

## Catawba 2

---

### Initiating Events

**Significance:**  Sep 23, 2000

Identified By: Licensee

Item Type: FIN Finding

#### **Reactor Trip Caused by Moisture Intrusion into Main Feedwater Pump 2B Speed Control Circuitry**

Poor workmanship and inadequate oversight of turbine building roof repairs, coupled with inadequately constructed roof drainage systems, resulted in a June 5, 2000, Unit 2 reactor trip. Water from heavy rains that day could not be properly drained from the turbine building roof, partially due to debris and other roofing material that had collected in the drainage system. Water overflowed from the roof and into the turbine building, and leaked into the 2B main feedwater pump turbine speed control cabinet. A secondary plant transient resulted, which ultimately led to a turbine trip/reactor trip. This issue was determined to be of very low safety significance because it did not affect the ability of mitigating systems to perform their safety functions (Section 40A3.1).

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

---

### Mitigating Systems

**Significance:**  Jun 22, 2002

Identified By: Licensee

Item Type: NCV NonCited Violation

#### **Failure to Maintain Both Trains of Control Room Area Chilled Water System Operable per Technical Specification 3.7.11 and TS 3.0.3**

Operation of Both Units in Mode 1 with Both Trains of Control Room Area Chilled Water System Inoperable from February 24 to February 27, 2002, Resulting in Violation of Technical Specification 3.7.11 and TS 3.0.3. The licensee unknowingly operated both units with the A and B trains of CRACWS system inoperable because of inadequate troubleshooting of an existing problem with the A-train chiller, which allowed it to remain inoperable when the licensee removed the B-train chiller from service for planned maintenance. This issue was captured in the licensee's corrective action program as PIP C-02-01042. This finding was of very low safety significance because the chillers' function to maintain control room temperatures could have been compensated by operator actions contained in the licensee's procedures. (Section 40A7)

Inspection Report# : [2002002\(pdf\)](#)

**Significance:**  Dec 22, 2001

Identified By: Licensee

Item Type: NCV NonCited Violation

#### **Violation of TS 3.6.9 due to Inoperable Hydrogen Ignition System**

Inoperable Ignitors on Both Trains of the Hydrogen Ignition System Due to a Common Cause Failure Mode on Non-Safety Related Equipment Resulting in Inoperable Hydrogen Ignition System and a Violation of TS 3.6.9.

Inspection Report# : [2001006\(pdf\)](#)

**Significance:**  Sep 22, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Implement Effective Corrective Actions Associated With the Unit 2 FWST Level Channels Failures**

The inspectors identified a failure to implement effective corrective actions for the Unit 2 Refueling Water Storage Tank (FWST) level channels 1 and 3 that was dispositioned as a non-cited violation. Specifically, portions of the instrument cables experience conduit temperatures of 275 degrees Fahrenheit which exceed the cable design rating of 194 degrees. This condition was identified in 1996 but was not promptly evaluated nor has the problem been fully resolved. The failure was determined to be of very low safety significance because all mitigation systems remained operable, the ability to manually swap the emergency core cooling system suction source from the FWST to containment sump was still available, and the channel failures did not render the system unavailable to perform its function. (Section 1R12.2)

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

**Significance:**  Sep 22, 2001

Identified By: Licensee

Item Type: NCV NonCited Violation

### **Failure to Identify A Condition Adverse to Quality that Rendered the "A" Chiller Inoperable**

Operations personnel failed to identify a condition adverse to quality which contributed to not recognizing that the "A" Train of the Control Room Area Chilled Water System (CRACWS) was inoperable. The successful start of the "A" chiller was the basis for calling "A" Train CRACWS operable. However, the fact that maintenance personnel assisted in the chiller start and unreliable operation of the chiller pressure switch was exhibited in earlier testing was not factored into the operability decision. This was dispositioned as a non-cited violation. The failure was determined to be of very low safety significance because the "A" Train CRACWS functioned properly while "B" Train CRACWS was being restored to service. Also during subsequent tests, the "A" chiller operated satisfactorily. Additional information on this finding is provided in NRC letter to Duke Energy Corporation dated January 9, 2002. (Section 4OA3)

