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

October 23, 2017

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

SUBJECT: SHEARON HARRIS NUCLEAR POWER PLANT – NUCLEAR REGULATORY COMMISSION PROBLEM IDENTIFICATION AND RESOLUTION INSPECTION REPORT 05000400/2017008

Dear Ms. Hamilton:

On September 28, 2017, the U.S. Nuclear Regulatory Commission (NRC) completed a Problem Identification and Resolution Biennial Inspection at your Shearon Harris Nuclear Power Plant, Unit 1, and discussed the results of this inspection with you and other members of your staff. The inspection team documented the results of this inspection in the enclosed inspection report.

Based on the inspection samples, the inspection team determined that your staff's implementation of the corrective action program was adequate to support nuclear safety. In reviewing your corrective action program, the team assessed how well your staff identified problems at a low threshold, your staff's implementation of the plant's process for prioritizing and evaluating these problems, and the effectiveness of corrective actions taken to resolve these problems. In each of these areas, the team determined that your staff's performance was adequate to support nuclear safety.

The team also evaluated other processes your staff used to identify issues for resolution. These included your use of audits and self-assessments to identify latent problems and your incorporation of lessons learned from industry operating experience into plant programs, processes, and procedures. The team determined that your staff's performance in each of these areas was adequate to support nuclear safety.

Additionally, the team determined that your plant's management maintains a safety-conscious work environment adequate to support nuclear safety. Based on the team's observations, personnel are willing to raise concerns related to nuclear safety through at least one of the several means available.

On the basis of the samples selected for review, the inspectors concluded that in general, problems were properly identified, evaluated, and corrected. The team did not identify any findings or violations of more than minor significance.

In accordance with Title 10 of the *Code of Federal Regulations* 2.390, “Public Inspections, Exemptions, Requests for Withholding,” of the NRC's “Rules of Practice,” a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC’s Public Document Room or from the Publicly Available Records component of the NRC’s Agencywide Documents Access and Management System (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

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

Docket No.: 05000400
License No.: NPF-63

Enclosure:
Inspection Report 05000400/2017008
w/Attachment: Supplemental Information

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SUBJECT: SHEARON HARRIS NUCLEAR POWER PLANT – NUCLEAR REGULATORY COMMISSION PROBLEM IDENTIFICATION AND RESOLUTION INSPECTION REPORT 05000400/2017008 October 23, 2017

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U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No.:	50-400
License No.:	NPF-63
Report No.:	05000400/2017008
Licensee:	Duke Energy Progress, LLC
Facility:	Shearon Harris Nuclear Power Plant, Unit 1
Location:	5413 Shearon Harris Road New Hill, NC 27562
Dates:	September 11-28, 2017
Inspectors:	D. Jackson, Project Engineer, Team Leader L. Dymek, Reactor Inspector A. Patz, Resident Inspector M. Toth, Project Engineer
Approved by:	Steven D. Rose, Chief Reactor Projects Branch 4 Division of Reactor Projects

Enclosure

SUMMARY

Inspection Report 05000400/2017008; September 11-28, 2017; Duke Energy Progress, LLC, Shearon Harris Nuclear Power Plant, Unit 1; Biennial Inspection of the Problem Identification and Resolution Program.

The inspection was conducted by three regional inspectors and a resident inspector. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, Reactor Oversight Process, Revision 6.

Identification and Resolution of Problems

The inspectors concluded that problems were properly identified, evaluated, prioritized, and corrected. The licensee effectively identified problems and entered them into the corrective action program (CAP) for resolution. Generally, prioritization and evaluation of issues were adequate, cause evaluations were adequate, and corrective actions specified for problems were acceptable. Overall, corrective actions developed and implemented for issues were generally effective and implemented in a timely manner.

The inspectors determined that audits and self-assessments were adequate in identifying deficiencies and areas for improvement in the CAP, and appropriate corrective actions were developed to address the issues identified. The licensee appropriately evaluated industry operating experience for relevance to the facility and entered applicable items in the CAP. The licensee appropriately incorporated industry and internal operating experience in its cause evaluations.

Based on discussions and interviews conducted with plant personnel from various departments, the inspectors determined that personnel at the site felt free to raise safety concerns and to use the CAP to resolve concerns.

No findings were identified.

