



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**  
REGION II  
245 PEACHTREE CENTER AVENUE NE, SUITE 1200  
ATLANTA, GEORGIA 30303-1257

April 30, 2018

Mr. Thomas D. Ray  
Site Vice President  
Duke Energy Carolinas, LLC  
McGuire Nuclear Station  
MG01VP/12700 Hagers Ferry Road  
Huntersville, NC 28078

**SUBJECT: MCGUIRE NUCLEAR STATION – NRC INTEGRATED INSPECTION REPORT  
05000369/2018001 AND 05000370/2018001**

Dear Mr. Ray:

On March 31, 2018, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your McGuire Nuclear Station Units 1 and 2. On April 12, 2018, the NRC inspectors discussed the results of this inspection with you and other members of your staff. The results of this inspection are documented in the enclosed report.

NRC inspectors documented two findings of very low safety significance (Green) in this report. These findings involved violations of NRC requirements. The NRC is treating these violations as non-cited violations (NCVs) consistent with Section 2.3.2.a of the Enforcement Policy. If you contest the violations or significance of the NCVs, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region II; the Director, Office of Enforcement; and the NRC resident inspector at the McGuire Nuclear Station. If you disagree with a cross-cutting aspect assignment in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region II; and the NRC resident inspector at the McGuire Nuclear Station.

T. Ray

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This letter, its enclosure, and your response (if any) will be made available for public inspection and copying at <http://www.nrc.gov/reading-rm/adams.html> and at the NRC Public Document Room in accordance with 10 CFR 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

***/RA Jannette Worosilo Acting for/***

Frank Ehrhardt, Chief  
Reactor Projects Branch 1  
Division of Reactor Projects

Docket Nos.: 50-369, 50-370  
License Nos.: NPF-9, NPF-17

Enclosure:  
IR 05000369/2018001, 05000370/2018001

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SUBJECT: MCGUIRE NUCLEAR STATION – NRC INTEGRATED INSPECTION REPORT  
05000369/2018001 AND 05000370/2018001 April 30, 2018

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U.S. NUCLEAR REGULATORY COMMISSION  
**Inspection Report**

Docket Numbers: 50-369, 50-370

License Numbers: NPF-9, NPF-17

Report Numbers: 05000369/2018001 and 05000370/2018001

Enterprise Identifier: I-2018-001-0058

Licensee: Duke Energy Carolinas, LLC

Facility: McGuire Nuclear Station, Units 1 and 2

Location: Huntersville, NC

Inspection Dates: January 1, 2018 to March 31, 2018

Inspectors: A. Hutto, Senior Resident Inspector  
R. Cureton, Resident Inspector

Approved By: F. Ehrhardt, Chief  
Reactor Projects Branch 1  
Division of Reactor Projects

## SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring licensee performance by conducting a quarterly baseline inspection at McGuire Units 1 and 2 in accordance with the Reactor Oversight Process. The Reactor Oversight Process is the NRC’s program for overseeing the safe operation of commercial nuclear power reactors. Refer to <https://www.nrc.gov/reactors/operating/oversight.html> for more information. NRC and self-revealed findings, violations, and additional items are summarized in the table below.

### List of Findings and Violations

Non-conservative Change to Core Exit Thermocouple (CET) Acceptance Criteria in Procedure PT/1/A/4600/003 D, “Monthly Surveillance Items”			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000369/2018001-01 Closed	[H.14] – Conservative Bias	71111.22 – Surveillance Testing
The inspectors identified a Green NCV of Technical Specification (TS) 5.4, “Procedures” for an inadequate procedure change to PT/1/A/4600/003 D, “Monthly Surveillance Items.” Specifically, the licensee made a non-conservative change to the CET acceptance criteria. The change reduced the lower temperature limit by subtracting CET total loop uncertainty from the existing lower limit of average cold leg temperature (T <sub>COLD</sub> ).			
Failure to Adequately Implement the Solid State Protection System (SSPS) Test Procedure Resulted in a Unit 1 Reactor Trip			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Initiating Events	Green NCV 05000369/2018001-02 Closed	[H.12] – Human Performance – Avoid Complacency	71153 – Events
A self-revealing Green NCV of TS 5.4 “Procedures,” was identified when the licensee failed to adequately implement procedure PT/0/A/4601/008 B, “SSPS Train B Periodic Test With NC System Pressure Greater Than 1955 PSIG,” resulting in a Unit 1 reactor trip.			

