclear condition reports 632998, 630621, 633538, and 633889. The licensee conducted a combination of prompt determinations of operability and engineering evaluations which provided reasonable expectation of operability of the direct current system pending final resolution.

The performance deficiency was determined to be more than minor because it was associated with the Design Control attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, there was reasonable doubt as to whether direct current system components would have adequate voltage to operate during design basis accidents. The team determined the finding to be of very low safety significance (Green) because the finding was a deficiency affecting the design or qualification of a mitigating structure, system, or component which maintained its operability or functionality. The team determined that no cross-cutting aspect was applicable because the finding was not indicative of current licensee performance.

Inspection Report# : [2013007](#) (pdf)

**Significance:**  Oct 23, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Verify Adequacy of the Service Water Intake Structure Ventilation System**

The team identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, “Design Control,” for the licensee’s failure to verify the adequacy of the service water intake structure ventilation design through calculational methods. This failure to verify the adequacy of the service water intake structure ventilation design was a performance deficiency. The licensee entered this issue into their corrective action program as nuclear condition report 627708. The licensee performed a prompt determination of operability and implemented a number of compensatory actions to ensure safety-related components in the intake structure would not fail under the worst case high temperature conditions.

The performance deficiency was determined to be more than minor because it was associated with the Design Control attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, there was reasonable doubt as to whether safety-related components in the service water intake structure would be operable under design temperatures. The team determined the finding to be of very low safety significance (Green) because the finding was a deficiency affecting the design or qualification of a mitigating structure, system, or component which maintained its operability or functionality. The team determined that no cross-cutting aspect was applicable because the finding was not indicative of current licensee performance.

Inspection Report# : [2013007](#) (pdf)

**Significance:**  Oct 23, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Scope Safety-related Components in the Maintenance Rule Program**

The team identified a non-cited violation of 10 CFR 50.65(b)(1), for the licensee’s failure to scope the safety-related service water intake structure exhaust fan dampers into the Maintenance Rule program. This failure to scope safety-related service water intake structure exhaust fan dampers was a performance deficiency. The licensee entered this issue into their corrective action program as nuclear condition reports 630922, 627708, 630553, and 630993. The licensee has subsequently implemented corrective actions to include the dampers within the scope of the Maintenance Rule program.

The performance deficiency was determined to be more than minor because it was associated with the Equipment Performance attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective of ensuring availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, numerous dampers were found in degraded conditions such that effective control of performance or condition through appropriate preventive maintenance under 10CFR 50.65(a)(2) could not be demonstrated. The team determined the finding to be of very low safety significance (Green) because the finding did not result in an actual loss of function of at least a single service water system train for greater than its technical specifications allowed outage time. The team determined that no cross-cutting aspect was applicable because the finding was not indicative of current licensee performance.

Inspection Report# : [2013007](#) (pdf)

**Significance:**  Oct 23, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Follow Plant Procedure Directing the Performance of Preventive Maintenance on Safety-related Dampers**

The team identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” for the licensee’s failure to follow plant procedures specifying requirements for preventive maintenance of safety-related dampers. This failure to follow plant procedures was a performance deficiency. The licensee entered this issue into their corrective action program as nuclear condition reports 631376, 628132, 633710, and 631711. The licensee performed an immediate determination of operability to verify the as-found condition of the dampers did not affect operability of equipment inside the diesel generator building and implemented corrective actions to complete the missed preventive maintenance on the dampers.

The performance deficiency was determined to be more than minor because it was associated with the Equipment Performance attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective of ensuring availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the programmatic failure to perform preventive maintenance on the nine dampers resulted in decreased availability and reliability of the dampers such that multiple dampers were found in degraded conditions. The team determined the finding to be of very low safety significance (Green) because the finding did not result in an actual loss of function of at least a single emergency diesel generator for greater than its technical specifications allowed outage time. The team determined that this finding was associated with the cross-cutting aspect of Supervisory Oversight in the Work Practices component of the Human Performance area because Brunswick supervisors did not enforce the scheduled preventive maintenance nor did they ensure a justification for not performing preventive maintenance on safety-related components. [H.4(c)]

Inspection Report# : [2013007](#) (pdf)

**Significance:**  Sep 30, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to identify and correct nuclear service water pump shaft degradation**

An NRC identified Green non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion XVI, Corrective Action, was identified for the failure of the licensee to identify and correct a condition adverse to quality (CAQ) on the 1B nuclear service water pump (NSWP). Specifically, between June 26, 2012, and January 12, 2013, the licensee failed to identify or correct the pump shaft degradation on the 1B Nuclear Service Water Pump (NSWP) pump. This resulted in the shaft bearing delaminating and bearing material becoming dislodged and trapped in the pump strainer which caused the 1B NSWP to become inoperable. The licensee replaced the pump shaft and returned the pump to operable. The licensee entered this issue into the corrective action program (CAP) as nuclear condition report (NCR) 582584.

The inspectors determined that the failure of the licensee to identify and correct the 1B NSWP shaft degradation before the pump failed was a performance deficiency. The finding was more than minor because it was associated with the equipment performance attribute of the Mitigating Systems Cornerstone and affects the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the shaft degradation resulted in the 1B NSWP being inoperable. Using IMC 0609, Appendix A, issued June 19, 2012, the SDP for Findings At-Power, the inspectors determined the finding was of very low safety significance (Green) because the finding did not affect the design or qualification of a mitigating structure, system and component (SSC), the finding did not represent a loss of system and/or function, the finding did not represent an actual loss of a function of a single train for greater than the technical specifications (TS) allowed outage time, the finding did not represent an actual loss of a function of one or more non-TS trains of equipment, 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 in the area of problem identification and resolution associated with the CAP attribute because the licensee failed to implement a CAP with a low threshold for identifying issues, specifically the licensee did not enter this issue into the CAP in June 2012. [P.1(a)] (Section 1R15)

Inspection Report# : [2013004](#) (pdf)

**Significance:** G Sep 30, 2013

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

**Inadequate preventative maintenance procedure for the service water pump breakers**

A self-revealing Green NCV of 10 CFR 50, Appendix B, Criterion V, Instructions, Procedures, and Drawings, was identified for the failure of the licensee to have an adequate preventative maintenance procedure for the service water pump breakers. Specifically, from December 1, 2004, through the end of this inspection period (September 30, 2013), the licensee failed to have an adequate preventative maintenance procedure to ensure the 52S mechanism was securely bolted to the breaker for the 2C conventional service water pump (CSWP). This resulted in both discharge valves failing to open when the 2C CSWP was started, and the inoperability of the 2C CSWP. The licensee securely bolted and tightened the 52S mechanism to the breaker. The licensee entered this issue into the CAP as NCR 604452.

The inspectors determined the failure to have an adequate preventative maintenance procedure for the service water pump breakers was a performance deficiency. The finding was more than minor because it was associated with the configuration control attribute of the Mitigating Systems Cornerstone and affects the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to ensure the 52S mechanism was securely bolted to the 2C CSWP breaker resulted in the failure of both 2C CSWP discharge valves to open. Using IMC 0609, Appendix A, issued June 19, 2012, the SDP for Findings At-Power, the inspectors determined the finding was of very low safety significance (Green) because the finding did not affect the design or qualification of a mitigating SSC, the finding did not represent a loss of system and/or function, the finding did not represent an actual loss of a function of a single train for greater than the TS allowed outage time, the finding did not represent an actual loss of a function of one or more non-TS trains of equipment, and did not screen as potentially risk-significant due to a seismic, flooding, or severe weather initiating event. The finding does not have a cross-cutting aspect since the performance deficiency is not indicative of current plant performance. The 2C CSWP breaker was refurbished in December 2004 and installed in the plant in January 2005. (Section 1R19)

Inspection Report# : [2013004](#) (pdf)

**Significance:** G Jun 30, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Have Adequate Installation and Testing Instructions for the EDG Overspeed Boost Cylinder.**

An NRC-identified Green NCV of 10 CFR 50, Appendix B, Criterion V, Instructions, Procedures, and Drawings, was identified for the failure of the licensee to have adequate installation and testing instructions for the EDG control oil system overspeed boost cylinder and accomplish the installation and testing in accordance with these instructions. The licensee replaced the boost cylinder and returned the EDG to operable. The licensee entered this issue into the corrective action program (CAP) as nuclear condition report (NCR) 567016.

The inspectors determined that the failure to properly install the EDG 3 overspeed boost cylinder and properly test the boost cylinder, to ensure the boost cylinder can perform its design basis function, was a performance deficiency. The finding was more than minor because it was associated with the design control attribute of the Mitigating Systems Cornerstone and affects the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to correctly install and test the EDG 3 overspeed boost cylinder resulted in the failure of EDG 3 to start and EDG 3 being declared inoperable on October 14, 2012. Using IMC 0609, Appendix A, issued June 19, 2012, the SDP for Findings At-Power, the

inspectors determined the finding was of very low safety significance (Green) because the finding did not affect the design or qualification of a mitigating SSC, the finding did not represent a loss of system and/or function, the finding did not represent an actual loss of a function of a single train for greater than the TS allowed outage time, the finding did not represent an actual loss of a function of one or more non-TS trains of equipment, 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 in the area of human performance associated with the resources attribute because the licensee did not have complete, accurate and up-to-date design documentation, procedures, and work packages to install and test the EDG 3 overspeed boost cylinder. H.2(c)

Inspection Report# : [2013003](#) (pdf)

**Significance:**  Jun 30, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Failure to Adequately Lubricate the 1B Residual Heat Removal Cooler Damper**

- An NRC-identified Green NCV of TS 5.4.1a, Procedures, was identified for the failure of the licensee to follow the procedure to properly lubricate the 1B RHR room cooler damper. The licensee lubricated the damper and returned the room cooler to operable, and entered this issue into the CAP as NCR 607514.

The inspectors determined that the failure of the licensee to properly lubricate the 1B RHR room cooler damper in accordance with Procedure OPM DMP500 was a performance deficiency. The finding was more than minor because it was associated with the human performance attribute of the Mitigating Systems Cornerstone and affects the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to lubricate the 1B RHR room cooler damper resulted in a failure of the cooler fan and damper, and the inoperability of the 1B RHR train. Using IMC 0609, Appendix A, issued June 19, 2012, the SDP for Findings At-Power, the inspectors determined the finding was of very low safety significance (Green) because the finding did not affect the design or qualification of a mitigating SSC, the finding did not represent a loss of system and/or function, the finding did not represent an actual loss of a function of a single train for greater than the TS allowed outage time, the finding did not represent an actual loss of a function of one or more non-TS trains of equipment, 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 in the area of human performance associated with the work practices attribute because the licensee did not define and effectively communicate expectations regarding procedural compliance to Procedure OPM-DMP500 and personnel did not follow this procedure. H.4(b)

Inspection Report# : [2013003](#) (pdf)

**Significance:**  Jun 30, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Inadequate Design Control for Allowable Jacket Water Leak Rate**

An NRC-identified Green NCV of 10 CFR 50, Appendix B, Criterion III, Design Control, was identified for the failure of the licensee to verify the adequacy of the design acceptance criteria for jacket water leakage to ensure EDG 3 could meet the design basis mission time of seven days. The licensee's corrective actions include developing a plan to fill the EDG jacket water system to ensure operation of the EDG for seven days. The licensee entered this issue into the CAP as NCR 615491.

The inspectors determined that the failure to ensure sufficient jacket water to the EDGs, with a jacket water leak, for the seven-day mission time, was a performance deficiency. The violation is more than minor because it is associated with the design control attribute of the Mitigating Systems Cornerstone and affects the cornerstone objective of

ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the calculational error assuming a four-day mission time versus a seven-day mission time results in a condition where there was reasonable doubt on the capability of an EDG when a jacket water leak exists. Using IMC 0609, Appendix A, issued June 19, 2012, the SDP for Findings At-Power, the inspectors determined the finding screened to a detailed risk evaluation because the finding represented an actual loss of function of at least a single Train of EDG for greater than the TS Allowed Outage time. The regional SRA performed a Phase 3 analysis on the finding. The time to failure of the EDG due to the leak precluded any internal risk impact, since it exceeded 24 hours to failure. A screening calculation was performed to estimate the impact the finding would have on an extended loss of offsite power from seismic or external flooding. The low likelihood of the seismic or external flood event occurring, combined with the short time the deficiency existed, resulted in a finding of very low safety significance (Green). The finding does not have a cross-cutting aspect since the performance deficiency is not indicative of current plant performance. Engineering evaluation was performed on July 7, 2004.

Inspection Report# : [2013003](#) (*pdf*)

---

## Barrier Integrity

**Significance:**  Jun 30, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

### **Inadequate Work Order to Perform a Modification to the Control Room Emergency Ventilation System**

An NRC-identified Green non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, Instructions, Procedures, and Drawings, was identified, for the licensee's failure to have an adequate instruction or procedure to perform a modification to the control room emergency ventilation system. The licensee took immediate action to return CREV to service and entered this issue into the CAP as NCR 578363.

The inspectors determined that the failure of the licensee to have an adequate procedure for installing a jumper on the 2A CREV system was a performance deficiency. The finding was more than minor because it was associated with the configuration control attribute of the Barrier Integrity Cornerstone and affects the cornerstone objective to provide reasonable assurance that physical design barriers (fuel cladding, reactor coolant system, and containment) protect the public from radionuclide releases caused by accidents or events. Specifically, the failure to have an adequate procedure to install a jumper on the 2A CREV system resulted in the safety system functional failure of CREV. Using IMC 0609, Appendix A, issued June 19, 2012, the SDP for Findings At-Power, the inspectors determined the finding screened to a detailed risk evaluation because the finding represented a degradation of the radiological barrier function and smoke or toxic atmosphere function of the control room barrier. The regional SRA performed a Phase 3 analysis on the finding. A screening calculation was performed to estimate the impact the finding would have on the facility for conditions that would lead to plant shutdown, or failure of the filtering function of the ventilation system. The low likelihood of failure to recover the system, combined with the short time the deficiency existed, resulted in a finding of very low safety significance (Green). The finding has a cross-cutting aspect in the area of human performance associated with the work control attribute because the licensee did not appropriately coordinate work activities by incorporating the impact of changes to the work scope or activity on the plant when installing a ring lug jumper on the 2A CREV subsystem. H.3(b)

Inspection Report# : [2013003](#) (*pdf*)

---

## Emergency Preparedness

## Occupational Radiation Safety

---

## Public Radiation Safety

---

## Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the [cover letters](#) to security inspection reports may be viewed.

---

## Miscellaneous

Last modified : February 24, 2014

# Brunswick 1

## 1Q/2014 Plant Inspection Findings

---

### Initiating Events

---

### Mitigating Systems

**Significance:** G Dec 31, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Inadequate Design Control for Required Service Water Flow to the Emergency Diesel Generators**

An NRC-identified Green NCV of 10 CFR Part 50, Appendix B, Criterion III, Design Control, was identified for the failure of the licensee to verify the adequacy of design of the emergency diesel generator (EDG) service water flow. Specifically, from May 1, 1989, until October 28, 2013, Calculation M-89-0008, contained non-conservative values for EDG maximum loading, service water inlet temperatures, and heat exchanger fouling factor, resulting in a non-conservative calculation for required service water flow to the EDG jacket water heat exchanger, which called into question the operability of EDG 3. The licensee re-performed Calculation M-89-0008 and determined EDG 3 was operable. The licensee entered this issue into the corrective action program (CAP) as nuclear condition report (NCR) 592035.

The inspectors determined that the failure of the licensee to have an accurate calculation for required service water flow to the EDG jacket water heat exchanger was a performance deficiency. The finding was more than minor because it was associated with the design control attribute of the Mitigating Systems Cornerstone and adversely affects the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the non-conservative calculation called into question the operability of EDG 3. Using IMC 0609, Appendix A, issued June 19, 2012, the SDP for Findings At-Power, the inspectors determined the finding was of very low safety significance (Green) because the finding did not affect the design or qualification of a mitigating structures, systems, and components (SSC), the finding did not represent a loss of system and/or function, the finding did not represent an actual loss of a function of a single train for greater than the technical specification (TS) allowed outage time, the finding did not represent an actual loss of a function of one or more non-TS trains of equipment, 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 in the area of human performance associated with the resources attribute because the licensee did not have complete, accurate and up-to-date design documentation for EDG service water flow. Specifically, due to the inspector's questions, Calculation M-89-0008 required revision due to non-conservatism in August 2013 and in November 2013. H.2(c)

Inspection Report# : [2013005](#) (*pdf*)

**Significance:** G Dec 31, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Inadequate Procedure to Perform Preventative Maintenance on the Residual Heat Removal Room Coolers**

A self-revealing Green NCV of TS 5.4.1a, Procedures, was identified for the failure of the licensee to have an

adequate procedure for preventative maintenance on the 1B residual heat removal (RHR) room cooler damper limit switch. Specifically, between May 1990 and September 26, 2013, the licensee did not have an adequate preventative maintenance procedure to replace the 1B RHR room cooler damper limit switch and to tighten the paddle arm on the limit switch. This resulted in the failure of the 1B RHR room cooler to start and the inoperability of the 1B RHR train. The licensee replaced the limit switch on the damper, tightened the paddle arm on the limit switch, returned the room cooler to operable, and entered this issue into the CAP as NCR 607986.

The inspectors determined that the failure of the licensee to have an adequate procedure to replace the 1B RHR room cooler limit switch and tighten the limit switch paddle arm was a performance deficiency. The finding was more than minor because it was associated with the equipment performance attribute of the Mitigating Systems Cornerstone and adversely affects the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to replace the limit switch and tighten the limit switch paddle arm resulted in a failure of the cooler fan and damper, and the inoperability of the 1B RHR train. Using IMC 0609, Appendix A, issued June 19, 2012, the SDP for Findings At-Power, the inspectors determined the finding was of very low safety significance (Green) because the finding did not affect the design or qualification of a mitigating SSC, the finding did not represent a loss of system and/or function, the finding did not represent an actual loss of a function of a single train for greater than the TS allowed outage time, the finding did not represent an actual loss of a function of one or more non-TS trains of equipment, and did not screen as potentially risk-significant due to a seismic, flooding, or severe weather initiating event. The finding does not have a cross-cutting aspect since the performance deficiency is not indicative of current plant performance. Vendor Manual QTR155, NAMCO Controls, which required periodic replacement of the limit switch and checking the limit switch for tightness was provided to the licensee in May 1990.

Inspection Report# : [2013005](#) (*pdf*)

**Significance:** TBD Dec 31, 2013

Identified By: NRC

Item Type: AV Apparent Violation

**Failure to Identify and Correct Flood Protection Degradation in Safety-Related Buildings**

The NRC identified an AV of 10 CFR Part 50, Appendix B, Criterion XVI, Corrective Action, with two examples. The first example involved the failure of the licensee to promptly identify and correct conditions adverse to quality associated with flood protection of multiple safety-related buildings. Specifically, the licensee failed to promptly identify or correct safety-related buildings that contained openings that would have adversely impacted their ability to mitigate external flooding of these buildings in the event of a design basis probable maximum hurricane (PMH). The second example involved the failure of the licensee to correct a significant condition adverse to quality. Specifically, the licensee failed to implement a corrective action to preclude repetition by not adequately developing an engineering program to mitigate the consequences of external events (flooding, high winds, and seismic) that ensured appropriate equipment classifications, with interfacing programs of maintenance rule (MR) and zero tolerance for equipment failures.

This resulted in a violation of technical specification (TS) 3.7.2, Service Water (SW) System and Ultimate Heat Sink, and TS 3.5.2, Emergency Core Cooling System (ECCS) – Shutdown, since the inoperability of the required number of service water pumps (SWPs) would violate TS 3.7.2, and TS 3.5.2 since SW cools the residual heat removal (RHR) system heat exchangers.

The inspectors determined the failure to identify and correct the missing and degraded flood barriers in multiple safety-related buildings, and the failure to implement a corrective action to preclude repetition by not developing an engineering program to mitigate the consequences of external events that ensured appropriate equipment classifications, with interfacing programs of MR and zero tolerance for equipment failures, was a performance deficiency. The finding was more than minor because it was associated with the protection against external factors attribute (flood hazard) of the

Mitigating Systems Cornerstone and adversely affects the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, nine of the ten Unit 1 and Unit 2 SWPs would be potentially inoperable and unavailable during specified PMH events. Because the finding involved reactor shutdown operations and conditions, IMC 0609, Appendix G, Shutdown Operations Significance Determination Process (SDP), Attachment 1, issued May 25, 2004, Phase 1 Operational Checklists for Both pressurized water reactors (PWRs) and boiling water reactors (BWRs), was used. The inspectors used Checklist 5, BWR Hot Shutdown: Time to Boil < 2 Hours, and determined the finding increased the likelihood that a loss of decay heat removal (DHR) will occur due to failure of the system itself or support systems, degraded the licensee's ability to cope with a loss of offsite power (LOOP), degraded the licensee's ability to add reactor coolant system (RCS) inventory when needed, and degraded the licensee's ability to establish an alternate core cooling path if DHR could not be re-established for 24 hours. Further, the performance deficiency involved external events. Consequently a Phase 2 analysis could not be performed and the issue screened directly to a Phase 3 analysis. The significance of this issue is "To Be Determined" (TBD) and its final significance will be dispositioned in separate transmittal. The issue is not an immediate safety concern because the licensee has taken appropriate corrective actions. The finding has a cross-cutting aspect in the area of human performance associated with the field presence attribute because deviations from standards and expectations were not corrected promptly, and the licensee did not ensure supervisory and management oversight of work activities, including contractors. Specifically, licensee management failed to ensure degradation associated with flood protection of the safety-related buildings was identified and corrected. [H.2] (Section 1R01.1)

Inspection Report# : [2013010](#) (pdf)

**Significance:** G Dec 31, 2013

Identified By: NRC

Item Type: FIN Finding

**Inadequate Procedures for Inspecting Flood Protection Doors and Performing Functionality Assessments**

An NRC-identified Green finding for the failure to meet the requirements of licensee procedure PRO-NGGC-0201, NGG Procedure Writer's Guide, was identified with two examples. Specifically, the licensee failed to provide an adequate procedure with appropriate acceptance criteria to inspect flood protection doors for leakage and failed to have an adequate procedure to perform functionality assessments which met the requirements specified in Procedure PRO-NGGC-0201. The licensee entered these issues into the corrective action program (CAP) as nuclear condition reports (NCRs) 631303, and 563113 and 580629, respectively.

The inspectors determined that the failure of the licensee to provide an adequate procedure to inspect flood protection doors for leakage and to have an adequate procedure which met the requirements of licensee Procedure PRO-NGGC-0201 to perform functionality assessments was a performance deficiency. The finding is more than minor because it is associated with the protection against external factors (i.e., flood hazard) attribute of the Mitigating Systems Cornerstone and adversely affects 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 flood protection door and flood penetration seals were missing or degraded which could have resulted in a flood pathway into the high pressure coolant injection (HPCI) system room and service water building (SWB) during a PMH. Using IMC 0609, Appendix A, issued June 9, 2012, The SDP for Findings At-Power, the inspectors determined the finding screened to Green because the individual door and penetration seal degradations did not involve the total loss of any safety function, identified by the licensee through a probabilistic risk assessment (PRA), individual plant examination of external events (IPEEE), or similar analysis, that contributes to external event initiated core damage accident sequences (i.e., initiated by a seismic, flooding, or severe weather event). The finding has a cross-cutting aspect in the area of human performance associated with the documentation attribute because the licensee failed to create and maintain complete, accurate and, up-to-date documentation to inspect flood protection doors and perform functionality assessments. [H.7] (Section 1R01.2)

Inspection Report# : [2013010](#) (pdf)

**Significance:** G Dec 31, 2013

Identified By: NRC

Item Type: FIN Finding

**Failure to Perform Functionality Assessments for flood Protection Features**

An NRC-identified Green finding was identified for the failure of the licensee to follow Procedure OPS-NGGC-1305, Operability Determinations, to perform functionality assessments for degraded or non-conforming flood protection features. Specifically, the licensee failed to perform functionality assessments for flood protection features, including EDG building conduit seals and Unit 2 HPCI sump pump failures. The licensee entered these issues into the CAP as NCRs 613354 and 631442.