REPORT DETAILS

4. OTHER ACTIVITIES

4OA2 Problem Identification and Resolution

.1 Corrective Action Program Effectiveness

a. Inspection Scope

The inspectors reviewed the licensee's CAP procedures which described the administrative process for initiating and resolving problems primarily through the use of nuclear condition reports (NCRs). To verify that problems were being properly identified, appropriately characterized, and entered into the CAP, the inspectors reviewed NCRs that had been issued between August 2015 and July 2017, including a detailed review of selected NCRs associated with the following systems: essential services chilled water, emergency service water, high head safety injection, instrument air, and AC power (including the emergency diesel generators and 480V breakers). To ensure samples were reviewed across all cornerstones of safety identified in the NRC's Reactor Oversight Process, the inspectors selected a representative number of NCRs that were identified and assigned to the major plant departments, including organizational effectiveness, emergency preparedness, health physics, and security. These NCRs were reviewed to assess each department's threshold for identifying and documenting plant problems, thoroughness of evaluations, and adequacy of corrective actions. Where possible, the inspectors independently verified that the corrective actions were implemented as intended.

The inspectors conducted plant walkdowns of equipment associated with the selected systems and other plant areas to assess the material condition and to look for any deficiencies that had not been previously entered into the CAP. The inspectors also reviewed maintenance history, work orders and requests, and associated system health reports. Items reviewed mostly covered a period of two years; however, in accordance with Inspection Procedure 71152, Problem Identification and Resolution, a five-year review was performed for selected systems for age-related equipment issues.

Control room reviews were also performed to assess operator challenges and to ascertain if deficiencies were entered into the CAP. The inspectors reviewed the main control room deficiency list, operator workarounds, and operator burden screenings and verified appropriate compensatory measures were implemented for deficient equipment.

The inspectors conducted a detailed review of selected NCRs to assess the adequacy of the root cause, apparent cause, and quick cause evaluations of the problems identified. The inspectors reviewed these evaluations against the issues discussed in the NCRs and the guidance in licensee procedures, AD-PI-ALL-0101, Root Cause Evaluations, AD-PI-ALL-0102, Apparent Cause Evaluations, and AD-PI-ALL-0103, Quick Cause Evaluations. The inspectors assessed if the licensee had adequately determined the cause(s) of identified problems, and had adequately addressed operability, reportability, common cause, generic concerns, extent of condition, and extent of cause, as required.

The review also assessed if the licensee had appropriately identified and prioritized corrective actions to prevent recurrence for significant conditions adverse to quality.

The inspectors reviewed site trend reports to determine if the licensee effectively trended identified issues and initiated appropriate corrective actions when adverse trends were identified. The inspectors observed the centralized screening team meetings, where NCRs were screened for significance, to determine whether the licensee was identifying, accurately characterizing, and entering problems into the CAP at an appropriate threshold. The inspectors also attended various plant meetings to observe management oversight functions of the corrective action process. Documents reviewed are listed in the Attachment.

b. Assessment

Problem Identification

Based on reviews and walkdowns of accessible portions of the selected systems, the inspectors determined that generally, deficiencies were being identified and placed in the CAP. The inspectors determined that the licensee was generally effective in identifying and entering problems into the CAP, and there was a low threshold for entering issues into the CAP. This conclusion was based on a review of the requirements for initiating NCRs as described in licensee procedure AD-PI-ALL-0100, and licensee management's expectation that personnel were encouraged to enter issues into the CAP in accordance with the procedure. Additionally, site management was actively involved in the CAP and focused appropriate attention on significant plant issues.

Problem Prioritization and Evaluation

Based on the review of NCRs sampled by the inspection team during the onsite period, the inspectors concluded that problems were generally prioritized and evaluated in accordance with the NCR significance determination guidance in licensee procedure AD-PI-ALL-0100. The inspectors determined that in general, adequate consideration was given to system or component operability and associated plant risk. The inspectors determined that licensee personnel had conducted root cause and apparent cause analyses in compliance with the licensee's CAP procedures and assigned cause determinations were appropriate, considering the significance of the issues being evaluated. A variety of formal causal-analysis techniques were used to evaluate NCRs depending on the type and complexity of the issue consistent with the applicable cause evaluation procedures.

Effectiveness of Corrective Actions

Based on a review of corrective action documents, interviews with licensee staff, and verification of completed corrective actions, the inspectors determined that overall, corrective actions were timely, commensurate with the safety significance of the issues, and effective, in that conditions adverse to quality were corrected. For significant conditions adverse to quality, the corrective actions directly addressed the cause and effectively prevented recurrence. The team reviewed performance indicators, NCRs, and effectiveness reviews, as applicable, to verify that the significant conditions adverse to quality had not recurred. Generally, effectiveness reviews for corrective actions to prevent recurrence were sufficient to ensure corrective actions were properly implemented and were effective.

c. Findings

No findings were identified.