## PLANT STATUS

Unit 1 began the inspection period at 100 percent rated thermal power (RTP) and operated there until February 16, 2018, when a manual reactor trip occurred due to human error while performing reactor trip breaker testing. The unit was restarted on February 17, 2018, reached 100 percent RTP on February 18, 2018, and remained there for the rest of the inspection period.

Unit 2 began the inspection period at 100 percent RTP and operated there until March 2, 2018, when power was reduced to approximately 73 percent RTP to allow a turbine governor valve control repair. Unit 2 was returned to 100 percent power on March 3, 2018, and remained there for the rest of the inspection period.

## INSPECTION SCOPES

Inspections were conducted using the appropriate portions of the inspection procedures (IPs) in effect at the beginning of the inspection unless otherwise noted. Currently approved IPs with their attached revision histories are located on the public website at <http://www.nrc.gov/reading-rm/doc-collections/insp-manual/inspection-procedure/index.html>. Samples were declared complete when the IP requirements most appropriate to the inspection activity were met consistent with Inspection Manual Chapter (IMC) 2515, "Light-Water Reactor Inspection Program - Operations Phase." The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel to assess licensee performance and compliance with Commission rules and regulations, license conditions, site procedures, and standards.

## REACTOR SAFETY

### 71111.01 - Adverse Weather Protection

#### Impending Severe Weather (1 Sample)

The inspectors evaluated readiness for impending adverse weather conditions for extreme cold weather from January 2-3, 2018.

### 71111.04 - Equipment Alignment

#### Partial Walkdown (4 Samples)

The inspectors evaluated system configurations during partial walkdowns of the following systems/trains:

- (1) Unit 2 diesel generator (DG) 2B with 2A DG out of service (OOS) for preventive maintenance (PM) on January 23, 2018
- (2) Unit 2 B train of auxiliary feedwater (CA) while the A train was OOS for breaker PMs on January 23, 2018
- (3) Unit 1 B train of spent fuel pool cooling while the A train was OOS for PMs on January 29, 2018
- (4) Unit 1 A train of nuclear service water (RN) system with the 1B RN pump OOS for breaker PMs on February 6, 2018

#### 71111.05AQ - Fire Protection Annual/Quarterly

##### Quarterly Inspection (5 Samples)

The inspectors evaluated fire protection program implementation in the following selected areas:

- (1) Unit 1 cable spreading room (fire area 19) on February 7, 2018
- (2) Unit 2 cable spreading room (fire area 20) on February 7, 2018
- (3) Auxiliary Building 695' elevation (fire area 1) on March 21, 2018
- (4) Auxiliary Building 733' elevation (fire area 14) on March 22, 2018
- (5) Unit 1 CA pump room (fire area 2, 2A) on March 27, 2018

##### Annual Inspection (1 Sample)

The inspectors evaluated fire brigade performance on March 11, 2018.

#### 71111.11 - Licensed Operator Requalification Program and Licensed Operator Performance

##### Operator Requalification (1 Sample)

The inspectors observed and evaluated active simulator exam ASE-100 on February 28, 2018.

##### Operator Performance (1 Sample)

The inspectors observed and evaluated control room actions during an AP-15, "Loss of Vital or Aux Control Power," entry on January 11, 2018.

