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

January 23, 2018

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 – NRC INTEGRATED INSPECTION REPORT 05000400/2017004

Dear Ms. Hamilton:

On December 31, 2017, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Shearon Harris Nuclear Power Plant, Unit 1. On January 10, 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.

The NRC inspectors did not identify any finding or violation of more than minor significance.

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 No.: 50-400
License No.: NPF-63

Enclosure:
IR 05000400/2017004
w/Attachment: Supplemental Information

cc: Distribution via ListServ

SUBJECT: SHEARON HARRIS NUCLEAR STATION – NRC INTEGRATED INSPECTION REPORT 05000400/2017004 January 23, 2018

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REGION II

Docket Nos.:	50-400
License Nos.:	NPF-63
Report No.:	05000400/2017004
Licensee:	Duke Energy Progress, LLC
Facility:	Shearon Harris Nuclear Power Plant, Unit 1
Location:	5413 Shearon Harris Road New Hill, NC 27562
Dates:	October 1, 2017 through December 31, 2017
Inspectors:	J. Zeiler, Senior Resident Inspector A. Patz, Resident Inspector M. Bates, Senior Operations Engineer (Section 1R11.3)
Approved by:	Steven D. Rose, Chief Reactor Projects Branch 4 Division of Reactor Projects

Enclosure

SUMMARY

Integrated Inspection Report 05000400/2017004; October 1, 2017, through December 31, 2017; Duke Energy Progress, Inc., Shearon Harris Nuclear Power Plant, Unit 1.

The report covered a three-month period of inspection by resident inspectors and a regional inspector. The NRC's program for overseeing the safe operations of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 6. No findings or violations of greater than minor significance were identified.

REPORT DETAILS

Summary of Plant Status

The unit began the inspection period at 100 percent rated thermal power. On October 11, 2017, a planned down power to 28 percent power was performed to repair condenser tube leakage in the west condenser water box. The unit was returned to essentially full power on October 14, 2017. On October 22, 2017, a rapid manual down power to 10 percent power was performed due to a failed open safety relief valve (1ES-149) for the 'B' moisture separator reheater (MSR). The unit was subsequently taken offline and the main turbine was shutdown in order to isolate the steam leakage from the failed open relief valve. Later that same day, the reactor was shutdown and remained in Mode 3 while the relief valve was replaced. On October 24, 2017, the reactor was taken critical and placed back online. On October 25, 2017, the unit reached 28 percent power and remained at this power while further condenser tube leakage repairs were conducted. On October 28, 2017, following condenser tube repair activities, the unit was returned to essentially full power operation.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01 – 1 sample)

a. Inspection Scope

Seasonal Extreme Weather Conditions

The inspectors conducted a detailed review of the station's adverse weather procedures written for the preparation of extreme low temperatures. The inspectors verified that weather-related equipment deficiencies identified during the previous year had been placed into the work control process and/or corrected before the onset of seasonal extremes. The inspectors evaluated the licensee's implementation of adverse weather preparation procedures and compensatory measures before the onset of and during seasonal extreme weather conditions. Documents reviewed are listed in the Attachment.

The inspectors evaluated in detail the following risk-significant systems:

- Emergency Service Water (ESW) System
- Dedicated Shutdown Diesel Generator

b. Findings

No findings were identified.

1R04 Equipment Alignment (71111.04 – 4 samples)

a. Inspection Scope

.1 Partial Walkdown

The inspectors verified that critical portions of the selected systems were correctly aligned by performing partial walkdowns. The inspectors selected systems for

assessment because they were a redundant or backup system or train, were important for mitigating risk for the current plant conditions, had been recently realigned, or were a single-train system. The inspectors determined the correct system lineup by reviewing plant procedures and drawings. Documents reviewed are listed in the Attachment.

The inspectors selected the following systems or trains to inspect:

- 'B' ESW during 'A' ESW train outage
- 'B' emergency diesel generator (EDG) while 'A' EDG was out of service for preventive maintenance
- 'B' essential services chilled water (ESCW) system while 'A' ESCW was out of service for preventive maintenance

.2 Complete Walkdown

The inspectors verified the alignment of the component cooling water system. The inspectors selected this system for assessment because it is a risk-significant mitigating system. The inspectors determined the correct system lineup by reviewing plant procedures, drawings, the updated final safety analysis report, and other documents. The inspectors reviewed records related to the system's outstanding design issues, maintenance work requests, and deficiencies. The inspectors verified that the selected system was correctly aligned by performing a complete walkdown of accessible components.