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

**Significance:**  Mar 30, 2001

Identified By: NRC

Item Type: FIN Finding

### **Failed to Demonstrate Performance of the Station Drinking Water System as Backup Cooling Water to the Unit 1 and 2 A Train Charging Pumps**

The licensee failed to demonstrate that the performance or condition of the station drinking water system, a risk-important system that provides backup cooling water to the Unit 1 and 2 A train charging pump motors and bearing oil coolers, was being effectively controlled through the performance of appropriate preventive maintenance (including surveillance activities). This resulted in a failure to recognize and correct a degraded system pressure condition, until it was identified by the inspectors. The degraded pressure condition was determined to be of very low safety significance because an analysis performed by the licensee demonstrated that the backup function to cool the charging pumps and motors would have been provided at the degraded pressure (Section 1R12.2).

Inspection Report# : [2000006\(pdf\)](#)

**Significance:**  Mar 30, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Adequately Perform TS SR 3.4.9.3 for Pressurizer Heaters**

A non-cited violation was identified regarding the licensee's failure to properly perform Technical Specification Surveillance Requirement 3.4.9.3, which verifies that pressurizer heaters can be automatically transferred from their normal power supplies to their emergency power supplies. Once identified, the portion of the automatic circuit that had been omitted from the test was properly tested on February 5, 2001, and was verified to be functional. This finding had a credible impact on safety because the licensee had never demonstrated the full automatic capability of the power supply transfer circuitry for the pressurizer heaters, which are important for maintaining pressurizer pressure control during a loss of offsite power event. The finding was also the latest in a number of missed surveillance requirements

identified at Catawba over the last two to three years. This finding was of very low safety significance because the circuit was functional when tested and because of provisions in the licensee's emergency procedures for manually aligning the heaters to their emergency power source had the automatic transfer failed during a loss of normal power event (Section 1R22).

Inspection Report# : [2000006\(pdf\)](#)

**Significance:** N/A Mar 30, 2001

Identified By: NRC

Item Type: FIN Finding

**Failure to Identify Two Maintenance Preventable Functional Failures Affecting the Unit 2 Auxiliary Feedwater System**

The inspectors identified a failure to identify two maintenance preventable functional failures (MPFFs) affecting the Unit 2 auxiliary feedwater system, one involving the turbine-driven auxiliary feedwater pump, the other involving the A motor-driven pump. Both of these occurred on October 5, 2000, following an inadvertent transfer of pump control to a local control panel. Although the finding did not involve a violation of the maintenance rule, it represented a recurring performance problem in this area as the latest of several missed maintenance preventable functional failure determinations involving different safety systems over the last year and a half. This finding was of very low safety significance because the failure to identify these MPFFs did not directly affect the ability of the auxiliary feedwater system to perform its safety function (Section 1R12.1).

Inspection Report# : [2000006\(pdf\)](#)

**Significance:**  Jun 24, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Scope an Accident Mitigating Function Associated with ECCS Leak Detection in the Maintenance Rule**

The licensee failed to include in its maintenance rule scope an accident mitigating function for a control room alarm associated with emergency core cooling system post-accident leak detection capability. The alarm was tied to residual heat removal and containment spray pump room sump levels and was identified in 1998 as a mitigating function, as described in the Catawba Updated Final Safety Analysis Report. As a result, two functional failures were not properly classified in February 2000. This issue was characterized as a non-cited violation of 10 CFR 50.65 (b)(2) and was determined to have very low safety significance because the licensee's scoping and functional failure determination errors did not directly result in additional unavailability of the alarm function (Section 1R12.2).

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

**Significance:**  Jun 24, 2000

Identified By: Licensee

Item Type: FIN Finding

**Steam generator power operated relief valve 2SV-19 failed to open on April 15, 2000, due to mispositioned nitrogen pressure regulators**

Steam generator power operated relief valve 2SV-19 failed to open on April 15, 2000, due to mispositioned nitrogen pressure regulators, which are required to function during a design basis event involving the loss of normally available instrument air. The licensee determined the mispositioned regulators to be a human performance issue, but were not able to pinpoint when the actual mispositioning took place. This issue was determined to have very low safety significance due to the availability of other steam generator power operated relief valves and diverse means of cooling the secondary plant (Section 1R22.2).