The inspectors determined the failure to follow Procedure OPS-NGGC-1305, to perform functionality assessments for degraded or non-conforming flood protection features, was a performance deficiency. The finding is more than minor because it is associated with the protection against external factors (i.e., flood hazard) attribute of the Mitigating Systems Cornerstone and adversely affects 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 failure to perform functionality assessments for degraded or non-conforming flood protection features could have resulted in a flood pathway into the HPCI room and EDG building during a PMH. Using IMC 0609, Appendix A, issued June 9, 2012, The SDP for Findings At-Power, the inspectors determined the finding screened to Green because the resulting individual functional assessments did not involve the total loss of any safety function, identified by the licensee through a PRA, IPEEE, or similar analysis, that contributes to external event initiated core damage accident sequences (i.e., initiated by a seismic, flooding, or severe weather event). The finding has a cross-cutting aspect in the area of human performance associated with the procedure adherence attribute because the licensee did not follow processes, procedures, and work instructions. Specifically, the licensee revised Procedure OPS-NGGC-1305 for performing functionality assessments but did not effectively communicate the new procedural requirements to operations personnel such that functionality assessments were performed when required. [H.8] (Section 1R01.3)

Inspection Report# : [2013010](#) (pdf)

**Significance:** N/A Dec 31, 2013

Identified By: NRC

Item Type: AV Apparent Violation

**Failure to Submit a Timely LER for Service Water System Operability**

An NRC-identified AV of 10 CFR 50.73(a)(2)(i)(B) and 10 CFR 50.73(a)(2)(v)(B), was identified for failure of the licensee to provide a written Licensee Event Report (LER) to the NRC within 60 days of identifying a condition which was prohibited by plant TS 3.7.2, SW System and Ultimate Heat Sink, and an event that could have prevented the fulfillment of a safety function of RHR. The licensee's corrective actions included submitting LER 50-325 and 50-324/2013-003-00 on November 14, 2013. The licensee entered this issue into the CAP as NCR 629064.

The inspectors determined the failure of the licensee to provide a written LER to the NRC within 60 days as required by 10 CFR 50.73(a)(2)(i)(B) and 10 CFR 50.73(a)(2)(v)(B) was a performance deficiency. This violation involved a failure to make a required report to the NRC and is considered to impact the regulatory process. Such violations are dispositioned using the traditional enforcement process instead of the SDP. As discussed in the Enforcement Policy, the severity level of a violation involving the failure to make a required report to the NRC will be based upon the significance of and the circumstances surrounding the matter that should have been reported. This issue is being characterized as an AV in accordance with the NRC's Enforcement Policy, and its final significance will be dispositioned in separate future correspondence. Because this violation involves the traditional enforcement process, a cross-cutting aspect is not assigned to this violation. (Section 4OA3.1)

Inspection Report# : [2013010](#) (*pdf*)

**Significance:**  Oct 23, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

**Inadequate Acceptance Criteria for the Class 1E Station Battery Service Capacity Test Procedure**

The team identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion XI, “Test Control,” for the licensee’s failure to incorporate adequate acceptance criteria in the Class 1E station battery service test procedures. This failure to incorporate adequate acceptance criteria was a performance deficiency. The licensee entered this issue into their corrective action program as nuclear condition reports 632998 and 630621. The licensee performed a prompt determination of operability to verify that the batteries would be capable of supplying the necessary voltage to safety-related direct current loads at the required time intervals specified in design bases calculations.

The performance deficiency was determined to be more than minor because it was associated with the Design Control attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, using an acceptance criterion of 105 volts direct current during the service test could result in incorrectly declaring a Class 1E station battery operable when greater terminal voltages, as specified in design bases calculations, were necessary for safety-related equipment to operate during the first minute of a design basis accident. The team determined the finding to be of very low safety significance (Green) because the finding was a deficiency affecting the design or qualification of a mitigating structure, system, or component which maintained its operability or functionality. The team determined that no cross-cutting aspect was applicable because the finding was not indicative of current licensee performance.

Inspection Report# : [2013007](#) (*pdf*)

**Significance:**  Oct 23, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

**Inadequate DC System Calculations – Three Examples**

The team identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, “Design Control,” with three examples, for the licensee’s failure to properly incorporate the design and licensing bases for the 125 volt direct current system into design calculations. This failure to properly incorporate the design and licensing bases for the 125 volts direct current system into design calculations was a performance deficiency. The licensee entered these issues into their corrective action program as nuclear condition reports 632998, 630621, 633538, and 633889. The licensee conducted a combination of prompt determinations of operability and engineering evaluations which provided reasonable expectation of operability of the direct current system pending final resolution.

The performance deficiency was determined to be more than minor because it was associated with the Design Control attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, there was reasonable doubt as to whether direct current system components would have adequate voltage to operate during design basis accidents. The team determined the finding to be of very low safety significance (Green) because the finding was a deficiency affecting the design or qualification of a mitigating structure, system, or component which maintained its operability or functionality. The team determined that no cross-cutting aspect was applicable because the finding was not indicative of current licensee performance.

Inspection Report# : [2013007](#) (*pdf*)

**Significance:**  Oct 23, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Verify Adequacy of the Service Water Intake Structure Ventilation System**

The team identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the licensee's failure to verify the adequacy of the service water intake structure ventilation design through calculational methods. This failure to verify the adequacy of the service water intake structure ventilation design was a performance deficiency. The licensee entered this issue into their corrective action program as nuclear condition report 627708. The licensee performed a prompt determination of operability and implemented a number of compensatory actions to ensure safety-related components in the intake structure would not fail under the worst case high temperature conditions.

The performance deficiency was determined to be more than minor because it was associated with the Design Control attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, there was reasonable doubt as to whether safety-related components in the service water intake structure would be operable under design temperatures. The team determined the finding to be of very low safety significance (Green) because the finding was a deficiency affecting the design or qualification of a mitigating structure, system, or component which maintained its operability or functionality. The team determined that no cross-cutting aspect was applicable because the finding was not indicative of current licensee performance.

Inspection Report# : [2013007](#) (*pdf*)

**Significance:**  Oct 23, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Scope Safety-related Components in the Maintenance Rule Program**

The team identified a non-cited violation of 10 CFR 50.65(b)(1), for the licensee's failure to scope the safety-related service water intake structure exhaust fan dampers into the Maintenance Rule program. This failure to scope safety-related service water intake structure exhaust fan dampers was a performance deficiency. The licensee entered this issue into their corrective action program as nuclear condition reports 630922, 627708, 630553, and 630993. The licensee has subsequently implemented corrective actions to include the dampers within the scope of the Maintenance Rule program.

The performance deficiency was determined to be more than minor because it was associated with the Equipment Performance attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective of ensuring availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, numerous dampers were found in degraded conditions such that effective control of performance or condition through appropriate preventive maintenance under 10CFR 50.65(a)(2) could not be demonstrated. The team determined the finding to be of very low safety significance (Green) because the finding did not result in an actual loss of function of at least a single service water system train for greater than its technical specifications allowed outage time. The team determined that no cross-cutting aspect was applicable because the finding was not indicative of current licensee performance.

Inspection Report# : [2013007](#) (*pdf*)

**Significance:**  Oct 23, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Follow Plant Procedure Directing the Performance of Preventive Maintenance on Safety-related**

## Dampers

The team identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” for the licensee’s failure to follow plant procedures specifying requirements for preventive maintenance of safety-related dampers. This failure to follow plant procedures was a performance deficiency. The licensee entered this issue into their corrective action program as nuclear condition reports 631376, 628132, 633710, and 631711. The licensee performed an immediate determination of operability to verify the as-found condition of the dampers did not affect operability of equipment inside the diesel generator building and implemented corrective actions to complete the missed preventive maintenance on the dampers.

The performance deficiency was determined to be more than minor because it was associated with the Equipment Performance attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective of ensuring availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the programmatic failure to perform preventive maintenance on the nine dampers resulted in decreased availability and reliability of the dampers such that multiple dampers were found in degraded conditions. The team determined the finding to be of very low safety significance (Green) because the finding did not result in an actual loss of function of at least a single emergency diesel generator for greater than its technical specifications allowed outage time. The team determined that this finding was associated with the cross-cutting aspect of Supervisory Oversight in the Work Practices component of the Human Performance area because Brunswick supervisors did not enforce the scheduled preventive maintenance nor did they ensure a justification for not performing preventive maintenance on safety-related components. [H.4(c)]

Inspection Report# : [2013007](#) (*pdf*)

**G**

**Significance:** Sep 30, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to identify and correct nuclear service water pump shaft degradation**

An NRC identified Green non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion XVI, Corrective Action, was identified for the failure of the licensee to identify and correct a condition adverse to quality (CAQ) on the 1B nuclear service water pump (NSWP). Specifically, between June 26, 2012, and January 12, 2013, the licensee failed to identify or correct the pump shaft degradation on the 1B Nuclear Service Water Pump (NSWP) pump. This resulted in the shaft bearing delaminating and bearing material becoming dislodged and trapped in the pump strainer which caused the 1B NSWP to become inoperable. The licensee replaced the pump shaft and returned the pump to operable. The licensee entered this issue into the corrective action program (CAP) as nuclear condition report (NCR) 582584.

The inspectors determined that the failure of the licensee to identify and correct the 1B NSWP shaft degradation before the pump failed was a performance deficiency. The finding was more than minor because it was associated with the equipment performance attribute of the Mitigating Systems Cornerstone and affects the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the shaft degradation resulted in the 1B NSWP being inoperable. Using IMC 0609, Appendix A, issued June 19, 2012, the SDP for Findings At-Power, the inspectors determined the finding was of very low safety significance (Green) because the finding did not affect the design or qualification of a mitigating structure, system and component (SSC), the finding did not represent a loss of system and/or function, the finding did not represent an actual loss of a function of a single train for greater than the technical specifications (TS) allowed outage time, the finding did not represent an actual loss of a function of one or more non-TS trains of equipment, 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 in the area of problem identification and resolution associated with the CAP attribute because the licensee failed to implement a CAP with a low threshold for identifying issues, specifically the licensee did not enter this issue into the CAP in June 2012. [P.1(a)] (Section 1R15)

Inspection Report# : [2013004](#) (*pdf*)

**Significance:** G Sep 30, 2013

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

**Inadequate preventative maintenance procedure for the service water pump breakers**

A self-revealing Green NCV of 10 CFR 50, Appendix B, Criterion V, Instructions, Procedures, and Drawings, was identified for the failure of the licensee to have an adequate preventative maintenance procedure for the service water pump breakers. Specifically, from December 1, 2004, through the end of this inspection period (September 30, 2013), the licensee failed to have an adequate preventative maintenance procedure to ensure the 52S mechanism was securely bolted to the breaker for the 2C conventional service water pump (CSWP). This resulted in both discharge valves failing to open when the 2C CSWP was started, and the inoperability of the 2C CSWP. The licensee securely bolted and tightened the 52S mechanism to the breaker. The licensee entered this issue into the CAP as NCR 604452.

The inspectors determined the failure to have an adequate preventative maintenance procedure for the service water pump breakers was a performance deficiency. The finding was more than minor because it was associated with the configuration control attribute of the Mitigating Systems Cornerstone and affects the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to ensure the 52S mechanism was securely bolted to the 2C CSWP breaker resulted in the failure of both 2C CSWP discharge valves to open. Using IMC 0609, Appendix A, issued June 19, 2012, the SDP for Findings At-Power, the inspectors determined the finding was of very low safety significance (Green) because the finding did not affect the design or qualification of a mitigating SSC, the finding did not represent a loss of system and/or function, the finding did not represent an actual loss of a function of a single train for greater than the TS allowed outage time, the finding did not represent an actual loss of a function of one or more non-TS trains of equipment, and did not screen as potentially risk-significant due to a seismic, flooding, or severe weather initiating event. The finding does not have a cross-cutting aspect since the performance deficiency is not indicative of current plant performance. The 2C CSWP breaker was refurbished in December 2004 and installed in the plant in January 2005. (Section 1R19)

Inspection Report# : [2013004](#) (pdf)

**Significance:** G Jun 30, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Have Adequate Installation and Testing Instructions for the EDG Overspeed Boost Cylinder.**

An NRC-identified Green NCV of 10 CFR 50, Appendix B, Criterion V, Instructions, Procedures, and Drawings, was identified for the failure of the licensee to have adequate installation and testing instructions for the EDG control oil system overspeed boost cylinder and accomplish the installation and testing in accordance with these instructions. The licensee replaced the boost cylinder and returned the EDG to operable. The licensee entered this issue into the corrective action program (CAP) as nuclear condition report (NCR) 567016.

The inspectors determined that the failure to properly install the EDG 3 overspeed boost cylinder and properly test the boost cylinder, to ensure the boost cylinder can perform its design basis function, was a performance deficiency. The finding was more than minor because it was associated with the design control attribute of the Mitigating Systems Cornerstone and affects the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to correctly install and test the EDG 3 overspeed boost cylinder resulted in the failure of EDG 3 to start and EDG 3 being declared inoperable on October 14, 2012. Using IMC 0609, Appendix A, issued June 19, 2012, the SDP for Findings At-Power, the inspectors determined the finding was of very low safety significance (Green) because the finding did not affect the design or qualification of a mitigating SSC, the finding did not represent a loss of system and/or function, the finding did not represent an actual loss of a function of a single train for greater than the TS allowed outage time, the finding

did not represent an actual loss of a function of one or more non-TS trains of equipment, 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 in the area of human performance associated with the resources attribute because the licensee did not have complete, accurate and up-to-date design documentation, procedures, and work packages to install and test the EDG 3 overspeed boost cylinder. H.2(c)

Inspection Report# : [2013003](#) (*pdf*)

**Significance:**  Jun 30, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Adequately Lubricate the 1B Residual Heat Removal Cooler Damper**

• An NRC-identified Green NCV of TS 5.4.1a, Procedures, was identified for the failure of the licensee to follow the procedure to properly lubricate the 1B RHR room cooler damper. The licensee lubricated the damper and returned the room cooler to operable, and entered this issue into the CAP as NCR 607514.

The inspectors determined that the failure of the licensee to properly lubricate the 1B RHR room cooler damper in accordance with Procedure 0PM DMP500 was a performance deficiency. The finding was more than minor because it was associated with the human performance attribute of the Mitigating Systems Cornerstone and affects the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to lubricate the 1B RHR room cooler damper resulted in a failure of the cooler fan and damper, and the inoperability of the 1B RHR train. Using IMC 0609, Appendix A, issued June 19, 2012, the SDP for Findings At-Power, the inspectors determined the finding was of very low safety significance (Green) because the finding did not affect the design or qualification of a mitigating SSC, the finding did not represent a loss of system and/or function, the finding did not represent an actual loss of a function of a single train for greater than the TS allowed outage time, the finding did not represent an actual loss of a function of one or more non-TS trains of equipment, 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 in the area of human performance associated with the work practices attribute because the licensee did not define and effectively communicate expectations regarding procedural compliance to Procedure 0PM-DMP500 and personnel did not follow this procedure. H.4(b)

Inspection Report# : [2013003](#) (*pdf*)

**Significance:**  Jun 30, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

**Inadequate Design Control for Allowable Jacket Water Leak Rate**

An NRC-identified Green NCV of 10 CFR 50, Appendix B, Criterion III, Design Control, was identified for the failure of the licensee to verify the adequacy of the design acceptance criteria for jacket water leakage to ensure EDG 3 could meet the design basis mission time of seven days. The licensee's corrective actions include developing a plan to fill the EDG jacket water system to ensure operation of the EDG for seven days. The licensee entered this issue into the CAP as NCR 615491.

The inspectors determined that the failure to ensure sufficient jacket water to the EDGs, with a jacket water leak, for the seven-day mission time, was a performance deficiency. The violation is more than minor because it is associated with the design control attribute of the Mitigating Systems Cornerstone and affects the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the calculational error assuming a four-day mission time versus a seven-day mission time results in a condition where there was reasonable doubt on the capability of an EDG when a jacket water leak exists.

Using IMC 0609, Appendix A, issued June 19, 2012, the SDP for Findings At-Power, the inspectors determined the finding screened to a detailed risk evaluation because the finding represented an actual loss of function of at least a single Train of EDG for greater than the TS Allowed Outage time. The regional SRA performed a Phase 3 analysis on the finding. The time to failure of the EDG due to the leak precluded any internal risk impact, since it exceeded 24 hours to failure. A screening calculation was performed to estimate the impact the finding would have on an extended loss of offsite power from seismic or external flooding. The low likelihood of the seismic or external flood event occurring, combined with the short time the deficiency existed, resulted in a finding of very low safety significance (Green). The finding does not have a cross-cutting aspect since the performance deficiency is not indicative of current plant performance. Engineering evaluation was performed on July 7, 2004.

Inspection Report# : [2013003](#) (*pdf*)

---

## Barrier Integrity

**Significance:** G Jun 30, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

### **Inadequate Work Order to Perform a Modification to the Control Room Emergency Ventilation System**

An NRC-identified Green non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, Instructions, Procedures, and Drawings, was identified, for the licensee's failure to have an adequate instruction or procedure to perform a modification to the control room emergency ventilation system. The licensee took immediate action to return CREV to service and entered this issue into the CAP as NCR 578363.

The inspectors determined that the failure of the licensee to have an adequate procedure for installing a jumper on the 2A CREV system was a performance deficiency. The finding was more than minor because it was associated with the configuration control attribute of the Barrier Integrity Cornerstone and affects the cornerstone objective to provide reasonable assurance that physical design barriers (fuel cladding, reactor coolant system, and containment) protect the public from radionuclide releases caused by accidents or events. Specifically, the failure to have an adequate procedure to install a jumper on the 2A CREV system resulted in the safety system functional failure of CREV. Using IMC 0609, Appendix A, issued June 19, 2012, the SDP for Findings At-Power, the inspectors determined the finding screened to a detailed risk evaluation because the finding represented a degradation of the radiological barrier function and smoke or toxic atmosphere function of the control room barrier. The regional SRA performed a Phase 3 analysis on the finding. A screening calculation was performed to estimate the impact the finding would have on the facility for conditions that would lead to plant shutdown, or failure of the filtering function of the ventilation system. The low likelihood of failure to recover the system, combined with the short time the deficiency existed, resulted in a finding of very low safety significance (Green). The finding has a cross-cutting aspect in the area of human performance associated with the work control attribute because the licensee did not appropriately coordinate work activities by incorporating the impact of changes to the work scope or activity on the plant when installing a ring lug jumper on the 2A CREV subsystem. H.3(b)

Inspection Report# : [2013003](#) (*pdf*)

---

## Emergency Preparedness

---

## Occupational Radiation Safety

---

## Public Radiation Safety

---

## Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the [cover letters](#) to security inspection reports may be viewed.

---

## Miscellaneous

Last modified : May 30, 2014

# Brunswick 1

## 2Q/2014 Plant Inspection Findings

---

### Initiating Events

---

### Mitigating Systems

**Significance:**  Jun 30, 2014

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Failure to Include Flood Protection Features in the Maintenance Rule Program**

An NRC-identified Green non-cited violation (NCV) of 10 CFR 50.65(b)(2)(ii) was identified for the failure of the licensee to scope flood protection features in the maintenance rule (MR) program. Specifically, from July 10, 1996, to May 8, 2014, the licensee failed to include floor drain flood protection features in the MR program that are nonsafety-related but whose failure could prevent safety-related structures, systems, and components (SSCs) from fulfilling their safety-related function. The licensee's corrective actions included scoping the floor drains into the MR program. The licensee entered this issue into the corrective action program (CAP) as nuclear condition report (NCR) 677850.

The inspectors determined that the failure of the licensee to monitor flood protection features in the MR program, as required by 10 CFR 50.65(b)(2)(ii), was a performance deficiency. The finding is more than minor because it is associated with the protection against external factors (i.e. flood hazard) attribute of the Mitigating Systems Cornerstone and adversely affects the cornerstone objective of ensuring the availability, reliability, and capability of the safety related systems to respond to initiating events to prevent undesirable consequences. Specifically, the finding is more than minor because failing to monitor flood protection features resulted in degradation of various flood protection features which could have impacted safety-related equipment. Using IMC 0609, Appendix A, issued June 9, 2012, The SDP for Findings At-Power, Exhibit 2, the inspectors determined the finding is of very low safety significance (Green) because it did not represent an actual loss of function of one or more non-TS trains of equipment designated as high safety-significant in accordance with the licensee's maintenance rule program for greater than 24 hours. The finding has a cross-cutting aspect in the area of problem identification and resolution associated with the resolution attribute because the organization failed to take effective corrective actions to address issues in a timely manner commensurate with their safety significance. Specifically, the licensee failed to scope the credited flood protection floor drains into the MR program. [P.3]

Inspection Report# : [2014003](#) (*pdf*)

**Significance:**  Dec 31, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Inadequate Design Control for Required Service Water Flow to the Emergency Diesel Generators**

An NRC-identified Green NCV of 10 CFR Part 50, Appendix B, Criterion III, Design Control, was identified for the failure of the licensee to verify the adequacy of design of the emergency diesel generator (EDG) service water flow. Specifically, from May 1, 1989, until October 28, 2013, Calculation M-89-0008, contained non-conservative values for EDG maximum loading, service water inlet temperatures, and heat exchanger fouling factor, resulting in a non-

conservative calculation for required service water flow to the EDG jacket water heat exchanger, which called into question the operability of EDG 3. The licensee re-performed Calculation M-89-0008 and determined EDG 3 was operable. The licensee entered this issue into the corrective action program (CAP) as nuclear condition report (NCR) 592035.

The inspectors determined that the failure of the licensee to have an accurate calculation for required service water flow to the EDG jacket water heat exchanger was a performance deficiency. The finding was more than minor because it was associated with the design control attribute of the Mitigating Systems Cornerstone and adversely affects the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the non-conservative calculation called into question the operability of EDG 3. Using IMC 0609, Appendix A, issued June 19, 2012, the SDP for Findings At-Power, the inspectors determined the finding was of very low safety significance (Green) because the finding did not affect the design or qualification of a mitigating structures, systems, and components (SSC), the finding did not represent a loss of system and/or function, the finding did not represent an actual loss of a function of a single train for greater than the technical specification (TS) allowed outage time, the finding did not represent an actual loss of a function of one or more non-TS trains of equipment, 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 in the area of human performance associated with the resources attribute because the licensee did not have complete, accurate and up-to-date design documentation for EDG service water flow. Specifically, due to the inspector's questions, Calculation M-89-0008 required revision due to non-conservatism in August 2013 and in November 2013. H.2(c)

Inspection Report# : [2013005](#) (*pdf*)

**Significance:**  Dec 31, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

**Inadequate Procedure to Perform Preventative Maintenance on the Residual Heat Removal Room Coolers**

A self-revealing Green NCV of TS 5.4.1a, Procedures, was identified for the failure of the licensee to have an adequate procedure for preventative maintenance on the 1B residual heat removal (RHR) room cooler damper limit switch. Specifically, between May 1990 and September 26, 2013, the licensee did not have an adequate preventative maintenance procedure to replace the 1B RHR room cooler damper limit switch and to tighten the paddle arm on the limit switch. This resulted in the failure of the 1B RHR room cooler to start and the inoperability of the 1B RHR train. The licensee replaced the limit switch on the damper, tightened the paddle arm on the limit switch, returned the room cooler to operable, and entered this issue into the CAP as NCR 607986.

The inspectors determined that the failure of the licensee to have an adequate procedure to replace the 1B RHR room cooler limit switch and tighten the limit switch paddle arm was a performance deficiency. The finding was more than minor because it was associated with the equipment performance attribute of the Mitigating Systems Cornerstone and adversely affects the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to replace the limit switch and tighten the limit switch paddle arm resulted in a failure of the cooler fan and damper, and the inoperability of the 1B RHR train. Using IMC 0609, Appendix A, issued June 19, 2012, the SDP for Findings At-Power, the inspectors determined the finding was of very low safety significance (Green) because the finding did not affect the design or qualification of a mitigating SSC, the finding did not represent a loss of system and/or function, the finding did not represent an actual loss of a function of a single train for greater than the TS allowed outage time, the finding did not represent an actual loss of a function of one or more non-TS trains of equipment, and did not screen as potentially risk-significant due to a seismic, flooding, or severe weather initiating event. The finding does not have a cross-cutting aspect since the performance deficiency is not indicative of current plant performance. Vendor Manual QTR155, NAMCO Controls, which required periodic replacement of the limit switch and checking the limit switch for tightness was provided to the licensee in May 1990.