#### 71111.12 - Maintenance Effectiveness

##### Routine Maintenance Effectiveness (2 Samples)

The inspectors evaluated the effectiveness of routine maintenance activities associated with the following equipment and/or safety significant functions:

- (1) Unit 2 loss of rod position maintenance rule evaluation (Nuclear Condition Report (NCR) 2177327)
- (2) Periodic a(3) assessment covering January 1, 2016, through June 30, 2017

#### 71111.13 - Maintenance Risk Assessments and Emergent Work Control (6 Samples)

The inspectors evaluated the risk assessments for the following planned and emergent work activities:

- (1) Unit 1 and 2 equipment protection plan for the emergent loss of KRB voltage regulator (shutdown risk), on January 22, 2018
- (2) Unit 2 equipment protection plan for planned maintenance on the 2A CA pump breaker, on January 23, 2018

- (3) Unit 1 equipment protection plan for planned maintenance on the A train service water to the 1A component cooling water heat exchanger on January 31, 2018
- (4) Unit 1 equipment protection plan for planned maintenance on the B DG on February 13, 2018
- (5) Unit 1 and 2 critical activity plan for the A train RN suction from the standby nuclear service water pond piping inspection on February 15, 2018
- (6) Unit 1 equipment protection plan for planned maintenance on the A train of CA (yellow risk) on March 28, 2018

#### 71111.15 - Operability Determinations and Functionality Assessments (6 Samples)

The inspectors evaluated the following operability determinations and functionality assessments:

- (1) Cracked lid on standby shutdown facility battery cells 49 and 50 (NCR 2175124), on January 7, 2018
- (2) 1A1 component cooling pump outboard seal leak increase, on January 8, 2018
- (3) Incorrect load list value impacts DG load calculations (NCR 2176736), on January 17, 2018
- (4) Unexpected annunciators during refueling water storage tank level channel operability test (NCR 2183374), on February 8, 2018
- (5) 1A CA pump has water leakage at 28 mL/min (NCR 2183699), on February 21, 2018
- (6) Ultrasonic testing of fuel bottom end plug welds (NCR 2176519), on March 26, 2018

#### 71111.18 - Plant Modifications (2 Samples)

The inspectors evaluated the following temporary or permanent modifications:

- (1) Engineering Change (EC) 411233, Provide Temporary Regulated 120VAC Power to Unit 1 & 2 Digital Rod Position Indication (DRPI) Data B
- (2) EC 411631, Provide Temporary Power to shared motor control center SMXE

#### 71111.19 - Post Maintenance Testing (6 Samples)

The inspectors evaluated the following post maintenance tests:

- (1) IP/0/A/2001/004 H, "Removal and Installation of Station Circuit Breakers" after 5 year preventative maintenance (PM) activities on the CA pump input breaker, on January 23, 2018
- (2) PT/2/A/4350/002 A, "Diesel Generator 2A Operability Test," following diesel fuel oil booster pump PMs, on January 23, 2018
- (3) PT/1/A/4350/002 B, "Diesel Generator 1B Operability Test," following diesel down day PMs, on February 14, 2018
- (4) PT/0/A/4200/002, "Standby Shutdown Facility (SSF) Operability Test," following SSF diesel inspections, on March 1, 2018
- (5) PT/2/A/4403/002 E, "RN Train B Valve Stroke Timing – Quarterly Plant Evolution Valves" following PMs on 2RN-190B, on March 6, 2018
- (6) PT/1/A/4252/007 A, "CA System Train 1A Performance Test," following inspections on 1CA-11A, on March 27, 2018



## 71111.22 - Surveillance Testing

The inspectors evaluated the following surveillance tests:

### Routine (3 Samples)

- (1) PT/1/A/4600/003 D, "Monthly Surveillance Items," on January 4, 2018
- (2) PT/0/A/4200/002, "Standby Shutdown Facility Operability Test," on February 1, 2018
- (3) PT/1/A/4350/002 A, "Diesel Generator 1A Operability Test," on February 27, 2018

### In-service (1 Sample)

- (1) PT/2/A/4252/001 A, "2A CA Pump Performance Test," on January 30, 2018

### Reactor Coolant System Leak Detection (1 Sample)

- (1) PT/2/A/4150/001 B, "Reactor Coolant Leakage Calculation" on March 27, 2018

## 71114.06 - Drill Evaluation

### Emergency Planning Drill (1 Sample)

The inspectors evaluated an emergency planning drill on February 14, 2018. The drill included a loss of offsite power with a reactor trip due to a turbine trip. The 1A steam generator main steam line safety valve (MSSV) failed open, faulting the steam generator. Additionally, a 1A steam generator tube rupture and fuel pin failures caused a loss of all fission product barriers.

