



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

November 30, 2018

Ms. Tanya Hamilton  
Site Vice President  
5413 Shearon Harris Rd.  
Shearon Harris Nuclear Power Plant  
M/C HNP01  
New Hill, NC 27562-0165

SUBJECT: SHEARON HARRIS NUCLEAR POWER PLANT - NRC EVALUATION OF  
CHANGES, TESTS, AND EXPERIMENTS REPORT NUMBER  
05000400/2018010

Dear Ms. Hamilton:

On October 25, 2018, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Shearon Harris Nuclear Power Plant, Unit 1. On October 25, 2018, the NRC inspectors discussed the results of this inspection with you and members of your staff. The results of this inspection are documented in the enclosed report.

The NRC inspectors did not identify any findings or violations.

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/**

Omar López-Santiago, Chief  
Engineering Branch 1  
Division of Reactor Safety

Docket Nos. 50-400  
License Nos. NPF-63

Enclosure:  
Inspection Report 05000425/2018010

cc: Distribution via ListServ

SUBJECT: SHEARON HARRIS NUCLEAR POWER PLANT - NRC EVALUATION OF  
CHANGES, TESTS, AND EXPERIMENTS REPORT NUMBER  
05000425/2018010 dated November 30, 2018

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\*See previous page for concurrence

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ADAMS: ☒ Yes   ACCESSION NUMBER: **ML 18345A116**   ☒ SUNSI REVIEW COMPLETE   ☐ FORM 665 ATTACHED

OFFICE	RII:DRS	RII:DRS	RII:DRS	RII:DRS		
SIGNATURE	<b>PXB3</b>	<b>RNP1</b>	<b>DXT2</b>	<b>ORL</b>		
NAME	P. Braxton	R. Patterson	D. Terry-Ward	O. Lopez		
DATE	11/26/2018	11/27/2018	11/26/2018	11 / 30 /2018		
E-MAIL COPY?	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO

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**U.S. NUCLEAR REGULATORY COMMISSION**

**Inspection Report**

Docket No.: 50-400

License No.: NPF-63

Report No.: 05000425/2018010

Enterprise Identifier: I-2018-010-0048

Licensee: Duke Energy Progress, LLC.

Facility: Shearon Harris Nuclear Power Plant, Unit 1

Location: 5413 Shearon Harris Road  
New Hill, NC 27562

Dates: October 22 – 25, 2018

Inspectors: Robert Patterson, Reactor Inspector (Team Leader)  
Denise Terry-Ward, Construction Inspector  
Pauline Braxton, Reactor Inspector

Approved By: Omar López-Santiago, Chief  
Engineering Branch 1  
Division of Reactor Safety

Enclosure

## **SUMMARY**

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring Duke Energy Company's performance by conducting a 10 CFR 50.59 inspection at Shearon Harris Nuclear Plant, Unit 1, 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.

## **List of Findings and Violations**

No findings or violations were identified.

## INSPECTION SCOPE

Inspections were conducted using the appropriate portions of the inspection procedure (IP) 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, conducted walkdowns and interviewed personnel to assess licensee performance and compliance with Commission rules and regulations, license conditions, site procedures, and standards.

## REACTOR SAFETY

### 71111.17T - Evaluations of Changes, Tests and Experiments (18 Samples)

The inspectors evaluated the following samples for compliance with Title 10, Code of Federal Regulations (CFR) 50.59, "Changes, tests, and experiments," October 22, 2018, to October 25, 2018:

#### 10 CFR 50.59 Evaluations - 71111.17T

- (1) 0000284102, Non-Conservative T/S for Emergency Diesel Generator Voltage
- (2) 0000284333, HNP Turbine Control System Upgrade - Main Control Board Changes
- (3) 0000296193, Revise and Issue HNP-M/Mech-1049 And HNP-M/Mech-1055
- (4) 0000298102, RWST Back Leakage Test Capability
- (5) 0000290494, Replacement of Automatic Voltage Regulator

