



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

July 27, 2016

Mr. Benjamin C. Waldrep  
Site Vice President  
Shearon Harris Nuclear Power Plant  
M/C HNP01  
New Hill, North Carolina 27562-0165

**SUBJECT: SHEARON HARRIS NUCLEAR POWER PLANT - NRC INTEGRATED  
INSPECTION REPORT 05000400/2016002**

Dear Mr. Waldrep:

On June 30, 2016, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Shearon Harris Nuclear Power Plant Unit 1. The enclosed inspection report documents the inspection results which were discussed on July 14, 2016, with you and other members of your staff.

No NRC-identified or self-revealing findings were identified during this inspection. However, two licensee-identified violations which were determined to be of very low safety significance are listed in this report. The NRC is treating these violations as non-cited violations (NCVs) consistent with Section 2.3.2.a of the Enforcement Policy.

If you contest these NCVs, 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, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the Shearon Harris Nuclear Power Plant.

B. Waldrep

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In accordance with Title 10 of the *Code of Federal Regulations* 2.390, "Public Inspections, Exemptions, Requests for Withholding," of the NRC's "Agency 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 Public Document Room or from the Publicly Available Records (PARS) component of NRC's Agencywide Document 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/***

George T. Hopper, Chief  
Reactor Projects Branch 4  
Division of Reactor Projects

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

Enclosure:  
NRC Inspection Report 05000400/2016002  
w/Attachment: Supplemental Information

cc Distribution via ListServ

B. Waldrep

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B. Waldrep

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Letter to Benjamin C. Waldrep from George T. Hopper dated July 27, 2016

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INSPECTION REPORT 05000400/2016002

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**U.S. NUCLEAR REGULATORY COMMISSION**

**REGION II**

Docket Nos.: 50-400

License Nos.: NPF-63

Report No.: 05000400/2016002

Licensee: Duke Energy Progress, Inc.

Facility: Shearon Harris Nuclear Power Plant, Unit 1

Location: 5413 Shearon Harris Road  
New Hill, NC 27562

Dates: April 1, 2016 through June 30, 2016

Inspectors: J. Austin, Senior Resident Inspector  
M. Riches, Resident Inspector  
S. Sanchez, Senior Emergency Preparedness Inspector  
(Sections 1EP2, 1EP3, 1EP4, 1EP5, 4OA1)  
C. Fontana, Emergency Preparedness Inspector (Sections 1EP2,  
1EP3, 1EP4, 1EP5, 4OA1)  
J. Hickman, Emergency Preparedness Inspector (trainee)  
(Sections 1EP2, 1EP3, 1EP4, 1EP5, 4OA1)  
A. Butcavage, Reactor Inspector (Section 1R07)  
M. Thomas, Senior Reactor Inspector (Sections 4OA3, 4OA7.2)

Approved by: George T. Hopper, Chief  
Reactor Projects Branch 4  
Division of Reactor Projects

Enclosure

## **SUMMARY**

Integrated Inspection Report 05000400/2016002; April 1, 2016, through June 30, 2016; Duke Energy Progress, Inc., Shearon Harris Nuclear Power Plant, Unit 1, Integrated Inspection Report.

The report covered a three-month period of inspection by resident inspectors and regional inspectors. The significance of inspection findings are indicated by their color (i.e., greater than Green, or Green, White, Yellow, Red) and determined using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process," (SDP) dated April 29, 2015. All violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy dated February 4, 2015. The NRC's program for overseeing the safe operations of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 5.

### Licensee-Identified Violations

Two violations of very low safety significance that were identified by the licensee have been reviewed by the NRC. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program (CAP). The violations and corrective action tracking numbers are listed in Section 4OA7 of this report.

## REPORT DETAILS

### Summary of Plant Status

Unit 1: The unit began the period at 100 percent rated thermal power (RTP). On April 16, 2016, power was lowered to 75 percent for turbine valve testing. The unit returned to 100 percent RTP on April 17, 2016, and remained there for the remainder of the quarter.

#### 1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

#### 1R01 Adverse Weather Protection (711111.01 – 2 samples)

##### a. Inspection Scope

##### .1 Summer Readiness of Offsite and Alternate AC Power System

The licensee did not implement equipment or procedure changes that potentially affect operation or reliability of offsite and alternate AC power systems since the last time the inspectors assessed grid reliability. The inspectors reviewed the material condition of offsite and onsite alternate AC power systems (including switchyard and transformers) by performing a walkdown of the switchyard. The inspectors reviewed outstanding work orders and assessed corrective actions for degraded conditions that impacted plant risk or required compensatory actions. Documents reviewed are listed in the Attachment.

The inspectors reviewed the following action requests (ARs) associated with this area to verify that the licensee identified and implemented appropriate corrective actions:

- AR 2011474, Fleet Actions for ONS [Oconee Nuclear Station] Fire-Explosion
- AR 2022615, Report of arcing in the switchyard near disconnect 52-10LS

##### .2 Seasonal Extreme Weather Conditions

The inspectors conducted a detailed review of the station's adverse weather procedures written for extreme high 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 seasonal extreme weather conditions. Documents reviewed are listed in the Attachment.

The inspectors evaluated the following risk-significant systems:

- Security Building HVAC system
- Essential Services Chilled Water system

##### b. Findings

No findings were identified.

1R04 Equipment Alignment (71111.04 – 3 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:

- 'A' component cooling water (CCW) pump and breaker, 'B' motor-driven auxiliary feedwater pump and breaker, 'A' train Process Instrumentation Cabinets while 'B' CCW pump was out for maintenance from April 11, 2016, to April 13, 2016
- 'A' train essential services chilled water (ESCW) with the 'B' train ESCW out of service, April 26, 2016
- 'B' 125 Volt DC Nuclear Non-Safety Battery Charger, 'A' 125 Volt DC Battery Charger, 'B' Reactor Makeup Water pump and breaker, and 'B' and 'C' Air Compressors and breaker during the 1A1 Bus Outage from June 27, 2016, to June 29, 2016

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 CAP



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.

