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

May 2, 2018

William R. Gideon
Site Vice President
Brunswick Steam Electric Plant
8470 River Rd. SE (M/C BNP001)
Southport, NC 28461

SUBJECT: BRUNSWICK STEAM ELECTRIC PLANT – NRC INTEGRATED INSPECTION REPORT 05000325/2018001 AND 05000324/2018001

Dear Mr. Gideon:

On March 31, 2018, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Brunswick Steam Electric Plant, Units 1 and 2. On April 19, 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 one self-revealing finding of very low safety significance (Green) in this report. This finding involved a violation of NRC requirements. The NRC is treating this violation as a non-cited violation (NCV) consistent with Section 2.3.2.a of the Enforcement Policy.

If you contest the violation or the significance of the violation, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the 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 Brunswick Steam Electric Plant.

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 Brunswick Steam Electric Plant.

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/

Steven D. Rose, Chief
Reactor Projects Branch 4
Division of Reactor Projects

Docket Nos.: 50-325, 50-324
License Nos.: DPR-71, DPR-62

Enclosure:
IR 05000325/2018001 and
05000324/2018001

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SUBJECT: BRUNSWICK STEAM ELECTRIC PLANT - NRC INTEGRATED INSPECTION REPORT 05000325/2018001 AND 05000324/2018001 May 2, 2018

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U.S. NUCLEAR REGULATORY COMMISSION
Inspection Report

Docket Numbers:	50-325, 50-324
License Numbers:	DPR-71, DPR-62
Report Numbers:	05000325/2018001, 05000324/2018001
Enterprise Identifier:	I-2018-001-0053
Licensee:	Duke Energy Progress, LLC
Facility:	Brunswick Steam Electric Plant, Units 1 & 2
Location:	Southport, NC
Inspection Dates:	January 1, 2018 to March 31, 2018
Inspectors:	G. Smith, Senior Resident Inspector J. Steward, Resident Inspector M. Schwieg, Reactor Inspector W. Loo, Senior Health Physicist J. Panfel, Health Physicist B. Collins, Reactor Inspector S. Freeman, Senior Reactor Analyst
Approved By:	S. Rose, Chief Reactor Projects Branch 4 Division of Reactor Projects

Enclosure

SUMMARY

The NRC continued monitoring licensee's performance by conducting a quarterly integrated inspection at Brunswick Steam Electric Plant 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 http://www.nrc.gov/NRR/OVERSIGHT/ASSESS/index.html for more information. Any NRC and self-revealed findings, violations, and additional items are summarized in the table below.

List of Findings and Violations

Inadequate Instruction to Perform Inspections on Emergency Ventilation Dampers			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Barrier Integrity	Green NCV 05000324/2018001-01 05000325/2018001-01 Closed	H.5 – Work Management	71153
A self-revealing Green NCV of TS 5.4.1a, Procedures, was identified when the licensee failed to properly provide adequate work instructions associated with the control room emergency damper inspections. Specifically, the licensee disconnected the damper air supply line without adequate work instruction guidance, which caused a loss of Control Building Heating, Ventilation and Air Conditioning (HVAC) and Control Room Emergency Ventilation (CREV) Systems resulting in a safety system functional failure.			

Additional Tracking Items

Type	Issue number	Title	Report Section	Status
LER	05000325/2017-003-00	Unplanned Inoperability of CREV and Control Building HVAC	71153	Closed

PLANT STATUS

Unit 1 began the inspection period at 100 percent rated thermal power and operated there until January 28, 2018, when operators began a coast down into a refueling outage. On March 3, 2018, Unit 1 was shut down from 85 percent and remained shut down in a refueling outage for the remainder of the period.

Unit 2 began the period at 100 percent rated thermal power and operated there until February 16, 2018, when the unit was taken off-line for a forced outage due to a hot spot on the main turbine generator disconnect link ('A' phase). Following repairs, the unit was returned to 100 percent rated thermal power on February 20, 2018, and essentially operated at this level for the remainder 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 winter storm Grayson on January 8, 2018.