Inspection Report# : [2013005](#) (pdf)

**Significance:** G Dec 31, 2013

Identified By: NRC

Item Type: VIO Violation

### **Failure to Identify and Correct Flood Protection Degradation in Safety-Related Buildings**

The NRC identified an AV of 10 CFR Part 50, Appendix B, Criterion XVI, Corrective Action, with two examples. The first example involved the failure of the licensee to promptly identify and correct conditions adverse to quality associated with flood protection of multiple safety-related buildings. Specifically, the licensee failed to promptly identify or correct safety-related buildings that contained openings that would have adversely impacted their ability to mitigate external flooding of these buildings in the event of a design basis probable maximum hurricane (PMH). The second example involved the failure of the licensee to correct a significant condition adverse to quality. Specifically, the licensee failed to implement a corrective action to preclude repetition by not adequately developing an engineering program to mitigate the consequences of external events (flooding, high winds, and seismic) that ensured appropriate equipment classifications, with interfacing programs of maintenance rule (MR) and zero tolerance for equipment failures.

This resulted in a violation of technical specification (TS) 3.7.2, Service Water (SW) System and Ultimate Heat Sink, and TS 3.5.2, Emergency Core Cooling System (ECCS) – Shutdown, since the inoperability of the required number of service water pumps (SWPs) would violate TS 3.7.2, and TS 3.5.2 since SW cools the residual heat removal (RHR) system heat exchangers.

The inspectors determined the failure to identify and correct the missing and degraded flood barriers in multiple safety-related buildings, and the failure to implement a corrective action to preclude repetition by not developing an engineering program to mitigate the consequences of external events that ensured appropriate equipment classifications, with interfacing programs of MR and zero tolerance for equipment failures, was a performance deficiency. The finding was more than minor because it was associated with the protection against external factors attribute (flood hazard) of the

Mitigating Systems Cornerstone and adversely affects the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, nine of the ten Unit 1 and Unit 2 SWPs would be potentially inoperable and unavailable during specified PMH events. Because the finding involved reactor shutdown operations and conditions, IMC 0609, Appendix G, Shutdown Operations Significance Determination Process (SDP), Attachment 1, issued May 25, 2004, Phase 1 Operational Checklists for Both pressurized water reactors (PWRs) and boiling water reactors (BWRs), was used. The inspectors used Checklist 5, BWR Hot Shutdown: Time to Boil < 2 Hours, and determined the finding increased the likelihood that a loss of decay heat removal (DHR) will occur due to failure of the system itself or support systems, degraded the licensee's ability to cope with a loss of offsite power (LOOP), degraded the licensee's ability to add reactor coolant system (RCS) inventory when needed, and degraded the licensee's ability to establish an alternate core cooling path if DHR could not be re-established for 24 hours. Further, the performance deficiency involved external events. Consequently a Phase 2 analysis could not be performed and the issue screened directly to a Phase 3 analysis. The significance of this issue is "To Be Determined" (TBD) and its final significance will be dispositioned in separate transmittal. The issue is not an immediate safety concern because the licensee has taken appropriate corrective actions. The finding has a cross-cutting aspect in the area of human performance associated with the field presence attribute because deviations from standards and expectations were not corrected promptly, and the licensee did not ensure supervisory and management oversight of work activities, including contractors. Specifically, licensee management failed to ensure degradation associated with flood protection of the safety-related buildings was identified and corrected. [H.2] (Section 1R01.1)

Inspection Report# : [2013010](#) (pdf)

Inspection Report# : [2014011](#) (*pdf*)

**Significance:** G Dec 31, 2013

Identified By: NRC

Item Type: FIN Finding

**Inadequate Procedures for Inspecting Flood Protection Doors and Performing Functionality Assessments**

An NRC-identified Green finding for the failure to meet the requirements of licensee procedure PRO-NGGC-0201, NGG Procedure Writer's Guide, was identified with two examples. Specifically, the licensee failed to provide an adequate procedure with appropriate acceptance criteria to inspect flood protection doors for leakage and failed to have an adequate procedure to perform functionality assessments which met the requirements specified in Procedure PRO-NGGC-0201. The licensee entered these issues into the corrective action program (CAP) as nuclear condition reports (NCRs) 631303, and 563113 and 580629, respectively.

The inspectors determined that the failure of the licensee to provide an adequate procedure to inspect flood protection doors for leakage and to have an adequate procedure which met the requirements of licensee Procedure PRO-NGGC-0201 to perform functionality assessments was a performance deficiency. The finding is more than minor because it is associated with the protection against external factors (i.e., flood hazard) attribute of the Mitigating Systems Cornerstone and adversely affects 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 flood protection door and flood penetration seals were missing or degraded which could have resulted in a flood pathway into the high pressure coolant injection (HPCI) system room and service water building (SWB) during a PMH. Using IMC 0609, Appendix A, issued June 9, 2012, The SDP for Findings At-Power, the inspectors determined the finding screened to Green because the individual door and penetration seal degradations did not involve the total loss of any safety function, identified by the licensee through a probabilistic risk assessment (PRA), individual plant examination of external events (IPEEE), or similar analysis, that contributes to external event initiated core damage accident sequences (i.e., initiated by a seismic, flooding, or severe weather event). The finding has a cross-cutting aspect in the area of human performance associated with the documentation attribute because the licensee failed to create and maintain complete, accurate and, up-to-date documentation to inspect flood protection doors and perform functionality assessments. [H.7] (Section 1R01.2)

Inspection Report# : [2013010](#) (*pdf*)

**Significance:** G Dec 31, 2013

Identified By: NRC

Item Type: FIN Finding

**Failure to Perform Functionality Assessments for flood Protection Features**

An NRC-identified Green finding was identified for the failure of the licensee to follow Procedure OPS-NGGC-1305, Operability Determinations, to perform functionality assessments for degraded or non-conforming flood protection features. Specifically, the licensee failed to perform functionality assessments for flood protection features, including EDG building conduit seals and Unit 2 HPCI sump pump failures. The licensee entered these issues into the CAP as NCRs 613354 and 631442.

The inspectors determined the failure to follow Procedure OPS-NGGC-1305, to perform functionality assessments for degraded or non-conforming flood protection features, was a performance deficiency. The finding is more than minor because it is associated with the protection against external factors (i.e., flood hazard) attribute of the Mitigating Systems Cornerstone and adversely affects 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 failure to perform functionality assessments for degraded or non-conforming flood protection features could have resulted in a flood pathway into the HPCI room and EDG building during a PMH. Using IMC

0609, Appendix A, issued June 9, 2012, The SDP for Findings At-Power, the inspectors determined the finding screened to Green because the resulting individual functional assessments did not involve the total loss of any safety function, identified by the licensee through a PRA, IPEEE, or similar analysis, that contributes to external event initiated core damage accident sequences (i.e., initiated by a seismic, flooding, or severe weather event). The finding has a cross-cutting aspect in the area of human performance associated with the procedure adherence attribute because the licensee did not follow processes, procedures, and work instructions. Specifically, the licensee revised Procedure OPS-NGGC-1305 for performing functionality assessments but did not effectively communicate the new procedural requirements to operations personnel such that functionality assessments were performed when required. [H.8] (Section 1R01.3)

Inspection Report# : [2013010](#) (*pdf*)

**Significance:**  Oct 23, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

**Inadequate Acceptance Criteria for the Class 1E Station Battery Service Capacity Test Procedure**

The team identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion XI, “Test Control,” for the licensee’s failure to incorporate adequate acceptance criteria in the Class 1E station battery service test procedures. This failure to incorporate adequate acceptance criteria was a performance deficiency. The licensee entered this issue into their corrective action program as nuclear condition reports 632998 and 630621. The licensee performed a prompt determination of operability to verify that the batteries would be capable of supplying the necessary voltage to safety-related direct current loads at the required time intervals specified in design bases calculations.

The performance deficiency was determined to be more than minor because it was associated with the Design Control attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, using an acceptance criterion of 105 volts direct current during the service test could result in incorrectly declaring a Class 1E station battery operable when greater terminal voltages, as specified in design bases calculations, were necessary for safety-related equipment to operate during the first minute of a design basis accident. The team determined the finding to be of very low safety significance (Green) because the finding was a deficiency affecting the design or qualification of a mitigating structure, system, or component which maintained its operability or functionality. The team determined that no cross-cutting aspect was applicable because the finding was not indicative of current licensee performance.

Inspection Report# : [2013007](#) (*pdf*)

**Significance:**  Oct 23, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

**Inadequate DC System Calculations – Three Examples**

The team identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, “Design Control,” with three examples, for the licensee’s failure to properly incorporate the design and licensing bases for the 125 volt direct current system into design calculations. This failure to properly incorporate the design and licensing bases for the 125 volts direct current system into design calculations was a performance deficiency. The licensee entered these issues into their corrective action program as nuclear condition reports 632998, 630621, 633538, and 633889. The licensee conducted a combination of prompt determinations of operability and engineering evaluations which provided reasonable expectation of operability of the direct current system pending final resolution.

The performance deficiency was determined to be more than minor because it was associated with the Design Control attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective of ensuring the

availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, there was reasonable doubt as to whether direct current system components would have adequate voltage to operate during design basis accidents. The team determined the finding to be of very low safety significance (Green) because the finding was a deficiency affecting the design or qualification of a mitigating structure, system, or component which maintained its operability or functionality. The team determined that no cross-cutting aspect was applicable because the finding was not indicative of current licensee performance.

Inspection Report# : [2013007](#) (*pdf*)

**Significance:**  Oct 23, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Failure to Verify Adequacy of the Service Water Intake Structure Ventilation System**

The team identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, “Design Control,” for the licensee’s failure to verify the adequacy of the service water intake structure ventilation design through calculational methods. This failure to verify the adequacy of the service water intake structure ventilation design was a performance deficiency. The licensee entered this issue into their corrective action program as nuclear condition report 627708. The licensee performed a prompt determination of operability and implemented a number of compensatory actions to ensure safety-related components in the intake structure would not fail under the worst case high temperature conditions.

The performance deficiency was determined to be more than minor because it was associated with the Design Control attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, there was reasonable doubt as to whether safety-related components in the service water intake structure would be operable under design temperatures. The team determined the finding to be of very low safety significance (Green) because the finding was a deficiency affecting the design or qualification of a mitigating structure, system, or component which maintained its operability or functionality. The team determined that no cross-cutting aspect was applicable because the finding was not indicative of current licensee performance.

Inspection Report# : [2013007](#) (*pdf*)

**Significance:**  Oct 23, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Failure to Scope Safety-related Components in the Maintenance Rule Program**

The team identified a non-cited violation of 10 CFR 50.65(b)(1), for the licensee’s failure to scope the safety-related service water intake structure exhaust fan dampers into the Maintenance Rule program. This failure to scope safety-related service water intake structure exhaust fan dampers was a performance deficiency. The licensee entered this issue into their corrective action program as nuclear condition reports 630922, 627708, 630553, and 630993. The licensee has subsequently implemented corrective actions to include the dampers within the scope of the Maintenance Rule program.

The performance deficiency was determined to be more than minor because it was associated with the Equipment Performance attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective of ensuring availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, numerous dampers were found in degraded conditions such that effective control of performance or condition through appropriate preventive maintenance under 10CFR 50.65(a)(2) could not be demonstrated. The team determined the finding to be of very low safety significance (Green) because the finding did not result in an actual loss of function of at least a single service water system train for greater than its technical specifications allowed outage time. The team determined that no cross-cutting aspect was applicable because the

finding was not indicative of current licensee performance.

Inspection Report# : [2013007](#) (*pdf*)

**Significance:**  Oct 23, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Follow Plant Procedure Directing the Performance of Preventive Maintenance on Safety-related Dampers**

The team identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for the licensee's failure to follow plant procedures specifying requirements for preventive maintenance of safety-related dampers. This failure to follow plant procedures was a performance deficiency. The licensee entered this issue into their corrective action program as nuclear condition reports 631376, 628132, 633710, and 631711. The licensee performed an immediate determination of operability to verify the as-found condition of the dampers did not affect operability of equipment inside the diesel generator building and implemented corrective actions to complete the missed preventive maintenance on the dampers.

The performance deficiency was determined to be more than minor because it was associated with the Equipment Performance attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective of ensuring availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the programmatic failure to perform preventive maintenance on the nine dampers resulted in decreased availability and reliability of the dampers such that multiple dampers were found in degraded conditions. The team determined the finding to be of very low safety significance (Green) because the finding did not result in an actual loss of function of at least a single emergency diesel generator for greater than its technical specifications allowed outage time. The team determined that this finding was associated with the cross-cutting aspect of Supervisory Oversight in the Work Practices component of the Human Performance area because Brunswick supervisors did not enforce the scheduled preventive maintenance nor did they ensure a justification for not performing preventive maintenance on safety-related components. [H.4(c)]

Inspection Report# : [2013007](#) (*pdf*)

**Significance:**  Sep 30, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to identify and correct nuclear service water pump shaft degradation**

An NRC identified Green non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion XVI, Corrective Action, was identified for the failure of the licensee to identify and correct a condition adverse to quality (CAQ) on the 1B nuclear service water pump (NSWP). Specifically, between June 26, 2012, and January 12, 2013, the licensee failed to identify or correct the pump shaft degradation on the 1B Nuclear Service Water Pump (NSWP) pump. This resulted in the shaft bearing delaminating and bearing material becoming dislodged and trapped in the pump strainer which caused the 1B NSWP to become inoperable. The licensee replaced the pump shaft and returned the pump to operable. The licensee entered this issue into the corrective action program (CAP) as nuclear condition report (NCR) 582584.

The inspectors determined that the failure of the licensee to identify and correct the 1B NSWP shaft degradation before the pump failed was a performance deficiency. The finding was more than minor because it was associated with the equipment performance attribute of the Mitigating Systems Cornerstone and affects the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the shaft degradation resulted in the 1B NSWP being inoperable. Using IMC 0609, Appendix A, issued June 19, 2012, the SDP for Findings At-Power, the inspectors determined the finding was of very low safety significance (Green) because the finding did not affect the design or qualification of a mitigating structure, system and component (SSC), the finding did not represent a loss of system and/or function, the finding did not

represent an actual loss of a function of a single train for greater than the technical specifications (TS) allowed outage time, the finding did not represent an actual loss of a function of one or more non-TS trains of equipment, 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 in the area of problem identification and resolution associated with the CAP attribute because the licensee failed to implement a CAP with a low threshold for identifying issues, specifically the licensee did not enter this issue into the CAP in June 2012. [P.1(a)] (Section 1R15)

Inspection Report# : [2013004](#) (pdf)

**Significance:**  Sep 30, 2013

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

**Inadequate preventative maintenance procedure for the service water pump breakers**

A self-revealing Green NCV of 10 CFR 50, Appendix B, Criterion V, Instructions, Procedures, and Drawings, was identified for the failure of the licensee to have an adequate preventative maintenance procedure for the service water pump breakers. Specifically, from December 1, 2004, through the end of this inspection period (September 30, 2013), the licensee failed to have an adequate preventative maintenance procedure to ensure the 52S mechanism was securely bolted to the breaker for the 2C conventional service water pump (CSWP). This resulted in both discharge valves failing to open when the 2C CSWP was started, and the inoperability of the 2C CSWP. The licensee securely bolted and tightened the 52S mechanism to the breaker. The licensee entered this issue into the CAP as NCR 604452.

The inspectors determined the failure to have an adequate preventative maintenance procedure for the service water pump breakers was a performance deficiency. The finding was more than minor because it was associated with the configuration control attribute of the Mitigating Systems Cornerstone and affects the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to ensure the 52S mechanism was securely bolted to the 2C CSWP breaker resulted in the failure of both 2C CSWP discharge valves to open. Using IMC 0609, Appendix A, issued June 19, 2012, the SDP for Findings At-Power, the inspectors determined the finding was of very low safety significance (Green) because the finding did not affect the design or qualification of a mitigating SSC, the finding did not represent a loss of system and/or function, the finding did not represent an actual loss of a function of a single train for greater than the TS allowed outage time, the finding did not represent an actual loss of a function of one or more non-TS trains of equipment, and did not screen as potentially risk-significant due to a seismic, flooding, or severe weather initiating event. The finding does not have a cross-cutting aspect since the performance deficiency is not indicative of current plant performance. The 2C CSWP breaker was refurbished in December 2004 and installed in the plant in January 2005. (Section 1R19)

Inspection Report# : [2013004](#) (pdf)

---

## Barrier Integrity

---

## Emergency Preparedness

**Significance:**  Jun 30, 2014

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Maintain a Standard Emergency Action Level Scheme for Flooding**

An NRC-identified Green NCV of 10 CFR 50.54(q)(2), 10 CFR 50.47(b)(4), and the requirements of Appendix E to 10 CFR Part 50, was identified for the failure of the licensee to maintain the effectiveness of the emergency plan. Specifically, from November 6, 2009, to July 21, 2014, the licensee failed to maintain in effect, a standard emergency action level (EAL) scheme by failing to provide effective means for determining flooding water levels which is required to properly classify an ALERT during a probable maximum hurricane (PMH). The licensee's corrective actions include painting level indication on the service water building visible to the operator stationed at the service water building to determine when the ALERT flood level is reached. The licensee entered this issue into the CAP as NCRs 688613 and 693590.

The inspectors determined that the failure to provide reliable and timely indication for operators to adequately implement the ALERT flooding EAL HA 1.5 was a performance deficiency. The finding is more than minor because it is associated with the Facilities and Equipment attribute of the Emergency Preparedness (EP) cornerstone and affected the cornerstone objective to ensure the licensee is capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. Specifically, the licensee's ability to classify an ALERT for a flooding event was adversely affected because flood levels could not be adequately determined. In accordance with the IMC 0609, Appendix B, "Emergency Preparedness Significance Determination," issued February 24, 2012, and Figure 5.4-1, the inspectors determined that this finding is of very low safety significance (Green) because the performance deficiency was a condition where an EAL has been rendered ineffective such that an ALERT would not be declared for a flooding event. The finding has a cross-cutting aspect in the area of human performance associated with the resources attribute because leaders failed to ensure that personnel, equipment, procedures, and other resources are available and adequate to support nuclear safety and declare an ALERT for a PMH. [H.1]

Inspection Report# : [2014003](#) (*pdf*)

---

## **Occupational Radiation Safety**

---

## **Public Radiation Safety**

---

## **Security**

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the [cover letters](#) to security inspection reports may be viewed.

---

## **Miscellaneous**

Last modified : August 29, 2014

# Brunswick 1

## 3Q/2014 Plant Inspection Findings

---

### Initiating Events

---

### Mitigating Systems

**Significance:**  Jun 30, 2014

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Failure to Include Flood Protection Features in the Maintenance Rule Program**

An NRC-identified Green non-cited violation (NCV) of 10 CFR 50.65(b)(2)(ii) was identified for the failure of the licensee to scope flood protection features in the maintenance rule (MR) program. Specifically, from July 10, 1996, to May 8, 2014, the licensee failed to include floor drain flood protection features in the MR program that are nonsafety-related but whose failure could prevent safety-related structures, systems, and components (SSCs) from fulfilling their safety-related function. The licensee's corrective actions included scoping the floor drains into the MR program. The licensee entered this issue into the corrective action program (CAP) as nuclear condition report (NCR) 677850.

The inspectors determined that the failure of the licensee to monitor flood protection features in the MR program, as required by 10 CFR 50.65(b)(2)(ii), was a performance deficiency. The finding is more than minor because it is associated with the protection against external factors (i.e. flood hazard) attribute of the Mitigating Systems Cornerstone and adversely affects the cornerstone objective of ensuring the availability, reliability, and capability of the safety related systems to respond to initiating events to prevent undesirable consequences. Specifically, the finding is more than minor because failing to monitor flood protection features resulted in degradation of various flood protection features which could have impacted safety-related equipment. Using IMC 0609, Appendix A, issued June 9, 2012, The SDP for Findings At-Power, Exhibit 2, the inspectors determined the finding is of very low safety significance (Green) because it did not represent an actual loss of function of one or more non-TS trains of equipment designated as high safety-significant in accordance with the licensee's maintenance rule program for greater than 24 hours. The finding has a cross-cutting aspect in the area of problem identification and resolution associated with the resolution attribute because the organization failed to take effective corrective actions to address issues in a timely manner commensurate with their safety significance. Specifically, the licensee failed to scope the credited flood protection floor drains into the MR program. [P.3]

Inspection Report# : [2014003](#) (*pdf*)

**Significance:**  Dec 31, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Inadequate Design Control for Required Service Water Flow to the Emergency Diesel Generators**

An NRC-identified Green NCV of 10 CFR Part 50, Appendix B, Criterion III, Design Control, was identified for the failure of the licensee to verify the adequacy of design of the emergency diesel generator (EDG) service water flow. Specifically, from May 1, 1989, until October 28, 2013, Calculation M-89-0008, contained non-conservative values for EDG maximum loading, service water inlet temperatures, and heat exchanger fouling factor, resulting in a non-

conservative calculation for required service water flow to the EDG jacket water heat exchanger, which called into question the operability of EDG 3. The licensee re-performed Calculation M-89-0008 and determined EDG 3 was operable. The licensee entered this issue into the corrective action program (CAP) as nuclear condition report (NCR) 592035.

The inspectors determined that the failure of the licensee to have an accurate calculation for required service water flow to the EDG jacket water heat exchanger was a performance deficiency. The finding was more than minor because it was associated with the design control attribute of the Mitigating Systems Cornerstone and adversely affects the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the non-conservative calculation called into question the operability of EDG 3. Using IMC 0609, Appendix A, issued June 19, 2012, the SDP for Findings At-Power, the inspectors determined the finding was of very low safety significance (Green) because the finding did not affect the design or qualification of a mitigating structures, systems, and components (SSC), the finding did not represent a loss of system and/or function, the finding did not represent an actual loss of a function of a single train for greater than the technical specification (TS) allowed outage time, the finding did not represent an actual loss of a function of one or more non-TS trains of equipment, 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 in the area of human performance associated with the resources attribute because the licensee did not have complete, accurate and up-to-date design documentation for EDG service water flow. Specifically, due to the inspector's questions, Calculation M-89-0008 required revision due to non-conservatism in August 2013 and in November 2013. H.2(c)

Inspection Report# : [2013005](#) (*pdf*)

**Significance:**  Dec 31, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

**Inadequate Procedure to Perform Preventative Maintenance on the Residual Heat Removal Room Coolers**

A self-revealing Green NCV of TS 5.4.1a, Procedures, was identified for the failure of the licensee to have an adequate procedure for preventative maintenance on the 1B residual heat removal (RHR) room cooler damper limit switch. Specifically, between May 1990 and September 26, 2013, the licensee did not have an adequate preventative maintenance procedure to replace the 1B RHR room cooler damper limit switch and to tighten the paddle arm on the limit switch. This resulted in the failure of the 1B RHR room cooler to start and the inoperability of the 1B RHR train. The licensee replaced the limit switch on the damper, tightened the paddle arm on the limit switch, returned the room cooler to operable, and entered this issue into the CAP as NCR 607986.

The inspectors determined that the failure of the licensee to have an adequate procedure to replace the 1B RHR room cooler limit switch and tighten the limit switch paddle arm was a performance deficiency. The finding was more than minor because it was associated with the equipment performance attribute of the Mitigating Systems Cornerstone and adversely affects the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to replace the limit switch and tighten the limit switch paddle arm resulted in a failure of the cooler fan and damper, and the inoperability of the 1B RHR train. Using IMC 0609, Appendix A, issued June 19, 2012, the SDP for Findings At-Power, the inspectors determined the finding was of very low safety significance (Green) because the finding did not affect the design or qualification of a mitigating SSC, the finding did not represent a loss of system and/or function, the finding did not represent an actual loss of a function of a single train for greater than the TS allowed outage time, the finding did not represent an actual loss of a function of one or more non-TS trains of equipment, and did not screen as potentially risk-significant due to a seismic, flooding, or severe weather initiating event. The finding does not have a cross-cutting aspect since the performance deficiency is not indicative of current plant performance. Vendor Manual QTR155, NAMCO Controls, which required periodic replacement of the limit switch and checking the limit switch for tightness was provided to the licensee in May 1990.