- Fuel Handling Building (FHB), 216-ft Elevation
- FHB, 236-ft Elevation
- FHB, 261-ft Elevation
- FHB, 286-ft Elevation
- "A" Cable Spreading Room
- "B" Cable Spreading Room

b. Findings

No findings were identified.

1R06 Flood Protection Measures (71111.06 – 2 samples)

a. Inspection Scope

.1 Internal Flooding

The inspectors reviewed related flood analysis documents and walked down the area(s) 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 CAP. Documents reviewed are listed in the Attachment.

- Reactor Auxiliary Building (RAB), 190-ft elevation
- RAB, 216-ft elevation

b. Findings

No findings were identified.

1R07 Heat Sink Performance (71111.07T – 3 samples)

a. Inspection Scope

.1 Triennial Review of Heat Sink Performance

The inspectors interviewed plant personnel, conducted plant walkdowns, and reviewed records for a sample of heat exchangers that were directly cooled by the emergency service water (ESW) system, to verify that heat exchanger deficiencies or potential common cause problems that could result in initiating events or affect multiple heat exchangers in mitigating systems, were being identified, evaluated, and resolved. The

inspectors selected the following heat exchangers for review based on their risk-significance in the licensee's probabilistic risk analysis, and their safety-related mitigating functions.

- CCW Heat Exchanger, HX-1A
- ESCW, 1CH-E005
- Emergency Diesel Generator (EDG) Jacket Water Cooler, EDG-1B

For the heat exchangers, the inspectors reviewed the results of routine maintenance inspections performed to monitor the effects of fouling and establish the inspection/cleaning frequency in order to verify that the inspection frequency, monitoring and trending of as-found conditions were consistent with accepted industry practices and Generic Letter (GL) 89-13 guidance. The inspectors also assessed the inspection results to verify they were being documented in such a way as to support the inspection and cleaning frequencies established for the heat exchangers and that they provide reasonable assurance that heat transfer capability under current licensing and design basis conditions was being maintained. Additionally, the inspectors reviewed a sample of photographic records for recent inspection/cleaning activities to verify that as-left conditions were consistent with documented reports. The inspectors reviewed recent eddy current examination reports to verify that tube integrity was being assessed through use of eddy current testing methods, and that maximum tube plugging limits were considered during the inspection process.

The inspectors reviewed inspection/cleaning methodologies for the selected heat exchangers to verify that the licensee's activities were adequate to detect degradation prior to loss of heat removal capabilities below design basis values, and were consistent with the licensee's regulatory commitments in response to GL 89-13. The inspectors' review included a sample of periodic flow testing records to verify that flow through each heat exchanger was consistent with the system design and licensing basis. The inspectors also reviewed a sample of system health reports to verify that the licensee's chemical treatment programs for corrosion and fouling control were being evaluated and provided reasonable assurance that the programs were effective in preventing system degradation. The inspectors also conducted a walkdown of the chiller areas to verify that any visible conditions adverse to quality were identified and corrected. The walkdown also provided verification that local conditions in the chiller equipment area supported licensee information documented system health reports and that the chiller equipment was functional at the time of the walkdown and that no indications of water hammer damage was observed in the adjacent service piping. A field check of local chiller instrument data recorded by an auxiliary operator performing rounds during the chiller unit walkdowns was also performed to verify that a sample of the indications being recorded at the time, were within the required range of values provided on the auxiliary operator round log sheets.

In addition to the heat exchangers, the inspectors reviewed a sample of the ultimate heat sink (UHS) inspection attributes, for the main and auxiliary dams and intake and discharge canals as described in the next paragraphs, in order to verify that the condition of the UHS, and its subcomponents, was adequate to ensure availability and accessibility to the in-plant cooling water systems.

The inspectors reviewed a sample maintenance records for the inspection of the ESW system intake structure bays in order to verify the licensee had established a program to

identify degradation and silting issues in the structure itself and the canals that supply the intake from the main and auxiliary dams. The inspectors conducted a walkdown of the intake and discharge canals to verify that the vegetation present along the slopes of the intake canal was maintained in order to prevent adverse effects on the function of the UHS.

The UHS inspection sample also included a walkdown of the main and auxiliary dam conditions to assess the material condition and check for potential leakage at the toe of both dams. Any identified concerns were entered into the corrective action process and are listed in the document reviewed section. During the walkdown, the inspectors interviewed plant staff to assess the maintenance of the ESW system underground piping.

The inspectors also reviewed corrective action documents related to the ESW system and UHS performance issues to determine whether the licensee had an appropriate threshold for identifying issues, and to evaluate the effectiveness of the corrective actions.

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification Program and Licensed Operator Performance (71111.11 – 2 samples)

a. Inspection Scope

.1 Resident Inspector Quarterly Review of Licensed Operator Requalification

On May 24, 2016, the inspectors observed an evaluated simulator scenario administered to an operating crew as part of the annual requalification operating test required by Title 10 of the *Code of Federal Regulations* (10 CFR) Section 55.59, Requalification. The simulator scenario focused on the crew's response to a main steam line break that led to an uncontrolled depressurization of all the steam generators (SGs).

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 a downpower from 100 percent power to 75 percent power to support valve testing on the main turbine.

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.

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. Documents reviewed are listed in the attachment.

- AR 2024798, Train 'B' ESCW Challenging Maintenance Rule Unavailability Criteria
- Maintenance rule evaluation concerning swapped leads on the 'A' EDG tachometer relay
- Placement of the emergency DC lighting system in the (a)1 category

b. Findings

No findings were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13 – 4 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 CAP. 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.

- Unit 1, April 13, 2016, reviewed qualitative yellow risk assessment associated with the downpower for turbine valve testing
- Unit 1, April 25, 2016 evaluated the additional risk associated with the emergent loss of 'B' ESCW Chiller
- Unit 1, April 25, 2016 reviewed qualitative yellow risk assessment associated with 'B' Main Feedwater Regulating Valve (FRV) in Manual for 'B' SG level instrumentation testing
- Unit 1, June 1, 2016, reviewed qualitative yellow risk assessment while 'C' Main FRV was in Manual for 'C' SG level instrumentation testing

b. Findings

No findings were identified.