To verify the licensee was identifying and resolving equipment alignment discrepancies, the inspectors reviewed corrective action documents, including condition reports and outstanding work orders. The inspectors also reviewed periodic reports containing information on the status of risk-significant systems, including maintenance rule reports. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

1R05 Fire Protection (71111.05Q – 6 samples)

a. Inspection Scope

Quarterly Inspection

The inspectors evaluated the adequacy of selected fire plans by comparing the fire plans to the defined hazards and defense-in-depth features specified in the fire protection program. In evaluating the fire plans, the inspectors assessed the following items:

- control of transient combustibles and ignition sources
- fire detection systems
- water-based fire suppression systems
- gaseous fire suppression systems
- manual firefighting equipment and capability
- passive fire protection features

- compensatory measures and fire watches
- issues related to fire protection contained in the licensee's corrective action program

The inspectors toured the following fire areas to assess material condition and operational status of fire protection equipment. Documents reviewed are listed in the Attachment.

- Main control room, termination cabinet room, auxiliary relay panel room, process instrument cabinet room, and rod control cabinet room (fire zones 12-A-6-CR1, 12-A-6-RT1, 12-A-6-ARP1, 12-A-6-PICR1, and 12-A-6-RCC1)
- 'A' and 'B' EDG rooms (fire zones 1-D-1-DGA-RM, 1-D-1-DGA-ER, 1-D-1-DGA-ASU, 1-D-1-DGB-RM, 1-D-1-DGB-ER, and 1-D-1-DGB-ASU)
- 'A' and 'B' cable spreading rooms (fire zones 1-A-CSRA and 1-A-CSRB)
- 'A', 'B', and non-safety 125 volt DC battery rooms (fire zones 1-A-BATA, 1-A-BATB, and 1-A-5-BATN)
- Main steam tunnel (fire zone 1-A-46-ST)
- ESCW area on reactor auxiliary building (RAB) 261' elevation (fire zone 1-A-4-CHLR)

b. Findings

No findings were identified.

1R06 Flood Protection Measures (71111.06 – 1 sample)

a. Inspection Scope

Internal Flooding

The inspectors reviewed related flood analysis documents and walked down the area listed below containing risk-significant structures, systems, and components susceptible to flooding. The inspectors verified that plant design features and plant procedures for flood mitigation were consistent with design requirements and internal flooding analysis assumptions. The inspectors also assessed the condition of flood protection barriers and drain systems. In addition, the inspectors verified the licensee was identifying and properly addressing issues using the corrective action program. Documents reviewed are listed in the Attachment.

- Normal service water and component cooling water system piping, RAB 236' elevation

b. Findings

No findings were identified.

1R07 Heat Sink Performance (71111.07 – 2 samples)

a. Inspection Scope

Annual Review

The inspectors verified the readiness and availability of the 'A' and 'B' charging and safety injection pump (CSIP) lube oil and gear oil cooler heat exchangers to perform their design function. The inspectors observed the performance of heat exchanger maintenance and inspection activities, reviewed reports of those activities, verified the licensee uses the periodic maintenance method outlined in NRC Generic Letter 89-13, verified critical operating parameters by reviewing operating data, and verified correct categorization and receipt of maintenance under the Maintenance Rule. Additionally, the inspectors verified that the licensee had entered any significant heat exchanger performance problems into the corrective action program and that the licensee's corrective actions were appropriate. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification Program and Licensed Operator Performance (71111.11 – 3 samples)

a. Inspection Scope

.1 Resident Inspector Quarterly Review of Licensed Operator Requalification

On October 31, 2017, the inspectors observed a simulator scenario conducted for training and to test the ability of the new Charlotte, North Carolina, based Emergency Operations Facility (EOF) to support an emergency at the Harris nuclear plant versus using the EOF located at the Harris site. The simulator scenario involved a series of faults in one steam generator and downstream main steam valves that caused a large release of reactor coolant directly to the environment.