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

**Significance:**  Jun 24, 2000

Identified By: NRC

Item Type: FIN Finding

**Failure to properly classify a maintenance rule functional failure of the Unit 2 A steam generator power operated relief valve (2SV-19)**

The licensee failed to properly classify a maintenance rule functional failure of the Unit 2 A steam generator power operated relief valve (2SV-19) when it failed to open on April 15, 2000. The licensee incorrectly assumed that the valve's failure was not a functional failure because other redundant valves were available at the time. This issue was determined to have very low safety significance because the licensee's error did not result in additional equipment unavailability (Section 1R12.1).

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

**Significance:**  Jun 24, 2000

Identified By: Licensee

Item Type: NCV NonCited Violation

**Failure to Provide Adequate Procedures for Performing Maintenance on Safety-Related Sump Pump Level Switches**

Residual heat removal and containment spray pump room sump level alarm function was lost for several months up to February 2000 due to inadequate maintenance procedures associated with sump level switch calibrations. This issue was characterized as a non-cited violation of Technical Specification 5.4.1 and was determined to be of very low safety significance due to the availability of other emergency core cooling system leak detection methods (Section 4OA3.2).

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

---

## Barrier Integrity

**Significance:**  Mar 23, 2002

Identified By: Licensee

Item Type: NCV NonCited Violation

**Violation of TS 3.4.13.a. due to Unit 2 Reactor Coolant System Pressure Boundary Leakage while Operating in Modes 1 through 4**

Unit 2 Reactor Coolant System Pressure Boundary Leakage while Operating in Modes 1 through 4, resulting in a Violation of TS 3.4.13.a. This issue was captured in the licensee's corrective action program as PIP C-01-04283. This finding was of very low safety significance because the pressure boundary leakage was considered to be minimal, as the volume of boron residue was reportedly only one cubic inch, and the leakage was not detectable during routine NC system leakage calculations conducted while the plant was operating (4OA7).

Inspection Report# : [2001007\(pdf\)](#)

**Significance:**  Jun 24, 2000

Identified By: NRC

Item Type: FIN Finding

**Failure to properly evaluate plant risk associated with emergent work for the Unit 2 hydrogen ignition system on April 27, 2000.**

The licensee did not properly evaluate plant risk associated with emergent work for the Unit 2 hydrogen ignition system on April 27, 2000. As a result, the unit was in an unevaluated increased risk condition while planned work associated with the containment spray system was ongoing. This condition was allowed by Technical Specifications and plant procedures, but plant procedures required that a written contingency plan be developed prior to the work commencing, which was not done. This issue was of very low safety significance due to the availability of diverse and redundant systems designed to accomplish the hydrogen mitigation and containment pressure control functions (Section 1R13).

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

---

## Emergency Preparedness

---

## Occupational Radiation Safety

**Significance:**  Jun 24, 2000

Identified By: Licensee

Item Type: NCV NonCited Violation

### **Failure to Prevent the Release of Radioactive Byproduct Material from the Radiological Control Area and Plant Site**

A non-cited violation was identified for the failure to comply with the requirements of 10 CFR 20.1802. Specifically, on April 7, 2000, the licensee failed to prevent the release of radioactive byproduct material (e.g., a radioactive particle on a contract employee's lanyard) from the radiological control area and plant site. Based on the activity of the particle and the resulting occupational dose assessment for the affected contract employee, this finding was determined to be of very low significance (Sections OS2, 2PS3).

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

---

## Public Radiation Safety

---

## Physical Protection

**Significance:**  Jun 24, 2000

Identified By: Licensee

Item Type: NCV NonCited Violation

### **Failure to Secure Two Vital Area Openings Exceeding 96 Square Inches in February 1999**

A non-cited violation of the Physical Security Plan was identified for the licensee's failure to secure two vital area openings exceeding 96 square inches in February 1999. This issue was determined to have very little significance, given the non-predictable basis of the failures and the fact that there was no evidence that the vulnerabilities had been exploited (Section 3PP2).