1R15 Operability Determinations and Functionality Assessments (71111.15 – 4 samples)

a. Inspection Scope

.1 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 UFSAR 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.

- AR 2014556, Immediate Determination of Operability (IDO) for AH-12-1B-SA is Turning Off
- AR 2023567, IDO for Fuel Handling Building dP Lower Than Expected
- AR 2038785, IDO for Questions Regarding the Reactor Vessel Head Repair Issue
- AR 2023746, IDO for P-4A (ESCW chilled water pump) bearing oilers located in non-ideal orientation

b. Findings

No findings were identified.

1R18 Plant Modifications (71111.18 – 2 samples)a. Inspection Scope

The inspectors verified that the plant modification(s) 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 (EC) 403910, Evaluation of Replacement Inboard Bearing on Pump P-4B
- EC 298179, Master Fire Detection Replacement TB 286-ft Elevation

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19 – 3 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) 13457132-04, EDG 1A, "Shutdown System Activate" Not Functioning, May 25, 2016
- WO 13507251-01, I,MPT-I0052, Turbine Building Local Fire Detection, June 3, 2016
- WO 12230348-05, O,OST-1074 for 1SW-123, MCC 1A35-SA-11A, June 23, 2016

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 – 3 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. Documents reviewed are listed in the Attachment.

Routine Surveillance Tests

- OPT-1014, Turbine Valve Test Semi-Annual Interval Modes 1 – 5
- OST-1045, ESFAS Train B Slave Relay Test Quarterly Interval Modes 1-4

In-Service Tests

- OST-1118, Containment Spray Operability Train 'A' Quarterly Interval Modes 1-4

b. Findings

No findings were identified.

Cornerstone: Emergency Preparedness

1EP2 Alert and Notification System Evaluation (71114.02 – 1 sample)

a. Inspection Scope

The inspectors evaluated the adequacy of the licensee's methods for testing and maintaining the alert and notification system in accordance with NRC Inspection Procedure (IP) 71114, Attachment 02, Alert and Notification System Evaluation. The applicable planning standard, 10 CFR Part 50.47(b)(5), and its related 10 CFR Part 50, Appendix E requirements were used as reference criteria. The criteria contained in NUREG-0654, Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants, Revision 1, were also used as a reference. The inspectors reviewed various documents which are listed in the Attachment, interviewed personnel responsible for system performance, and observed aspects of periodic siren maintenance and testing.

b. Findings

No findings were identified.

1EP3 Emergency Response Organization Staffing and Augmentation System (71114.03 – 1 sample)

a. Inspection Scope

The inspectors reviewed the licensee's Emergency Response Organization (ERO) augmentation staffing requirements and process for notifying the ERO to ensure the readiness of key staff for responding to an event and timely facility activation. The qualification records of key position ERO personnel were reviewed to ensure all ERO qualifications were current. A sample of problems identified from augmentation drills or system tests performed since the last inspection was reviewed to assess the effectiveness of corrective actions. The inspection was conducted in accordance with NRC IP 71114, Attachment 03, Emergency Response Organization Staffing and Augmentation System. The applicable planning standard, 10 CFR 50.47(b)(2), and its related 10 CFR 50, Appendix E requirements were used as reference criteria. The inspectors reviewed various documents which are listed in the Attachment.

b. Findings

No findings were identified.

1EP4 Emergency Action Level and Emergency Plan Changes (71114.04 – 1 sample)

a. Inspection Scope

Since the last NRC inspection of this program area, one change was made to the Radiological Emergency Plan and one change was made to the Emergency Action Levels, along with changes to several implementing procedures. The licensee determined that, in accordance with 10 CFR 50.54(q), the Plan continued to meet the requirements of 10 CFR 50.47(b) and Appendix E to 10 CFR Part 50. The inspectors reviewed these changes to evaluate for potential reductions in the effectiveness of the Plan. However, this review was not documented in a Safety Evaluation Report and does not constitute formal NRC approval of the changes. Therefore, these changes remain subject to future NRC inspection in their entirety. The inspection was conducted in accordance with NRC IP 71114, Attachment 04, Emergency Action Level and Emergency Plan Changes. The applicable planning standards of 10 CFR 50.47(b), and its related requirements in 10 CFR 50, Appendix E were used as reference criteria. The inspectors reviewed various documents that are listed in the Attachment to this report.

b. Findings

No findings were identified.



1EP5 Maintenance of Emergency Preparedness (71114.05 – 1 sample)

a. Inspection Scope

The inspectors reviewed the corrective actions identified through the Emergency Preparedness program to determine the significance of the issues, the completeness and effectiveness of corrective actions, and to determine if issues were recurring. The licensee's post-event after action reports, self-assessments, and audits were reviewed to assess the licensee's ability to be self-critical, thus avoiding complacency and degradation of their emergency preparedness program. Inspectors reviewed the licensee's 10 CFR 50.54(q) change process, personnel training, and selected screenings and evaluations to assess adequacy. The inspectors toured facilities and reviewed equipment and facility maintenance records to assess licensee's adequacy in maintaining them. The inspectors evaluated the capabilities of selected radiation monitoring instrumentation to adequately support Emergency Action Level (EAL) declarations. The inspection was conducted in accordance with NRC IP 71114, Attachment 05, Maintenance of Emergency Preparedness. The applicable planning standards, related 10 CFR 50, Appendix E requirements, and 10 CFR 50.54(q) and (t) were used as reference criteria. The inspectors reviewed various documents which are listed in the Attachment.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151 – 6 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 April 2015 and March 2016 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

- safety system functional failures

Cornerstone: Barrier Integrity

- reactor coolant system leak rate
- reactor coolant system specific activity

The inspectors sampled licensee submittals relative to the PIs listed below for the period July 1, 2015, through March 31, 2016. To verify the accuracy of the PI data reported during that period, PI definitions and guidance contained in NEI 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, was used to confirm the reporting basis for each data element.