71111.04 - Equipment Alignment

Partial Walkdown (3 Samples)

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

(1) Unit 2 Standby Liquid Control System following maintenance on January 11, 2018
(2) Unit 2 'B' and 'C' Conventional Service Water (CSW) while 2 'A' CSW pump was out-of-service (OOS) for planned maintenance on February 17, 2018
(3) Emergency Diesel Generator (EDG)-1 while EDG-2 was OOS for installation of an automatic voltage regulator on February 28, 2018

Complete Walkdown (1 Sample)

The inspectors evaluated system configurations during a complete walkdown of the control rod drive system between February 12 and March 23, 2018.

71111.05AQ - Fire Protection Annual/Quarterly

Quarterly Inspection (5 Samples)

The inspectors evaluated fire protection program implementation in the following selected areas between February 8 and March 23, 2018:

(1) Unit 2 reactor building 20’ elevation
(2) Unit 1 drywell
(3) Unit 1 turbine building 20’ elevation
(4) Unit 1 turbine building 45’ elevation
(5) Unit 1 turbine building 70’ elevation

Annual Inspection (1 Sample)

The inspectors evaluated the fire brigade performance during a fire drill on February 8, 2018.

71111.08 - Inservice Inspection Activities (1 Sample)

The inspectors evaluated boiling water reactor non-destructive testing by observing/reviewing the following examinations from February 5 to February 9, 2018:

(1) Ultrasonic Examination
    a) 10” core spray system nozzle inner radius (1-B11-RPV-N5A-IRS), ASME Class 1 (observed)
    b) Reactor pressure vessel Ring 1 longitudinal seam weld @ 255° (1B11-RPV-E4B), ASME Class 1 (observed)
    c) 12” feedwater system nozzle extension-to-safe end weld (1B21N4A-2-SW1-2), ASME Class 1 (observed)

(2) Liquid Penetrant Examination
    a) WO 20191808-1, 20” service water system reducer-to-flange weld (1-SW-911), ASME Class 3 (reviewed; associated with welding package, which was also reviewed)

71111.11 - Licensed Operator Requalification Program and Licensed Operator Performance

Operator Requalification (1 Sample)

The inspectors observed and evaluated Cycle 1 of operator retraining on March 2, 2018.

Operator Performance (2 Samples)

The inspectors observed and evaluated:

(1) Unit 1 Final Feed water Temperature Reduction on January 18, 2018
(2) Unit 2 EDG-4 Monthly Load Test on January 18, 2018

71111.12 - Maintenance Effectiveness

Routine Maintenance Effectiveness (1 Sample)

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

(1) Unit 2 high pressure coolant injection (HPCI) valve packing failure on March 9, 2018

Quality Control (QC) (1 Sample)

The inspectors evaluated the below quality control activities between March 8 and March 22, 2018:

(1) QC inspection of Unit 1 reactor coolant system (RCS) level indicator LI-R610 installation
(2) QC torqueing inspection of U-clamp on the Unit 1 'D' residual heat removal service water system booster pump
(3) QC cleanliness inspection of backup nitrogen check valves1-RNA-V-305 and -307

71111.13 - Maintenance Risk Assessments and Emergent Work Control (4 Samples)

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

(1) EDG-3/2A nuclear service water (SW) pump/supplemental EDG outage, on January 9, 2018
(2) EDG-2 outage automatic voltage regulator modification, on March 2, 2018
(3) Yellow plant status control risk as a result of electrical power on March 8, 2018, due to U1 unit auxiliary transformer outage
(4) Emergent failure of the 1B1 battery during following a test discharge failure, on March 16, 2018

71111.15 - Operability Determinations and Functionality Assessments (4 Samples)

The inspectors evaluated the following operability determinations and functionality assessments:

(1) CR 2174081 - ISFSI HSM-001 prompt determination of operability for concrete spalling noted behind roof vent, on January 8, 2018
(2) CR 2178808 - complex programmable logic device (CPLD) relays installed in EDGs, on February 7, 2018
(3) CR 2175636 - Shells found in EDG-3 Jacket water heat exchanger, on February 12, 2018
(4) CR 2172700 - HPCI steam valve packing leak, on March 23, 2018

71111.19 - Post Maintenance Testing (5 Samples)

The inspectors evaluated the following post maintenance tests:

(1) WO 20019415, 2A Conventional SW pump conduit rerouting, on March 2, 2018
(2) WO 20040133, 2-SW-V-685, check valve removal and inspection, on March 2, 2018
(3) WO 20062954, EDG-2 post maintenance test (PMT) from automatic voltage regulator (AVR) modification, on March 9, 2018
(4) WO 20040132, 1-SW-V-685, check valve exam, on March 23, 2018
(5) Control Rm In-leakage Test, Final Report via Vendor, on March 29, 2018

71111.20 - Refueling and Other Outage Activities (1 Sample)

The inspectors evaluated refueling outage B1R-22 activities from March 2, 2018, to March 31, 2018.

71111.22 - Surveillance Testing

The inspectors evaluated the following surveillance tests:

Routine (4 Samples)

(1) 0PT-12.2D Rev.118, EDG-4 Monthly Load Test, on January 26, 2018
(2) WO 20180054, Functional Test of Service Water Building Sump Pump, on February 28, 2018
(3) 0PT-46.6 Rev 6, Control Room In leakage Tracer Gas Test, on February 16, 2018
(4) 0PT-12.1A, Rev. 5, No. 1 Diesel Generator LOOP/LOCA Loading Test, on March 23, 2018

Containment Isolation Valve (1 Sample)

(1) 0PT-20.3A.5 Rev. 13, MSIV Leak Test, 1-B21-F028B, post maintenance LLRT per WO 20238741, on March 21, 2018

RADIATION SAFETY

71124.01 - Radiological Hazard Assessment and Exposure Controls

Radiological Hazard Assessment (1 Sample)

The inspectors evaluated radiological hazards assessments and controls.

Instructions to Workers (1 Sample)

The inspectors evaluated worker instructions.

Contamination and Radioactive Material Control (1 Sample)

The inspectors evaluated contamination and radioactive material controls.

Radiological Hazards Control and Work Coverage (1 Sample)

The inspectors evaluated radiological hazards control and work coverage.

High Radiation Area and Very High Radiation Area Controls (1 Sample)

The inspectors evaluated risk-significant high radiation area and very high radiation area controls.

Radiation Worker Performance and Radiation Protection Technician Proficiency (1 Sample)

The inspectors evaluated radiation worker performance and radiation protection technician proficiency.

71124.08 - Radioactive Solid Waste Processing and Radioactive Material Handling, Storage, and Transportation

Radioactive Material Storage (1 Sample)

The inspectors evaluated the licensee's radioactive material storage.

Radioactive Waste System Walk-down (1 Sample)

The inspectors evaluated the licensee's radioactive waste processing facility during plant walkdowns.

Waste Characterization and Classification (1 Sample)

The inspectors evaluated the licensee's radioactive waste characterization and classification.

Shipment Preparations (1 Sample)

The inspectors evaluated the licensee's radioactive material shipment preparation processes.

Shipment Records (1 Sample)

The inspectors evaluated the licensee's non-excepted package shipment records.

OTHER ACTIVITIES – BASELINE

71151 - Performance Indicator Verification

The inspectors verified on March 16, 2018, the licensee's performance indicators submittals listed below for the period from January 1, 2017 through December 31, 2017. (6 Samples)

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

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 issue:

(1) CR 2097378 – Tracer gas test failure on main control room on March 23, 2018

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

Licensee Event Reports (1 Sample)

The inspectors evaluated the following licensee event report which can be accessed at https://lersearch.inl.gov/LERSearchCriteria.aspx:

(1) Licensee Event Report (LER) 05000325/2017-003-00, Unplanned Inoperability of CREV and Control Building HVAC, on March 30, 2018