#### 10 CFR 50.59 Screening/Applicability Determinations - 71111.17T

- (1) 0000297509, 6.9 V Breaker Replacement 1A-5
- (2) 0000401600, ESW Pumps Modification - Couplings, Shafts, Bearings
- (3) 0000401808, MSSV Tolerance and Pressurizer Level Setpoint Tech Spec Changes
- (4) 0000402435, ESW Pump Vibration Monitor Station Installation
- (5) 0000402625, Modify Chiller Lube Oil Thermostat Set-Point
- (6) 0000403441, Security System Cyber Intrusion Detection and Reporting Cabinet/Wiring
- (7) 0000406905, Secondary Protection Device for Containment Penetration
- (8) 0000407633, Electrical Cable Vault Sump Pump Remediation Project
- (9) 0000407948, Potter & Brumfield MDR Relays
- (10) 0000408444, PSA Mechanical Snubber Replacement with Anvil or Lisega Hydraulic Snubbers
- (11) 0000409895, Emergency Response Guidelines Revision 3 Setpoint Changes
- (12) 0000270422, 480 Volt Feeder Ground Fault Alarm Relay Increase Time Delay
- (13) 0000290494, Replacement of Automatic Voltage Regulator

**OTHER ACTIVITIES – TEMPORARY INSTRUCTIONS, INFREQUENT AND ABNORMAL****IP 71007 - Reactor Vessel Head Replacement Inspection (1 Sample)**

The inspectors evaluated the following sample for compliance with Title 10, Code of Federal Regulations (CFR) 50.59, "Changes, tests, and experiments," from October 22, 2018, to October 25, 2018:

(1) 0000294356, Missile Shield Block Modification

The inspectors reviewed selected procedures and records, conducted walkdowns and interviewed personnel to assess licensee performance and compliance with Commission rules and regulations, site procedures, and standards. This sample was reviewed in accordance with Inspection Procedure 71111.17T, "Evaluations of Changes, Tests and Experiments," as specified in IP 71007, "Reactor Vessel Head Replacement Projection Inspection," section 02.02, "Design and Planning Inspections." The review of this inspection item constitutes a partial sample completion.

**EXIT MEETINGS AND DEBRIEFS**

On October 25, 2018, the inspectors presented the inspection results to Ms. Tanya Hamilton, John Dills and other members of the licensee staff.