## **OTHER ACTIVITIES – BASELINE**

### 71151 - Performance Indicator Verification

The inspectors verified licensee performance indicators submittals listed below for the period from January 1, 2017, through December 31, 2017. (6 Samples)

- (1) Unit 1 and 2 Unplanned Scrams per 7000 Critical Hours
- (2) Unit 1 and 2 Scrams with Complications per 7000 Critical Hours
- (3) Unit 1 and 2 Unplanned Power Changes per 7000 Critical Hours

### 71152 - Problem Identification and Resolution

#### Annual Follow-up of Selected Issues (1 Sample)

The inspectors reviewed the licensee's implementation of its corrective action program related to the following issues:

- (1) KTK-2 fuse failures caused Unit 2 to enter TS LCO 3.0.3 due to both trains of containment air return fans being declared inoperable (NCR 02176186)

71153 - Follow-up of Events and Notices of Enforcement Discretion

Events (1 Sample)

The inspectors evaluated the Unit 1 reactor trip and the licensee’s response on February 16, 2018.

**INSPECTION RESULTS**

Non-conservative Change to Core Exit Thermocouple (CET) Acceptance Criteria in Procedure PT/1/A/4600/003 D, “Monthly Surveillance Items”			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000369/2018001-01 Closed	[H.14] – Conservative Bias	71111.22 – Surveillance Testing
<p>The inspectors identified a Green NCV of TS 5.4, “Procedures” for an inadequate procedure change to PT/1/A/4600/003 D, “Monthly Surveillance Items.” Specifically, the licensee made a non-conservative change to the CET acceptance criteria. The change reduced the lower temperature limit by subtracting CET total loop uncertainty from the existing lower limit of average cold leg temperature (<math>T_{COLD}</math>).</p>			
<p><u>Description:</u></p> <p>On December 27, 2017, the licensee made a procedure change to PT/1/A/4600/003 D, Enclosure 13.1, “Main Control Board Instrumentation Checklist,” to expand the acceptance criteria for operable CET readings. The existing acceptance criteria specified an upper limit of saturation temperature (<math>T_{SAT}</math>) and a lower limit of <math>T_{COLD}</math>. The procedure change subtracted 20 degrees Fahrenheit from <math>T_{COLD}</math> by applying CET total loop uncertainty. The licensee surmised that a CET could be reading as low as 20 degrees Fahrenheit below <math>T_{COLD}</math> and still be operating as designed. The purpose of the change was to allow the acceptance of CETs reading below <math>T_{COLD}</math>, as a number of CETs were failed and the margin to the required number of operable CETs was challenged. The inspectors noted that this logic would only apply to CETs that may be exposed to significant bypass flow (water at or near <math>T_{COLD}</math>). However, the vast majority of CETs would be exposed to water at hot leg temperature (<math>T_{HOT}</math>) or higher (90 degrees Fahrenheit or more higher than the new lower limit). The new acceptance criteria would increase the probability that a CET reading significantly lower than the actual water temperature would be considered operable. Since a low reading CET is non-conservative with respect to calculating sub-cooling margin, over time enough low reading CETs could be accepted such that the average core exit temperature used to calculate sub-cooling margin would be non-conservatively biased. This could have an adverse impact on appropriate operator actions for loss of sub-cooling conditions during accident mitigation.</p> <p>Corrective Actions: The licensee made a procedure change to PT/1/A/4600/003 D, to require an NCR to be written for CETs reading below <math>T_{COLD}</math> to prompt an engineering evaluation of the acceptability of any low reading CET. Additionally, the licensee created an action register item to track completion of repairs/replacement of existing inoperable CETs for both units.</p> <p>Corrective Action Reference: The licensee entered this issue into their corrective action program (CAP) as NCR 2176763.</p>			

Performance Assessment:

Performance Deficiency: The licensee's non-conservative change to CET acceptance criteria in PT/1/A/4600/003 D, "Monthly Surveillance Items" was a violation of TS 5.4 and a performance deficiency. The new acceptance criteria would increase the probability that a CET reading significantly lower than the actual water temperature would be considered operable.