The inspectors assessed the following:

- licensed operator performance
- the ability of the licensee to administer the scenario and evaluate the operators
- the quality of the post-scenario critique
- simulator performance

Documents reviewed are listed in the Attachment.

.2 Resident Inspector Quarterly Review of Licensed Operator Performance in the Actual Plant/Main Control Room

The inspectors observed licensed operator performance in the main control room during the following non-routine activities:

- Planned unit downpower to 28 percent power to conduct main condenser tube repairs and return to full power between October 11-14, 2017

- Rapid power reduction from full power and subsequent Mode 2 entry due to unexpected opening of the 'B' MSR steam relief valve 1ES-149 on October 22, 2017
- Reactor startup following shutdown to repair MSR relief valve 1ES-149 on October 24, 2017
- Emergent power reduction to 98.5 percent power due to the 3A feedwater heater steam leak on November 30, 2017

The inspectors assessed the following:

- use of plant procedures
- control board manipulations
- communications between crew members
- use and interpretation of instruments, indications, and alarms
- use of human error prevention techniques
- documentation of activities
- management and supervision

Documents reviewed are listed in the Attachment.

.3 Annual Review of Licensee Requalification Examination Results

On August 31, 2017, the licensee completed the annual requalification operating examinations required to be administered to all licensed operators in accordance with Title 10 of the *Code of Federal Regulations* Section 55.59(a)(2), "Requalification Requirements," of the NRC's "Operator's Licenses." The inspectors performed an in-office review of the overall pass/fail results of the individual operating examinations and the crew simulator operating examinations in accordance with NRC Inspection Procedure (IP) 71111.11, "Licensed Operator Requalification Program." These results were compared to the thresholds established in Section 3.02, "Requalification Examination Results," of IP 71111.11.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12 – 3 samples)

a. Inspection Scope

The inspectors assessed the licensee's treatment of the issues listed below to verify the licensee appropriately addressed equipment problems within the scope of the maintenance rule (10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants"). The inspectors reviewed procedures and records to evaluate the licensee's identification, assessment, and characterization of the problems as well as their corrective actions for returning the equipment to a satisfactory condition. The inspectors also interviewed system engineers and the maintenance rule coordinator to assess the accuracy of performance deficiencies and extent of condition. In addition, the inspectors performed a review of quality control to ensure the licensee was in compliance with their Quality Assurance Program requirements related to nuclear condition report (NCR) 02159812. Documents reviewed are listed in the Attachment.

- NCR 02159812, Failure of MSR relief valve 1ES-149
- NCR 02158595, Broken thermocouple on 'A' EDG right #3 exhaust cylinder
- Licensee's 10 CFR 50.65(a)(3) Periodic Evaluation for the period May 15, 2015, to November 13, 2016

b. Findings

No findings were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13 – 5 samples)

a. Inspection Scope

The inspectors reviewed the maintenance activities listed below to verify that the licensee assessed and managed plant risk as required by 10 CFR 50.65(a)(4) and licensee procedures. The inspectors assessed the adequacy of the licensee's risk assessments and implementation of risk management actions. The inspectors also verified that the licensee was identifying and resolving problems with assessing and managing maintenance-related risk using the corrective action program. Additionally, for maintenance resulting from unforeseen situations, the inspectors assessed the effectiveness of the licensee's planning and control of emergent work activities. Documents reviewed are listed in the Attachment.

- October 10, 2017, Replacement of circuitry cards in rod control logic cabinet causing urgent failure alarms
- October 10-11, 2017, Review of plant evolutions during (electrical) Grid Risk Yellow emergent conditions and unit downpower from 100 to 28 percent power to conduct condenser tube leakage repairs
- October 17-20, 2017, Review of 'A' EDG preventive maintenance outage
- December 15, 2017, Review of emergent 'B' EDG sequencer undervoltage relay failure and replacement activity
- December 19, 2017, Review of 'A' ESCW preventive maintenance outage

b. Findings

No findings were identified.