INSPECTION RESULTS

Inadequate Instruction to Perform Inspections on Emergency Ventilation Dampers			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Barrier Integrity	Green NCV 05000324/2018001-01 05000325/2018001-01 Closed	H.5 – Work Management	71153

Introduction: A self-revealing Green NCV of TS 5.4.1a, Procedures, was identified when the licensee failed to properly preplan and perform work instructions associated with the control room emergency ventilation (CREV) damper inspections. Specifically, the licensee disconnected the damper airline without work instruction guidance, which caused a loss of control building heating, ventilation and air conditioning (HVAC) and CREV systems, resulting in a safety system functional failure.

Description: The first event occurred at 0930 hours on June 5, 2017. The licensee was performing a work order (WO) 20036198-02 task to inspect 2-VA-2J-D-CB, Emergency Recirculation Damper. During the task, but without WO guidance, the licensee disconnected a damper actuator instrument airline to cycle the 2J damper to the open position. Afterwards, it was determined that disconnecting the damper actuator instrument airline had caused the Emergency Recirculation Damper 2J to become non-functional rendering both divisions of the CREV system inoperable. The CREV system was restored to operable status by 1009 hours.

The second event occurred at 1352 hours on June 5, 2017. The licensee was performing a WO 20036198-04 task to inspect 2-VA-2A-EAD-CB, Control Room Emergency Supply Fan A Inlet Isolation Damper. During the task, but without WO guidance, the licensee disconnected a damper actuator instrument airline to cycle the 2A damper to the open position. When the damper actuator airline was disconnected, the control building instrument air system pressure decrease resulted in subsequent loss of the control building HVAC and CREV systems. This event was self-revealing with the trip of both running control building HVAC units (1D-CU-CB and 2D-CU-CB control building air conditioning and Supply Fans). The technical specifications for this condition requires both units to be placed in MODE 3 within 12 hours and MODE 4 within 36 hours. The affected systems were restored by 1407 hours.

In both events, the CREV system dampers were temporarily disabled by the loss of their pneumatic supply. With the CREV dampers unable to respond as required, the CREV system was inoperable and its safety function was lost. The CREV safety function is to minimize infiltration of contaminated air by removing radioactive particles, smoke and toxic gases from the control room envelope. The combined duration of inoperability was 54 minutes. The control building HVAC system was inoperable only during the second event. The duration of inoperability was 15 minutes. There was no adverse impact on temperature or humidity in the control building during this event.

The licensee performed a root cause evaluation and determined the work order instructions did not contain precautions or limitations about operating dampers and the maintenance leadership has failed to effectively enforce work control standards to align workers and their behaviors to achieve successful maintenance execution.

Additionally, in August of 2015, Brunswick transitioned from PassPort to Consolidated Asset Suite. When this change happened, the instructions for all of the damper seal inspection tasks were revised, removing critical aspects that the damper seal should be inspected in the damper-closed position.

Inspectors determined from August 2015 until June 2017, the work order instruction was not maintained or properly planned when the instruction was revised to remove the damper inspection while in the closed position.

Corrective Actions: Corrective actions included restoring the affected pneumatic air supply, revising work order instructions to prevent damper operation, and improvements in crew performance standards.

Corrective Action Reference: NCR 2129139

Performance Assessment:

Performance Deficiency: The inspectors determined that the licensee's failure to properly preplan and establish adequate work instructions for the emergency damper inspections was a performance deficiency.

Screening: The performance deficiency was more than minor because it was associated with Procedural Quality attribute of the Barrier Integrity cornerstone, and adversely affected the cornerstone objective to provide reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. The CREV safety function is to minimize infiltration of contaminated air by removing radioactive particles was lost from the control room envelope.