Screening: The inspectors determined the performance deficiency was more than minor because if left uncorrected, it would have the potential to lead to a more significant safety concern. Specifically, this new acceptance criteria would increase the probability that a CET reading significantly lower than the actual water temperature it was seeing, would be considered operable. As a result, over time, the average core exit temperature used to calculate sub-cooling margin would be non-conservatively biased.

Significance: In accordance with IMC 0609, Attachment 4, dated October 7, 2016, this finding affected the mitigating systems cornerstone. The inspectors assessed the significance of the finding using IMC 0609 Appendix A, dated June 19, 2012 and determined that the finding was of very low safety significance (Green) because a sufficient number of CETs remained operable to satisfy TS operability requirements.

Cross-Cutting Aspect: The inspectors determined the finding had a cross-cutting aspect of conservative bias in the human performance area because the licensee's decision to non-conservatively expand CET acceptance criteria failed to emphasize prudent choices over those that are simply allowable.

Enforcement:

Violation: Technical Specification 5.4, "Procedures," requires, in part, that written procedures shall be established, implemented, and maintained covering the applicable procedures recommended in Regulatory Guide (RG) 1.33, Revision 2, Appendix A, dated February 1978. Regulatory Guide 1.33 Appendix A, Section 8, "Procedures for Control of Measuring and Test Equipment and for Surveillance Tests, Procedures, and Calibrations," requires procedures for surveillance tests. Licensee procedure PT/1/A/4600/003 D, "Monthly Surveillance Items," is the plant procedure for verifying operability of CETs in accordance with TS requirements.

Contrary to the above, from December 27, 2018, until January 11, 2018, the licensee failed to adequately maintain procedure PT/1/A/4600/003 D, "Monthly Surveillance Items." Specifically, the licensee made a non-conservative change to the CET acceptance criteria reducing the lower temperature limit by subtracting CET total loop uncertainty from the existing lower limit of average  $T_{COLD}$ . This change would have allowed acceptance of CETs that were not operating as designed.

Disposition: This violation is being treated as an NCV, consistent with Section 2.3.2 of the Enforcement Policy.

Failure to Adequately Implement the Solid State Protection System (SSPS) Test Procedure Resulted in a Unit 1 Reactor Trip			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Initiating Events	Green NCV 05000369/2018001-02 Closed	[H.12] – Human Performance – Avoid Complacency	71153 – Event Response
A self-revealing Green NCV of TS 5.4 “Procedures,” was identified when the licensee failed to adequately implement procedure PT/0/A/4601/008 B, “SSPS Train B Periodic Test With NC System Pressure Greater Than 1955 PSIG,” resulting in a Unit 1 reactor trip.			
<p><u>Description:</u></p> <p>On February 16, 2018, the Unit 1 reactor tripped from 100 percent power due to a human performance error. Specifically, during B train SSPS testing, technicians reached Step 12.4.6 in procedure PT/0/A/4601/008 B which instructed Technician 1 to “Depress and hold UV TEST pushbutton for Train B in back of breaker CABINET- 1(RTB/BYB),” and Technician 2 to proceed with Steps 12.4.7 through 12.4.13. Technician 2 completed the actions, out of the area, while Technician 1 stayed in the area holding the UV TEST pushbutton. Technician 1 proceeded, without the procedure, to Step 12.4.14, which states, “Release UV TEST pushbutton,” and proceeded to Step 12.4.15, which instructs the technicians to verify that the reactor trip breaker (RTB) opened. Technician 2 erroneously opened the bypass breaker (BYB) cabinet to perform Step 12.4.15 and noticed that the breaker was closed. Technician 2 proceeded to trip the BYB causing a reactor trip because the BYB was supplying power to the control rods while the RTB was being tested. Technician 2’s actions were done without the procedure in-hand and the procedure did not direct the technician to manipulate the breaker, regardless of position.</p> <p>Corrective Actions:</p> <ul style="list-style-type: none"> <li>• Technicians were removed from duty</li> <li>• Post-trip fitness-for-duty testing was performed</li> <li>• Reactor Trip investigation performed</li> </ul> <p>Corrective Action Reference: NCR 02185409, Unit 1 Reactor Trip during 1B SSPS Testing</p> <p><u>Performance Assessment:</u></p> <p>Performance Deficiency: The failure to follow procedure PT/0/A/4601/008 B, “SSPS Train B Periodic Test With NC System Pressure Greater Than 1955 PSIG,” resulting in a Unit 1 reactor trip, was a violation of TS 5.4 and a performance deficiency.</p> <p>Screening: The inspectors determined the performance deficiency was more than minor because it was associated with the human 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 performance deficiency resulted in a Unit 1 reactor trip.</p> <p>Significance: The inspectors assessed the significance of the finding using IMC 0609 Appendix A, dated June 19, 2012. The finding was screened as Green because the reactor</p>			