Inspection Report# : [2013005](#) (pdf)

**Significance:** G Dec 31, 2013

Identified By: NRC

Item Type: VIO Violation

**Failure to Identify and Correct Flood Protection Degradation in Safety-Related Buildings**

The NRC identified an AV of 10 CFR Part 50, Appendix B, Criterion XVI, Corrective Action, with two examples. The first example involved the failure of the licensee to promptly identify and correct conditions adverse to quality associated with flood protection of multiple safety-related buildings. Specifically, the licensee failed to promptly identify or correct safety-related buildings that contained openings that would have adversely impacted their ability to mitigate external flooding of these buildings in the event of a design basis probable maximum hurricane (PMH). The second example involved the failure of the licensee to correct a significant condition adverse to quality. Specifically, the licensee failed to implement a corrective action to preclude repetition by not adequately developing an engineering program to mitigate the consequences of external events (flooding, high winds, and seismic) that ensured appropriate equipment classifications, with interfacing programs of maintenance rule (MR) and zero tolerance for equipment failures.

This resulted in a violation of technical specification (TS) 3.7.2, Service Water (SW) System and Ultimate Heat Sink, and TS 3.5.2, Emergency Core Cooling System (ECCS) – Shutdown, since the inoperability of the required number of service water pumps (SWPs) would violate TS 3.7.2, and TS 3.5.2 since SW cools the residual heat removal (RHR) system heat exchangers.

The inspectors determined the failure to identify and correct the missing and degraded flood barriers in multiple safety-related buildings, and the failure to implement a corrective action to preclude repetition by not developing an engineering program to mitigate the consequences of external events that ensured appropriate equipment classifications, with interfacing programs of MR and zero tolerance for equipment failures, was a performance deficiency. The finding was more than minor because it was associated with the protection against external factors attribute (flood hazard) of the

Mitigating Systems Cornerstone and adversely affects the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, nine of the ten Unit 1 and Unit 2 SWPs would be potentially inoperable and unavailable during specified PMH events. Because the finding involved reactor shutdown operations and conditions, IMC 0609, Appendix G, Shutdown Operations Significance Determination Process (SDP), Attachment 1, issued May 25, 2004, Phase 1 Operational Checklists for Both pressurized water reactors (PWRs) and boiling water reactors (BWRs), was used. The inspectors used Checklist 5, BWR Hot Shutdown: Time to Boil < 2 Hours, and determined the finding increased the likelihood that a loss of decay heat removal (DHR) will occur due to failure of the system itself or support systems, degraded the licensee’s ability to cope with a loss of offsite power (LOOP), degraded the licensee’s ability to add reactor coolant system (RCS) inventory when needed, and degraded the licensee’s ability to establish an alternate core cooling path if DHR could not be re-established for 24 hours. Further, the performance deficiency involved external events. Consequently a Phase 2 analysis could not be performed and the issue screened directly to a Phase 3 analysis. The significance of this issue is “To Be Determined” (TBD) and its final significance will be dispositioned in separate transmittal. The issue is not an immediate safety concern because the licensee has taken appropriate corrective actions. The finding has a cross-cutting aspect in the area of human performance associated with the field presence attribute because deviations from standards and expectations were not corrected promptly, and the licensee did not ensure supervisory and management oversight of work activities, including contractors. Specifically, licensee management failed to ensure degradation associated with flood protection of the safety-related buildings was identified and corrected. [H.2] (Section 1R01.1)

Inspection Report# : [2014011](#) (pdf)

Inspection Report# : [2013010](#) (*pdf*)

**Significance:**  Dec 31, 2013

Identified By: NRC

Item Type: FIN Finding

**Inadequate Procedures for Inspecting Flood Protection Doors and Performing Functionality Assessments**

An NRC-identified Green finding for the failure to meet the requirements of licensee procedure PRO-NGGC-0201, NGG Procedure Writer's Guide, was identified with two examples. Specifically, the licensee failed to provide an adequate procedure with appropriate acceptance criteria to inspect flood protection doors for leakage and failed to have an adequate procedure to perform functionality assessments which met the requirements specified in Procedure PRO-NGGC-0201. The licensee entered these issues into the corrective action program (CAP) as nuclear condition reports (NCRs) 631303, and 563113 and 580629, respectively.

The inspectors determined that the failure of the licensee to provide an adequate procedure to inspect flood protection doors for leakage and to have an adequate procedure which met the requirements of licensee Procedure PRO-NGGC-0201 to perform functionality assessments was a performance deficiency. The finding is more than minor because it is associated with the protection against external factors (i.e., flood hazard) attribute of the Mitigating Systems Cornerstone and adversely affects 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 flood protection door and flood penetration seals were missing or degraded which could have resulted in a flood pathway into the high pressure coolant injection (HPCI) system room and service water building (SWB) during a PMH. Using IMC 0609, Appendix A, issued June 9, 2012, The SDP for Findings At-Power, the inspectors determined the finding screened to Green because the individual door and penetration seal degradations did not involve the total loss of any safety function, identified by the licensee through a probabilistic risk assessment (PRA), individual plant examination of external events (IPEEE), or similar analysis, that contributes to external event initiated core damage accident sequences (i.e., initiated by a seismic, flooding, or severe weather event). The finding has a cross-cutting aspect in the area of human performance associated with the documentation attribute because the licensee failed to create and maintain complete, accurate and, up-to-date documentation to inspect flood protection doors and perform functionality assessments. [H.7] (Section 1R01.2)

Inspection Report# : [2013010](#) (*pdf*)

**Significance:**  Dec 31, 2013

Identified By: NRC

Item Type: FIN Finding

**Failure to Perform Functionality Assessments for flood Protection Features**

An NRC-identified Green finding was identified for the failure of the licensee to follow Procedure OPS-NGGC-1305, Operability Determinations, to perform functionality assessments for degraded or non-conforming flood protection features. Specifically, the licensee failed to perform functionality assessments for flood protection features, including EDG building conduit seals and Unit 2 HPCI sump pump failures. The licensee entered these issues into the CAP as NCRs 613354 and 631442.

The inspectors determined the failure to follow Procedure OPS-NGGC-1305, to perform functionality assessments for degraded or non-conforming flood protection features, was a performance deficiency. The finding is more than minor because it is associated with the protection against external factors (i.e., flood hazard) attribute of the Mitigating Systems Cornerstone and adversely affects 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 failure to perform functionality assessments for degraded or non-conforming flood protection features could have resulted in a flood pathway into the HPCI room and EDG building during a PMH. Using IMC

0609, Appendix A, issued June 9, 2012, The SDP for Findings At-Power, the inspectors determined the finding screened to Green because the resulting individual functional assessments did not involve the total loss of any safety function, identified by the licensee through a PRA, IPEEE, or similar analysis, that contributes to external event initiated core damage accident sequences (i.e., initiated by a seismic, flooding, or severe weather event). The finding has a cross-cutting aspect in the area of human performance associated with the procedure adherence attribute because the licensee did not follow processes, procedures, and work instructions. Specifically, the licensee revised Procedure OPS-NGGC-1305 for performing functionality assessments but did not effectively communicate the new procedural requirements to operations personnel such that functionality assessments were performed when required. [H.8] (Section 1R01.3)

Inspection Report# : [2013010](#) (*pdf*)

**Significance:**  Oct 23, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

**Inadequate Acceptance Criteria for the Class 1E Station Battery Service Capacity Test Procedure**

The team identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion XI, “Test Control,” for the licensee’s failure to incorporate adequate acceptance criteria in the Class 1E station battery service test procedures. This failure to incorporate adequate acceptance criteria was a performance deficiency. The licensee entered this issue into their corrective action program as nuclear condition reports 632998 and 630621. The licensee performed a prompt determination of operability to verify that the batteries would be capable of supplying the necessary voltage to safety-related direct current loads at the required time intervals specified in design bases calculations.

The performance deficiency was determined to be more than minor because it was associated with the Design Control attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, using an acceptance criterion of 105 volts direct current during the service test could result in incorrectly declaring a Class 1E station battery operable when greater terminal voltages, as specified in design bases calculations, were necessary for safety-related equipment to operate during the first minute of a design basis accident. The team determined the finding to be of very low safety significance (Green) because the finding was a deficiency affecting the design or qualification of a mitigating structure, system, or component which maintained its operability or functionality. The team determined that no cross-cutting aspect was applicable because the finding was not indicative of current licensee performance.

Inspection Report# : [2013007](#) (*pdf*)

**Significance:**  Oct 23, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

**Inadequate DC System Calculations – Three Examples**

The team identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, “Design Control,” with three examples, for the licensee’s failure to properly incorporate the design and licensing bases for the 125 volt direct current system into design calculations. This failure to properly incorporate the design and licensing bases for the 125 volts direct current system into design calculations was a performance deficiency. The licensee entered these issues into their corrective action program as nuclear condition reports 632998, 630621, 633538, and 633889. The licensee conducted a combination of prompt determinations of operability and engineering evaluations which provided reasonable expectation of operability of the direct current system pending final resolution.

The performance deficiency was determined to be more than minor because it was associated with the Design Control attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective of ensuring the

availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, there was reasonable doubt as to whether direct current system components would have adequate voltage to operate during design basis accidents. The team determined the finding to be of very low safety significance (Green) because the finding was a deficiency affecting the design or qualification of a mitigating structure, system, or component which maintained its operability or functionality. The team determined that no cross-cutting aspect was applicable because the finding was not indicative of current licensee performance.

Inspection Report# : [2013007](#) (*pdf*)

**Significance:**  Oct 23, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Failure to Verify Adequacy of the Service Water Intake Structure Ventilation System**

The team identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the licensee's failure to verify the adequacy of the service water intake structure ventilation design through calculational methods. This failure to verify the adequacy of the service water intake structure ventilation design was a performance deficiency. The licensee entered this issue into their corrective action program as nuclear condition report 627708. The licensee performed a prompt determination of operability and implemented a number of compensatory actions to ensure safety-related components in the intake structure would not fail under the worst case high temperature conditions.

The performance deficiency was determined to be more than minor because it was associated with the Design Control attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, there was reasonable doubt as to whether safety-related components in the service water intake structure would be operable under design temperatures. The team determined the finding to be of very low safety significance (Green) because the finding was a deficiency affecting the design or qualification of a mitigating structure, system, or component which maintained its operability or functionality. The team determined that no cross-cutting aspect was applicable because the finding was not indicative of current licensee performance.

Inspection Report# : [2013007](#) (*pdf*)

**Significance:**  Oct 23, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Failure to Scope Safety-related Components in the Maintenance Rule Program**

The team identified a non-cited violation of 10 CFR 50.65(b)(1), for the licensee's failure to scope the safety-related service water intake structure exhaust fan dampers into the Maintenance Rule program. This failure to scope safety-related service water intake structure exhaust fan dampers was a performance deficiency. The licensee entered this issue into their corrective action program as nuclear condition reports 630922, 627708, 630553, and 630993. The licensee has subsequently implemented corrective actions to include the dampers within the scope of the Maintenance Rule program.

The performance deficiency was determined to be more than minor because it was associated with the Equipment Performance attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective of ensuring availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, numerous dampers were found in degraded conditions such that effective control of performance or condition through appropriate preventive maintenance under 10CFR 50.65(a)(2) could not be demonstrated. The team determined the finding to be of very low safety significance (Green) because the finding did not result in an actual loss of function of at least a single service water system train for greater than its technical specifications allowed outage time. The team determined that no cross-cutting aspect was applicable because the

finding was not indicative of current licensee performance.

Inspection Report# : [2013007](#) (*pdf*)

**Significance:**  Oct 23, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Follow Plant Procedure Directing the Performance of Preventive Maintenance on Safety-related Dampers**

The team identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” for the licensee’s failure to follow plant procedures specifying requirements for preventive maintenance of safety-related dampers. This failure to follow plant procedures was a performance deficiency. The licensee entered this issue into their corrective action program as nuclear condition reports 631376, 628132, 633710, and 631711. The licensee performed an immediate determination of operability to verify the as-found condition of the dampers did not affect operability of equipment inside the diesel generator building and implemented corrective actions to complete the missed preventive maintenance on the dampers.

The performance deficiency was determined to be more than minor because it was associated with the Equipment Performance attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective of ensuring availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the programmatic failure to perform preventive maintenance on the nine dampers resulted in decreased availability and reliability of the dampers such that multiple dampers were found in degraded conditions. The team determined the finding to be of very low safety significance (Green) because the finding did not result in an actual loss of function of at least a single emergency diesel generator for greater than its technical specifications allowed outage time. The team determined that this finding was associated with the cross-cutting aspect of Supervisory Oversight in the Work Practices component of the Human Performance area because Brunswick supervisors did not enforce the scheduled preventive maintenance nor did they ensure a justification for not performing preventive maintenance on safety-related components. [H.4(c)]

Inspection Report# : [2013007](#) (*pdf*)

---

## **Barrier Integrity**

---

## **Emergency Preparedness**

**Significance:**  Jun 30, 2014

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Maintain a Standard Emergency Action Level Scheme for Flooding**

An NRC-identified Green NCV of 10 CFR 50.54(q)(2), 10 CFR 50.47(b)(4), and the requirements of Appendix E to 10 CFR Part 50, was identified for the failure of the licensee to maintain the effectiveness of the emergency plan. Specifically, from November 6, 2009, to July 21, 2014, the licensee failed to maintain in effect, a standard emergency action level (EAL) scheme by failing to provide effective means for determining flooding water levels which is required to properly classify an ALERT during a probable maximum hurricane (PMH). The licensee’s corrective actions include painting level indication on the service water building visible to the operator stationed at the service water building to determine when the ALERT flood level is reached. The licensee entered this issue into the CAP as

NCRs 688613 and 693590.

The inspectors determined that the failure to provide reliable and timely indication for operators to adequately implement the ALERT flooding EAL HA 1.5 was a performance deficiency. The finding is more than minor because it is associated with the Facilities and Equipment attribute of the Emergency Preparedness (EP) cornerstone and affected the cornerstone objective to ensure the licensee is capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. Specifically, the licensee's ability to classify an ALERT for a flooding event was adversely affected because flood levels could not be adequately determined. In accordance with the IMC 0609, Appendix B, "Emergency Preparedness Significance Determination," issued February 24, 2012, and Figure 5.4-1, the inspectors determined that this finding is of very low safety significance (Green) because the performance deficiency was a condition where an EAL has been rendered ineffective such that an ALERT would not be declared for a flooding event. The finding has a cross-cutting aspect in the area of human performance associated with the resources attribute because leaders failed to ensure that personnel, equipment, procedures, and other resources are available and adequate to support nuclear safety and declare an ALERT for a PMH. [H.1]

Inspection Report# : [2014003](#) (*pdf*)

---

## Occupational Radiation Safety

---

## Public Radiation Safety

---

## Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the [cover letters](#) to security inspection reports may be viewed.

---

## Miscellaneous

Last modified : November 26, 2014

# Brunswick 1

## 4Q/2014 Plant Inspection Findings

---

### Initiating Events

**Significance:**  Sep 30, 2014

Identified By: NRC

Item Type: FIN Finding

#### **Inadequate Procedure to Perform Core Ground Checks on the Common Bus C Transformer**

A self-revealing Green finding of Licensee Procedure OPM-XMR001, ITE Substation Transformers, was identified for the failure to have an adequate procedure to perform preventative maintenance on the Common Bus C 4160/480V Transformer. Specifically, between May 6, 2009 and March 23, 2012, the licensee failed to incorporate Procedure Revision Requests (PRRs) 312951 and 334482 to add core ground testing of the Common C transformer, resulting in the transformer failing and a Unit 1 manual reactor SCRAM. The licensee replaced the transformer to Common Bus C. The licensee entered this issue into the CAP as nuclear condition report (NCR) 519193.

The inspectors determined that the failure of the licensee to have an adequate procedure to perform preventative maintenance on the Common Bus C transformer was a performance deficiency. The finding was more than minor because it was associated with the equipment performance attribute of the Initiating Events Cornerstone and affects the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the failure to perform preventative maintenance on the Common Bus C transformer resulted in the transformer failing and a Unit 1 manual reactor SCRAM. Using IMC 0609, Appendix A, issued June 19, 2012, the SDP for Findings At-Power, the inspectors determined the finding was of very low safety significance (Green) because the finding did not cause a reactor trip and the loss of mitigation equipment relied upon to transition the plant from the onset of the trip to a stable shutdown condition. The finding does not have a cross-cutting aspect since the performance deficiency is not indicative of current plant performance. The PRR was initiated on May 6, 2009.

Inspection Report# : [2014004](#) (*pdf*)

---

### Mitigating Systems

**Significance:**  Dec 31, 2014

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Failure to Protect Emergency Diesel Generator 4-Day Fuel Oil Tank Ventilation Piping from Tornado Missiles**

The NRC-identified a Green non-cited violation (NCV) of Title 10 of the Code of Federal Regulations (10 CFR) Part 50, Appendix B, Criterion III, Design Control, for the failure to ensure adequate tornado missile protection for the emergency diesel generator (EDG) 4-day fuel oil tank ventilation piping. Specifically, it was determined that the ventilation piping could be sheared with a design basis tornado missile at the 4-day fuel oil tank building roof level and water intrusion into the EDG fuel oil system would occur during a design basis rain event that would prevent the diesel from performing its required safety function. The licensee documented this issue in their corrective action program (CAP) and performed corrective actions to install concrete blocks around the piping.

The inspectors determined that the finding was more than minor in accordance with IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," dated September 7, 2012, because it is associated with the Mitigating Systems Cornerstone attributes of Protection Against External Factors and Equipment Performance, 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, it was determined that the ventilation piping could be sheared with a design basis tornado missile at the 4-day fuel oil tank building roof level and water intrusion into the EDG fuel oil system would occur during a design basis rain event that would prevent the EDG from performing its required safety function. Using IMC 0609, Appendix A, issued June 19, 2012, "The Significance Determination Process (SDP) for Findings At-Power," the inspectors determined the finding screened to a detailed risk evaluation since the EDG1 fuel oil system was assumed to be completely failed due to a tornado, and it would degrade one or more trains of a system that supports a risk significant system or function. The regional Senior Reactor Analyst performed a detailed risk evaluation by using a qualitative screening analysis to determine the significance of the finding. Tornado initiating event frequency was derived from Nation Weather Service data. Because of the low likelihood of a tornado powerful enough to throw an object of sufficient size to damage the piping, the remote chance the thrown object would strike the vent pipe, and because the remaining EDGs would not be impacted in the same way by the tornado, the finding was determined to be Green. The inspectors did not identify a cross-cutting aspect associated with this finding because the finding is an old design issue that has been in place since original plant construction.

Inspection Report# : [2014005](#) (*pdf*)

**Significance:** G Sep 30, 2014

Identified By: NRC

Item Type: FIN Finding

**Failure to Correct SLC Tank Level Indication Degradation**

An NRC-identified Green finding of Licensee Procedure AD-PI-ALL-0100, Corrective Action Program (CAP), was identified for the failure of the licensee to identify and correct a condition adverse to quality with the Unit 2 standby liquid control (SLC) control room level indicator. Specifically, between February 25, 2012, and August 17, 2014, the licensee failed to identify and correct three clogged SLC tank level indicators before the indicators failed. The licensee's corrective actions included cleaning out the SLC tank level indicator bubbler and evaluating the adequacy of the preventative maintenance associated with this indicator. The licensee entered this issue into the CAP as NCRs 704327 and 704593.

The inspectors determined that the failure of the licensee to identify and correct the clogged SLC tank level indicators before the indicators failed was a performance deficiency. The finding was more than minor because it was associated with the equipment performance attribute of the Mitigating Systems Cornerstone and affects the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, this resulted in the instrument reading a higher tank level than actual due to the flow restriction in the bubbler tube, and the inoperability of the instrument. Using IMC 0609, Appendix A, issued June 19, 2012, the SDP for Findings At-Power, the inspectors determined the finding was of very low safety significance (Green) because the finding did not affect the design or qualification of a mitigating structure, system and component (SSC), the finding did not represent a loss of system and/or function, the finding did not represent an actual loss of a function of a single train for greater than the technical specifications (TS) allowed outage time, the finding did not represent an actual loss of a function of one or more non-TS trains of equipment, 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 in the area of human performance associated with the work management attribute because the licensee failed to implement a process of planning, controlling, and executing work activities such that nuclear safety is the overriding priority. The licensee failed to have the work process include the identification and management of risk commensurate to the work and the need for coordination with different groups. Specifically, the licensee failed to identify and manage the risk of the SLC tank level indicator bubbler clogging issue. [H.5]

Inspection Report# : [2014004](#) (*pdf*)

**Significance:**  Jun 30, 2014

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Include Flood Protection Features in the Maintenance Rule Program**

An NRC-identified Green non-cited violation (NCV) of 10 CFR 50.65(b)(2)(ii) was identified for the failure of the licensee to scope flood protection features in the maintenance rule (MR) program. Specifically, from July 10, 1996, to May 8, 2014, the licensee failed to include floor drain flood protection features in the MR program that are nonsafety-related but whose failure could prevent safety-related structures, systems, and components (SSCs) from fulfilling their safety-related function. The licensee's corrective actions included scoping the floor drains into the MR program. The licensee entered this issue into the corrective action program (CAP) as nuclear condition report (NCR) 677850.

The inspectors determined that the failure of the licensee to monitor flood protection features in the MR program, as required by 10 CFR 50.65(b)(2)(ii), was a performance deficiency. The finding is more than minor because it is associated with the protection against external factors (i.e. flood hazard) attribute of the Mitigating Systems Cornerstone and adversely affects the cornerstone objective of ensuring the availability, reliability, and capability of the safety related systems to respond to initiating events to prevent undesirable consequences. Specifically, the finding is more than minor because failing to monitor flood protection features resulted in degradation of various flood protection features which could have impacted safety-related equipment. Using IMC 0609, Appendix A, issued June 9, 2012, The SDP for Findings At-Power, Exhibit 2, the inspectors determined the finding is of very low safety significance (Green) because it did not represent an actual loss of function of one or more non-TS trains of equipment designated as high safety-significant in accordance with the licensee's maintenance rule program for greater than 24 hours. The finding has a cross-cutting aspect in the area of problem identification and resolution associated with the resolution attribute because the organization failed to take effective corrective actions to address issues in a timely manner commensurate with their safety significance. Specifically, the licensee failed to scope the credited flood protection floor drains into the MR program. [P.3]

Inspection Report# : [2014003](#) (*pdf*)

## **Barrier Integrity**

## **Emergency Preparedness**

**Significance:**  Jun 30, 2014

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Maintain a Standard Emergency Action Level Scheme for Flooding**

An NRC-identified Green NCV of 10 CFR 50.54(q)(2), 10 CFR 50.47(b)(4), and the requirements of Appendix E to 10 CFR Part 50, was identified for the failure of the licensee to maintain the effectiveness of the emergency plan. Specifically, from November 6, 2009, to July 21, 2014, the licensee failed to maintain in effect, a standard emergency action level (EAL) scheme by failing to provide effective means for determining flooding water levels which is required to properly classify an ALERT during a probable maximum hurricane (PMH). The licensee's corrective actions include painting level indication on the service water building visible to the operator stationed at the service water building to determine when the ALERT flood level is reached. The licensee entered this issue into the CAP as NCRs 688613 and 693590.