For the specified review period, the inspectors examined data reported to the NRC, procedural guidance for reporting PI information, and records used by the licensee to identify potential PI occurrences. The inspectors verified the accuracy of the PI for ERO drill and exercise performance through review of a sample of drill and event records. The inspectors reviewed selected training records to verify the accuracy of the PI for ERO drill participation for personnel assigned to key positions in the ERO. The inspectors verified the accuracy of the PI for alert and notification system reliability through review of a sample of the licensee's records of periodic system tests. The inspectors also interviewed the licensee personnel who were responsible for collecting and evaluating the PI data. Licensee procedures, records, and other documents reviewed within this inspection area are listed in the Attachment.

#### Emergency Preparedness Cornerstone

- Drill/Exercise Performance
- Emergency Response Organization Readiness
- Alert and Notification System Reliability

#### 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 CAP 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 CAP and associated documents to identify trends that could indicate the existence of a more significant safety issue. The inspectors focused their review on issues associated with design control, 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 January 2016 through June 2016 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

The review identified an adverse trend exists in the area of design control. The following are examples of this trend:

- AR 1989404: Documented several instances associated with 480 V breaker replacement project where design reviews and post-maintenance testing failed to identify errors in calculations and trip settings.
- AR 1964721: Identified multiple design inadequacies with the cable vault pumping system that resulted in the submergence of safety-related cables.
- AR 2024746, 49, 50, 52, 54, 55, 56, 57: Identifies those safety-related pumps with bearing oilers not installed in accordance with the vendor recommendations.
- AR 2030427: Documents design review and post-maintenance testing failed to identify that a replacement fire detection system failed to meet the code requirements of NFPA 805 for alarm function. This issue resulted in the licensee-identified violation documented in Section 4OA7 of this report.

No findings were identified.

.3 Annual Follow-up of Selected Issues

a. Inspection Scope

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

- AR 2035132, Unexpected Fire Alarm in Containment - Spurious Actuation of Thermal Detector Results in Filling Fire Header inside Containment.
- AR 2030516, P-4B Discolored Oil Sample Found during Return to Service

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.

#### 40A3 Follow-up of Events (71153 – 1 sample)

##### .1 (Closed) Licensee Event Report 05000400/2014-002-00, Inadequate DC Cable Protection Could Adversely Affect Safe Shutdown

###### a. Inspection Scope

On August 11, 2014, the licensee submitted a licensee event report (LER) documenting the discovery of a historical design issue where inadequate cable protection existed in control cables for the turbine emergency oil pump. The cables had no electrical protection devices (fuses) other than the circuit breaker. The control cables were routed through several fire areas, including the main control room, and under postulated conditions, could have created a common enclosure fire hazard situation.

Compensatory measures (hourly fire watches) were implemented for affected areas of the plant until fuses were installed. The inspectors reviewed documents related to the LER to assess the adequacy of the licensee's compensatory measures and corrective actions.

###### b. Findings

The enforcement action associated with this LER is documented in Section 40A7.2. No additional findings were identified during the review of this LER. This LER is closed.

#### 40A5 Other Activities

##### .1 Institute of Nuclear Power Operations Report Review

In accordance with Executive Director of Operations Procedure 0220, "Coordination with the Institute of Nuclear Power Operations," the inspectors reviewed the most recent INPO evaluation and accreditation reports dated June 20, 2016, to determine if those reports identified safety or training issues not previously identified by NRC evaluations. The report contained no safety issues that were not already known by the NRC.

#### 40A6 Meetings, Including Exit

On July 14, 2016, the resident inspectors presented the inspection results to Mr. Ben Waldrep 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.

#### 40A7 Licensee-Identified Violations

The following licensee-identified violations of NRC requirements were determined to be of very low safety significance and meet the NRC Enforcement Policy criteria for being dispositioned as a Non-Cited Violation.

- .1 Section 50.48 of 10 CFR, Fire Protection, states that a fire protection program that is maintained to the requirements of National Fire Protection Association (NFPA) standard 805, "Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants, is an acceptable method for complying with the requirements of Section 50.48. Section 3.8.1 of NFPA 805 states, in part, that alarm annunciation shall allow the proprietary alarm system to transmit fire-related alarms, supervisory

signals, and trouble alarms to the control room or other constantly attended location from which required notifications and response can be initiated. Contrary to the above, from December 2015, to May 17, 2016, neither the licensee's design reviews nor post-modification tests identified that the fire protection system installed on the 286-ft elevation of the turbine building did not transmit trouble alarms to the Harris main control room. Following installation and testing, the newly-installed Protecta Wire™ system and fire detection panel, 1-SFD-E144, were placed in service in late December 2015. On May 17, 2016, while performing maintenance periodic test, MPT-I0052, Turbine Building Local Fire Detection Control Panel LFDCP-10 Test and 1-SFD-E144 Test of the fire detection system, the technicians performing the test recognized that the remote trouble alarm function would not cause an alarm in the control room. The licensee entered the issue concerning the inadequate remote alarm function into the corrective action program via AR 2030427 and implemented actions to incorporate and test the remote trouble alarm function into the EC package. The licensee also initiated corrective actions via AR 2033716 and AR 2038682 to address issues in the design review process. Using IMC 0609, Appendix F, Fire Protection Significance Determination Process, the inspectors determined this finding to be of very low safety significance (Green) since the reactor would still be able to achieve and maintain safe shutdown.