1R15 Operability Determinations and Functionality Assessments (71111.15 – 3 samples)

a. Inspection Scope

Operability and Functionality Review

The inspectors selected the operability determinations or functionality evaluations listed below for review based on the risk-significance of the associated components and systems. The inspectors reviewed the technical adequacy of the determinations to ensure that technical specification operability was properly justified and the components or systems remained capable of performing their design functions. To verify whether components or systems were operable, the inspectors compared the operability and design criteria in the appropriate sections of the technical specification and updated final safety analysis report to the licensee's evaluations. Where compensatory measures

were required to maintain operability, the inspectors determined whether the measures in place would function as intended and were properly controlled. Additionally, the inspectors reviewed a sample of corrective action documents to verify the licensee was identifying and correcting any deficiencies associated with operability evaluations. Documents reviewed are listed in the Attachment.

- NCR 02155078, Abnormal condensing unit fan speed in technical support center (TSC) air-handling unit AH-17
- NCR 02159371, 'A' EDG trip during post-maintenance testing due to high lube oil temperature
- NCR 02161394, 'A' CSIP active leakage from outboard seal

b. Findings

No findings were identified.

1R18 Plant Modifications (71111.18 – 1 sample)

a. Inspection Scope

The inspectors verified that the temporary plant modification listed below did not affect the safety functions of important safety systems. The inspectors confirmed the modifications did not degrade the design bases, licensing bases, and performance capability of risk significant structures, systems and components. The inspectors also verified modifications performed during plant configurations involving increased risk did not place the plant in an unsafe condition. Additionally, the inspectors evaluated whether system operability and availability, configuration control, post-installation test activities, and changes to documents, such as drawings, procedures, and operator training materials, complied with licensee standards and NRC requirements. In addition, the inspectors reviewed a sample of related corrective action documents to verify the licensee was identifying and correcting any deficiencies associated with modifications. Documents reviewed are listed in the Attachment.

- Engineering Change 410262, Defeat of 'A' EDG lube oil/jacket water high temperature non-emergency trip functions

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19 – 6 samples)

a. Inspection Scope

The inspectors either observed post-maintenance testing or reviewed the test results for the maintenance activities listed below to verify the work performed was completed correctly and the test activities were adequate to verify system operability and functional capability.

- Work Order (WO) 20202041: Perform functional testing of the rod control logic circuitry using OP-104 following scheduled replacement of circuitry cards in the logic cabinet, October 10, 2017

- WO 20164606: Perform OST-1214 on 'A' ESW system, October 17, 2017
- WOs 20038018, 20038019, and 20043458: Perform functional testing of the 'A' EDG using OST-1013 and OP-155 following 'A' EDG maintenance outage, October 19, 2017
- WO 20219142: Perform functional testing of the 'B' EDG undervoltage trip function using OST-1124 following emergent relay failure and replacement on December 15, 2017
- WO 20061454: Perform stroke test of the 'A' ESCW chiller condenser service water outlet valve 1SW-1055 using OST-1834 following actuator replacement on December 19, 2017
- WO 20207251; Perform functional testing of the 'A' EDG using OST-1013 following re-instatement of lube oil and jacket water high temperature non-emergency trips on December 20, 2017

The inspectors evaluated these activities for the following:

- Acceptance criteria were clear and demonstrated operational readiness
- Effects of testing on the plant were adequately addressed
- Test instrumentation was appropriate
- Tests were performed in accordance with approved procedures
- Equipment was returned to its operational status following testing
- Test documentation was properly evaluated

Additionally, the inspectors reviewed a sample of corrective action documents to verify the licensee was identifying and correcting any deficiencies associated with post-maintenance testing. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22 – 5 samples)

a. Inspection Scope

The inspectors reviewed the surveillance tests listed below and either observed the test or reviewed test results to verify testing adequately demonstrated equipment operability and met technical specification and licensee procedural requirements. The inspectors evaluated the test activities to assess for preconditioning of equipment, procedure adherence, and equipment alignment following completion of the surveillance. Additionally, the inspectors reviewed a sample of related corrective action documents to verify the licensee was identifying and correcting any deficiencies associated with surveillance testing.

Routine Surveillance Tests

- OST-1216, Component Cooling Water System Operability (A-SA and B-SB Pumps in Service) Quarterly Interval Modes 1-4
- OST-1191, Steam Generator PORV and Block Valve Operability Test
- OST-1073, 1B-SA Emergency Diesel Generator Operability Test Monthly Interval Modes 1-6

- OPT-1512, Essential Chilled Water Turbopak Units Quarterly Inspection/Checks Modes 1-6

In-Service Tests (IST)

- OST-1040, Essential Services Chilled Water Systems Operability Quarterly Interval Modes 1-6

b. Findings

No findings were identified.