.2 Use of Operating Experience

a. Inspection Scope

The inspectors examined licensee programs for reviewing industry operating experience (OE), and licensee procedure AD-PI-ALL-0400, Operating Experience Program. The inspectors also reviewed the licensee's OE database to assess the effectiveness of how external and internal OE information was used to prevent similar or address recurring problems at the plant. Licensee evaluations of selected OE documents (NRC generic communications, 10 CFR Part 21 reports, licensee event reports, vendor notifications, plant internal operating experience items, etc.), issued since August 2015, were reviewed to determine if the licensee had appropriately evaluated each notification for applicability to Shearon Harris, and whether issues identified through these reviews were entered into the CAP. Documents reviewed are listed in the Attachment.

b. Assessment

Based on a review of documentation related to the review of operating experience issues, the inspectors determined that the licensee was generally effective in screening OE for applicability to the plant. Industry OE was evaluated at either the corporate or plant level depending on the source and type of the document. Relevant information was then forwarded to the applicable department for further action or informational purposes. OE issues requiring action were appropriately entered into the CAP for tracking and closure. Additionally, OE was included in root cause and apparent cause evaluations in accordance with licensee procedures.

c. Findings

No findings were identified.

.3 Self-Assessments and Audits

a. Inspection Scope

The inspectors reviewed audits and self-assessment reports, including those which focused on problem identification and resolution, to assess the thoroughness and effectiveness of the licensee's audits and self-assessments. Additionally, the inspectors verified that problems identified through those activities were appropriately prioritized and entered into the CAP for resolution in accordance with the applicable licensee procedures. The inspectors also verified the audits and self-assessments were consistent with the NRC's assessment of the licensee's CAP. Documents reviewed are listed in the Attachment.

b. Assessment

The inspectors determined that the scopes of self-assessments and audits were adequate. Self-assessments were detailed and critical, as evidenced by findings consistent with the inspector's independent review. The inspectors verified that NCRs were created to document all areas for improvement and findings resulting from the self-assessments and verified that actions were completed consistently with those recommendations. Overall, the licensee performed evaluations that were technically accurate. Site trend reports were thorough and a low threshold was established for

evaluation of potential trends, as evidenced by the NCRs reviewed that were initiated as a result of adverse trends.

c. Findings

No findings were identified.

.4 Safety-Conscious Work Environment

a. Inspection Scope

During the course of the inspection, the team assessed the plant's safety-conscious work environment through a review of the plant's Employee Concerns Program (ECP) and interviews with various department personnel, including contractors. The team reviewed a sample of ECP issues to verify that concerns were being properly reviewed and identified deficiencies were being resolved and entered into the CAP when appropriate. Both informal discussions and formal interviews with plant personnel were used to develop a general perspective of the safety-conscious work environment at the site and to determine if any conditions existed that would cause personnel to be reluctant to raise safety concerns. The team also reviewed the site's most recent safety culture assessment. Documents reviewed are listed in the Attachment.

b. Assessment

Based on the interviews conducted and the NCRs reviewed, the inspectors determined that licensee management emphasized the need for all personnel to identify and report problems using the appropriate methods established within the administrative programs, including the CAP and the ECP. These methods were readily accessible to all personnel. Based on discussions conducted with a sample of plant personnel from various departments, the inspectors determined that workers felt free to raise issues, and that management encouraged personnel to place issues into the CAP for resolution. The inspectors did not identify any reluctance on the part of the licensee staff to report safety concerns.

c. Findings

No findings were identified.

4OA6 Meetings, Including Exit

On September 28, 2017, the inspectors presented the inspection results to Ms. Hamilton and other members of the site staff. The inspectors confirmed that proprietary information was not retained by the inspectors or documented in this report.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee personnel:
R. Andrews, Engineering
L. Bennett, Aging Management Program
J. Duhon, Performance Improvement
B. Flood, Engineering
J. Glasser, Engineering
T. Hamilton, Site Vice President
C. Jernigan, Operations
K. King, Radiation Protection
G. Moreno, Operations
M. Parker, Radiation Protection
B. Rhoades, Engineering
B. Scharff, Engineering
N. Sealander, Engineering
M. Setzer, Engineering
G. Simmons, Emergency Preparedness
T. Stephens, Regulatory Affairs
B. Thompson, Performance Improvement
C. Tucker, Engineering
T. Wagner, Engineering