The inspectors determined that the failure to provide reliable and timely indication for operators to adequately implement the ALERT flooding EAL HA 1.5 was a performance deficiency. The finding is more than minor because it is associated with the Facilities and Equipment attribute of the Emergency Preparedness (EP) cornerstone and affected the cornerstone objective to ensure the licensee is capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. Specifically, the licensee's ability to classify an ALERT for a flooding event was adversely affected because flood levels could not be adequately determined. In accordance with the IMC 0609, Appendix B, "Emergency Preparedness Significance Determination," issued February 24, 2012, and Figure 5.4-1, the inspectors determined that this finding is of very low safety significance (Green) because the performance deficiency was a condition where an EAL has been rendered ineffective such that an ALERT would not be declared for a flooding event. The finding has a cross-cutting aspect in the area of human performance associated with the resources attribute because leaders failed to ensure that personnel, equipment, procedures, and other resources are available and adequate to support nuclear safety and declare an ALERT for a PMH. [H.1]

Inspection Report# : [2014003](#) (*pdf*)

---

## Occupational Radiation Safety

---

## Public Radiation Safety

---

## Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the [cover letters](#) to security inspection reports may be viewed.

---

## Miscellaneous

Last modified : February 26, 2015

# Brunswick 1

## 1Q/2015 Plant Inspection Findings

---

### Initiating Events

**Significance:**  Sep 30, 2014

Identified By: NRC

Item Type: FIN Finding

#### **Inadequate Procedure to Perform Core Ground Checks on the Common Bus C Transformer**

A self-revealing Green finding of Licensee Procedure OPM-XMR001, ITE Substation Transformers, was identified for the failure to have an adequate procedure to perform preventative maintenance on the Common Bus C 4160/480V Transformer. Specifically, between May 6, 2009 and March 23, 2012, the licensee failed to incorporate Procedure Revision Requests (PRRs) 312951 and 334482 to add core ground testing of the Common C transformer, resulting in the transformer failing and a Unit 1 manual reactor SCRAM. The licensee replaced the transformer to Common Bus C. The licensee entered this issue into the CAP as nuclear condition report (NCR) 519193.

The inspectors determined that the failure of the licensee to have an adequate procedure to perform preventative maintenance on the Common Bus C transformer was a performance deficiency. The finding was more than minor because it was associated with the equipment performance attribute of the Initiating Events Cornerstone and affects the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the failure to perform preventative maintenance on the Common Bus C transformer resulted in the transformer failing and a Unit 1 manual reactor SCRAM. Using IMC 0609, Appendix A, issued June 19, 2012, the SDP for Findings At-Power, the inspectors determined the finding was of very low safety significance (Green) because the finding did not cause a reactor trip and the loss of mitigation equipment relied upon to transition the plant from the onset of the trip to a stable shutdown condition. The finding does not have a cross-cutting aspect since the performance deficiency is not indicative of current plant performance. The PRR was initiated on May 6, 2009.

Inspection Report# : [2014004](#) (*pdf*)

---

### Mitigating Systems

**Significance:**  Dec 31, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

#### **Failure to Protect Emergency Diesel Generator 4-Day Fuel Oil Tank Ventilation Piping from Tornado Missiles**

The NRC-identified a Green non-cited violation (NCV) of Title 10 of the Code of Federal Regulations (10 CFR) Part 50, Appendix B, Criterion III, Design Control, for the failure to ensure adequate tornado missile protection for the emergency diesel generator (EDG) 4-day fuel oil tank ventilation piping. Specifically, it was determined that the ventilation piping could be sheared with a design basis tornado missile at the 4-day fuel oil tank building roof level and water intrusion into the EDG fuel oil system would occur during a design basis rain event that would prevent the diesel from performing its required safety function. The licensee documented this issue in their corrective action program (CAP) and performed corrective actions to install concrete blocks around the piping.

The inspectors determined that the finding was more than minor in accordance with IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," dated September 7, 2012, because it is associated with the Mitigating Systems Cornerstone attributes of Protection Against External Factors and Equipment Performance, 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, it was determined that the ventilation piping could be sheared with a design basis tornado missile at the 4-day fuel oil tank building roof level and water intrusion into the EDG fuel oil system would occur during a design basis rain event that would prevent the EDG from performing its required safety function. Using IMC 0609, Appendix A, issued June 19, 2012, "The Significance Determination Process (SDP) for Findings At-Power," the inspectors determined the finding screened to a detailed risk evaluation since the EDG1 fuel oil system was assumed to be completely failed due to a tornado, and it would degrade one or more trains of a system that supports a risk significant system or function. The regional Senior Reactor Analyst performed a detailed risk evaluation by using a qualitative screening analysis to determine the significance of the finding. Tornado initiating event frequency was derived from Nation Weather Service data. Because of the low likelihood of a tornado powerful enough to throw an object of sufficient size to damage the piping, the remote chance the thrown object would strike the vent pipe, and because the remaining EDGs would not be impacted in the same way by the tornado, the finding was determined to be Green. The inspectors did not identify a cross-cutting aspect associated with this finding because the finding is an old design issue that has been in place since original plant construction.

Inspection Report# : [2014005](#) (*pdf*)

**Significance:** G Sep 30, 2014

Identified By: NRC

Item Type: FIN Finding

#### **Failure to Correct SLC Tank Level Indication Degradation**

An NRC-identified Green finding of Licensee Procedure AD-PI-ALL-0100, Corrective Action Program (CAP), was identified for the failure of the licensee to identify and correct a condition adverse to quality with the Unit 2 standby liquid control (SLC) control room level indicator. Specifically, between February 25, 2012, and August 17, 2014, the licensee failed to identify and correct three clogged SLC tank level indicators before the indicators failed. The licensee's corrective actions included cleaning out the SLC tank level indicator bubbler and evaluating the adequacy of the preventative maintenance associated with this indicator. The licensee entered this issue into the CAP as NCRs 704327 and 704593.

The inspectors determined that the failure of the licensee to identify and correct the clogged SLC tank level indicators before the indicators failed was a performance deficiency. The finding was more than minor because it was associated with the equipment performance attribute of the Mitigating Systems Cornerstone and affects the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, this resulted in the instrument reading a higher tank level than actual due to the flow restriction in the bubbler tube, and the inoperability of the instrument. Using IMC 0609, Appendix A, issued June 19, 2012, the SDP for Findings At-Power, the inspectors determined the finding was of very low safety significance (Green) because the finding did not affect the design or qualification of a mitigating structure, system and component (SSC), the finding did not represent a loss of system and/or function, the finding did not represent an actual loss of a function of a single train for greater than the technical specifications (TS) allowed outage time, the finding did not represent an actual loss of a function of one or more non-TS trains of equipment, 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 in the area of human performance associated with the work management attribute because the licensee failed to implement a process of planning, controlling, and executing work activities such that nuclear safety is the overriding priority. The licensee failed to have the work process include the identification and management of risk commensurate to the work and the need for coordination with different groups. Specifically, the licensee failed to identify and manage the risk of the SLC tank level indicator bubbler clogging issue. [H.5]

Inspection Report# : [2014004](#) (*pdf*)

**Significance:**  Jun 30, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

### **Failure to Include Flood Protection Features in the Maintenance Rule Program**

An NRC-identified Green non-cited violation (NCV) of 10 CFR 50.65(b)(2)(ii) was identified for the failure of the licensee to scope flood protection features in the maintenance rule (MR) program. Specifically, from July 10, 1996, to May 8, 2014, the licensee failed to include floor drain flood protection features in the MR program that are nonsafety-related but whose failure could prevent safety-related structures, systems, and components (SSCs) from fulfilling their safety-related function. The licensee's corrective actions included scoping the floor drains into the MR program. The licensee entered this issue into the corrective action program (CAP) as nuclear condition report (NCR) 677850.

The inspectors determined that the failure of the licensee to monitor flood protection features in the MR program, as required by 10 CFR 50.65(b)(2)(ii), was a performance deficiency. The finding is more than minor because it is associated with the protection against external factors (i.e. flood hazard) attribute of the Mitigating Systems Cornerstone and adversely affects the cornerstone objective of ensuring the availability, reliability, and capability of the safety related systems to respond to initiating events to prevent undesirable consequences. Specifically, the finding is more than minor because failing to monitor flood protection features resulted in degradation of various flood protection features which could have impacted safety-related equipment. Using IMC 0609, Appendix A, issued June 9, 2012, The SDP for Findings At-Power, Exhibit 2, the inspectors determined the finding is of very low safety significance (Green) because it did not represent an actual loss of function of one or more non-TS trains of equipment designated as high safety-significant in accordance with the licensee's maintenance rule program for greater than 24 hours. The finding has a cross-cutting aspect in the area of problem identification and resolution associated with the resolution attribute because the organization failed to take effective corrective actions to address issues in a timely manner commensurate with their safety significance. Specifically, the licensee failed to scope the credited flood protection floor drains into the MR program. [P.3]

Inspection Report# : [2014003](#) (*pdf*)

## **Barrier Integrity**

## **Emergency Preparedness**

**Significance:**  Jun 30, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

### **Failure to Maintain a Standard Emergency Action Level Scheme for Flooding**

An NRC-identified Green NCV of 10 CFR 50.54(q)(2), 10 CFR 50.47(b)(4), and the requirements of Appendix E to 10 CFR Part 50, was identified for the failure of the licensee to maintain the effectiveness of the emergency plan. Specifically, from November 6, 2009, to July 21, 2014, the licensee failed to maintain in effect, a standard emergency action level (EAL) scheme by failing to provide effective means for determining flooding water levels which is required to properly classify an ALERT during a probable maximum hurricane (PMH). The licensee's corrective actions include painting level indication on the service water building visible to the operator stationed at the service water building to determine when the ALERT flood level is reached. The licensee entered this issue into the CAP as NCRs 688613 and 693590.

The inspectors determined that the failure to provide reliable and timely indication for operators to adequately implement the ALERT flooding EAL HA 1.5 was a performance deficiency. The finding is more than minor because it is associated with the Facilities and Equipment attribute of the Emergency Preparedness (EP) cornerstone and affected the cornerstone objective to ensure the licensee is capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. Specifically, the licensee's ability to classify an ALERT for a flooding event was adversely affected because flood levels could not be adequately determined. In accordance with the IMC 0609, Appendix B, "Emergency Preparedness Significance Determination," issued February 24, 2012, and Figure 5.4-1, the inspectors determined that this finding is of very low safety significance (Green) because the performance deficiency was a condition where an EAL has been rendered ineffective such that an ALERT would not be declared for a flooding event. The finding has a cross-cutting aspect in the area of human performance associated with the resources attribute because leaders failed to ensure that personnel, equipment, procedures, and other resources are available and adequate to support nuclear safety and declare an ALERT for a PMH. [H.1]

Inspection Report# : [2014003](#) (*pdf*)

---

## Occupational Radiation Safety

---

## Public Radiation Safety

---

## Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the [cover letters](#) to security inspection reports may be viewed.

---

## Miscellaneous

Last modified : June 16, 2015

# Brunswick 1

## 2Q/2015 Plant Inspection Findings

---

### Initiating Events

**Significance:**  Sep 30, 2014

Identified By: NRC

Item Type: FIN Finding

#### **Inadequate Procedure to Perform Core Ground Checks on the Common Bus C Transformer**

A self-revealing Green finding of Licensee Procedure OPM-XMR001, ITE Substation Transformers, was identified for the failure to have an adequate procedure to perform preventative maintenance on the Common Bus C 4160/480V Transformer. Specifically, between May 6, 2009 and March 23, 2012, the licensee failed to incorporate Procedure Revision Requests (PRRs) 312951 and 334482 to add core ground testing of the Common C transformer, resulting in the transformer failing and a Unit 1 manual reactor SCRAM. The licensee replaced the transformer to Common Bus C. The licensee entered this issue into the CAP as nuclear condition report (NCR) 519193.

The inspectors determined that the failure of the licensee to have an adequate procedure to perform preventative maintenance on the Common Bus C transformer was a performance deficiency. The finding was more than minor because it was associated with the equipment performance attribute of the Initiating Events Cornerstone and affects the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the failure to perform preventative maintenance on the Common Bus C transformer resulted in the transformer failing and a Unit 1 manual reactor SCRAM. Using IMC 0609, Appendix A, issued June 19, 2012, the SDP for Findings At-Power, the inspectors determined the finding was of very low safety significance (Green) because the finding did not cause a reactor trip and the loss of mitigation equipment relied upon to transition the plant from the onset of the trip to a stable shutdown condition. The finding does not have a cross-cutting aspect since the performance deficiency is not indicative of current plant performance. The PRR was initiated on May 6, 2009.

Inspection Report# : [2014004](#) (*pdf*)

---

### Mitigating Systems

**Significance:**  Jun 30, 2015

Identified By: NRC

Item Type: NCV Non-Cited Violation

#### **Inadequate Procedure for the 1B Conventional Service Water Pump Strainer Repair**

An NRC-identified Green NCV of 10 CFR Part 50, Appendix B, Criterion V, Instructions, Procedures, and Drawings, was identified for the licensee's failure to have an adequate procedure to perform maintenance on the 1B conventional service water (CSW) pump strainer. Specifically, between August 28, 2009, and May 11, 2015, licensee procedure MNT NGGC-0009, Application of Protective Coatings, was not adequate to perform repairs on the 1B CSW pump strainer, which resulted in through wall leaks on three occasions. As corrective actions, the licensee repaired the weld, recoated the inside of the affected strainer area with Belzona coating using qualified individuals, and updated procedure MNT-NGGC-0009. The licensee entered this issue into the CAP as NCR 747712.

The inspectors determined that the licensee's failure to have an adequate procedure to perform maintenance on the 1B CSW pump strainer was a performance deficiency. The finding was more than minor because if left uncorrected, it had the potential to lead to a more significant safety concern. Specifically, it could have led to a more significant failure of the 1B CSW pump strainer and the service water system. Using IMC 0609, Appendix A, issued June 19, 2012, the SDP for Findings At-Power, the inspectors determined the finding was of very low safety significance (Green) because the finding did not affect the design or qualification of a mitigating SSC, the finding did not represent a loss of system and/or function, the finding did not represent an actual loss of a function of a single train for greater than the TS allowed outage time, the finding did not represent an actual loss of a function of one or more non-TS trains of equipment, 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 in the area human performance associated with the documentation attribute because the licensee failed to create and maintain complete, accurate and up-to-date documentation to correct the 1B CSW pump strainer through-wall leak issue on three occasions.

Inspection Report# : [2015002](#) (*pdf*)

**Significance:**  Dec 31, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

**Failure to Protect Emergency Diesel Generator 4-Day Fuel Oil Tank Ventilation Piping from Tornado Missiles**

The NRC-identified a Green non-cited violation (NCV) of Title 10 of the Code of Federal Regulations (10 CFR) Part 50, Appendix B, Criterion III, Design Control, for the failure to ensure adequate tornado missile protection for the emergency diesel generator (EDG) 4-day fuel oil tank ventilation piping. Specifically, it was determined that the ventilation piping could be sheared with a design basis tornado missile at the 4-day fuel oil tank building roof level and water intrusion into the EDG fuel oil system would occur during a design basis rain event that would prevent the diesel from performing its required safety function. The licensee documented this issue in their corrective action program (CAP) and performed corrective actions to install concrete blocks around the piping.

The inspectors determined that the finding was more than minor in accordance with IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," dated September 7, 2012, because it is associated with the Mitigating Systems Cornerstone attributes of Protection Against External Factors and Equipment Performance, 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, it was determined that the ventilation piping could be sheared with a design basis tornado missile at the 4-day fuel oil tank building roof level and water intrusion into the EDG fuel oil system would occur during a design basis rain event that would prevent the EDG from performing its required safety function. Using IMC 0609, Appendix A, issued June 19, 2012, "The Significance Determination Process (SDP) for Findings At-Power," the inspectors determined the finding screened to a detailed risk evaluation since the EDG1 fuel oil system was assumed to be completely failed due to a tornado, and it would degrade one or more trains of a system that supports a risk significant system or function. The regional Senior Reactor Analyst performed a detailed risk evaluation by using a qualitative screening analysis to determine the significance of the finding. Tornado initiating event frequency was derived from Nation Weather Service data. Because of the low likelihood of a tornado powerful enough to throw an object of sufficient size to damage the piping, the remote chance the thrown object would strike the vent pipe, and because the remaining EDGs would not be impacted in the same way by the tornado, the finding was determined to be Green. The inspectors did not identify a cross-cutting aspect associated with this finding because the finding is an old design issue that has been in place since original plant construction.

Inspection Report# : [2014005](#) (*pdf*)

**Significance:**  Sep 30, 2014

Identified By: NRC

Item Type: FIN Finding

### **Failure to Correct SLC Tank Level Indication Degradation**

An NRC-identified Green finding of Licensee Procedure AD-PI-ALL-0100, Corrective Action Program (CAP), was identified for the failure of the licensee to identify and correct a condition adverse to quality with the Unit 2 standby liquid control (SLC) control room level indicator. Specifically, between February 25, 2012, and August 17, 2014, the licensee failed to identify and correct three clogged SLC tank level indicators before the indicators failed. The licensee's corrective actions included cleaning out the SLC tank level indicator bubbler and evaluating the adequacy of the preventative maintenance associated with this indicator. The licensee entered this issue into the CAP as NCRs 704327 and 704593.

The inspectors determined that the failure of the licensee to identify and correct the clogged SLC tank level indicators before the indicators failed was a performance deficiency. The finding was more than minor because it was associated with the equipment performance attribute of the Mitigating Systems Cornerstone and affects the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, this resulted in the instrument reading a higher tank level than actual due to the flow restriction in the bubbler tube, and the inoperability of the instrument. Using IMC 0609, Appendix A, issued June 19, 2012, the SDP for Findings At-Power, the inspectors determined the finding was of very low safety significance (Green) because the finding did not affect the design or qualification of a mitigating structure, system and component (SSC), the finding did not represent a loss of system and/or function, the finding did not represent an actual loss of a function of a single train for greater than the technical specifications (TS) allowed outage time, the finding did not represent an actual loss of a function of one or more non-TS trains of equipment, 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 in the area of human performance associated with the work management attribute because the licensee failed to implement a process of planning, controlling, and executing work activities such that nuclear safety is the overriding priority. The licensee failed to have the work process include the identification and management of risk commensurate to the work and the need for coordination with different groups. Specifically, the licensee failed to identify and manage the risk of the SLC tank level indicator bubbler clogging issue. [H.5]

Inspection Report# : [2014004](#) (*pdf*)

---

## **Barrier Integrity**

---

## **Emergency Preparedness**

---

## **Occupational Radiation Safety**

---

## **Public Radiation Safety**

---

## **Security**

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the [cover letters](#) to security inspection reports may be viewed.

---

## Miscellaneous

Last modified : August 07, 2015

# Brunswick 1

## 3Q/2015 Plant Inspection Findings

---

### Initiating Events

---

### Mitigating Systems

**Significance:** G Jun 30, 2015

Identified By: NRC

Item Type: NCV Non-Cited Violation

#### **Inadequate Procedure for the 1B Conventional Service Water Pump Strainer Repair**

An NRC-identified Green NCV of 10 CFR Part 50, Appendix B, Criterion V, Instructions, Procedures, and Drawings, was identified for the licensee's failure to have an adequate procedure to perform maintenance on the 1B conventional service water (CSW) pump strainer. Specifically, between August 28, 2009, and May 11, 2015, licensee procedure MNT NGGC-0009, Application of Protective Coatings, was not adequate to perform repairs on the 1B CSW pump strainer, which resulted in through wall leaks on three occasions. As corrective actions, the licensee repaired the weld, recoated the inside of the affected strainer area with Belzona coating using qualified individuals, and updated procedure MNT-NGGC-0009. The licensee entered this issue into the CAP as NCR 747712.

The inspectors determined that the licensee's failure to have an adequate procedure to perform maintenance on the 1B CSW pump strainer was a performance deficiency. The finding was more than minor because if left uncorrected, it had the potential to lead to a more significant safety concern. Specifically, it could have led to a more significant failure of the 1B CSW pump strainer and the service water system. Using IMC 0609, Appendix A, issued June 19, 2012, the SDP for Findings At-Power, the inspectors determined the finding was of very low safety significance (Green) because the finding did not affect the design or qualification of a mitigating SSC, the finding did not represent a loss of system and/or function, the finding did not represent an actual loss of a function of a single train for greater than the TS allowed outage time, the finding did not represent an actual loss of a function of one or more non-TS trains of equipment, 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 in the area human performance associated with the documentation attribute because the licensee failed to create and maintain complete, accurate and up-to-date documentation to correct the 1B CSW pump strainer through-wall leak issue on three occasions.

Inspection Report# : [2015002](#) (*pdf*)

**Significance:** G Jun 18, 2015

Identified By: NRC

Item Type: NCV Non-Cited Violation

#### **Failure to Identify Conditions Adverse to Quality**

An NRC-identified Green non-cited violation (NCV) of the Code of Federal Regulations (10 CFR) Part 50, Appendix B, Criterion XVI, Corrective Action, was identified for licensee failure to identify conditions adverse to quality during the evaluation of an emergency diesel generator (EDG) output breaker failure on March 16, 2015. Specifically, the licensee missed that an internal change made to a relay was a condition adverse to quality. Further, the licensee failed to reclassify a corrective action document to higher significance when information arose indicating that the

event in question was a loss of safety function. The licensee documented these issues in their corrective action program, completed the necessary reviews for a condition adverse to quality, and reclassified the original event to Significance Level 1.

The inspectors determined that the finding was more than minor in accordance with Manual Chapter 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," dated September 7, 2012, because, if left uncorrected, additional unqualified relays would likely have been installed in the plant. Using Manual Chapter 0609, Appendix A, Exhibit 1, effective July 1, 2012, the finding screened as Green for each unit by answering "no" to the questions related to an actual loss of function of a system, a single train, non-technical specification equipment designated as high safety-significant in accordance with the licensee's maintenance rule program for >24 hrs. The finding had a cross-cutting aspect for "Evaluation" in the area of Problem Identification & Resolution because the most likely cause of the missed conditions adverse to quality was a lack of thorough investigation during the evaluations (for cause and reportability) of the relay issue [P.2]

Inspection Report# : [2015007](#) (pdf)

**Significance:** G Jun 18, 2015

Identified By: NRC

Item Type: NCV Non-Cited Violation

#### **Insufficient Material Evaluation of Commercially Dedicated Allen Bradley Relays**

An NRC-identified Green NCV of 10 CFR Part 50, Appendix B, Criterion III, Design Control was identified for the licensee's inadequate commercial grade dedication technical evaluation that resulted in non-conforming relays being installed in the control circuits for emergency diesel generator output breakers. This led to specification of a relay that was unsuitable for the application being installed in the control circuit for two emergency diesel generator output breakers and failure of one of those breakers to close. The licensee documented this issue in their corrective action program and performed corrective actions to mitigate the effects of the undetected changes on the relay.

The inspectors determined that the finding was more than minor in accordance with Manual Chapter 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," dated September 7, 2012, because, if the process for detecting commercial grade item changes using material evaluations was left uncorrected, additional undetected design or process changes would likely occur. Using Manual Chapter 0609, Appendix A, issued June 19, 2012, "The Significance Determination Process (SDP) for Findings At-Power," the inspectors determined the finding required a detailed risk evaluation because the effect on two emergency diesel generators was considered a loss of function. For Unit 1, the regional Senior Reactor Analyst used demand data to adjust the probability that an emergency diesel generator would fail to start and ran a condition assessment on SAPHIRE. Because of limited exposure time, the finding was determined to be Green for Unit 1. For Unit 2, the conditions for exposure occurred during an outage with the reactor cavity filled, and both EDGs would be available. The SRA determined the significance to be bounded by the at power risk analysis performed for Unit 1. Because of the low exposure time, and the high likelihood of operators recovering the failure to start of the EDGs, this issue was Green for Unit 2. The inspectors did not identify a cross-cutting aspect associated with this finding because the original relay evaluation was done in 1999 and was not indicative of current licensee performance.

Inspection Report# : [2015007](#) (pdf)

**Significance:** G Dec 31, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

#### **Failure to Protect Emergency Diesel Generator 4-Day Fuel Oil Tank Ventilation Piping from Tornado Missiles**

The NRC-identified a Green non-cited violation (NCV) of Title 10 of the Code of Federal Regulations (10 CFR) Part 50, Appendix B, Criterion III, Design Control, for the failure to ensure adequate tornado missile protection for the emergency diesel generator (EDG) 4-day fuel oil tank ventilation piping. Specifically, it was determined that the ventilation piping could be sheared with a design basis tornado missile at the 4-day fuel oil tank building roof level and water intrusion into the EDG fuel oil system would occur during a design basis rain event that would prevent the

diesel from performing its required safety function. The licensee documented this issue in their corrective action program (CAP) and performed corrective actions to install concrete blocks around the piping.