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluation (71114.06 – 1 sample)

a. Inspection Scope

The inspectors observed the emergency preparedness drill conducted on October 31, 2017. The inspectors observed licensee activities in the simulator to evaluate implementation of the emergency plan, including event classification, notification, and protective action recommendations. The inspectors evaluated the licensee's performance against criteria established in the licensee's procedures. Additionally, the inspectors attended the post-exercise critique to assess the licensee's effectiveness in identifying emergency preparedness weaknesses and verified the identified weaknesses were entered in the corrective action program. The simulator scenario focused on the crew's response to a turbine trip and a primary to secondary leak. The scenario included the need for the licensee to exercise their offsite dose assessment capabilities. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151 – 2 samples)

a. Inspection Scope

The inspectors reviewed a sample of the performance indicator (PI) data, submitted by the licensee, for the Unit 1 PIs listed below. The inspectors reviewed plant records compiled between October 2016 and September 2017 to verify the accuracy and completeness of the data reported for the station. The inspectors verified that the PI data complied with guidance contained in Nuclear Energy Institute 99-02, "Regulatory Assessment Performance Indicator Guideline," and licensee procedures. The inspectors verified the accuracy of reported data that were used to calculate the value of each PI. In addition, the inspectors reviewed a sample of related corrective action documents to verify the licensee was identifying and correcting any deficiencies associated with PI data. Documents reviewed are listed in the Attachment.

Cornerstone: Mitigating Systems

- heat removal system
- cooling water system

b. Findings

No findings were identified.

4OA2 Problem Identification and Resolution (71152 – 3 samples)

.1 Routine Review

The inspectors screened items entered into the licensee's corrective action program to identify repetitive equipment failures or specific human performance issues for follow-up. The inspectors reviewed condition reports, attended screening meetings, or accessed the licensee's computerized corrective action database.

.2 Semi-Annual Trend Review

a. Inspection Scope

The inspectors reviewed issues entered in the licensee's corrective program and associated documents to identify trends that could indicate the existence of a more significant safety issue. The inspectors focused their review on repetitive equipment issues, but also considered the results of inspector daily condition report screenings, licensee trending efforts, and licensee human performance results. The review nominally considered the 6-month period of July 2017 through December 2017, although some examples extended beyond those dates when the scope of the trend warranted. The inspectors compared their results with the licensee's analysis of trends. Additionally, the inspectors reviewed the adequacy of corrective actions associated with a sample of the issues identified in the licensee's trend reports. The inspectors also reviewed corrective action documents that were processed by the licensee to identify potential adverse trends in the condition of structures, systems and/or components as evidenced by acceptance of long-standing non-conforming or degraded conditions. Documents reviewed are listed in the Attachment.

b. Findings and Observations

No findings were identified. However, the inspectors noted that the licensee continues to be challenged by equipment performance issues beyond those associated with the ESCW chillers that was the main subject of discussion in the semi-annual trend review conducted in NRC inspection report 05000400/2017002. These additional equipment performance issues involved the EDGs, sequencer emergency bus undervoltage protection circuitry, control rod circuitry, accident radiation monitors, condenser tube leakage, and MSR safety relief valves that either resulted in plant transient conditions or challenged the availability and/or reliability of safety-related or important to safety plant equipment. These issues included the following:

- NCRs 02140194 and 02154435, July 31, 2017, and September 28, 2017, urgent failure alarms in the control rod power cabinets

- NCR 02149343, September 9, 2017, elevated steam generator sodium levels due to condenser tube leakage
- NCR 02158595, October 17, 2017, broken thermocouple in 'A' EDG cylinder R3 exhaust
- NCR 02159371, October 19, 2017, 'A' EDG trip during post-maintenance testing due to malfunctioning high lube oil temperature instrument
- NCR 02159812, October 22, 2017, failure of 'B' MSR relief valve 1ES-149 due to broken pilot valve spring resulting in plant transient
- NCR 02172551, December 14, 2017, relay failure in 'B' train emergency bus undervoltage protection circuitry
- NCR 02172597, December 15, 2017, failure of both radiation monitor control panels RM-11 resulting in loss of post-accident monitoring capability