Significance: The finding was screened in accordance with IMC 0609, Appendix A, "The Significance Determination Process (SDP) For Findings At–Power" dated June 19, 2012. The finding was screened by Exhibit 3 – Barrier Integrity Screening Questions, under Section C – "Control Room, Auxiliary, Reactor, or Spent Fuel Pool Building". Since the control room radiological barrier function and the barrier function against smoke or a toxic atmosphere were inoperable, a detailed risk evaluation was required. A regional senior reactor analyst (SRA) conducted the risk assessment using SAPHIRE software Version 8.1.6 and the Standardized Plant Analysis Risk (SPAR) Models, Version 8.50, for each of Units 1 and 2. Because the control room ventilation systems were not specifically modeled in SPAR, the SRA used human error probability (HEP) as a surrogate for the degraded condition. Also, given that no human errors were actually made and control room temperature remained less than 70 degrees Fahrenheit, the SRA increased each HEP by a factor of 10 for the degraded condition. The exposure time was one hour. The dominant sequences, which accounted for approximately 50 percent of the change, included loss of conventional service water with operator failure to initiate suppression pool cooling, fire water injection, or control low pressure coolant injection at low pressures, and loss of condenser heat sink with operator failure to depressurize the reactor or vent containment. The result was a change in core damage frequency of less than 1E-7/year for each unit and was primarily mitigated by the short exposure time. Because the change was less than 1E-7/year, no further analysis was needed for external events or large early release, and this finding was determined to be of very low safety significance (Green).

Cross-cutting Aspect: The finding had a cross-cutting aspect in the Work Management component of the Human Performance cross-cutting area (H.5), which required the organization to implement a process of planning, controlling, and executing work activities such that nuclear safety was the overriding priority. Specifically, the licensee failed to plan, control, and execute the CREV work activities, which resulted in a loss of the CREV and control room HVAC systems.

Enforcement:

Violation: Technical Specification 5.4.1a, Procedures, states that "written procedures shall be established, implemented, and maintained covering the following activities: a) the applicable procedures recommended in Regulatory Guide 1.33, Appendix A, November 1972 (Safety Guide 33, November 1972)." Regulatory Guide 1.33, Appendix A, November 1972 (Safety Guide 33, November 1972), Section I, states in part that "maintenance which can affect the performance of safety-related equipment should be properly preplanned and performed in accordance with written procedures, documented instructions, or drawings appropriate to the circumstance." WO 20036198 was a documented instruction for safety-related ventilation system dampers.

Contrary to the above, from August 2015 until June 2017, the licensee failed to properly preplan and maintain adequate work instructions for the damper inspections on the CREV and control room HVAC systems. As a result, the CREV and control room HVAC systems became inoperable and could not perform their safety function.

Disposition: This violation is being treated as a Non-Cited Violation, consistent with Section 2.3.2 of the Enforcement Policy.

EXIT MEETINGS AND DEBRIEFS

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

- On April 19, 2018, the inspectors presented the inspection results to R. Gideon, Site Vice President, and other members of the licensee staff.

DOCUMENTS REVIEWED

Common Documents Reviewed

Updated Final Safety Analysis Report
Individual Plant Examination
Individual Plant Examination of External Events
Technical Specifications and Bases
Technical Requirements Manual
Control Room Narrative Logs
Plan of the Day

71111.01 - Adverse Weather Protection
Procedures
0OI-01.03, Non-Routine Activities, Rev 70
0AP-062, Seasonal Preparations, Rev. 6

71111.04 - Equipment Alignment
Procedures
0OP-39, Diesel Generator Operating Procedure, Rev. 190
2OP-43, Service Water System Operating Procedure, Rev. 166
2OP-05, Standby Liquid Control System, Rev. 69
SD-05, Standby Liquid Control System, Rev.11
1OP-08, Control Rod Drive Hydraulic System Operating Procedure, Rev. 100
2OP-08, Control Rod Drive Hydraulic System Operating Procedure, Rev. 106
DBD-08, Control Rod Drive System, Rev. 9
SD-08, CRD Hydraulic System, Rev 13