The inspectors determined that the finding was more than minor in accordance with IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," dated September 7, 2012, because it is associated with the Mitigating Systems Cornerstone attributes of Protection Against External Factors and Equipment Performance, 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, it was determined that the ventilation piping could be sheared with a design basis tornado missile at the 4-day fuel oil tank building roof level and water intrusion into the EDG fuel oil system would occur during a design basis rain event that would prevent the EDG from performing its required safety function. Using IMC 0609, Appendix A, issued June 19, 2012, "The Significance Determination Process (SDP) for Findings At-Power," the inspectors determined the finding screened to a detailed risk evaluation since the EDG1 fuel oil system was assumed to be completely failed due to a tornado, and it would degrade one or more trains of a system that supports a risk significant system or function. The regional Senior Reactor Analyst performed a detailed risk evaluation by using a qualitative screening analysis to determine the significance of the finding. Tornado initiating event frequency was derived from Nation Weather Service data. Because of the low likelihood of a tornado powerful enough to throw an object of sufficient size to damage the piping, the remote chance the thrown object would strike the vent pipe, and because the remaining EDGs would not be impacted in the same way by the tornado, the finding was determined to be Green. The inspectors did not identify a cross-cutting aspect associated with this finding because the finding is an old design issue that has been in place since original plant construction.

Inspection Report# : [2014005](#) (*pdf*)

---

## Barrier Integrity

---

## Emergency Preparedness

---

## Occupational Radiation Safety

---

## Public Radiation Safety

---

## Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the [cover letters](#) to security inspection reports

may be viewed.

---

## **Miscellaneous**

Last modified : December 15, 2015

## Brunswick 1

### 4Q/2015 Plant Inspection Findings

---

## Initiating Events

---

## Mitigating Systems

**Significance:** G Jun 30, 2015

Identified By: NRC

Item Type: NCV Non-Cited Violation

### **Inadequate Procedure for the 1B Conventional Service Water Pump Strainer Repair**

An NRC-identified Green NCV of 10 CFR Part 50, Appendix B, Criterion V, Instructions, Procedures, and Drawings, was identified for the licensee's failure to have an adequate procedure to perform maintenance on the 1B conventional service water (CSW) pump strainer. Specifically, between August 28, 2009, and May 11, 2015, licensee procedure MNT NGGC-0009, Application of Protective Coatings, was not adequate to perform repairs on the 1B CSW pump strainer, which resulted in through wall leaks on three occasions. As corrective actions, the licensee repaired the weld, recoated the inside of the affected strainer area with Belzona coating using qualified individuals, and updated procedure MNT-NGGC-0009. The licensee entered this issue into the CAP as NCR 747712.

The inspectors determined that the licensee's failure to have an adequate procedure to perform maintenance on the 1B CSW pump strainer was a performance deficiency. The finding was more than minor because if left uncorrected, it had the potential to lead to a more significant safety concern. Specifically, it could have led to a more significant failure of the 1B CSW pump strainer and the service water system. Using IMC 0609, Appendix A, issued June 19, 2012, the SDP for Findings At-Power, the inspectors determined the finding was of very low safety significance (Green) because the finding did not affect the design or qualification of a mitigating SSC, the finding did not represent a loss of system and/or function, the finding did not represent an actual loss of a function of a single train for greater than the TS allowed outage time, the finding did not represent an actual loss of a function of one or more non-TS trains of equipment, 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 in the area human performance associated with the documentation attribute because the licensee failed to create and maintain complete, accurate and up-to-date documentation to correct the 1B CSW pump strainer through-wall leak issue on three occasions.

Inspection Report# : [2015002](#) (*pdf*)

**Significance:** G Jun 18, 2015

Identified By: NRC

Item Type: NCV Non-Cited Violation

### **Failure to Identify Conditions Adverse to Quality**

An NRC-identified Green non-cited violation (NCV) of the Code of Federal Regulations (10 CFR) Part 50, Appendix B, Criterion XVI, Corrective Action, was identified for licensee failure to identify conditions adverse to quality during the evaluation of an emergency diesel generator (EDG) output breaker failure on March 16, 2015. Specifically, the licensee missed that an internal change made to a relay was a condition adverse to quality. Further, the licensee failed to reclassify a corrective action document to higher significance when information arose indicating that the

event in question was a loss of safety function. The licensee documented these issues in their corrective action program, completed the necessary reviews for a condition adverse to quality, and reclassified the original event to Significance Level 1.

The inspectors determined that the finding was more than minor in accordance with Manual Chapter 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," dated September 7, 2012, because, if left uncorrected, additional unqualified relays would likely have been installed in the plant. Using Manual Chapter 0609, Appendix A, Exhibit 1, effective July 1, 2012, the finding screened as Green for each unit by answering "no" to the questions related to an actual loss of function of a system, a single train, non-technical specification equipment designated as high safety-significant in accordance with the licensee's maintenance rule program for >24 hrs. The finding had a cross-cutting aspect for "Evaluation" in the area of Problem Identification & Resolution because the most likely cause of the missed conditions adverse to quality was a lack of thorough investigation during the evaluations (for cause and reportability) of the relay issue [P.2]

Inspection Report# : [2015007](#) (pdf)

**Significance:** G Jun 18, 2015

Identified By: NRC

Item Type: NCV Non-Cited Violation

### **Insufficient Material Evaluation of Commercially Dedicated Allen Bradley Relays**

An NRC-identified Green NCV of 10 CFR Part 50, Appendix B, Criterion III, Design Control was identified for the licensee's inadequate commercial grade dedication technical evaluation that resulted in non-conforming relays being installed in the control circuits for emergency diesel generator output breakers. This led to specification of a relay that was unsuitable for the application being installed in the control circuit for two emergency diesel generator output breakers and failure of one of those breakers to close. The licensee documented this issue in their corrective action program and performed corrective actions to mitigate the effects of the undetected changes on the relay.

The inspectors determined that the finding was more than minor in accordance with Manual Chapter 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," dated September 7, 2012, because, if the process for detecting commercial grade item changes using material evaluations was left uncorrected, additional undetected design or process changes would likely occur. Using Manual Chapter 0609, Appendix A, issued June 19, 2012, "The Significance Determination Process (SDP) for Findings At-Power," the inspectors determined the finding required a detailed risk evaluation because the effect on two emergency diesel generators was considered a loss of function. For Unit 1, the regional Senior Reactor Analyst used demand data to adjust the probability that an emergency diesel generator would fail to start and ran a condition assessment on SAPHIRE. Because of limited exposure time, the finding was determined to be Green for Unit 1. For Unit 2, the conditions for exposure occurred during an outage with the reactor cavity filled, and both EDGs would be available. The SRA determined the significance to be bounded by the at power risk analysis performed for Unit 1. Because of the low exposure time, and the high likelihood of operators recovering the failure to start of the EDGs, this issue was Green for Unit 2. The inspectors did not identify a cross-cutting aspect associated with this finding because the original relay evaluation was done in 1999 and was not indicative of current licensee performance.

Inspection Report# : [2015007](#) (pdf)

---

## **Barrier Integrity**

---

## **Emergency Preparedness**

## Occupational Radiation Safety

---

## Public Radiation Safety

---

## Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the [cover letters](#) to security inspection reports may be viewed.

---

## Miscellaneous

Last modified : March 01, 2016

# Brunswick 1

## 1Q/2016 Plant Inspection Findings

---

### Initiating Events

---

### Mitigating Systems

**Significance:**  Jun 30, 2015

Identified By: NRC

Item Type: NCV Non-Cited Violation

#### **Inadequate Procedure for the 1B Conventional Service Water Pump Strainer Repair**

An NRC-identified Green NCV of 10 CFR Part 50, Appendix B, Criterion V, Instructions, Procedures, and Drawings, was identified for the licensee's failure to have an adequate procedure to perform maintenance on the 1B conventional service water (CSW) pump strainer. Specifically, between August 28, 2009, and May 11, 2015, licensee procedure MNT NGGC-0009, Application of Protective Coatings, was not adequate to perform repairs on the 1B CSW pump strainer, which resulted in through wall leaks on three occasions. As corrective actions, the licensee repaired the weld, recoated the inside of the affected strainer area with Belzona coating using qualified individuals, and updated procedure MNT-NGGC-0009. The licensee entered this issue into the CAP as NCR 747712.

The inspectors determined that the licensee's failure to have an adequate procedure to perform maintenance on the 1B CSW pump strainer was a performance deficiency. The finding was more than minor because if left uncorrected, it had the potential to lead to a more significant safety concern. Specifically, it could have led to a more significant failure of the 1B CSW pump strainer and the service water system. Using IMC 0609, Appendix A, issued June 19, 2012, the SDP for Findings At-Power, the inspectors determined the finding was of very low safety significance (Green) because the finding did not affect the design or qualification of a mitigating SSC, the finding did not represent a loss of system and/or function, the finding did not represent an actual loss of a function of a single train for greater than the TS allowed outage time, the finding did not represent an actual loss of a function of one or more non-TS trains of equipment, 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 in the area human performance associated with the documentation attribute because the licensee failed to create and maintain complete, accurate and up-to-date documentation to correct the 1B CSW pump strainer through-wall leak issue on three occasions.

Inspection Report# : [2015002](#) (*pdf*)

**Significance:**  Jun 18, 2015

Identified By: NRC

Item Type: NCV Non-Cited Violation

#### **Failure to Identify Conditions Adverse to Quality**

An NRC-identified Green non-cited violation (NCV) of the Code of Federal Regulations (10 CFR) Part 50, Appendix B, Criterion XVI, Corrective Action, was identified for licensee failure to identify conditions adverse to quality during the evaluation of an emergency diesel generator (EDG) output breaker failure on March 16, 2015. Specifically, the licensee missed that an internal change made to a relay was a condition adverse to quality. Further, the licensee failed to reclassify a corrective action document to higher significance when information arose indicating that the

event in question was a loss of safety function. The licensee documented these issues in their corrective action program, completed the necessary reviews for a condition adverse to quality, and reclassified the original event to Significance Level 1.

The inspectors determined that the finding was more than minor in accordance with Manual Chapter 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," dated September 7, 2012, because, if left uncorrected, additional unqualified relays would likely have been installed in the plant. Using Manual Chapter 0609, Appendix A, Exhibit 1, effective July 1, 2012, the finding screened as Green for each unit by answering "no" to the questions related to an actual loss of function of a system, a single train, non-technical specification equipment designated as high safety-significant in accordance with the licensee's maintenance rule program for >24 hrs. The finding had a cross-cutting aspect for "Evaluation" in the area of Problem Identification & Resolution because the most likely cause of the missed conditions adverse to quality was a lack of thorough investigation during the evaluations (for cause and reportability) of the relay issue [P.2]

Inspection Report# : [2015007](#) (pdf)

**Significance:** G Jun 18, 2015

Identified By: NRC

Item Type: NCV Non-Cited Violation

### **Insufficient Material Evaluation of Commercially Dedicated Allen Bradley Relays**

An NRC-identified Green NCV of 10 CFR Part 50, Appendix B, Criterion III, Design Control was identified for the licensee's inadequate commercial grade dedication technical evaluation that resulted in non-conforming relays being installed in the control circuits for emergency diesel generator output breakers. This led to specification of a relay that was unsuitable for the application being installed in the control circuit for two emergency diesel generator output breakers and failure of one of those breakers to close. The licensee documented this issue in their corrective action program and performed corrective actions to mitigate the effects of the undetected changes on the relay.

The inspectors determined that the finding was more than minor in accordance with Manual Chapter 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," dated September 7, 2012, because, if the process for detecting commercial grade item changes using material evaluations was left uncorrected, additional undetected design or process changes would likely occur. Using Manual Chapter 0609, Appendix A, issued June 19, 2012, "The Significance Determination Process (SDP) for Findings At-Power," the inspectors determined the finding required a detailed risk evaluation because the effect on two emergency diesel generators was considered a loss of function. For Unit 1, the regional Senior Reactor Analyst used demand data to adjust the probability that an emergency diesel generator would fail to start and ran a condition assessment on SAPHIRE. Because of limited exposure time, the finding was determined to be Green for Unit 1. For Unit 2, the conditions for exposure occurred during an outage with the reactor cavity filled, and both EDGs would be available. The SRA determined the significance to be bounded by the at power risk analysis performed for Unit 1. Because of the low exposure time, and the high likelihood of operators recovering the failure to start of the EDGs, this issue was Green for Unit 2. The inspectors did not identify a cross-cutting aspect associated with this finding because the original relay evaluation was done in 1999 and was not indicative of current licensee performance.

Inspection Report# : [2015007](#) (pdf)

---

## **Barrier Integrity**

---

## **Emergency Preparedness**

## Occupational Radiation Safety

---

## Public Radiation Safety

---

## Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the [cover letters](#) to security inspection reports may be viewed.

---

## Miscellaneous

Last modified : July 11, 2016

## Brunswick 1 2Q/2016 Plant Inspection Findings

---

### Initiating Events

**Significance:** TBD May 31, 2016

Identified By: NRC

Item Type: FIN Finding

#### **Inadequate Procedures to Perform Maintenance on the SAT Non-segregated Bus and the 1B RRP VFD Cables**

A self-revealing finding with two examples was identified for the licensee's failure to have adequate procedures to perform maintenance on the startup auxiliary transformer (SAT) non-segregated bus duct and the 1B Reactor Recirculation Pump (RRP) variable frequency drive (VFD) cables. The first example, from May 1997 to the present, procedure 0PM-NSB001, Inspection and Cleaning Non-Segregated Buses, did not contain sufficient information to ensure that deficiencies that could lead to water intrusion in the SAT non-segregated bus duct were identified and corrected. The second example, from October 2003 to June 20, 2016, procedure 0SPP-CBL011, Splicing of Wires and Cables Without Tape, failed to specify use of a depth-limiting cutting tool for removing semi-conductor insulation on the 1B RRP VFD cables. The licensee entered this issue into the corrective action program (CAP) as nuclear condition report (NCR) 1998726.

The inspectors determined that the failure of the licensee to have adequate procedures to perform maintenance on the SAT non-segregated bus duct and the 1B RRP VFD cables was a performance deficiency. The finding was more than minor because it was associated with the equipment performance attribute of the Initiating Events Cornerstone and adversely affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the failure to perform adequate maintenance on the SAT non-segregated bus duct and the 1B RRP VFD cables resulted in a SAT differential lockout, a Unit 1 manual reactor SCRAM, and a loss of offsite power (LOOP). Using IMC 0609, Appendix A, issued June 19, 2012, the Significance Determination Process for Findings At-Power, the inspectors determined the finding screened to a more detailed risk evaluation because the finding caused a reactor trip and the loss of mitigation equipment relied upon to transition the plant from the onset of the trip to a stable shutdown condition. The finding could not be screened to Green and is pending an initial significance characterization and is not yet finalized. The finding does not currently present an immediate safety concern because the licensee repaired the A phase fault on the non-segregated bus, resealed the bus duct bank, spliced in new cables to the 1B RRP VFD breaker and replaced the 1B RRP VFD breaker. The finding has a cross-cutting aspect in the area of human performance associated with the avoid complacency attribute because individuals failed to recognize and plan for the possibility of mistakes, latent issues, and inherent risk, even while expecting successful outcomes, and individuals failed to implement appropriate error reduction tools. Specifically, the licensee failed to plan for the inherent risk associated with water intrusion into the SAT non-segregated bus duct and failed to implement error reduction tools when inspecting and repairing the duct. Inspection Report# : [2016008](#) (*pdf*)

---

### Mitigating Systems

---

### Barrier Integrity

## Emergency Preparedness

---

## Occupational Radiation Safety

---

## Public Radiation Safety

---

## Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the [cover letters](#) to security inspection reports may be viewed.

---

## Miscellaneous

Last modified : August 29, 2016

## Brunswick 1

### 3Q/2016 Plant Inspection Findings

---

## Initiating Events

**Significance:** G May 31, 2016

Identified By: NRC

Item Type: FIN Finding

### **Inadequate Procedures to Perform Maintenance on the SAT Non-segregated Bus and the 1B RRP VFD Cables**

A self-revealing finding with two examples was identified for the licensee's failure to have adequate procedures to perform maintenance on the startup auxiliary transformer (SAT) non-segregated bus duct and the 1B Reactor Recirculation Pump (RRP) variable frequency drive (VFD) cables. The first example, from May 1997 to the present, procedure 0PM-NSB001, Inspection and Cleaning Non-Segregated Buses, did not contain sufficient information to ensure that deficiencies that could lead to water intrusion in the SAT non-segregated bus duct were identified and corrected. The second example, from October 2003 to June 20, 2016, procedure 0SPP-CBL011, Splicing of Wires and Cables Without Tape, failed to specify use of a depth-limiting cutting tool for removing semi-conductor insulation on the 1B RRP VFD cables. The licensee entered this issue into the corrective action program (CAP) as nuclear condition report (NCR) 1998726.

The inspectors determined that the failure of the licensee to have adequate procedures to perform maintenance on the SAT non-segregated bus duct and the 1B RRP VFD cables was a performance deficiency. The finding was more than minor because it was associated with the equipment performance attribute of the Initiating Events Cornerstone and adversely affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the failure to perform adequate maintenance on the SAT non-segregated bus duct and the 1B RRP VFD cables resulted in a SAT differential lockout, a Unit 1 manual reactor SCRAM, and a loss of offsite power (LOOP). Using IMC 0609, Appendix A, issued June 19, 2012, the SDP for Findings At-Power, the inspectors determined the finding screened to a more detailed risk evaluation because the finding caused a reactor trip and the loss of mitigation equipment relied upon to transition the plant from the onset of the trip to a stable shutdown condition. A detailed risk review was performed by the regional Senior Reactor Analyst. After additional review, it was determined that the two inadequate procedures did not share a direct common cause. Therefore, the risk associated with each condition was analyzed separately in accordance with the SDP. When separate, each finding, given the appropriate conditions, would result in a ground. The high resistance grounding design of the plant's 4kV system limits the phase to ground fault current to a low enough value to limit plant equipment damage and allow time to search for the ground. The very low risk significance associated with these two separate grounds resulted in a Green (very low safety significance) finding. The risk significance of the event was mitigated because the licensee had earlier implemented modifications to the plant that would allow for early backfeed of alternating current power through the auxiliary unit transformer in the event of the failure of the path from the startup transformer. The licensee had also installed a supplemental EDG to provide a backup to the site EDGs that did not share the dependence on external sources of water for cooling. The finding has a cross-cutting aspect in the area of human performance associated with the avoid complacency attribute because individuals failed to recognize and plan for the possibility of mistakes, latent issues, and inherent risk, even while expecting successful outcomes, and individuals failed to implement appropriate error reduction tools. Specifically, the licensee failed to plan for the inherent risk associated with water intrusion into the SAT non-segregated bus duct and failed to implement error reduction tools when inspecting and repairing the duct.

Inspection Report# : [2016003](#) (*pdf*)

Inspection Report# : [2016008](#) (*pdf*)

## Mitigating Systems

**Significance:**  Jun 30, 2016

Identified By: NRC

Item Type: NCV Non-Cited Violation

### **Failure to Identify Broken Auto Start Control Relay on Emergency Diesel Generator 1**

An NRC-identified Green non-cited violation (NCV) of 10 CFR Part 50, Appendix B, Criterion XVI, Corrective Action, was identified because the licensee failed to promptly identify and correct a condition adverse to quality (CAQ) on emergency diesel generator (EDG) 1. Specifically, from February 7, 2016, until March 5, 2016, the licensee failed to promptly identify and correct a broken auto start control relay (ASCR) which resulted in reduced capacity of EDG 1 due to load oscillations and inoperability of EDG 1 due to oscillating between droop and isochronous mode. The oscillations could cause the EDG to not meet Technical Specification (TS) frequency and load requirements. The licensee replaced the ASCR and entered this issue into the corrective action program (CAP) as nuclear condition report (NCR) 2007720.

The licensee's failure to promptly identify and correct the broken ASCR, which resulted in reduced capacity and inoperability of EDG 1 due to load oscillations, was a performance deficiency. The finding was more than minor because it was associated with the equipment performance attribute of the Mitigating Systems Cornerstone and adversely affected the cornerstone objective of ensuring the capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to identify and correct the malfunctioning ASCR resulted in reduced capacity of EDG 1 due to load oscillations, and could cause EDG 1 to not meet TS frequency and load requirements. Using IMC 0609, Appendix A, issued June 19, 2012, The Significance Determination Process (SDP) for Findings At-Power, the inspectors determined the finding screened to a more detailed risk evaluation because it represented a loss of system and/or function, and the finding represented an actual loss of a function of a single train for greater than the TS allowed outage time. The regional Senior Reactor Analyst evaluated the finding and determined it to be Green. The risk was low because of the diverse sources of AC power available, and the long duration of some of the sequences allowed a greater potential for recovery of a failed AC power source. The dominant risk sequences contained common cause failure of the diesel generators, with the supplemental EDG aligned to the other unit, and non-recovery of offsite power or of an EDG.

The finding has a cross-cutting aspect in the area of problem identification and resolution associated with the identification attribute because the licensee failed to implement a CAP with a low threshold for identifying issues completely, accurately, and in a timely manner in accordance with the program. Specifically, the licensee failed to write a timely NCR and identify the load oscillations as a CAQ. [P.1]

Inspection Report# : [2016002](#) (*pdf*)

**Significance:**  Jun 30, 2016

Identified By: NRC

Item Type: NCV Non-Cited Violation

### **Failure to Verify or Check the Adequacy of Design of the EDG 3 Auto-Start Circuitry**

A self-revealing Green NCV of 10 CFR Part 50, Appendix B, Criterion III, Design Control, was identified for the licensee's failure to verify or check the adequacy of design of the EDG 3 emergency auto-start circuitry. Specifically, on October 24, 2011, the licensee failed to verify or check the adequacy of design of the fuse block holder modification to the EDG auto-start circuitry. This resulted in the fuse block holder connection becoming loose, a loss of continuity through the circuit, and the inoperability of EDG 3. The licensee replaced the fuse block holder, performed a continuity check, and plans to implement a design change to install continuity indication for continuous verification of continuity. The licensee entered this issue into the CAP as NCR 2007449.

The licensee's failure to verify or check the adequacy of design of the EDG 3 emergency auto-start circuitry fuse

block holder modification was a performance deficiency. The performance deficiency was more than minor because it was associated with the design control attribute of the Mitigating Systems Cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. This resulted in the fuse block holder connection becoming loose, a loss of continuity through the circuit, and the inoperability of EDG 3. Using IMC 0609, Appendix A, issued June 19, 2012, The Significance Determination Process (SDP) for Findings At-Power, the inspectors determined the finding screened to a more detailed risk evaluation because it represented a loss of system and/or function, and the finding represented an actual loss of a function of a single train for greater than the TS allowed outage time. The regional SRA performed a detailed risk review for the finding. The finding was determined to be Green. The limited duration of the EDG's failure of the auto start, the ability to manually recover the EDG, and the availability of the other EDGs and of the supplemental EDG contributed to the low risk value. The dominant risk sequences were of low value, and were Station Blackout with failure to recover offsite power or the EDGs.

The finding has a cross-cutting aspect in the area of problem identification and resolution associated with the identification attribute because the licensee failed to implement a CAP with a low threshold for identifying issues completely, accurately, and in a timely manner in accordance with the program. Specifically, the licensee failed to identify EDG 3 was inoperable on February 7, 2016, when the indications were apparent. [P.1]

Inspection Report# : [2016002](#) (*pdf*)

---

## Barrier Integrity

---

## Emergency Preparedness

---

## Occupational Radiation Safety

---

## Public Radiation Safety

---

## Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the [cover letters](#) to security inspection reports may be viewed.