The inspectors noted that in late November 2017, as a result of the ongoing equipment performance issues, the licensee had initiated a common cause analysis to evaluate the recent issues challenging the plant (documented in NCR 02161389). The results of this evaluation did not identify any one condition that was the cause of the events, but identified weaknesses in parts quality, aging, and obsolescence as a common area that needed to be addressed. As a result, corrective actions were being developed to: 1) ensure high quality parts were being acquired and tested for use in risk-significant equipment; 2) raise the level of awareness and visibility within the Engineering department to better understand how supply chain and procurement engineering ensure part quality; and 3) increase the level of Engineering technical rigor and intrusiveness to ensure thorough evaluation and follow through with plant deficiencies that have the potential for consequential failures. The inspectors determined that the licensee was taking appropriate actions to address the adverse trend in equipment performance and will continue to monitor licensee actions to address the equipment reliability issues.

.3 Annual Follow-up of Selected Issues

a. Inspection Scope

The inspectors conducted a detailed review of the following condition reports:

- NCR 02148188, Loss of redundancy with LT-01SI-0926 inoperable
- NCR 02159812, Failure of 1ES-149 required entry into AOP-042 and AOP-038

NCR 02148188 was chosen because the accumulator level transmitter is safety-related and is required to be operable by plant technical specifications. NCR 02159812 was selected for review since it represented a transient that posed a challenge to safe and reliable plant operation.

The inspectors evaluated the following attributes of the licensee's actions:

- complete and accurate identification of the problem in a timely manner
- evaluation and disposition of operability and reportability issues
- consideration of extent of condition, generic implications, common cause, and previous occurrences
- classification and prioritization of the problem
- identification of root and contributing causes of the problem

- identification of any additional condition reports
- completion of corrective actions in a timely manner

Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

4OA3 Follow-Up of Events and Notices of Enforcement Discretion

Rapid Unit Down Power Due to Failed Open 'B' MSR Safety Relief Valve

a. Inspection Scope

On October 22, 2017, the inspectors responded to the control room and evaluated the licensee's response to a failed open safety relief valve (1ES-149) on the 'B' MSR. The control room operators immediately initiated a rapid manual down power to 10 percent power in response to the transient and subsequently took the unit offline and shut down the main turbine in order to isolate the steam leakage from the failed open relief valve. Later in the day, the reactor was shut down and Mode 3 was entered while the relief valve was replaced. As appropriate, the inspectors: 1) observed plant parameters and status, including mitigating systems/components required to maintain the plant in a safe configuration and in accordance with Technical Specification requirements; 2) evaluated whether control room alarms/conditions during and following the transient were as expected for the conditions; 3) evaluated the performance of plant systems and operator actions in response to the transient; and, 4) confirmed whether any NRC emergency classification or event reporting requirements were entered. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

4OA6 Meetings, Including Exit

On January 10, 2018, the resident inspectors presented the inspection results to Ms. Tanya Hamilton, Site Vice President, and other members of the licensee's staff. The inspectors verified that no proprietary information was retained by the inspectors or documented in this report.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee personnel

S. Cahill, Manager, Work Management
L. Faulk, Director, Plant Security
P. Fisk, Plant Manager
D. Griffith, Manager, Training
T. Hamilton, Site Vice President
B. Jones, Director, Organizational Effectiveness
J. Keltner, Manager, Chemistry
B. McCabe, Manager, Nuclear Oversight
T. Mitchell, Manager, Maintenance
M. Murdock, General Manager, Engineering
J. O'Keefe, Assistant Operations Manager - Shift
M. Parker, Manager, Radiation Protection
J. Robertson, Manager, Regulatory Affairs
S. Scott, Operations Manager
G. Simmons, Manager, Emergency Planning
T. Stephens, Senior Nuclear Engineering Tech
R. Vandenberg, Assistant Operations Manager – Support
F. Womack, Senior Project Director, Major Projects