## LIST OF DOCUMENTS REVIEWED

### PROCEDURES

AD-EG-ALL-1117, Design Analyses and Calculations, Rev. 5  
AD-ED-ALL-1132, Preparation and Control of Design Change Engineering Changes, Rev. 11  
AD-EG-ALL-1133, Preparation and Control of Design Equivalent Change Engineering Changes, Rev. 8  
AD-EG-ALL-1134, Preparation and Control of Evaluation Engineering Changes, Rev. 2  
AD-EG-ALL-1135, Preparation and Control of Configuration Management Update Engineering Changes, Rev. 0  
AD-EG-ALL-1136, Preparation and Control of Commercial Change Engineering Changes, Rev. 4  
AD-EG-ALL-1139, Temporary Configuration Changes, Rev. 0  
AD-EG-ALL-1176, Preparation of Engineering Documents, Rev. 0  
AD-LS-ALL-0005, UFSAR Updates, Rev. 5  
AD-LS-ALL-0007, Applicability Determination Process, Rev. 5  
AD-LS-ALL-0008, 10 CFR 50.59 Review Process, Rev. 0  
AD-EG-ALL-1905, CDA Personnel Access Control and Management, Rev. 2  
AD-EG-ALL-1155, Post Modification Testing, Rev. 4  
HNP-I/INST-1014, EOP Setpoint Technical Basis Document, Rev. 6  
MST-E0001, 6.9 KV RCP Circuit Breaker Inspection and Maintenance, Rev. 18  
MST-I0081, Reactor Coolant System Wide Range Pressure (P-403) Calibration, Rev. 24  
MST-I019, Reactor Coolant System Wide Range Pressure P-0403 Operational Test of Train B CVCS Miniflow Circuit, Rev. 13  
CAR-SH-BE-007, Air Handling Units, Rev. 12  
APP-AEP-002, Auxiliary Equipment Panel 2, Rev. 52  
CSP -NGGC -0007, NGG Cyber Security Program, Rev. 5  
EDC-0020, Adequacy of Safety Related Bus Voltage, Rev. 005  
EGR -NGGC -0157, Engineering of Plant Digital Systems and Components, Rev. 7  
MST-I0080, Plant Operating Manual, Maintenance Surveillance Test, Reactor Coolant System Wide Range Pressure (P-0402) Calibration, Rev. 23  
MST-I0081, Plant Operating Manual, Maintenance Surveillance Test, Reactor Coolant System Wide Range Pressure (P-0403) Calibration Rev. 24  
MST-I0190, Plant Operating Manual, Maintenance Surveillance Test, Reactor Coolant System Wide Range Pressure P-0402 Operational Test of Train A CVCS Miniflow Circuit, Rev. 13  
MST-I0191, Plant Operating Manual, Maintenance Surveillance Test, Reactor Coolant System Wide Range Pressure P-0403 Operational Test of Train B CVCS Miniflow Circuit, Rev. 13  
PIC-I074, Process Instrument Calibration, Rev. 3  
OST-1010A, A Train Containment Cooling System Operability Test Monthly, date 09/29/2018  
AP-045, Operator Time Critical Action Program, Rev. 2  
AOP-016-BD, Excessive Primary Plant Leakage, Rev. 29  
OMM-020 Emergency Operating Procedure Verification and Validation Program, Rev. 19  
OP-137, Auxiliary Feedwater System, Rev. 42  
OST-1026, RCS Leakage Evaluation, Rev. 50  
OST-1119, Containment Spray Operability Train B, Rev. 56  
OST-1118, Containment Spray Operability Train A, Rev. 52  
OST-1226, RCS System Leakage Manual Calculation, Rev. 19  
OST-1513, Operability Test for 1CS-294, 1CS-775 and 1CS-776, Rev. 16  
OST-1120, RWST Backleakage Test, Rev. 1  
EOP-ES-1.3, Transfer to Cold Leg Recirculation, Rev. 2  
OST 12-14, ESW System Operability Test, Rev. 92

OP-148, ESCW System, Rev. 80

## **DRAWINGS**

CAR 2166 B-041 SH. 680, Power Distribution & Motor Data 120V PNL-UPP-1A Vital, Rev. 10  
 1364-096297 S07, Main Control Board Wiring Section B, Rev. 1  
 1364-096297 S08, Main Control Board Wiring Section B, Rev. 2  
 1364-096297 S13, Main Control Board Wiring Section B, Rev. 0  
 1364-002280 S02, Unit 1 Main Control Board Front View Panel 1B & 1BB, Rev. 21  
 1460E22, Caroline Power and Light Co., Shearon Harris Units 1, 2, 3 and 4, Reduced Size Control Board Outline and Installation, Rev 5  
 1543E73, Caroline Power and Light Co., Shearon Harris Units 1, 2, 3 and 4, Reduced Size Control Board Assembly and Details, Sheet 1 of 14, Rev. 4  
 1543E73, Caroline Power and Light Co., Shearon Harris Units 1, 2, 3 and 4, Assembly and Details, Sheet 2 of 14, Rev. 3  
 1543E73, Caroline Power and Light Co., Shearon Harris Units 1, 2, 3 and 4, Assembly and Details, Sheet 3 of 14, Rev. 3  
 5-G-0098 S01, Manhole M84, Sump Pump Skid Plan, Rev. 1  
 5-G-0098 S09, Manhole M70, Sump Pump Skid Plan, Rev. 2  
 5-G-0098 S12, Manhole M523, Sump Pump Skid Plan, Rev. 2  
 6-B-041 0643, Power Distribution & Motor Data 120 VAC Power Panel UPP-1 Vital, Rev.024  
 6-B-041 0705, Power Distribution & Motor Data 208/120V Power Panel UPP-2A Vital, Rev. 25  
 8-G-0050, Class 1E Cable Vault Sump Pump Level Transmitter Installation Details, Rev. 1  
 3ACD100948E001, Schematic Diagrams - Automatic Voltage Regulator Unitrol 6080, Rev. E  
 6-B-041-0643, Unit 1 Power Distribution and Motor Data, 120 VAC Power Panel Upp-1, Rev. 22  
 6-B-430-31.233, Unit 1 Instrumentation Schematics and Logic Diagrams, Rev 7  
 6-G-0042-S01, 250 V DC, 125V DC & 120 V Uninterruptible AC wiring diagram, Rev. 29  
 6-S-1389, ESW Vibration Monitor Station Sensor Locations, Rev. 1  
 CPL-2165 S-0550, Simplified Containment Spray System, Rev. 18  
 CPL-2165 S-1305, Simplified Containment Spray System, Rev. 29  
 CPL-2165 S-1304, Simplified Containment Spray System, Rev. 13  
 CAR-2167 G-1221, Reactor Auxiliary Building South Wall, Rev. 5  
 SK-EC294356, Vertical Missile Block Lift Rig, Rev. C  
 7-G-1201, Reactor Auxiliary Building South Wall – MAS, Rev. 0