NRC personnel:
J. Zeiler, Senior Resident Inspector
S. Rose, Branch Chief

LIST OF REPORT ITEMS

Opened/Closed/Discussed

None

LIST OF DOCUMENTS REVIEWED

Procedures:
AD-BO-ALL-0201, Nuclear Project Funding Approval, Rev. 3
AD-CP-ALL-1000, Conduct of Chemistry, Rev. 2
AD-EG-ALL-1106, Configuration Management and Margin Management, Rev. 4
AD-EG-ALL-1110, Design Review Requirements, Rev. 5
AD-EG-ALL-1202, Preventative Maintenance and Surveillance Testing Administration, Rev. 6
AD-EG-ALL-1207, Plant Health Process, Rev. 4
AD-EG-ALL-1210, Maintenance Rule Program, Rev. 1
AD-EG-ALL-1522, Duties of a Fire Watch, Rev. 3
AD-EG-ALL-1532, NFPA 805 Pre-Fire Plans, Rev. 0
AD-HU-ALL-0001, Human Performance Program, Rev. 11
AD-MN-ALL-1000, Conduct of Maintenance, Rev. 14
AD-NO-ALL-0202, Employee Concerns Program, Rev. 1
AD-NO-ALL-1000, Conduct of Nuclear Oversight, Rev. 6
AD-NO-ALL-1001, Conduct of Audit, Rev. 4
AD-NO-ALL-1002, Conduct of Assessment, Rev. 4
AD-OP-ALL-0101, Event Response and Notifications, Rev. 8
AD-OP-ALL-0105, Operability Determination and Functionality Assessments, Rev. 3
AD-OP-ALL-0200, Clearance and Tagging, Rev. 16
AD-OP-ALL-0202, Aggregate Operator Impact Assessment, Rev. 1
AD-OP-ALL-0204, Plant Status Control, Rev. 3
AD-PI-ALL-0100, Corrective Action Program, Rev. 8
AD-PI-ALL-0101, Root Cause Evaluation, Rev. 4
AD-PI-ALL-0102, Apparent Cause Evaluation, Rev. 4
AD-PI-ALL-0103, Quick Cause Evaluation, Rev. 4
AD-PI-ALL-0400, Operating Experience Program, Rev. 4
AD-RP-ALL-1000, Conduct of Radiation Protection, Rev. 3
AD-RP-ALL-9001, ALARA Planning, Rev. 4
AD-SY-ALL-0401, Fitness for Duty Program, Rev. 1
AD-SY-ALL-0460, Managing Fatigue and Work Hour Limits, Rev. 0 and Rev. 1
ADM-NGGC-0206, Managing Fatigue and Work Hour Limits, Rev. 1
AP-300, Severe Weather Response, Rev. 30
EGR-NGGC-0106, AC and DC Overcurrent Protection and Coordination, Rev. 5
EPM-400, Public Notification and Alerting System, Rev. 21
FPP-013, Fire Protection – Minimum Requirements, Mitigating Actions and Surveillance Requirements, Rev. 98
GP-007, Normal Plant Cooldown Mode 3 to Mode 5, Rev. 67
MPT-E0030, Self-Contained DC Emergency Lighting System, Rev. 30
MPT-E0032, Self-Contained DC Emergency Lighting System Eight Hour Life Test, Rev. 29
OP-156.05, Bus Outage Preparation, Rev. 63
PD-EG-ALL-1500, Fleet Fire Protection Program Manual, Rev. 1
PD-EG-ALL-1650, License Renewal Aging Management, Rev. 0 and Rev. 1
PLP-717, Equipment Important to Emergency Response, Rev. 26
SEC-NGGC-2141, Fitness for Duty-Unscheduled Work Callouts, Rev. 11

Action Requests/Nuclear Condition Reports:

492262	1962664	2001315	2045662	2084265
500928	1964030	2003125	2047870	2084674
552849	1964721	2003420	2050622	2085522
581930	1966653	2004140	2051966	2092163
631345	1967358	2005467	2053736	2093518
670171	1967696	2005892	2053832	2095855
692766	1967805	2007188	2055301	2096871
729608	1967806	2013486	2059460	2098614
745185	1969011	2014556	2060044	2108876
747036	1970685	2014613	2061670	2109278
754721	1971434	2015477	2063783	2109943
755621	1971487	2018545	2065204	2110371
757885	1971488	2018621	2066694	2110596
1931986	1973709	2018681	2066770	2117719
1940205	1974924	2019156	2068223	2118254
1940942	1979511	2019191	2068585	2120926
1941686	1983086	2021628	2068601	2121015
1944551	1983588	2028763	2068866	2121536
1944657	1987987	2029231	2071163	2126181
1950151	1988806	2030427	2071451	2130588
1950574	1988901	2031610	2073741	2132583
1954784	1989364	2033716	2074141	2132781
1957764	1993234	2038082	2075118	2134163
1958628	1995995	2038682	2076052	2136242
1961636	1996068	2039239	2077483	2138780
1961933	2000247	2044549	2080400	2139205
1962551	2001220	2045531	2080402	