---

## Miscellaneous

Last modified : December 08, 2016

# Brunswick 1

## 4Q/2016 Plant Inspection Findings

---

### Initiating Events

**Significance:**  May 31, 2016

Identified By: NRC

Item Type: FIN Finding

#### **Inadequate Procedures to Perform Maintenance on the SAT Non-segregated Bus and the 1B RRP VFD Cables**

A self-revealing finding with two examples was identified for the licensee's failure to have adequate procedures to perform maintenance on the startup auxiliary transformer (SAT) non-segregated bus duct and the 1B Reactor Recirculation Pump (RRP) variable frequency drive (VFD) cables. The first example, from May 1997 to the present, procedure 0PM-NSB001, Inspection and Cleaning Non-Segregated Buses, did not contain sufficient information to ensure that deficiencies that could lead to water intrusion in the SAT non-segregated bus duct were identified and corrected. The second example, from October 2003 to June 20, 2016, procedure 0SPP-CBL011, Splicing of Wires and Cables Without Tape, failed to specify use of a depth-limiting cutting tool for removing semi-conductor insulation on the 1B RRP VFD cables. The licensee entered this issue into the corrective action program (CAP) as nuclear condition report (NCR) 1998726.

The inspectors determined that the failure of the licensee to have adequate procedures to perform maintenance on the SAT non-segregated bus duct and the 1B RRP VFD cables was a performance deficiency. The finding was more than minor because it was associated with the equipment performance attribute of the Initiating Events Cornerstone and adversely affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the failure to perform adequate maintenance on the SAT non-segregated bus duct and the 1B RRP VFD cables resulted in a SAT differential lockout, a Unit 1 manual reactor SCRAM, and a loss of offsite power (LOOP). Using IMC 0609, Appendix A, issued June 19, 2012, the SDP for Findings At-Power, the inspectors determined the finding screened to a more detailed risk evaluation because the finding caused a reactor trip and the loss of mitigation equipment relied upon to transition the plant from the onset of the trip to a stable shutdown condition. A detailed risk review was performed by the regional Senior Reactor Analyst. After additional review, it was determined that the two inadequate procedures did not share a direct common cause. Therefore, the risk associated with each condition was analyzed separately in accordance with the SDP. When separate, each finding, given the appropriate conditions, would result in a ground. The high resistance grounding design of the plant's 4kV system limits the phase to ground fault current to a low enough value to limit plant equipment damage and allow time to search for the ground. The very low risk significance associated with these two separate grounds resulted in a Green (very low safety significance) finding. The risk significance of the event was mitigated because the licensee had earlier implemented modifications to the plant that would allow for early backfeed of alternating current power through the auxiliary unit transformer in the event of the failure of the path from the startup transformer. The licensee had also installed a supplemental EDG to provide a backup to the site EDGs that did not share the dependence on external sources of water for cooling. The finding has a cross-cutting aspect in the area of human performance associated with the avoid complacency attribute because individuals failed to recognize and plan for the possibility of mistakes, latent issues, and inherent risk, even while expecting successful outcomes, and individuals failed to implement appropriate error reduction tools. Specifically, the licensee failed to plan for the inherent risk associated with water intrusion into the SAT non-segregated bus duct and failed to implement error reduction tools when inspecting and repairing the duct.

Inspection Report# : [2016008](#) (*pdf*)

Inspection Report# : [2016003](#) (*pdf*)

## Mitigating Systems

**Significance:**  Jun 30, 2016

Identified By: NRC

Item Type: NCV Non-Cited Violation

### **Failure to Identify Broken Auto Start Control Relay on Emergency Diesel Generator 1**

An NRC-identified Green non-cited violation (NCV) of 10 CFR Part 50, Appendix B, Criterion XVI, Corrective Action, was identified because the licensee failed to promptly identify and correct a condition adverse to quality (CAQ) on emergency diesel generator (EDG) 1. Specifically, from February 7, 2016, until March 5, 2016, the licensee failed to promptly identify and correct a broken auto start control relay (ASCR) which resulted in reduced capacity of EDG 1 due to load oscillations and inoperability of EDG 1 due to oscillating between droop and isochronous mode. The oscillations could cause the EDG to not meet Technical Specification (TS) frequency and load requirements. The licensee replaced the ASCR and entered this issue into the corrective action program (CAP) as nuclear condition report (NCR) 2007720.

The licensee's failure to promptly identify and correct the broken ASCR, which resulted in reduced capacity and inoperability of EDG 1 due to load oscillations, was a performance deficiency. The finding was more than minor because it was associated with the equipment performance attribute of the Mitigating Systems Cornerstone and adversely affected the cornerstone objective of ensuring the capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to identify and correct the malfunctioning ASCR resulted in reduced capacity of EDG 1 due to load oscillations, and could cause EDG 1 to not meet TS frequency and load requirements. Using IMC 0609, Appendix A, issued June 19, 2012, The Significance Determination Process (SDP) for Findings At-Power, the inspectors determined the finding screened to a more detailed risk evaluation because it represented a loss of system and/or function, and the finding represented an actual loss of a function of a single train for greater than the TS allowed outage time. The regional Senior Reactor Analyst evaluated the finding and determined it to be Green. The risk was low because of the diverse sources of AC power available, and the long duration of some of the sequences allowed a greater potential for recovery of a failed AC power source. The dominant risk sequences contained common cause failure of the diesel generators, with the supplemental EDG aligned to the other unit, and non-recovery of offsite power or of an EDG.

The finding has a cross-cutting aspect in the area of problem identification and resolution associated with the identification attribute because the licensee failed to implement a CAP with a low threshold for identifying issues completely, accurately, and in a timely manner in accordance with the program. Specifically, the licensee failed to write a timely NCR and identify the load oscillations as a CAQ. [P.1]

Inspection Report# : [2016002](#) (*pdf*)

**Significance:**  Jun 30, 2016

Identified By: NRC

Item Type: NCV Non-Cited Violation

### **Failure to Verify or Check the Adequacy of Design of the EDG 3 Auto-Start Circuitry**

A self-revealing Green NCV of 10 CFR Part 50, Appendix B, Criterion III, Design Control, was identified for the licensee's failure to verify or check the adequacy of design of the EDG 3 emergency auto-start circuitry. Specifically, on October 24, 2011, the licensee failed to verify or check the adequacy of design of the fuse block holder modification to the EDG auto-start circuitry. This resulted in the fuse block holder connection becoming loose, a loss of continuity through the circuit, and the inoperability of EDG 3. The licensee replaced the fuse block holder, performed a continuity check, and plans to implement a design change to install continuity indication for continuous verification of continuity. The licensee entered this issue into the CAP as NCR 2007449.

The licensee's failure to verify or check the adequacy of design of the EDG 3 emergency auto-start circuitry fuse

block holder modification was a performance deficiency. The performance deficiency was more than minor because it was associated with the design control attribute of the Mitigating Systems Cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. This resulted in the fuse block holder connection becoming loose, a loss of continuity through the circuit, and the inoperability of EDG 3. Using IMC 0609, Appendix A, issued June 19, 2012, The Significance Determination Process (SDP) for Findings At-Power, the inspectors determined the finding screened to a more detailed risk evaluation because it represented a loss of system and/or function, and the finding represented an actual loss of a function of a single train for greater than the TS allowed outage time. The regional SRA performed a detailed risk review for the finding. The finding was determined to be Green. The limited duration of the EDG's failure of the auto start, the ability to manually recover the EDG, and the availability of the other EDGs and of the supplemental EDG contributed to the low risk value. The dominant risk sequences were of low value, and were Station Blackout with failure to recover offsite power or the EDGs.

The finding has a cross-cutting aspect in the area of problem identification and resolution associated with the identification attribute because the licensee failed to implement a CAP with a low threshold for identifying issues completely, accurately, and in a timely manner in accordance with the program. Specifically, the licensee failed to identify EDG 3 was inoperable on February 7, 2016, when the indications were apparent. [P.1]

Inspection Report# : [2016002](#) (*pdf*)

---

## Barrier Integrity

---

## Emergency Preparedness

---

## Occupational Radiation Safety

---

## Public Radiation Safety

---

## Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the [cover letters](#) to security inspection reports may be viewed.

---

## Miscellaneous

Last modified : February 01, 2017



Home > Nuclear Reactors > Operating Reactors > Reactor Oversight Process > Plant Summaries > Brunswick 1 > Quarterly Plant Inspection Findings

## **Brunswick 1 – Quarterly Plant Inspection Findings**

### **2Q/2017 – Plant Inspection Findings**

On this page:

- Initiating Events
- Mitigating Systems
- Barrier Integrity
- Emergency Preparedness
- Occupational Radiation Safety
- Public Radiation Safety
- Security

#### **Initiating Events**

#### **Mitigating Systems**

**Significance:** G Mar 31, 2017

Identified By: NRC

Item Type: NCV Non-Cited Violation

#### **Nonfunctional Sprinklers in the Service Water Building Without Compensatory Measures**

An NRC-identified Green non-cited violation (NCV) of License Condition 2.B.(6), Fire Protection Program, was identified for the licensee's failure to implement compensatory measures for nonfunctional sprinklers. Specifically, from January 11, 2017, until January 14, 2017, fire sprinklers were impaired when scaffolding was built over the service water (SW) system discharge valves without the proper fire protection evaluation and compensatory measures, as required by licensee procedure 0PLP-01.2, Fire Protection System Operability, Action, and Surveillance Requirements. The licensee's corrective actions included declaring the sprinklers nonfunctional, and implementing an hourly fire watch and backup suppression until the scaffold could be removed. This issue was entered into the licensee's corrective action program (CAP) as nuclear condition report (NCR) 2091795.

The inspectors determined that the licensee's failure to implement compensatory measures for nonfunctional sprinklers in accordance with procedure 0PLP-01.2, was a performance deficiency. The finding was more than minor because it was associated with the Protection against External Events attribute (i.e. fire) of the Mitigating Systems Cornerstone 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, this resulted in nonfunctional sprinklers in a safety-related area without compensatory measures. The finding was screened using NRC IMC 0609, Appendix F, "Fire Protection Significance Determination Process," dated September 20, 2013, because the finding affected the fixed fire protection system capability. Using IMC 0609, Appendix F, Attachment 1, "Fire Protection SDP Phase 1 Worksheet," dated September 20, 2013, the finding was assigned to the Fixed Fire Protection System category because the nonfunctional sprinklers affected the automatic fire suppression system. Proceeding to Task 1.3.1 of IMC 0609, Appendix F, Attachment 1, the inspectors determined the finding was of very low safety significance (Green), because

with the sprinklers nonfunctional, the reactor was able to reach and maintain safe shutdown. The finding has a cross-cutting aspect in the area of human performance associated with the field presence attribute because leaders did not observe, coach, and reinforce standards and expectations regarding scaffolding. Deviations from standards and expectations for building scaffolding near fire protection sprinklers were not corrected promptly.

Inspection Report# : 2017001 (*pdf*)

**Significance:**  Mar 31, 2017

Identified By: NRC

Item Type: NCV Non-Cited Violation

#### **Failure to Install Flood Barrier Seals Around the EDG 2 Four-Day Fuel Oil Tank Vents**

An NRC-identified Green NCV of 10 CFR Part 50, Appendix B, Criterion III, Design Control, was identified for the failure of the licensee to install flood barrier seals around the emergency diesel generator (EDG) 2, four-day fuel oil tank vent as described in engineering change (EC) 400606. This resulted in a nonfunctional flood barrier into the EDG 2 four-day tank room. As an immediate corrective action, the licensee grouted the opening to prevent water intrusion into the EDG 2 four-day fuel oil tank room. The licensee entered this issue into the CAP as NCR 2093563.

The inspectors determined the failure of the licensee to control the design of the installation of the new EDG 2 four-day fuel oil tank vent was a performance deficiency. The finding is more than minor because it is associated with the protection against external factors (i.e., flood hazard) attribute of the Mitigating Systems Cornerstone and adversely 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 licensee failed to install flood barrier seals around the EDG 2 four-day fuel oil tank vent designed to mitigate a flood of the EDG 2 four-day fuel oil tank room. Using IMC 0609, Appendix A, issued June 9, 2012, The SDP for Findings At-Power, the inspectors determined the finding screened to Exhibit 4, External Events Screening Questions, since the finding involved the loss of equipment specifically designed to mitigate a flood. The inspectors determined the finding screened to Green since if the flood barrier is assumed to be completely failed, it would not result in the inoperability or degradation of EDG 2, and would not involve the total loss of any safety function that contributes to external event initiated core damage accident sequences. The finding has a cross-cutting aspect in the area of human performance associated with the design margins attribute because the licensee failed to maintain equipment within design margins and failed to change margins through a systematic and rigorous process. Specifically, the licensee changed the installation of the EDG 2 fuel oil tank roof vent without ensuring flood protection during the modification.

Inspection Report# : 2017001 (*pdf*)

**Significance:**  Feb 17, 2017

Identified By: NRC

Item Type: NCV Non-Cited Violation

#### **Failure to Correct a Nonfunctional Fire Door**

The NRC identified a Green non-cited violation (NCV) of Brunswick Operating License Condition (OLC) 2.B(6) for Units 1 and 2, for the licensee's failure to correct a nonfunctional fire door in the diesel generator (DG) building. Specifically, on three occasions, NRC inspectors identified door 2-DGB-DR-EL023-118 in the DG building as having a stuck open latch, which prevented the door from closing and latching securely. Upon the third discovery of the nonfunctional fire door, the licensee initiated AR 02100405, entered the appropriate action statement in accordance with site procedure 0PLP-01.2, "Fire Protection System Operability, Action, and Surveillance Requirements," and took actions to install a new thumb latch, and to install a new door closure mechanism.

The inspectors determined that the licensee's failure correct nonfunctional fire door was a performance deficiency (PD). The PD was determined to be more than minor because if left uncorrected, the PD could have the potential to lead to a

more significant safety concern. Specifically, if the door was not repaired adequately, it could have the potential to not be able to perform its design function in the case of a fire in diesel generator cell nos. 1 or 2 (FA DG-4 or DG-5). Using IMC 0609, Appendix F, Attachment 1, "Fire Protection Significance Determination Process Worksheet," the finding was screened as Green at task 1.4.3-C because there was a fully functional automatic suppression system on at least one side of the fire barrier. The finding has a cross-cutting aspect in the area of problem identification & resolution associated with the 'Evaluation' attribute because the organization did not thoroughly evaluate the condition of the door to ensure that the resolution addressed the underlying cause of the nonfunctional fire door (P.2).

Inspection Report# : 2017007 (*pdf*)

## **Barrier Integrity**

**Significance:**  Mar 31, 2017

Identified By: NRC

Item Type: NCV Non-Cited Violation

### **Failure to Enter the Technical Specification for an Inoperable 1D Control Room Air Conditioning Unit**

An NRC-identified Green NCV of Technical Specification (TS) 3.7.4, Control Room Air Conditioning (AC) System, was identified for the failure to declare the 1D control room AC unit inoperable. Specifically, on December 1, 2016, the licensee failed to declare the 1D control room AC unit inoperable due to extensive corrosion on the support channels. As a result, the 1D control room AC unit was inoperable from December 1, 2016, until the next time it was inspected on January 30, 2017, and exceeded the TS allowed outage time. As corrective actions, the licensee replaced the supports of the 1D and 2D control room AC units and inspected the 2E control room AC unit for corrosion. The licensee entered this issue into the CAP as NCRs 2113799 and 2113800.

The inspectors determined the licensee's failure to declare the 1D control room AC unit inoperable and enter TS 3.7.4 was a performance deficiency. The finding was more than minor because it was associated with the structures, systems, and components (SSC) attribute of the Barrier Integrity Cornerstone and adversely affected the cornerstone objective of providing reasonable assurance that physical design barriers (fuel cladding, reactor coolant system, and containment) protect the public from radionuclide releases caused by accidents or events. Specifically, this resulted in the 1D control room AC unit being inoperable from December 1, 2016, to January 30, 2017. Using IMC 0609, Appendix A, issued June 19, 2012, the SDP for Findings At-Power, the inspectors determined the finding was of very low safety significance (Green) because the finding did not only represent a degradation of the radiological barrier function for the control room and the finding did not represent a degradation of the barrier function of the control room against smoke or toxic atmosphere. This finding had a cross cutting aspect in the area of problem identification and resolution associated with the resolution aspect because the licensee failed to take effective corrective actions to address issues in a timely manner commensurate with their safety significance. Specifically, the licensee did not correct the degradation of the 1D control room AC unit until the unit was inoperable.

Inspection Report# : 2017001 (*pdf*)

## **Emergency Preparedness**

### **Occupational Radiation Safety**

### **Public Radiation Safety**

### **Security**

The security cornerstone is an important component of the ROP, which includes various security inspection activities the NRC uses to verify licensee compliance with Commission regulations and thus ensure public health and safety. The Commission determined in the staff requirements memorandum (SRM) for SECY-04-0191, "Withholding Sensitive Unclassified Information Concerning Nuclear Power Reactors from Public Disclosure," dated November 9, 2004, that specific information related to findings and performance indicators associated with the security cornerstone will not be publicly available to ensure that security-related information is not provided to a possible adversary. Security

inspection report cover letters will be available on the NRC Web site; however, security-related information on the details of inspection finding(s) will not be displayed.

## **Miscellaneous**

**Significance:** N/A Dec 31, 2016

Identified By: NRC

Item Type: NCV Non-Cited Violation

### **Failure to Submit a Licensee Event Report for a Condition Prohibited by Technical Specification**

An NRC-identified severity level (SL) IV NCV of 10 CFR 50.73(a)(2)(i)(B) was identified for the failure of the licensee to provide a written report to the NRC within 60 days of identifying a condition which was prohibited by plant Technical Specifications (TSs). The licensee entered this issue into the corrective action program (CAP) as nuclear condition report (NCR) 2091608.

The inspectors had previously evaluated the underlying technical issue and determined the failure to promptly identify and correct a condition adverse to quality, which resulted in the condition prohibited by Technical Specifications (TS), was a performance deficiency. The issue was documented as a Green NCV, 05000325;324/2016002-01, Failure to Identify Broken Auto Start Control Relay on Emergency Diesel Generator 1. The ROP's significance determination process does not specifically consider the regulatory process impact in its assessment of licensee performance.

Therefore, it was necessary to address this violation which involved a failure to make a required report to the NRC and was considered to impact the regulatory process, using traditional enforcement to adequately deter non-compliance. Using the NRC Enforcement Policy, Section 6.9.d.9, the SL assigned to this violation was SL IV, because the licensee failed to make a report required by 10 CFR 50.73. This violation also meets the criteria for an NCV because it was not repetitive or willful, and was entered into the licensee's CAP. Traditional enforcement violations are not assessed for cross-cutting aspects.

Inspection Report# : 2016004 (*pdf*)

Current data as of : August 03, 2017

*Page Last Reviewed/Updated Wednesday, August 10, 2016*



Home > Nuclear Reactors > Operating Reactors > Reactor Oversight Process > Plant Summaries > Brunswick 1 > Quarterly Plant Inspection Findings

## Brunswick 1 – Quarterly Plant Inspection Findings

### 2Q/2017 – Plant Inspection Findings

On this page:

- Initiating Events
- Mitigating Systems
- Barrier Integrity
- Emergency Preparedness
- Occupational Radiation Safety
- Public Radiation Safety
- Security

#### Initiating Events

#### Mitigating Systems

**Significance:** G May 26, 2017

Identified By: NRC

Item Type: NCV Non-Cited Violation

#### **Inoperability of EDG1 due to Cyclic Fatigue Failure of Hydraulic Fuel Rack Control**

A self-revealing Green non-cited violation (NCV) of 10 CFR 50 Appendix B Criterion XVI, "Corrective Actions," was identified on February 19, 2017, when emergency diesel generator (EDG) number one was determined to be inoperable due to an oil leak on the linkshaft hydraulic control assembly. This violation of regulatory requirement existed from October 27, 2015 until February 20, 2017. The licensee entered this issue in their corrective action program as nuclear condition report (NCR) 02101084.

The inspectors determined that the finding was more than minor because it was associated with the Mitigating Systems cornerstone attribute of Equipment Performance and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, failure to correct a condition adverse to quality led to the inoperability of EDG1. The inspectors screened this finding using IMC 0609, Appendix A, "The Significant Determination Process (SDP) For Findings At-Power," dated June 19, 2012, Based on Exhibit 2, Question A3, the inspectors determined that a detailed risk evaluation was necessary given the uncertainty over how long EDG1 would have operated while leaking oil. A regional senior reactor analyst (SRA) conducted the risk assessment and screened the issue to Green based on an increase in risk of less than 1E-6. The inspectors determined that this finding did not have an associated cross cutting aspect because this finding was not reflective of current licensee performance due to enhancements of site procedures guiding creation of work orders.

Inspection Report# : 2017009 (*pdf*)

**Significance:** G Mar 31, 2017

Identified By: NRC

Item Type: NCV Non-Cited Violation

### **Nonfunctional Sprinklers in the Service Water Building Without Compensatory Measures**

An NRC-identified Green non-cited violation (NCV) of License Condition 2.B.(6), Fire Protection Program, was identified for the licensee's failure to implement compensatory measures for nonfunctional sprinklers. Specifically, from January 11, 2017, until January 14, 2017, fire sprinklers were impaired when scaffolding was built over the service water (SW) system discharge valves without the proper fire protection evaluation and compensatory measures, as required by licensee procedure 0PLP-01.2, Fire Protection System Operability, Action, and Surveillance Requirements. The licensee's corrective actions included declaring the sprinklers nonfunctional, and implementing an hourly fire watch and backup suppression until the scaffold could be removed. This issue was entered into the licensee's corrective action program (CAP) as nuclear condition report (NCR) 2091795.

The inspectors determined that the licensee's failure to implement compensatory measures for nonfunctional sprinklers in accordance with procedure 0PLP-01.2, was a performance deficiency. The finding was more than minor because it was associated with the Protection against External Events attribute (i.e. fire) of the Mitigating Systems Cornerstone 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, this resulted in nonfunctional sprinklers in a safety-related area without compensatory measures. The finding was screened using NRC IMC 0609, Appendix F, "Fire Protection Significance Determination Process," dated September 20, 2013, because the finding affected the fixed fire protection system capability. Using IMC 0609, Appendix F, Attachment 1, "Fire Protection SDP Phase 1 Worksheet," dated September 20, 2013, the finding was assigned to the Fixed Fire Protection System category because the nonfunctional sprinklers affected the automatic fire suppression system. Proceeding to Task 1.3.1 of IMC 0609, Appendix F, Attachment 1, the inspectors determined the finding was of very low safety significance (Green), because with the sprinklers nonfunctional, the reactor was able to reach and maintain safe shutdown. The finding has a cross-cutting aspect in the area of human performance associated with the field presence attribute because leaders did not observe, coach, and reinforce standards and expectations regarding scaffolding. Deviations from standards and expectations for building scaffolding near fire protection sprinklers were not corrected promptly.

Inspection Report# : 2017001 (*pdf*)

**Significance:** G Mar 31, 2017

Identified By: NRC

Item Type: NCV Non-Cited Violation

### **Failure to Install Flood Barrier Seals Around the EDG 2 Four-Day Fuel Oil Tank Vents**

An NRC-identified Green NCV of 10 CFR Part 50, Appendix B, Criterion III, Design Control, was identified for the failure of the licensee to install flood barrier seals around the emergency diesel generator (EDG) 2, four-day fuel oil tank vent as described in engineering change (EC) 400606. This resulted in a nonfunctional flood barrier into the EDG 2 four-day tank room. As an immediate corrective action, the licensee grouted the opening to prevent water intrusion into the EDG 2 four-day fuel oil tank room. The licensee entered this issue into the CAP as NCR 2093563.

The inspectors determined the failure of the licensee to control the design of the installation of the new EDG 2 four-day fuel oil tank vent was a performance deficiency. The finding is more than minor because it is associated with the protection against external factors (i.e., flood hazard) attribute of the Mitigating Systems Cornerstone and adversely 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 licensee failed to install flood barrier seals around the EDG 2 four-day fuel oil tank vent designed to mitigate a flood of the EDG 2 four-day

fuel oil tank room. Using IMC 0609, Appendix A, issued June 9, 2012, The SDP for Findings At-Power, the inspectors determined the finding screened to Exhibit 4, External Events Screening Questions, since the finding involved the loss of equipment specifically designed to mitigate a flood. The inspectors determined the finding screened to Green since if the flood barrier is assumed to be completely failed, it would not result in the inoperability or degradation of EDG 2, and would not involve the total loss of any safety function that contributes to external event initiated core damage accident sequences. The finding has a cross-cutting aspect in the area of human performance associated with the design margins attribute because the licensee failed to maintain equipment within design margins and failed to change margins through a systematic and rigorous process. Specifically, the licensee changed the installation of the EDG 2 fuel oil tank roof vent without ensuring flood protection during the modification.