## **CALCULATIONS**

E1-0006, Ground Fault Relay Settings - 480V Power Center Feeders, Rev. 003  
 E4-0006, Safety Batteries 1A-SA AND 1B-SB Load Profile Determination (LOCA/SBO/FLEX) Rev. 007  
 E-6000, Tab A Calculation E-6000 Voltage, Loading & Available Fault Current, Rev. 13  
 SC-N-061, Revision Summary, Revision 7 incorporated EC 284102, Rev. 007  
 SC-N-062, Revision Summary, Revision 8 incorporated EC 284102, Rev. 008  
 SC-N-062, RCS Wide Range Pressure Loop 3 P-402, Rev. 008  
 SC-N-061, RSC Wide Range Pressure Loop 1 P-403, Rev. 007  
 HNP-I/INST-1044, CSIP Alternate Miniflow Interlock Accuracy Calculation, Rev. 005  
 SI-0045, "Max. RCS Pressure for CSIP Minimum Flow", Rev. 3  
 HNP-E/ELEC-005, HNP Automatic Voltage Regulator Limiter and Protections Coordination, Rev. 1  
 AF-0045, Evaluation of TDAFW Pump Runout, dated 04/03/2014  
 CN-CRA-10-31, SGTR Margin to Overfill Re-Analysis for Decay Heat Issue, Rev. 0  
 HNP-M/MECH-1049, Impact of the Failure of the TDAFW Pump Controller, Rev. 1  
 C1-CT-H-01032, Hanger Calculation, Rev. 1



EGR-NGGC-0308, Pipe Stress Analysis, Rev. 8  
 DESG-DCHG, Anchor Bolt Overpressure Evaluation Z19, Rev. 5