- .2 Section 50.48(c) of 10 CFR and NFPA 805, 2001 Edition, Section 2.4.2.2.2(b), "Common Enclosure Circuits," require that those circuits which share enclosures with circuits required to achieve the nuclear safety performance criteria and whose fire-induced failure could cause the loss of the required component, shall be identified to prevent propagating fires outside of the immediate fire area due to fire-induced electrical faults on inadequately protected cables. Contrary to the above, from October 1986 to September 2014, the licensee failed to meet the requirements of 10 CFR 50.48(c) and NFPA 805, Section 2.4.2.2.2(b), in that, the licensee failed to identify and provide adequate electrical fault protection for the turbine emergency oil pump control cables 11376C and 11376D. The cables could have created a common enclosure fire hazard under postulated situations which could have resulted in a secondary fire in other fire areas and could have adversely affected the capability to achieve safe and stable plant conditions. A fire-induced failure could have caused the loss of the required safe shutdown components. This violation was determined to be of very low safety significance (Green) based on the results of the IMC 0609, Appendix F, Fire Protection Significance Determination Process, Phase III Quantitative Screening Approach. A detailed risk evaluation was performed in accordance with NRC IMC 0609 Appendix F, and NUREG/CR6850 Rev. 0 and 1, using inputs from the licensee's NFPA 805 Fire PRA. The major analysis assumptions included a one-year exposure interval, and secondary fires occurring between the power supply and the fire induced hot short. The dominant sequence was a fire in the main control board causing a secondary fire in the "B" cable spreading room which if unsuppressed could result in the inability to achieve safe shutdown resulting in core damage. The quantitative screening approach resulted in a calculated delta core damage frequency of less than 1E-06, which screened this violation to Green (very low safety significance). This violation was documented in the licensee's corrective action program as Condition Report 692766.

ATTACHMENT: SUPPLEMENTAL INFORMATION

## **SUPPLEMENTAL INFORMATION**

### **KEY POINTS OF CONTACT**

#### Licensee personnel

J. Brown, Fleet Emergency Preparedness Trainer  
J. Caves, (Acting) Manager, Regulatory Affairs  
M. Denny, Director, Engineering  
L. Faulk, Director, Plant Security  
D. Griffith, Manager, Training  
T. Hamilton, Plant Manager  
B. Jones, Director, Organizational Effectiveness  
J. Keltner, Manager, Chemistry  
I. Norby, Senior Engineer, Regulatory Affairs  
S. O'Connor, General Manager, Engineering  
J. O'Keefe, Assistant Manager, Operations Support  
M. Parker, Manager, Radiation Protection  
B. McCabe, Manager, Nuclear Oversight  
J. Sharlow, Senior Emergency Preparedness Specialist  
G. Simmons, Manager, Emergency Planning  
T. Stephens, Regulatory Affairs  
D. Stih, Emergency Preparedness Specialist  
B. Waldrep, Site Vice President  
C. Yarley, Engineer, Regulatory Affairs

#### NRC personnel

G. Hopper, Chief, Reactor Projects Branch 4, Division of Reactor Projects, Region II

### **LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED**

#### Closed

05000400/2014-002-00	LER	Inadequate DC Cable Protection Could Adversely Affect Safe Shutdown
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## LIST OF DOCUMENTS REVIEWED

### **Section 1R01: Adverse Weather Protection**

#### Procedures

OP-161.01, Operations Freeze Protection and Temperature Maintenance Systems  
AP-300, Severe Weather  
AP-301, Seasonal Weather Preparations and Monitoring  
AOP-028, Grid Instability  
Self-Assessment 1983964-05, Plant Summer Readiness 2016

### **Section 1R04: Equipment Alignment**

OMM-001, Operations Administrative Requirements, Attachment 16, Protected Train Equipment

#### Partial System Walkdown

Component Cooling Water system:  
Procedure OP-145, Component Cooling Water System,

DC Electrical Distribution system:  
Procedure OP-156.01, DC Electrical Distribution System,

Essential Services Chilled Water system:  
Procedure OP148, Essential Services Chilled Water System,  
5-S-0998 S02

### **Section 1R05: Fire Protection**

FPP-001 Fire Protection Program Manual  
FPP-013, Fire Protection – Minimum Requirements, Mitigating Actions and Surveillance Requirements  
FPP-012-03-FHB, Fuel Handling Building Fire Pre-Plan  
FPP-012-02-RAB286, Reactor Auxiliary Building Elevation 286 Fire Pre-Plan  
FPP-012-02-RAB305-324, Reactor Auxiliary Building Elevations 305 and 324 Fire Pre-Plan

### **Section 1R06: Flood Protection Measures**

PRA-F-E-0004, Reactor Auxiliary Building Unit 1 Elev. 190' and 216' Internal Flooding Analysis  
Prompt Operability Determination for NCR 748419

### **Section 1R07: Heat Sink Performance**

#### Drawings

CAR-2165 G-206, Carolina Power and Light (CP&L) Company, Shearon Harris Nuclear Plant, Emergency Service Water & Cooling Tower Make Up Intake Structure Piping Plan and Sections Unit 1 Sht. 2, Rev. 13  
CAR-2165 G-209, CP&L, Shearon Harris Nuclear Plant, Emergency Service Water Intake Screening Structure Piping, Unit 1, Rev. 22

CAR-2165 G-219, CP&L, Shearon Harris Nuclear Plant, Yard Piping, Partial Plan and Section, Unit-1 Sht. 6, Rev. 14

CAR-2167 G-6020, CP&L, Shearon Harris Nuclear Plant, General Plan Reservoir Area, Rev. 5

#### Procedures

Engineering Periodic Test (EPT)-249, Emergency Service Water Piping Internal Coating Inspection, Train "B", 11/15/07

EPT-249, Emergency Service Water (ESW) Piping Internal Coating Inspection, Train "A", 9/11/09

EPT-163, Generic Letter 89-13 Inspections (Raw Water Systems and Local Area Air Handler Inspection and Documentation), Rev. 16

EPT-250, "A" Train ESW Flow Verification Balance, 6/30/14

EPT-251, "B" Train ESW Flow Verification Balance, 4/21/14

Operations Surveillance Test (OST) -1214, Emergency Service Water System Operability Train "A" Quarterly Interval, Modes 1-2-3-4-5-6 Defueled, Rev. 86