Drawings
D-02547, Rev. 34

71111.05AQ - Fire Protection Annual/Quarterly
Procedures
0FPP-060 Fire Drill Program, Rev. 2
99-F-RB-03, Fire Drill Scenario Guide, Rev. 2
0PFP-013, General Fire Plan, Rev. 52
CSD-BNP-PFP-1RB, Unit 2 Reactor Building Pre-fire Plans Rev. 1
CSD-BNP-PFP-2RB, Unit 2 Reactor Building Pre-fire Plans Rev. 0
CSD-BNP-PFP-1TB, Turbine Building Pre-fire Plans, Rev. 3

71111.08 - Inservice Inspection Activities
Work Orders
20181808-011-SW-142-30-157: Repair Conventional and Vital Headers Drain Pipe, 3/13/18

Procedures
NDE-NE-ALL-6213, Utilization of PDI-UT-13 Procedure for Manual Phased Array Ultrasonic Examination of Reactor Pressure Vessel Nozzle to Shell Welds and Nozzle Inner Radius Regions Rev. 001
ISwT-PDI-AUT5 IHI Southwest Technologies, Inc. Operating Procedure: Automated Inside Surface Ultrasonic Examination of Pressure Vessel Welds Using Phased Array Rev. 2

ISwT-NDE2 IHI Southwest Technologies, Inc. Operating Procedure: Ultrasonic Linearity Measurements Rev. 0
54-ISI-869-000 AREVA Inc. Nondestructive Examination Procedure: Procedure for Encoded Phased Array Ultrasonic Examination of Dissimilar Metal Piping Welds Rev. 000
AD-NE-ALL-1103 Calibration and Control of NDE Examination Equipment Rev. 0

Corrective Action
02194822 NCR: WO 20191808-01 Material Issued not in accordance with Spec 248-117, 3/28/18
02190611 AR: Nozzle N4A Weld 1B21N4A-2-SW1-2 Flaw Identified, 3/12/18

Other
VEN-18-003 Ultrasonic Examination Record (N5A Inner Radius), 3/13/18
Z3668 Zetec Calibration Certificate: TOPAZ 32/128PR (SN 665462), 1/16/17
Z3987 Zetec Calibration Certificate: DYNARAY-128/128PR, 1/29/18
N1051823 Weldstar Certificate of Compliance/Conformance, 9/19/14
N845297 Weldstar Certificate of Compliance, 10/12/09
9 Carolina Power & Light Company Procedure Qualification Record, 8/26/76
46 Carolina Power & Light Company Procedure Qualification Record, 10/20/80
243 Carolina Power & Light Company Procedure Qualification Record, 4/5/94
53320 AREVA Certificate of Calibration: Digital Thermometer (SN 160067), 2/9/18
51-9280231-000 AREVA Inc. Engineering Information Record: Automated Dissimilar Metal Weld Examination Phased Array Technique Sheets for Brunswick Unit 1 B122 Spring 2018 Rev. 0
1-B11-0968 IHI Southwest Technologies Examination Summary Record (Ring 1 Longitudinal Weld @ 255°), 3/20/18
1-FW-115-VIP Framatome Automated Ultrasonic Phased Array Examination Summary Sheet (1B21N4A-2-SW1-2), 3/12/18
WPS 08 2 30 Carolina Power & Light Company Welding Procedure Specification Rev. 1
MAGNAFLUX Certificate of Certification: Ultragel II (Batch 14M076), 12/19/14
Duke Energy Certificate of Method Qualification: UT LII-N (May), 9/12/17
Duke Energy Visual Acuity Record (May), 9/6/17
Standards Laboratory Instrument Certification: IR Thermometer (ID G503098), 6/5/17
Day & Zimmerman Vision Acuity Record (Masey), 3/12/18
Day & Zimmerman Certification Record: PT LII (Masey), 5/4/16
Duke Energy Record of Welder Performance Qualification Test (Edwards), 8/30/17
Duke Energy Record of Welder Performance Qualification Test (Maloney), 2/24/16
MAGNAFLUX Certification: Spotcheck, SKC-S (Batch 16G17K), 7/29/16
MAGNAFLUX Certification: Spotcheck, SKL-SP2 (Batch 17B04K), 2/8/17
MAGNAFLUX Certification: Spotcheck, SKD-S2 (Batch 16L16K), 2/5/16
Review and Acceptance of Vendor Personnel and Examinations: UT LIII (Delgado), 3/3/18
Framatome Indication Notification Report: N4A Safe End to Pipe DM Weld (1B21N4A-2-SW1-2), 3/12/18
Framatome Certificate of Personnel Qualification: UT LIII (Breza), 3/26/18