Work Orders:

10096181	20014458	20102560
10105999	20041044	20115563
11829465	20055922-02	20138000
12199888-02	20065305	20155687
12264879	20075381	20157214
13517581-03	20075389	20158716
13543169	20101648	20176274

Audits and Self-Assessments:

H-PI-14-01, NOS – Harris Performance Improvement Audit Report
HNP NOS Monthly Reports, 2015-2017
Quick Hitter Self-Assessment (QHSA) 1956380, Post CAS Rollout Assignment Creation
QHSA 2057796, Backlog of Open Corrective Actions
QHSA 2103937, Problem Identification & Resolution – NRC Inspection Procedure 71152
QHSA 2101677, 2016 ECP QHSA of NECE-GUID-001-R01, Nuclear Employee Concerns Evaluation Program Performance Objectives
Nuclear Oversight-Audit-Harris Design Control, 2016-HNP-DES-01
Nuclear Oversight-Audit-Harris Fire Protection, 2016-HNP-FP-01

Miscellaneous Documents:
1364-016451, Emergency Diesel Generator Engine Control Panel Schematic, Rev. 4
1364-016463, Emergency Diesel Generator Engine Pneumatic Schematic, Rev. 20
1364-045823, Engine Generator Interconnect, Rev. 7
2166-B-301-1995, Control Wiring Diagram, Diesel Generator, 1A-SA Lockout Relay 86 DG, Rev. 12
DBD-104, Safety Injection System, Rev. 17
DBD-132, Essential and Non-Essential Services Chilled Water Systems, Rev. 13
DBD-133, Compressed Air System, Rev. 18
DBD-203, Plant Lighting System, Rev. 7
DBD-307, ERFIS, Rev. 23
Drawing CAR 2166 B-401 Sheet 1066, ERFIS Computer System Power Distribution
EC 284144, Reactor Vessel Head CRDM Nozzle Repairs
EC 284170, Standard Eaton Coils for Size 3, 4, and 5 Starters
EC 290235, Strategy Change for Surveillance Testing and Replacement of DC Emergency Lights
EC 405116, Fitting Failure Evaluation for 1CH-E005
LTAM HNP-13-0075, PBX Replacement, 6/24/2013
LTAM HNP-14-0025, Evaluate a new DC Emergency Light, 2/26/2014
LTAM HNP-17-0020, EDG Timer/NOT Reliability, 4/12/2017
LTAM HNP-16-0039, Radiation Monitor Cables and Thermally Induced Current, 11/23/2016
CM-10004, Limitorque Calibration Manual, Rev. 14
DBD-104, Safety Injection System, Rev. 17
DBD-132, Essential and Non-Essential Services Chilled Water Systems, Rev. 13
DBD-133, Compressed Air System, Rev. 18
EC 400837, Identify Replacement Pressure Switch for PS-01TA-4175V
EC 405116, Fitting Failure Evaluation for 1CH-E005
EC 79281, Automatic Pump-out of Manhole Vaults, Rev. 30
HNE00027-N, Owners Review of Outsourced of Engineering Projects, Rev. 0
HNE00034-N, Fire Protection Codes for Design Engineers, Rev. 0
NRC Integrated Inspection Report 05000400/2017002, July 19, 2017
OPT-1512, ECW Quarterly Inspection Manual, Rev. 44
PCR-5649, Compression Fitting and Tubing Change from Brass to Stainless Steel, Rev. 03
Renewed Facility Operating License, NFP-63, December 17, 2008
Safety Evaluation Report Related to License Renewal of Shearon Harris Nuclear Power Plant, August 2008
System Health Report - Emergency Diesel Generators, Q1-2017
System Health Report - Essential Service Chilled Water (ESCW), Q2-2017
System Health Report - Service Water (ESW), Q2-2017
Systems Plus-System Description, Essential Service Chilled Water System (ECSW), Rev. 11
Systems Plus-System Description, Fire Protection (FP), Rev. 6
Systems Plus-System Description, Service Water System (ESW), Rev. 6

Corrective Action Documents Written As A Result Of This Inspection:
WR 20084664, Repair insulation on ‘A’ Compressor Aftercooler Separator
PRR 02152519, Revise OP-156.05
CR 2150519, PI&R Inspection – WO task completed with no documentation
CR 2154883, 2017 HNP PI&R Inspection – Current solution to CHRRM unclear
CR 2156385, 2017 HNP PI&R Inspection - Current Status for ERFIS Inverter