OST-1215, Emergency Service Water System Operability Train "B" Quarterly Interval, Modes 1-2-3-4-5-6-Defueled, Rev. 83

Performance Test Procedure (OPT) -1083, "A" Train ESW Flow Verification, 5/15/15

OPT-1083, "B" Train ESW Flow Verification, 5/14/15

PLP- 620, Service Water Program (Generic Letter 89-13), Rev. 18

#### Calculations

Engineering Service Request (ESR) – 9600108, Emergency Service Water Tube Plugging Summary (Chillers), Rev. 0

SW-48, CCW Heat Exchanger Performance with Reduced Service Water Flow, Rev. 5

SW-49, EDG Jacket Water Cooler Performance with Reduce Service Water Flows, Rev. 3

SW-0080, Emergency Service Water Flow Requirements Based on Reservoir Level, Rev.15

SW-0085, Ultimate Heat Sink Analysis, Rev. 3

Tank 0020, Condensate Storage Tank (CST) Minimum Useable and Maximum Required Inventory Analysis, for Shearon Harris Nuclear Plant 11/22/10

#### Heat Exchanger Inspection Reports

Curtiss-Wright Flow Control, Final Eddy Current Inspection Report, Closed Cooling Water Heat Exchanger-1A, and ESCW "A" –Chiller, Duke Progress Energy, Harris Nuclear Plant, RFO-19, April 2015

Curtiss-Wright Flow Control, Final Eddy Current Inspection Report, Emergency Diesel Generator Jacket Water Cooler (EDG)-1B, New and Removed Tube Bundles, November, 2013

#### Corrective Action Documents

CR 00715519, Essential Service Chilled Water Cooling Capacity, 10/28/2014

CR 00731538, Challenges with expected response of the WC-2B pre-rotation vanes of the 1B-SB Essential Services Chilled Water (ESCW) Chiller, 2/13/2015

CR 2038301, (NRC Identified) Standing Water at toe of Aux DAM, 6/20/16

NCR 715131, Valve ISW-231 Service Water Supply to Containment Fan Coil Units (CIV) exceeded Stroke Time of 60 Seconds, 10/24/2014

NCR 745185, Service Water Leakage at Valve ISW-276, 4/22/2015



NCR 747036, Main Control Room Alarm Low Flow and Pressure on the "A" ESW Header.  
5/20/2014

NCR 2000247, 1A Normal Service Water Pump Control Room Alarm, 1/5/2016

#### Other Documents

Curtis-Wright Personnel Certification, Employee ID S3630, Level II ECT Certification, Expires January, 2017

Curtis-Wright Personnel Certification, Employee ID S8466, Level III ECT Certification, Expires December, 2017

Curtis-Wright Personnel Certification, Employee ID3071, ECT-Level III, Expires June 2017  
DBD-114, Duke Energy, Shearon Harris Nuclear Power Plant, Design Basis Document, Auxiliary Feedwater System, Rev.14

Design Basis Document (DBD)-114, Duke Energy Shearon Harris Nuclear Plant, Auxiliary Feed-water System, Rev.14

Engineering Change (EC) 74914, Measurement Uncertainty Recapture (MUR) Power Uprate, B00 Design, Rev. 6

Generic Letter 89-13 Test/Inspection Evaluation, Cycle 18, Cycle 19, and RFO-19, Attachment 6, 5/14/15

Preventative Maintenance (PM) Identification No. 00099635, 1RH-HXA, Eddy Current "A" RHR Heat Exchanger and Replace Gasket, Due Date 4/14/18

Preventative Maintenance (PM) Identification No. 00099636, 1RH-HXB, Eddy Current "B" RHR Heat Exchanger and Replace Gasket, Due Date 9/21/19

Progress Energy, Harris Nuclear Plant, Plant Operating Manual, Volume 6, Part 9, Engineering Periodic Test (EPT)-241, Emergency Service Water Piping Internal Coating Inspection, Train "A", Rev. 6

Progress Energy, Harris Nuclear Plant, Plant Operating Manual, Volume 6, Part 9, Engineering Periodic Test (EPT)-249, Emergency Service Water Piping Internal Coating Inspection, Train "B", Rev. 9

Shearon Harris Nuclear Plant, Final Safety Analysis Report (FSAR), Section 9.2.6.3, Amendment No. 58

Shearon Harris Unit-1, Technical Specifications (TS) 3 / 4 .7.5, Ultimate Heat Sink, Limiting Condition for Operation, 3.7.5, Amendment No. 132

Shearon Harris Unit-1, Technical Specifications Basis (TS) 3 / 4.7.3 Component Cooling Water System, 3 / 4.7.4 Emergency Service Water System, 3 / 4.7.5 Ultimate Heat Sink, Amendment No. 128

Work Order (WO) 13301012, 1RH-HXA, Eddy Current RHR Heat Exchanger and Replace Gasket, Due Date 4/14/18

#### **Section 1R11: Licensed Operator Requalification Program**

##### Procedures

AD-OP-ALL-1000, Fleet Conduct of Operations, Revision 5

Operations Management Manual, OMM-001, Operations Administrative Requirements, Rev 109

OMM-002, Shift Turnover Package, Rev 65

AD-TQ-ALL-0420, Conduct of Simulator Training and Evaluation, Rev 1

AD-TQ-ALL-1000, Conduct of Training, Rev 10

Training Program Procedure (TPP)-206, Simulator Program, Rev 12

TPP- 306, Licensed Operator Continuing Training Program, Rev 24  
 TRN-NGGC-0440, Regulated Exam Security, Rev 0  
 Simulator Evaluation Guide, DSS-023, Rev. 8

**Section 1R12: Maintenance Effectiveness**

NUMARC 93-01, Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants  
 Regulatory Guide 1.160, Monitoring the Effectiveness of Maintenance at Nuclear Power Plant  
 AD-EG-ALL-1210, Maintenance Rule Program  
 NCR 2024798