71111.11 - Licensed Operator Requalification Program and Licensed Operator Performance

Procedures
0GP-13, Increasing Unit Capacity at End of Core Cycle, Rev. 48

Lesson Plans
OPS-EDG-DLA, Manual Transfer of Emergency Bus Supply from EDG to Normal Feeder, Rev. 0

Other
LOR Exam 18-1 Version 'A' Rev. 0
LOR Exam 18-1 Version 'B' Rev. 0

71111.12 - Maintenance Effectiveness
Procedures
AD-EG-ALL-1210, Maintenance Rule Program, Rev. 1

Condition Reports
CR 2172700, Unit 2 HPCI Team Supply Packing Failure

Work Orders (WO)
WO12227572
WO20104840
WO12100401
WO12100402

Miscellaneous
NUMARC 93-01, Industry Guidelines for monitoring the effectiveness of maintenance at Nuclear Power Plants, Rev. 4A

71111.13 - Maintenance Risk Assessments and Emergent Work Control
Procedures
AD-OP-ALL-0201, Protected Equipment, Rev. 04
0AP-022, BNP Outage Risk Management, Rev. 56
AD-WC-ALL-0250, Work Implementation and Completion, Rev. 04
AD-WC-ALL-0410, Work Activity Integrated Risk Management, Rev. 03
AD-WC-ALL-0200, Online Work Management, Rev. 08
AD-OP-ALL-0201, Protected Equipment, Rev. 04
AD-WC-ALL-0430, Outage Risk Review, Rev. 02
0AP-025, BNP Integrated Scheduling, Rev. 56

71111.15 - Operability Determinations and Functionality Assessments
Procedures
NUHOMS Amend 10, Technical Specifications, Transnuclear, Inc., Storage System, Rev. 1
0ISFS-100, Horizontal Storage Module Assembly, Rev. 2
FP-86004, Transnuclear Dry Fuel Storage System, Rev. A
AD-OP-ALL-0105, Operability Determinations and Functionality Assessments, Rev. 4
AD-OP-ALL-0100, Corrective Action Program, Rev. 11

Condition Reports
CR 02174081, Inspection of ISFSI HSM and Prompt Operability Determination
CR 02178808, CPLD relays installed in EDGs
CR 2175636, Shells found in EDG-3 Jacket water HX
CR 2172700, HPCI steam valve packing leak

Drawings
F-08602, sheet 8, ISFSI Project Horizontal Storage Module Layout Details

71111.19 - Post Maintenance Testing

Procedures
0PLP-20, Post-Maintenance Testing Program, Rev. 49

Work Orders
WO 20019415, 2A Conventional SW pump conduit rerouting
WO 20040133, 2-SW-V-685, Check valve removal and inspection
WO 20062954, EDG-2 PMT from AVR modification
WO 20040132 1-SW-V-685 Check valve exam

Miscellaneous
Control Room In-leakage Test – Final Report from Vendor on January 18, 2018

71111.20 - Refueling and Other Outage Activities

Procedures
0FH-11, Fuel Handling, Rev. 107
0ENP-24.12, Preparation of Core Component Sequence Sheets, Rev. 50
0GP-05, Unit Shutdown, Rev 185
0GP-08, Refueling to Cold Shutdown, Rev 51
0GP-07, Preparations for Core Alterations, Rev 63
0GP-01, Pre-startup Checklist, Rev 197
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