### **ACTION REQUESTS**

AR 01962458, 50.59 Screen for EC 403206 implements SA train pressure switch PS-01RC 0402A1 recalibration.  
 AR 01962459, 50.59 Evaluation, Child EC 403206, implements SA train pressure switch PS-01RC-0402A1 recalibration  
 AR 01965140 Screen, EC 284333, Turbine Control System, Rev. 0  
 AR 02088391, Secondary Protection coordination issue, original date 12/28/2016  
 AR 02089653, This 50.59 Screen is a revision to 50.59 Screen 02070173. The update to Screen 02070173 is the result of an update to Master EC 284102.  
 AR 02092509, 50.59 Evaluation for EC Number 284243  
 AR 02106476, Potter & Brumfield MDR Relay Documentation Issue, original dated 03/08/2017  
 AR 2110546, 50.59 Screen for Engineering Change (EC) 406905, add a containment penetration secondary protection device  
 AR 2115971, 50.59 Screen for EC 407948 Potter & Brumfield MDR series AC relays  
 AR 2135298, 50.59 Screen for EC 407245, Sump Pump Reliability and Submerged Safety Related Cables  
 AR 2202436, this is a revision to 50.59 screen 679012  
 AR 679012 Screen, EC 270422, for Ground Fault Monitors (GFM's), Rev. 02  
 AR 00626242, HNP-Calc Update as Result of NSAL 07-11 Work, dated 10/30/2016  
 AR 01999328, DB SGTR AFW Isolation Times Changing, dated 08/10/2017  
 AR 02156583, Unexpected Results during Installation of Drillco Maxi-Bolts, dated 10/09/2017  
 AR 02198419, Incorrect Hydraulic Ram Used for Anchor Bolt Installation, dated 04/16/2018  
 AR 02199038, Catalog ID Model Does Not Match Description, dated 04/16/2018

### **WORK ORDERS**

20102347 01	20142964-02	20052974-01
13506275-01	20106843-01	20239448-01
20038121-02	20231254-03	13530023-01

### **MISCELLANEOUS DOCUMENTS**

CSP-NGGC-0007 Attachment 1 - Critical System Identification, ground detection, including alarm in the main control room, 0000070422, Rev. 8  
 I-T-E Ground Fault Relay, Type GRC, vendor number IB 18.1.7-8, EC 0000070422, R0  
 EC Milestone Turnover Screen Print for Child EC 403206, Rev. 1  
 EC 0000403206, Screen Print for Child 1 – Non- Conservative T/S for EDG Voltage (SA Train), status closed 02/14/2017  
 NSI Industrial Keyboard & Pointing devices, Touchpad Units, SPS55 for EC 0000084333, Version 1.1, Rev. 0  
 CAR-SH-IN-38, Project Identification No. CAR-SH-IN-38, Main Control Board, Rev. 1  
 DBD-202, Design Basis Document, Plant Electrical Distribution System, Rev. 038  
 DBD-308, Design Basis Document, Main and Auxiliary Control Boards and Panels, Rev. 007  
 NCP-D-0022, Distributed I&C System Platform (DICSP) - Platform Requirements Specification, Rev. 001  
 IN Information Notice No. 92-19: Misapplication of Potter & Brumfield MDR Rotary Relays, Carolina Power and Light Company (CP&L) discussion, March 2, 1992  
 ME00803, Material Evaluation, Relays, P & B MDR, R09  
 EC 407948R0, Z00R0 Drawing and Calculation References, Rev. 0  
 EC 407948R0, Z01R0 Potter and Brumfield MDR Relays list, Rev. 0

MCB HSI Touchpad, Critical Digital Asset Identification Screen Print, dated 03/29/2018  
3ACD100948E000x, Excitation System Unitrol 6080, Rev. E  
3BHS264752-E02, Unitrol 6080 Excitation System Summary of the Test Type Results Climatic, DBD-139, Turbine Generator Building HVAC Systems, Rev. 10  
E4-0007, 120 VAC Non Class 1E Inverter Load Tabulation, Rev. 12  
HNP-E-011, Automatic Voltage Regulator Procurement Specification, Rev. 0  
3ACD100948E0086, Reliability and Availability Report for AVR at Duke Nuclear Harris Unit 1, Rev. A  
3ACD100948E0081, FMEA for AVR at Harris Nuclear Station Unit 1, Rev. A  
3BHS264752-E01, Unitrol 6080 Excitation System- Summary of the Type test Results EMC  
HydroAire Final Inspection Report of ESW Pump Shaft Coupling Replacement, dated 08/09/2016  
ESW Pump Vibrations Trending Results October 2017 – October 2018  
WCAP-10698, Offsite Radiation Doses for SGTR Accident  
EOP-SI, Training Documentation, Rev. 0  
EOPLP-18.63, Training Records, Rev. 0  
EOP-SIM-3.60, Training Simulation, Rev. 9