trip was uncomplicated and there was no loss of mitigating equipment used to transition the plant to a stable condition following the reactor trip.

Cross-Cutting Aspect: The inspectors determined the finding had a cross-cutting aspect of avoid complacency in the human performance area because the technicians were complacent and did not adequately plan for the possibility of mistakes and the inherent risk of a reactor trip during SSPS procedure implementation.

Enforcement:

Violation: Technical Specification 5.4, "Procedures," requires, in part, that written procedures shall be established, implemented, and maintained covering the applicable procedures recommended in RG 1.33, Revision 2, Appendix A, dated February 1978. Regulatory Guide 1.33 Appendix A, Section 8, "Procedures for Control of Measuring and Test Equipment and for Surveillance Tests, Procedures, and Calibrations," requires procedures for reactor protection system surveillance tests. Licensee procedure PT/0/A/4601/008 B is the plant procedure for testing the SSPS in accordance with TS requirements.

Contrary to the above, on February 16, 2018, the licensee failed to adequately implement procedure PT/0/A/4601/008 B during Unit 1 SSPS surveillance testing. Specifically, a technician failed to follow the procedure and opened the B train bypass breaker while the B train reactor trip breaker was being tested, which resulted in a reactor trip.

Disposition: This violation is being treated as an NCV, consistent with Section 2.3.2 of the Enforcement Policy.

## **EXIT MEETINGS AND DEBRIEFS**

The inspectors verified no proprietary information was retained or documented in this report.

The inspectors confirmed that proprietary information was controlled to protect from public disclosure.

- On April 12, 2018, the inspector presented the inspection results to Mr. Tom Ray, and other members of the licensee staff.

## **DOCUMENTS REVIEWED**

### **71111.01: Adverse Weather Protection**

AD-WC-ALL-0230, "Seasonal Readiness"  
NSD 317, "Freeze Protection Program"  
PT/0/B/4700/038, "Cold Weather Protection"  
PT/0/B/4700/070, "On Demand Freeze Protection Verification Checklist"

### **71111.04: Equipment Alignment**

MCFD-2592-01.01, "Unit 2, Flow Diagram of Auxiliary Feedwater System"  
OP/2/A/6350/002, "Diesel Generator"  
OP/2/A/6250/002, "Auxiliary Feedwater System"  
MCFD-1574-01.01, "Flow Diagram of Nuclear Service Water System"  
MCFD-1570-01.00, "Flow Diagram of Spent Fuel Cooling System"

### **71111.05Q: Fire Protection**

MCS-1465.00-00-0008, "Design Basis Specification for Fire Protection"  
MCS-1465.00-00-0022, "Appendix R Safe Shutdown Analysis"  
MCC-1435.00-00-0059, "NFPA 805 – Appendix R Safe Shutdown Deterministic Analysis"  
AD-EG-ALL-1520, "Transient Combustible Control"  
FS/2/B/9000/002, "Unit 1 CA Pump Room Fire Strategy #2"  
FS/1/B/9000/0019, "Unit 1 Cable Spreading Room Fire Strategy #19"  
FS/2/B/9000/0020, "Unit 2 Cable Spreading Room Fire Strategy #20"  
FS/0/B/9000/001, "Auxiliary Building 695' Fire Strategy #1"  
FS/0/B/9000/014, "Auxiliary Building 733' Fire Strategy 14"  
MFSD-002, "Unit 1 CA Pump Room"  
MFSD-0019, "Unit 1 Cable Spreading Room"  
MFSD-0020, "Unit 2 Cable Spreading Room"  
MFSD-001, "Auxiliary Building 695' Level"  
MFSD-014, "Auxiliary Building 733' Level"