**Section 1R13: Maintenance Risk Assessments and Emergent Work Evaluation**

AD-WC-ALL-0200, On-Line Work Management, Rev 6  
 WCM-001, On-line Risk Management, Rev. 26  
 AD-NF-ALL-0501, Electronic Risk Assessment Tool, Rev. 0

**Section 1R15: Operability Evaluations**

AD-OP-ALL-0105, Operability Determinations, Rev 3  
 Immediate Determination of Operability for NCR 2014556  
 Immediate Determination of Operability for NCR 2023567  
 Immediate Determination of Operability for NCR 2038785  
 Immediate Determination of Operability for NCR 2023746

**Section 1R18: Plant Modifications**

EC 403910  
 EC 298179  
 AD-LS-ALL-0008, 10 CFR 50.59 Review Process, Rev. 0  
 AD-EG-ALL-1132, Preparation and Control of Design Change Engineering Changes, Rev. 5

**Section 1R19: Post Maintenance Testing**

PLP-400, Post Maintenance Testing  
 WO 13457132  
 WO 13507251  
 WO 12230348

**Section 1R22: Surveillance Testing**

OMM-007, Operations Surveillance, Periodic and Reliability Tests, Rev. 28  
 OPT-1014, Turbine Valve Test Semi-Annual Interval Modes 1 – 5  
 OST-1045, ESFAS Train B Slave Relay Test Quarterly Interval Modes 1-4  
 OST-1118, Containment Spray Operability Train 'A' Quarterly Interval Modes 1-4  
 WO 13458378  
 WO 20031117  
 WO 20048102

## **Section 1EP2: Alert and Notification System Evaluation**

### Procedures

Harris Nuclear Plant EPZ Siren Acoustic Study, Rev. 0  
 EPM-400, Public Notification & Alerting System, Rev. 20  
 PLP-201, Emergency Plan, Rev. 65

### Records and Data

Equipment Repair Logs  
 Weekly Silent Tests, March 2014 – March 2016  
 Quarterly Growl Tests, March 2014 – March 2016  
 2015 Annual Siren Full Volume Test  
 FEMA approval letter for ANS, dated 12/24/12  
 Siren System FEMA Annual Siren Report for 2016  
 Duke Energy, DHS/FEMA Region IV, Alert and Notification, dated 1/26/16

### Corrective Action Documents (Condition Reports)

CR 0679984, Siren system problems  
 CR 0691219, Partial activation during bi-weekly test  
 CR 0757009, C05 Siren experienced DC status alarm  
 CR 0757278, W02 activation failure during silent test  
 CR 1941545, Siren W17 RTU communications alarm  
 CR 1949579, Siren L04 partial activation alarm  
 CR 1951270, Partial activation during bi-weekly test  
 CR 1953842, Partial activation during bi-weekly test (non-KPI test)  
 CR 1958495, Siren W17 RTU communications alarm  
 CR 1966639, Partial activation during bi-weekly test  
 CR 1973325, Adverse trends for sirens  
 CR 1980122, Partial activation during bi-weekly test

## **Section 1EP3: Emergency Response Organization Staffing and Augmentation System**

### Procedures

AD-EP-ALL-0501, Emergency Preparedness Staff Training and Qualifications, Rev. 0  
 AD-EP-ALL-1000, Conduct of Emergency Preparedness, Rev. 0  
 CM-M-0100, Containment Equipment Hatch Removal and Replacement, Rev. 29  
 EPM-200, ERO Training Program, Rev. 20  
 EPM-201, EP Staff Training Program, Rev. 8  
 PEP-230, Control Room Operations, Rev. 27  
 PEP-240, Activation and Operation of the Technical Support Center, Rev. 22  
 PEP-260, Activation and Operation of the Operations Support Center, Rev. 17  
 PEP-270, Activation and Operation of the Emergency Offsite Facility, Rev. 33  
 PEP-310, Notifications and Communications, Rev. 35  
 PEP-330, Radiological Consequences, Rev. 12  
 PEP-350, Protective Actions, Rev. 10  
 PLP-201, Emergency Plan, Rev. 65  
 PLP-511, Radiation Control and Protection Program, Rev. 33

Records and Data

Selected Qualification Records for Key Position ERO Personnel  
 2014 and 2015 ERO Augmentation Testing Results  
 Harris Nuclear Plant On-Shift Staffing Analysis, dated 12/19/12  
 Harris Nuclear Plant ERO Augmentation Drill Critique Report, dated 1/6/16  
 EPL-001, Emergency Phone List, Harris Plant, dated 2/17/16

Corrective Action Documents

CR 1940538, ERO expired qualification  
 CR 1948135, EP participation attendance records not maintained  
 CR 1956365, Verizon wireless outage affecting ERO callout  
 CR 1968486, Errant ERO message sent out on ERONS  
 CR 1972427, EP KPI for ERO staffing depth is red  
 CR 1984681, OSC minimum staffing not within 30 minutes  
 CR 1990306, TSC ERO training on Flex Strategy Guidelines needed  
 CR 2013486, EP staff continuing training not documented in MyQuals  
 CR 2026065, Expiration of ERO qualification  
 CR 2032451, Two ERO members had been credited with the incorrect drill date  
 CR 2032713, EP drill roster discrepancies

**Section 1EP4 EAL and Emergency Plan Changes**Procedures

AD-EP-ALL-0602, Emergency Plan Change Screening & Effectiveness Evaluations 10 CFR 50.54(q), Rev. 1  
 EMG-NGGC-0010, Emergency Plan Change Screening & Evaluation 10CFR50.54(q)(3), Rev. 4  
 EP-EAL, Emergency Action Level, Revs. 15 & 16  
 EPM-201, Emergency Preparedness Staff Training Program, Rev. 8  
 PEP-110, Emergency Classification and Protective Action Recommendations, Revs. 24 & 25  
 PEP-230, Control Room Operations, Revs. 26 & 27  
 PEP-350, Protective Actions, Revs. 9 & 10  
 PLP-201, Emergency Plan, Revs. 64 & 65