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

---

## Miscellaneous

**Significance:** N/A Aug 23, 2002

Identified By: NRC

Item Type: FIN Finding

### **Problem Identification and Resolution Inspection**

There were no findings of significance identified during this inspection. The inspection concluded that problems were properly identified, evaluated, and resolved within the problem identification and resolution programs (PI&R).

However, during the inspection, several isolated examples were noted of incomplete corrective action implementation

and a lack of detail in operability reviews.

Inspection Report# : [2002007\(pdf\)](#)

**Significance:**  Jun 23, 2001

Identified By: Licensee

Item Type: NCV NonCited Violation

**Failed to Perform Adequate Testing Following Replacement of the Evaporator Differential Pressure Switch for the A train YC Chiller as Described in PIP C-01-01333**

10 CFR Part 50, Appendix B, Criteria XI, Test Control, requires that a test program be established to assure that all testing required to demonstrate that SSCs will perform satisfactorily in service is identified and performed in accordance with written test procedures. Contrary to this, on March 13, 2001, the licensee failed to perform adequate testing following replacement of the evaporator differential pressure switch for the A train YC chiller as described in PIP C-01-01333.

Inspection Report# : [2001004\(pdf\)](#)

**Significance:**  Jun 23, 2001

Identified By: Licensee

Item Type: NCV NonCited Violation

**Failure to Develop Appropriate Written Procedures or Documented Instructions for Maintenance Activities Performed on the A train YC Chiller as Described in PIP C-01-01994**

Technical Specification 5.4.1.a, and Regulatory Guide 1.33, Section 9, Procedures for Performing Maintenance, required that maintenance that can affect the performance of safety related equipment should be properly planned and performed in accordance with written procedures and documented instructions. Contrary to this, on May 3, 2001, the licensee failed to develop appropriate written procedures or documented instructions for maintenance activities performed on the A train YC chiller as described in PIP C-01-01994.

Inspection Report# : [2001004\(pdf\)](#)

**Significance:** N/A Feb 16, 2001

Identified By: NRC

Item Type: FIN Finding

**Identification and Resolution of Problems**

Overall, the licensee's corrective action program was effective at identifying, evaluating, and correcting problems. The threshold for entering problems into the corrective action program was sufficiently low. Reviews of operating experience information were comprehensive. In general, the licensee properly prioritized items (by Action Category) in its corrective action program database, which ensured that timely resolution and appropriate causal factor analyses were employed commensurate with safety significance. Some exceptions were noted in the area of problem identification, where all relevant issues of problems were not identified and equipment performance was adversely affected. The inspection identified three exceptions in the area of prioritization and evaluation of issues, where more comprehensive root cause determinations would have provided more effective evaluations and corrective actions. In the area of effectiveness of corrective actions, it was noted that the corrective action program was not timely in resolving various documentation deficiencies with Technical Specification (TS) surveillances, Updated Final Safety Analysis Report changes and TS bases changes. Previous non-compliance issues documented as non-cited violations were properly tracked and resolved via the corrective action program. The results of the last comprehensive corrective action program audit conducted by the licensee (September 1999) were properly entered and dispositioned in the corrective action program. Based on discussions with plant personnel and the apparently low threshold for items entered in the corrective action program database, the inspectors concluded that workers at the site generally felt free to raise safety concerns to their management.

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

**Significance:** N/A Dec 23, 2000

Identified By: Licensee

Item Type: NCV NonCited Violation

**Technical Specification 5.4.1 and Regulatory Guide 1.33, Section 7, for failing to have adequate procedures to control the release of radioactive material during a pressurizer gas space venting evolution**

Technical Specification 5.4.1 and Regulatory Guide 1.33, Section 7, for failing to have adequate procedures to control the release of radioactive material during a pressurizer gas space venting evolution on October 14, 2000, as described in the licensee's corrective action program. Reference PIPs C-00-04914 and 05241.

Inspection Report# : [2000005\(pdf\)](#)

Last modified : December 02, 2002