### **71111.11: Licensed Operator Requalification Program and Licensed Operator Performance**

AD-OP-ALL-1000, "Conduct of Operations"  
OMP 4.3, "Use of Emergency and Abnormal Procedures and FLEX Support Guidelines"  
SOMP 01-07, "Control Room Oversight"  
ASE-100  
AP-15, "Loss of Vital or Aux Control Power"

### **71111.12: Maintenance Effectiveness**

AD-EG-ALL-1204, "Single Point Vulnerability Identification, Elimination and Mitigation"  
AD-EG-ALL-1206, "Equipment Reliability Classification"  
AD-EG-ALL-1209, "System, Component, and Program Health Reports and Notebooks"  
AD-EG-ALL-1210, "Maintenance Rule Program"  
AD-EG-ALL-1211, "System Performance Monitoring and Trending"  
Duke Equipment Reliability Maintenance Rule Database

### **71111.13: Maintenance Risk Assessments and Emergent Work Control**

NSD-213, "Risk Management Process"  
SOMP 02-02, "Operations Roles in the Risk Management Process"

OMP 13-7, "Operational Control of Protected Equipment"  
AD-OP-ALL-0201, "Protected Equipment"

**71111.15: Operability Determinations and Functionality Assessments**

AD-OP-ALL-0102, "Operability Decision Making"  
AD-OP-ALL-0105, "Operability Determinations and Functionality Assessment"

**71111.18: Plant Modifications**

EC411233, "Provide Temporary Regulated 120VAC Power to Unit 1 & 2 DRPI Data B"  
EC 411631, "Provide Temporary Power to SMXE"  
AD-EP-ALL-0602, 10 CFR 50.54(q) Effectiveness Evaluation Form for EC 411631  
NCR 2188539 Immediate Functionality Assessment

**71111.19: Post-Maintenance Testing**

NSD-408, "Testing"  
AD-EG-ALL-1155, "Post Modification Testing"  
PT/1/A/4350/002 A, "Diesel Generator 1A Operability Test"  
PT/2/A/4350/002 A, "Diesel Generator 2A Operability Test"  
MP/0/A/7300/007, "Rotating Equipment Inspection and Vibration Measuring"  
PT/2/A/4208/001 B, "2B NS Performance Test"  
IP/0/A/2001/004 H, "Removal and Installation of Station Circuit Breakers"

**71111.22: Surveillance Testing**

AD-EG-ALL-1202, "Preventive Maintenance and Surveillance Testing Administration"  
AD-WC-ALL-0250, "Work Implementation and Completion"  
AD-EG-ALL-1720, "In-service Testing (IST) Program Implementation"  
EC 411028, "Evaluation for NCR 2178301, 1B ICCM CET Quadrant Three (III)"  
NCR 2173881, various core exit thermocouples read 32 degrees  
NCR 2173882, multiple in-core thermocouples reading 32 degrees  
MCC-1552.08-00-0160, "Instrument Uncertainties for ICCM and OAC Subcooling Margin"

**71151: Performance Indicator (PI) Verification**

AD-LS-ALL-0004, "NRC Performance Indicators and Monthly Operating Report"  
AD-PI-ALL-0100, "Corrective Action Program"

**71152: Problem Identification and Resolution**

AD-PI-ALL-0100, "Corrective Action Program"  
AD-PI-ALL-0102, "Apparent Cause Evaluation"  
AD-PI-ALL-0103, "Quick Cause Evaluation"  
AD-PI-ALL-0104, "Prompt Investigation Response Team"  
AD-PI-ALL-0105, "Effectiveness Reviews"  
AD-LS-ALL-0006, "Notification/Reportability Evaluation"

**71153: Follow-up Events and Notices of Enforcement Discretion**

RP/0/A/5700/010, "Event Notification Worksheet" dated February 16, 2018  
PT/0/A/4700/045, "Reactor Trip Investigation"