NRC personnel

S. Rose, Chief, Reactor Projects Branch 4, Division of Reactor Projects, Region II

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

None

LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

Seasonal Extreme Weather Conditions

AD-WC-ALL-0230, Seasonal Readiness
AP-300, Severe Weather
AP-301, Seasonal Weather Preparations and Monitoring
ORT-1415, Electric Unit Heater Check Monthly Interval
OP-161.01, Operations Freeze Protection and Temperature Maintenance Systems

Section 1R04: Equipment Alignment

Partial Walkdown

OP-139, Service Water System
Drawing 2165-S-0547 and 2165-S-0548, Simplified Flow Diagram Circulating and Service Water Systems
OP-155, Diesel Generator Emergency Power System
OP-148, Essential Services Chilled Water System

Complete Walkdown

OP-145, Component Cooling Water
DBD-131, Component Cooling Water System
Drawing 2165-S-1321 and -1322, Simplified Flow Diagram Component Cooling Water System
UFSAR section 9.2.2, Component Cooling Water
NCR 02100516, Perform resistance checks for CCW pump 1B-SB breaker
NCR 02146318, Shaft pitting on 'C' CCW pump shaft, mechanical seal sleeve
NCR 02170873, Shaft damage identified on 'C' CCW Motor Shaft

Section 1R05: Fire Protection

AD-EG-ALL-1520, Transient Combustible Control
FPP-001, Fire Protection Program Manual
FPP-013, Fire Protection – Minimum Requirements, Mitigating Actions and Surveillance Requirements
CSD-HNP-PFP-RAB-305-324, Reactor Auxiliary Building, Elevations 305 and 324 Pre-Fire Plan
CSD-HNP-PFP-RAB-286, Reactor Auxiliary Building, Elevation 286 Pre-Fire Plan
CSD-HNP-PFP-DGB, Diesel Generator Building Pre-Fire Plan
CSD-HNP-PFP-RAB-261, Reactor Auxiliary Building Elevation 261 Pre-Fire Plan
NCR 02164234, Personnel observed nor challenging fire doors
NCR 02173541, 1FP-D0048, Self-closing door does not close latched

Section 1R06: Flood Protection Measures

UFSAR Section 3.6A.6, Flooding Analysis
Section 3 of Shearon Harris Individual Plant Examination, Internal Flood Initiating Events
Calculation PRA-F/E-5, RAB Unit 1, Elevation 236 Compartment Flood Analysis
AOP-022, Loss of Service Water
OP-139, Service Water System
NCR 02169867, Detached flood barrier labels
NCR 02124616, AP-046 revision for external flood barriers

Section 1R07: Heat Sink Performance

EPT-163, Generic Letter 89-13 Inspections
MPT-M0091, Heat Exchanger Opening/Closure for NRC Generic Letter 89-13 Inspections
Work Order 20091093, Perform Inspections of the 'B' CSIP Lube Oil and Gear Oil Coolers
Work Order 20067123, Perform Inspection of the 'A' CSIP Lube Oil and Gear Oil Coolers

EPT-163 Records for 'A' CSIP Lube Oil and Gear Oil Coolers
PLP- 620, Service Water Program (Generic Letter 89-13)

Section 1R11: Licensed Operator Requalification Program and Licensed Operator Performance

Resident Inspector Quarterly Review of Licensed Operator Requalification
AD-OP-ALL-1000, Conduct of Operations
AD-TQ-ALL-0420, Conduct of Simulator Training and Evaluation
EP-EAL, Emergency Action Levels
PEP-230, Control Room Operations
EOP-E-0, Reactor Trip or Safety Injection
EOP-E-2, Faulted Steam Generator Isolation
EOP-E-3, Steam Generator Tube Rupture

Resident Inspector Quarterly Review of Licensed Operator Performance in the Actual Plant/Main Control Room
AD-OP-ALL-1000, Conduct of Operations
AP-002, Plant Conduct of Operations
AD-NF-ALL-0201, Reactivity Manipulation Plan (for reactor restart)
GP-006, Normal Plant Shutdown from Power Operation to Hot Standby (Mode 1 to Mode 3)
GP-005, Power Operation (Mode 2 to Mode 1)
OMM-001, Operations Administrative Requirements

Section 1R12: Maintenance Effectiveness

NUMARC 93-01, Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants
AD-EG-ALL-1210, Maintenance Rule Program
Self-Assessment Report 2103437, HNP Maintenance Rule (a)(3) Assessment
NCR 01955116, 1CZ-19 control circuit fuse is blown
NCR 02001030, Breaker 1-4B1-3B did not trip open