Inspection Report# : 2017001 (*pdf*)

**Significance:**  Feb 17, 2017

Identified By: NRC

Item Type: NCV Non-Cited Violation

### **Failure to Correct a Nonfunctional Fire Door**

The NRC identified a Green non-cited violation (NCV) of Brunswick Operating License Condition (OLC) 2.B(6) for Units 1 and 2, for the licensee's failure to correct a nonfunctional fire door in the diesel generator (DG) building. Specifically, on three occasions, NRC inspectors identified door 2-DGB-DR-EL023-118 in the DG building as having a stuck open latch, which prevented the door from closing and latching securely. Upon the third discovery of the nonfunctional fire door, the licensee initiated AR 02100405, entered the appropriate action statement in accordance with site procedure OPLP-01.2, "Fire Protection System Operability, Action, and Surveillance Requirements," and took actions to install a new thumb latch, and to install a new door closure mechanism.

The inspectors determined that the licensee's failure correct nonfunctional fire door was a performance deficiency (PD). The PD was determined to be more than minor because if left uncorrected, the PD could have the potential to lead to a more significant safety concern. Specifically, if the door was not repaired adequately, it could have the potential to not be able to perform its design function in the case of a fire in diesel generator cell nos. 1 or 2 (FA DG-4 or DG-5). Using IMC 0609, Appendix F, Attachment 1, "Fire Protection Significance Determination Process Worksheet," the finding was screened as Green at task 1.4.3-C because there was a fully functional automatic suppression system on at least one side of the fire barrier. The finding has a cross-cutting aspect in the area of problem identification & resolution associated with the 'Evaluation' attribute because the organization did not thoroughly evaluate the condition of the door to ensure that the resolution addressed the underlying cause of the nonfunctional fire door (P.2).

Inspection Report# : 2017007 (*pdf*)

### **Barrier Integrity**

**Significance:**  Mar 31, 2017

Identified By: NRC

Item Type: NCV Non-Cited Violation

### **Failure to Enter the Technical Specification for an Inoperable 1D Control Room Air Conditioning Unit**

An NRC-identified Green NCV of Technical Specification (TS) 3.7.4, Control Room Air Conditioning (AC) System, was identified for the failure to declare the 1D control room AC unit inoperable. Specifically, on December 1, 2016, the licensee failed to declare the 1D control room AC unit inoperable due to extensive corrosion on the support channels. As a result, the 1D control room AC unit was inoperable from December 1, 2016, until the next time it was inspected on January 30, 2017, and exceeded the TS allowed outage time. As corrective actions, the licensee replaced the supports of the 1D and 2D control room AC units and inspected the 2E control room AC unit for corrosion. The licensee entered this issue into the CAP as NCRs 2113799 and 2113800.

The inspectors determined the licensee's failure to declare the 1D control room AC unit inoperable and enter TS 3.7.4 was a performance deficiency. The finding was more than minor because it was associated with the structures, systems, and components (SSC) attribute of the Barrier Integrity Cornerstone and adversely affected the cornerstone objective of providing reasonable assurance that physical design barriers (fuel cladding, reactor coolant system, and containment) protect the public from radionuclide releases caused by accidents or events. Specifically, this resulted in the 1D control room AC unit being inoperable from December 1, 2016, to January 30, 2017. Using IMC 0609, Appendix A, issued June 19, 2012, the SDP for Findings At-Power, the inspectors determined the finding was of very low safety significance (Green) because the finding did not only represent a degradation of the radiological barrier function for the control room and the finding did not represent a degradation of the barrier function of the control room against smoke or toxic atmosphere. This finding had a cross cutting aspect in the area of problem identification and resolution associated with the resolution aspect because the licensee failed to take effective corrective actions to address issues in a timely manner commensurate with their safety significance. Specifically, the licensee did not correct the degradation of the 1D control room AC unit until the unit was inoperable.

Inspection Report# : 2017001 (*pdf*)

## **Emergency Preparedness**

## **Occupational Radiation Safety**

## **Public Radiation Safety**

## **Security**

The security cornerstone is an important component of the ROP, which includes various security inspection activities the NRC uses to verify licensee compliance with Commission regulations and thus ensure public health and safety. The Commission determined in the staff requirements memorandum (SRM) for SECY-04-0191, "Withholding Sensitive Unclassified Information Concerning Nuclear Power Reactors from Public Disclosure," dated November 9, 2004, that specific information related to findings and performance indicators associated with the security cornerstone will not be publicly available to ensure that security-related information is not provided to a possible adversary. Security inspection report cover letters will be available on the NRC Web site; however, security-related information on the details of inspection finding(s) will not be displayed.

## **Miscellaneous**

**Significance:** N/A Dec 31, 2016

Identified By: NRC

Item Type: NCV Non-Cited Violation

### **Failure to Submit a Licensee Event Report for a Condition Prohibited by Technical Specification**

An NRC-identified severity level (SL) IV NCV of 10 CFR 50.73(a)(2)(i)(B) was identified for the failure of the licensee to provide a written report to the NRC within 60 days of identifying a condition which was prohibited by plant Technical Specifications (TSs). The licensee entered this issue into the corrective action program (CAP) as nuclear condition report (NCR) 2091608.

The inspectors had previously evaluated the underlying technical issue and determined the failure to promptly identify and correct a condition adverse to quality, which resulted in the condition prohibited by Technical Specifications (TS), was a performance deficiency. The issue was documented as a Green NCV, 05000325;324/2016002-01, Failure to Identify Broken Auto Start Control Relay on Emergency Diesel Generator 1. The ROP's significance determination process does not specifically consider the regulatory process impact in its assessment of licensee performance. Therefore, it was necessary to address this violation which involved a failure to make a required report to the NRC and was considered to impact the regulatory process, using traditional enforcement to adequately deter non-compliance. Using the NRC Enforcement Policy, Section 6.9.d.9, the SL assigned to this violation was SL IV, because the licensee failed to make a report required by 10 CFR 50.73. This violation also meets the criteria for an NCV because it was not repetitive or willful, and was entered into the licensee's CAP. Traditional enforcement violations are not assessed for

cross-cutting aspects.

Inspection Report# : 2016004 (*pdf*)

Current data as of : September 05, 2017

*Page Last Reviewed/Updated Wednesday, June 07, 2017*



Home > Nuclear Reactors > Operating Reactors > Reactor Oversight Process > Plant Summaries > Brunswick 1 > Quarterly Plant Inspection Findings

## Brunswick 1 – Quarterly Plant Inspection Findings

### 3Q/2017 – Plant Inspection Findings

On this page:

- Initiating Events
- Mitigating Systems
- Barrier Integrity
- Emergency Preparedness
- Occupational Radiation Safety
- Public Radiation Safety
- Security

#### Initiating Events

#### Mitigating Systems

**Significance:** G May 26, 2017

Identified By: NRC

Item Type: NCV Non-Cited Violation

#### **Inoperability of EDG1 due to Cyclic Fatigue Failure of Hydraulic Fuel Rack Control**

A self-revealing Green non-cited violation (NCV) of 10 CFR 50 Appendix B Criterion XVI, "Corrective Actions," was identified on February 19, 2017, when emergency diesel generator (EDG) number one was determined to be inoperable due to an oil leak on the linkshaft hydraulic control assembly. This violation of regulatory requirement existed from October 27, 2015 until February 20, 2017. The licensee entered this issue in their corrective action program as nuclear condition report (NCR) 02101084.

The inspectors determined that the finding was more than minor because it was associated with the Mitigating Systems cornerstone attribute of Equipment Performance and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, failure to correct a condition adverse to quality led to the inoperability of EDG1. The inspectors screened this finding using IMC 0609, Appendix A, "The Significant Determination Process (SDP) For Findings At-Power," dated June 19, 2012, Based on Exhibit 2, Question A3, the inspectors determined that a detailed risk evaluation was necessary given the uncertainty over how long EDG1 would have operated while leaking oil. A regional senior reactor analyst (SRA) conducted the risk assessment and screened the issue to Green based on an increase in risk of less than 1E-6. The inspectors determined that this finding did not have an associated cross cutting aspect because this finding was not reflective of current licensee performance due to enhancements of site procedures guiding creation of work orders.

Inspection Report# : 2017009 (*pdf*)

**Significance:**  May 05, 2017

Identified By: NRC

Item Type: NCV Non-Cited Violation

**Nonfunctional Sprinklers in the Service Water Building Without Compensatory Measures**

Inspection Report# : 2017001 (*pdf*)

**Significance:**  May 05, 2017

Identified By: NRC

Item Type: NCV Non-Cited Violation

**Failure to Install Flood Barrier Seals Around the EDG 2 Four-Day Fuel Oil Tank Vents**

Inspection Report# : 2017001 (*pdf*)

**Significance:**  Feb 17, 2017

Identified By: NRC

Item Type: NCV Non-Cited Violation

**Failure to Correct a Nonfunctional Fire Door**

Inspection Report# : 2017007 (*pdf*)

**Barrier Integrity**

**Significance:**  Mar 31, 2017

Identified By: NRC

Item Type: NCV Non-Cited Violation

**Failure to Enter the Technical Specification for an Inoperable 1D Control Room Air Conditioning Unit**

An NRC-identified Green NCV of Technical Specification (TS) 3.7.4, Control Room Air Conditioning (AC) System, was identified for the failure to declare the 1D control room AC unit inoperable. Specifically, on December 1, 2016, the licensee failed to declare the 1D control room AC unit inoperable due to extensive corrosion on the support channels. As a result, the 1D control room AC unit was inoperable from December 1, 2016, until the next time it was inspected on January 30, 2017, and exceeded the TS allowed outage time. As corrective actions, the licensee replaced the supports of the 1D and 2D control room AC units and inspected the 2E control room AC unit for corrosion. The licensee entered this issue into the CAP as NCRs 2113799 and 2113800.

The inspectors determined the licensee's failure to declare the 1D control room AC unit inoperable and enter TS 3.7.4 was a performance deficiency. The finding was more than minor because it was associated with the structures, systems, and components (SSC) attribute of the Barrier Integrity Cornerstone and adversely affected the cornerstone objective of providing reasonable assurance that physical design barriers (fuel cladding, reactor coolant system, and containment) protect the public from radionuclide releases caused by accidents or events. Specifically, this resulted in the 1D control room AC unit being inoperable from December 1, 2016, to January 30, 2017. Using IMC 0609, Appendix A, issued June 19, 2012, the SDP for Findings At-Power, the inspectors determined the finding was of very low safety significance (Green) because the finding did not only represent a degradation of the radiological barrier function for the control room and the finding did not represent a degradation of the barrier function of the control room against smoke or toxic atmosphere. This finding had a cross cutting aspect in the area of problem identification and resolution associated with the resolution aspect because the licensee failed to take effective corrective actions to address issues in a timely manner commensurate with their safety significance. Specifically, the licensee did not correct the degradation

of the 1D control room AC unit until the unit was inoperable.

Inspection Report# : 2017001 (*pdf*)

## **Emergency Preparedness**

## **Occupational Radiation Safety**

## **Public Radiation Safety**

## **Security**

The security cornerstone is an important component of the ROP, which includes various security inspection activities the NRC uses to verify licensee compliance with Commission regulations and thus ensure public health and safety. The Commission determined in the staff requirements memorandum (SRM) for SECY-04-0191, "Withholding Sensitive Unclassified Information Concerning Nuclear Power Reactors from Public Disclosure," dated November 9, 2004, that specific information related to findings and performance indicators associated with the security cornerstone will not be publicly available to ensure that security-related information is not provided to a possible adversary. Security inspection report cover letters will be available on the NRC Web site; however, security-related information on the details of inspection finding(s) will not be displayed.

## **Miscellaneous**

**Significance:** N/A Dec 31, 2016

Identified By: NRC

Item Type: NCV Non-Cited Violation

### **Failure to Submit a Licensee Event Report for a Condition Prohibited by Technical Specification**

An NRC-identified severity level (SL) IV NCV of 10 CFR 50.73(a)(2)(i)(B) was identified for the failure of the licensee to provide a written report to the NRC within 60 days of identifying a condition which was prohibited by plant Technical Specifications (TSs). The licensee entered this issue into the corrective action program (CAP) as nuclear condition report (NCR) 2091608.

The inspectors had previously evaluated the underlying technical issue and determined the failure to promptly identify and correct a condition adverse to quality, which resulted in the condition prohibited by Technical Specifications (TS), was a performance deficiency. The issue was documented as a Green NCV, 05000325;324/2016002-01, Failure to Identify Broken Auto Start Control Relay on Emergency Diesel Generator 1. The ROP's significance determination process does not specifically consider the regulatory process impact in its assessment of licensee performance. Therefore, it was necessary to address this violation which involved a failure to make a required report to the NRC and was considered to impact the regulatory process, using traditional enforcement to adequately deter non-compliance. Using the NRC Enforcement Policy, Section 6.9.d.9, the SL assigned to this violation was SL IV, because the licensee failed to make a report required by 10 CFR 50.73. This violation also meets the criteria for an NCV because it was not repetitive or willful, and was entered into the licensee's CAP. Traditional enforcement violations are not assessed for cross-cutting aspects.

Inspection Report# : 2016004 (*pdf*)

Current data as of : November 29, 2017

*Page Last Reviewed/Updated Monday, November 06, 2017*



Home > Nuclear Reactors > Operating Reactors > Reactor Oversight Process > Plant Summaries > Brunswick 1 > Quarterly Plant Inspection Findings

## Brunswick 1 – Quarterly Plant Inspection Findings

### 4Q/2017 – Plant Inspection Findings

On this page:

- Initiating Events
- Mitigating Systems
- Barrier Integrity
- Emergency Preparedness
- Occupational Radiation Safety
- Public Radiation Safety
- Security

#### Initiating Events

#### Mitigating Systems

**Significance:** G May 26, 2017

Identified By: NRC

Item Type: NCV Non-Cited Violation

#### **Inoperability of EDG1 due to Cyclic Fatigue Failure of Hydraulic Fuel Rack Control**

A self-revealing Green non-cited violation (NCV) of 10 CFR 50 Appendix B Criterion XVI, "Corrective Actions," was identified on February 19, 2017, when emergency diesel generator (EDG) number one was determined to be inoperable due to an oil leak on the linkshaft hydraulic control assembly. This violation of regulatory requirement existed from October 27, 2015 until February 20, 2017. The licensee entered this issue in their corrective action program as nuclear condition report (NCR) 02101084.

The inspectors determined that the finding was more than minor because it was associated with the Mitigating Systems cornerstone attribute of Equipment Performance and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, failure to correct a condition adverse to quality led to the inoperability of EDG1. The inspectors screened this finding using IMC 0609, Appendix A, "The Significant Determination Process (SDP) For Findings At-Power," dated June 19, 2012, Based on Exhibit 2, Question A3, the inspectors determined that a detailed risk evaluation was necessary given the uncertainty over how long EDG1 would have operated while leaking oil. A regional senior reactor analyst (SRA) conducted the risk assessment and screened the issue to Green based on an increase in risk of less than 1E-6. The inspectors determined that this finding did not have an associated cross cutting aspect because this finding was not reflective of current licensee performance due to enhancements of site procedures guiding creation of work orders.

Inspection Report# : 2017009 (*pdf*)

**Significance:**  May 05, 2017

Identified By: NRC

Item Type: NCV Non-Cited Violation

### **Nonfunctional Sprinklers in the Service Water Building Without Compensatory Measures**

An NRC-identified Green non-cited violation (NCV) of License Condition 2.B.(6), Fire Protection Program, was identified for the licensee's failure to implement compensatory measures for nonfunctional sprinklers. Specifically, from January 11, 2017, until January 14, 2017, fire sprinklers were impaired when scaffolding was built over the service water (SW) system discharge valves without the proper fire protection evaluation and compensatory measures, as required by licensee procedure 0PLP-01.2, Fire Protection System Operability, Action, and Surveillance Requirements. The licensee's corrective actions included declaring the sprinklers nonfunctional, and implementing an hourly fire watch and backup suppression until the scaffold could be removed. This issue was entered into the licensee's corrective action program (CAP) as nuclear condition report (NCR) 2091795.

The inspectors determined that the licensee's failure to implement compensatory measures for nonfunctional sprinklers in accordance with procedure 0PLP-01.2, was a performance deficiency. The finding was more than minor because it was associated with the Protection against External Events attribute (i.e. fire) of the Mitigating Systems Cornerstone 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, this resulted in nonfunctional sprinklers in a safety-related area without compensatory measures. The finding was screened using NRC IMC 0609, Appendix F, "Fire Protection Significance Determination Process," dated September 20, 2013, because the finding affected the fixed fire protection system capability. Using IMC 0609, Appendix F, Attachment 1, "Fire Protection SDP Phase 1 Worksheet," dated September 20, 2013, the finding was assigned to the Fixed Fire Protection System category because the nonfunctional sprinklers affected the automatic fire suppression system. Proceeding to Task 1.3.1 of IMC 0609, Appendix F, Attachment 1, the inspectors determined the finding was of very low safety significance (Green), because with the sprinklers nonfunctional, the reactor was able to reach and maintain safe shutdown. The finding has a cross-cutting aspect in the area of human performance associated with the field presence attribute because leaders did not observe, coach, and reinforce standards and expectations regarding scaffolding. Deviations from standards and expectations for building scaffolding near fire protection sprinklers were not corrected promptly.

Inspection Report# : 2017001 (*pdf*)

**Significance:**  May 05, 2017

Identified By: NRC

Item Type: NCV Non-Cited Violation

### **Failure to Install Flood Barrier Seals Around the EDG 2 Four-Day Fuel Oil Tank Vents**

An NRC-identified Green NCV of 10 CFR Part 50, Appendix B, Criterion III, Design Control, was identified for the failure of the licensee to install flood barrier seals around the emergency diesel generator (EDG) 2, four-day fuel oil tank vent as described in engineering change (EC) 400606. This resulted in a nonfunctional flood barrier into the EDG 2 four-day tank room. As an immediate corrective action, the licensee grouted the opening to prevent water intrusion into the EDG 2 four-day fuel oil tank room. The licensee entered this issue into the CAP as NCR 2093563.

The inspectors determined the failure of the licensee to control the design of the installation of the new EDG 2 four-day fuel oil tank vent was a performance deficiency. The finding is more than minor because it is associated with the protection against external factors (i.e., flood hazard) attribute of the Mitigating Systems Cornerstone and adversely 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 licensee failed to install flood barrier seals around the EDG 2 four-day fuel oil tank vent designed to mitigate a flood of the EDG 2 four-day fuel oil tank room. Using IMC 0609, Appendix A, issued June 9, 2012, The SDP for Findings At-Power, the inspectors determined the finding screened to Exhibit 4, External Events Screening Questions, since the finding involved the loss of equipment specifically designed to mitigate a flood. The inspectors determined the finding screened to Green since if the flood barrier is assumed to be completely failed, it would not result in the inoperability or degradation of EDG 2, and would not involve the total loss of any safety function that contributes to external event initiated core damage accident sequences. The finding has a cross-cutting aspect in the area of human performance associated with the design margins attribute because the licensee failed to maintain equipment within design margins and failed to change margins through a systematic and rigorous process. Specifically, the licensee changed the installation of the EDG 2 fuel oil tank roof vent without ensuring flood protection during the modification.

Inspection Report# : 2017001 (*pdf*)

**Significance:** G Feb 17, 2017

Identified By: NRC

Item Type: NCV Non-Cited Violation

**Failure to Correct a Nonfunctional Fire Door**

The NRC identified a Green non-cited violation (NCV) of Brunswick Operating License Condition (OLC) 2.B(6) for Units 1 and 2, for the licensee's failure to correct a nonfunctional fire door in the diesel generator (DG) building. Specifically, on three occasions, NRC inspectors identified door 2-DGB-DR-EL023-118 in the DG building as having

a stuck open latch, which prevented the door from closing and latching securely. Upon the third discovery of the nonfunctional fire door, the licensee initiated AR 02100405, entered the appropriate action statement in accordance with site procedure OPLP-01.2, "Fire Protection System Operability, Action, and Surveillance Requirements," and took actions to install a new thumb latch, and to install a new door closure mechanism.

The inspectors determined that the licensee's failure correct nonfunctional fire door was a performance deficiency (PD). The PD was determined to be more than minor because if left uncorrected, the PD could have the potential to lead to a more significant safety concern. Specifically, if the door was not repaired adequately, it could have the potential to not be able to perform its design function in the case of a fire in diesel generator cell nos. 1 or 2 (FA DG-4 or DG-5). Using IMC 0609, Appendix F, Attachment 1, "Fire Protection Significance Determination Process Worksheet," the finding was screened as Green at task 1.4.3-C because there was a fully functional automatic suppression system on at least one side of the fire barrier. The finding has a cross-cutting aspect in the area

of problem identification & resolution associated with the 'Evaluation' attribute because the organization did not thoroughly evaluate the condition of the door to ensure that the resolution addressed the underlying cause of the nonfunctional fire door (P.2).

Inspection Report# : 2017007 (*pdf*)

## Barrier Integrity

**Significance:** G Mar 31, 2017

Identified By: NRC

Item Type: NCV Non-Cited Violation

### **Failure to Enter the Technical Specification for an Inoperable 1D Control Room Air Conditioning Unit**

An NRC-identified Green NCV of Technical Specification (TS) 3.7.4, Control Room Air Conditioning (AC) System, was identified for the failure to declare the 1D control room AC unit inoperable. Specifically, on December 1, 2016, the licensee failed to declare the 1D control room AC unit inoperable due to extensive corrosion on the support channels. As a result, the 1D control room AC unit was inoperable from December 1, 2016, until the next time it was inspected on January 30, 2017, and exceeded the TS allowed outage time. As corrective actions, the licensee replaced the supports of the 1D and 2D control room AC units and inspected the 2E control room AC unit for corrosion. The licensee entered this issue into the CAP as NCRs 2113799 and 2113800.

The inspectors determined the licensee's failure to declare the 1D control room AC unit inoperable and enter TS 3.7.4 was a performance deficiency. The finding was more than minor because it was associated with the structures, systems, and components (SSC) attribute of the Barrier Integrity Cornerstone and adversely affected the cornerstone objective of providing reasonable assurance that physical design barriers (fuel cladding, reactor coolant system, and containment) protect the public from radionuclide releases caused by accidents or events. Specifically, this resulted in the 1D control room AC unit being inoperable from December 1, 2016, to January 30, 2017. Using IMC 0609, Appendix A, issued June 19, 2012, the SDP for Findings At-Power, the inspectors determined the finding was of very low safety significance (Green) because the finding did not only represent a degradation of the radiological barrier function for the control room and the finding did not represent a degradation of the barrier function of the control room against smoke or toxic atmosphere. This finding had a cross cutting aspect in the area of problem identification and resolution associated with the resolution aspect because the licensee failed to take effective corrective actions to address issues in a timely manner commensurate with their safety significance. Specifically, the licensee did not correct the degradation of the 1D control room AC unit until the unit was inoperable.

Inspection Report# : 2017001 (*pdf*)

## Emergency Preparedness

### Occupational Radiation Safety

### Public Radiation Safety

### Security

The security cornerstone is an important component of the ROP, which includes various security inspection activities the NRC uses to verify licensee compliance with Commission regulations and thus ensure public health and safety. The Commission determined in the staff requirements memorandum (SRM) for SECY-04-0191, "Withholding Sensitive Unclassified Information Concerning Nuclear Power Reactors from Public Disclosure," dated November 9, 2004, that specific information related to findings and performance indicators associated with the security cornerstone will not be publicly available to ensure that security-related information is not provided to a possible adversary. Security inspection report cover letters will be available on the NRC Web site; however, security-related information on the details of inspection finding(s) will not be displayed.

## Miscellaneous

Current data as of : February 01, 2018

*Page Last Reviewed/Updated Monday, November 06, 2017*