Records and Data

10 CFR 50.54(q)(3) Screening Form for HNP E-Plan Rev. 65, dated 3/2/16  
 10 CFR 50.54(q)(3) Evaluation Form for HNP E-Plan Rev. 65, dated 3/2/16  
 10 CFR 50.54(q)(3) Screening Form for EP-EAL Rev. 16, dated 3/11/16  
 10 CFR 50.54(q)(3) Evaluation Form for EP-EAL Rev. 16, dated 3/11/16  
 10 CFR 50.54(q)(3) Screening Form for PEP-110 Rev. 25, dated 10/19/15  
 10 CFR 50.54(q)(3) Evaluation Form for PEP-110 Rev. 25, dated 10/19/15  
 10 CFR 50.54(q)(3) Screening Form for PEP-350 Rev. 10, dated 10/20/15  
 10 CFR 50.54(q)(3) Evaluation Form for PEP-350 Rev. 10, dated 10/20/15  
 10 CFR 50.54(q)(3) Screening Form for PEP-230 Rev. 27, dated 3/10/16  
 10 CFR 50.54(q)(3) Evaluation Form for PEP-230 Rev. 27, dated 3/10/16  
 LAR to Adopt EAL Scheme Pursuant to NEI 99-01 Rev. 6, dated 4/30/15

Corrective Action Documents

CR 0675044, EAL Change with insufficiently detailed evaluation  
 CR 1980480, Unclear EAL Board guidance for EAL HA2.1

**Section 1EP5: Maintenance of Emergency Preparedness**Procedures

AD-EP-ALL-0105, Effectiveness Reviews, Rev. 1  
 AD-EP-ALL-0501, Emergency Preparedness Staff Training & Qualifications, Rev. 0  
 AD-EP-ALL-0502, Emergency Preparedness 10CFR50.54(q) Training Requirements, Rev. 1  
 AD-EP-ALL-0602, E-Plan Change Screening & Effectiveness Evaluations 10CFR50.54(q), Rev1  
 AD-EP-ALL-1000, Conduct of Emergency Preparedness, Rev. 0  
 AD-NO-ALL-1001, Conduct of Audit, Rev.3  
 AD-PI-ALL-0100, Corrective Action Program, Rev. 5  
 AD-PI-ALL-0300, Self-Assessment and Benchmarking Programs, Rev. 2  
 EPM-201, EP Staff Training Program, Rev. 8  
 PLP-201, Emergency Plan, Rev. 65

Records and Data

Emergency Preparedness Program Assessment Report, dated 11/20/2015  
 Harris Nuclear Plant 2014 Population Update Analysis, dated November 10, 2014  
 Harris Nuclear Plant 2015 Population Update Analysis, dated November 9, 2015  
 Nuclear Oversight Audit Harris Emergency Preparedness Performance Review 2015-HNP-EP-PR-01, dated 10/15/2015  
 Nuclear Oversight Audit Harris Emergency Preparedness 2016-HNP-EP-01, dated 4/5/2016  
 RA-16-002, Request for Emergency Operation Facility Consolidation, dated 4/29/2016

Corrective Action Documents

CR 0751310, Incorrect PAR board revision found during ERO training  
 CR 1954784, Actions to address sensitivity to EP equipment issues  
 CR 1961091, PLP-717 potential vulnerability  
 CR 1961643, EPM-410 EOF testing documentation  
 CR 1968853, Harris graded exercise 15-10  
 CR 1970340, NRC minor violation – EAL revision issue  
 CR 1980480, Unclear EAL board guidance for Category HA2.1  
 CR 1984583, Perform Focused Self-Assessment of EP Program prior to NRC inspection  
 CR 1985109, Harris EP program independent assessment results  
 CR 2008671, Possible configuration management issue with EOF handler  
 CR 2013817, NOS identified Training and Qualification Assessment not documented

**Section 4OA1: Performance Indicator Verification**

NEI 99-02, Regulatory Assessment Performance Indicator Guideline  
 Calculation HNP-F/PSA-0068, NRC Mitigating System Performance Index Basis Document for Harris Nuclear Plant

Procedures

AD-EP-ALL-0002, NRC Regulatory Assessment Performance Indicator Guideline Emergency Preparedness Cornerstone, Rev. 1

PD-EP-ALL-0800, Drills & Exercises Program, Rev. 0

REG-NGGC-009, Alert and Notification System Reliability, January – December, 2014, Rev. 12

REG-NGGC-009, Alert and Notification System Reliability, January – June, 2015, Rev. 12

Records and Data

DEP opportunities documentation for 3<sup>rd</sup> and 4<sup>th</sup> quarters 2015, and 1<sup>st</sup> quarter 2016

Siren test data for 3<sup>rd</sup> and 4<sup>th</sup> quarters 2015, and 1<sup>st</sup> quarter 2016

Drill and exercise participation records of ERO personnel for 3<sup>rd</sup> and 4<sup>th</sup> quarters 2015, and 1<sup>st</sup> quarter 2016

Various ERO Personnel Qualification & Participation records

Corrective Action Program Documents

AR 1940538, ERO expired qualification

AR 1968495, DEP documentation errors

AR 1971488, DEP KPI red for October 2015

AR 2026065, Expiration of ERO qualification

AR 2032451, Two ERO members had been credited with the incorrect drill date

AR 2032713, EP drill roster discrepancies

**Section 40A2: Identification and Resolution of Problems**

AD-OP-ALL-0202, Aggregate Operator Impact Assessment

AD-PI-ALL-0100, Corrective Action Program

AD-PI-ALL-0101, Root Cause Evaluation

AD-PI-ALL-0102, Apparent Cause Evaluation

AD-PI-ALL-0103, Quick Cause Evaluation

AD-PI-ALL-0104, Prompt Investigation Response Team

AD-PI-ALL-0105, Effectiveness Reviews

AR 1989404

AR 1964721

AR 2024746

AR 2024749

AR 2024750

AR 2024752

AR 2024754

AR 2024755

AR 2024756

AR 2024757

AR 2030427

AR 2035132

AR 2030516