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

AD-WC-ALL-0200, On-Line Work Management
AD-OP-ALL-1000 Conduct of Operations
AD-WC-ALL-0410 Work Activity Integrated Risk Management
GP-006 Normal Plant Shutdown from Power Operation to Hot Standby (Mode 1 to Mode 3)
OMM-001, Conduct of Operations

Section 1R15: Operability Determinations and Functionality Assessments

AD-OP-ALL-0105, Operability Determinations and Functionality Assessments
DBD-322, Emergency Response Facilities (TSC, EOF and OSC)
NCR 02146322, 1TSC-AH17 Condensate Leakage
NCR 02157385, TSC AH-17 heater disconnect DS-1TSC-AH17:004 was found open
OPS-NGGC-1305, Operability Determinations

Section 1R18: Plant Modifications

AD-EG-ALL-1110, Design Review Requirements
AD-EG-ALL-1130, Activation of Engineering Changes
AD-EG-ALL-1132, Preparation and Control of Design Change Engineering Changes
AD-LS-ALL-0008, 10 CFR 50.59 Review Process
WCM-007, Temporary Alteration Monitoring Process
NCR 02159371, 'A' EDG trip during post-maintenance testing on high lube oil temperature

DBD-201, Emergency Diesel Generator System
Work Order 20207251, Implementation of EC 410262 to defeat high lube oil/jacket water trips
Drawing 1364-016451 and 1364-016463

Section 1R19: Post Maintenance Testing
AD-OP-ALL-0201, Protected Equipment
OST-1214, Emergency Service Water System Operability, Train A
OWP-SW-01, ESW Pump 1A-SA

Section 1EP6: Drill Evaluation
AD-OP-ALL-1000, Conduct of Operations
AD-TQ-ALL-0420, Conduct of Simulator Training and Evaluation
EP-EAL, Emergency Action Levels
PLP-201, Emergency Plan
PEP-110, Emergency Classification and Protective Action Requirements
PEP-230, Control Room Operations
EOP-E-0, Reactor Trip or Safety Injection
EOP-E-2, Faulted Steam Generator Isolation

Section 4OA1: Performance Indicator Verification
AD-LS-ALL-0004, NRC Performance Indicators and Monthly Operating Report
NEI 99-02, Regulatory Assessment Performance Indicator Guideline
Calculation HNP-F/PSA-0068, NRC Mitigating System Performance Index Basis Document for Harris Nuclear Plant
NCR 02169825, October PI needs updating in CDE database

Section 4OA2: Problem Identification and Resolution
AD-OP-ALL-0105, Operability Determinations and Functionality Assessments
AD-PI-ALL-0100, Corrective Action Program
AD-PI-ALL-0104, Prompt Investigation Response Team
AP-929, Troubleshooting Guide
OST-1021, Daily Surveillance Requirements, Daily Interval, Mode 1, 2
OP-110, Safety Injection
WO 20191566, LP-L-0926, LI-01SI-0926W, 8% Lower than LI-0924 B CLA Level
AD-OP-ALL-0202, Aggregate Operator Impact Assessment
AD-PI-ALL-0102, Apparent Cause Evaluation

Section 4OA3: Follow-up of Events and Notices of Enforcement Discretion
AD-OP-ALL-1000, Conduct of Operations
AD-OP-ALL-0203, Reactivity Management
AD-WC-ALL-0390, Unit Threat, Forced Outage, and Downpower Management
AOP-042, Secondary Steam Leak/Efficiency Loss
AOP-038, Rapid Downpower
AP-617, Reportability Determination and Notification
GP-006, Normal Plant Shutdown From Power Operation to Hot Standby (Mode 1 to Mode 3)
OP-131.04, Moisture Separator Reheater
OP-134.01, Feedwater System
OP-136, Feedwater Heaters, Vents, and Drains
OP-138.01, Circulating Water
OP-156.02, AC Electrical Distribution System
PLP-614, Self-Assessment For Restart Readiness to Startup
NCR 02159812, Failure of 1ES-149 required entry into AOP-042 and AOP-038