



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

October 30, 2014

Mr. Benjamin C. Waldrep  
Vice President  
Duke Energy Progress, Inc.  
Shearon Harris Nuclear Power Plant  
P. O. Box 165, Mail Code: Zone 1  
New Hill, North Carolina 27562-0165

**SUBJECT: SHEARON HARRIS NUCLEAR POWER PLANT - NRC INTEGRATED  
INSPECTION REPORT 05000400/2014004**

Dear Mr. Waldrep:

On September 30, 2014, 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 October 23, 2014, with you and other members of your staff.

One NRC-identified finding of very low safety significance (Green) was identified during this inspection. Additionally, one licensee-identified violation which was determined to be of very low safety significance is listed in this report. The NRC is treating this violation as a non-cited violation (NCV) consistent with Section 2.3.2.a of the Enforcement Policy.

If you contest this non-cited violation, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 20555-0001; with copies to the Regional Administrator, Region II; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the Shearon Harris facility.

If you disagree with a cross-cutting aspect assignment in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region II; and the NRC Resident Inspector at Shearon Harris facility.

B. Waldrep

2

In accordance with Title 10 of the *Code of Federal Regulations* (10CFR) 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC 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 05000400/2014004  
w/Attachment: Supplemental Information

cc Distribution via ListServ

B. Waldrep

2

In accordance with Title 10 of the *Code of Federal Regulations* (10CFR) 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC 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 05000400/2014004  
w/Attachment: Supplemental Information

cc Distribution via ListServ

PUBLICLY AVAILABLE       NON-PUBLICLY AVAILABLE       SENSITIVE       NON-SENSITIVE  
ADAMS:  Yes      ACCESSION NUMBER: \_\_\_\_\_       SUNSI REVIEW COMPLETE       FORM 665 ATTACHED

OFFICE	RII:DRP	RII:DRP	RII:DRS	RII:DRS	RII:DRS	RII:DRS	RII:DRP
SIGNATURE	Via email	Via email	Via email	Via email	Via email	Via email	JSD /RA/
NAME	JAustin	PLessard	MBates	ANielsen	BPursley	JRivera	JDodson
DATE	10/21/2014	10/21/2014	10/17/2014	10/17/2014	10/20/2014	10/20/2014	10/17/2014
E-MAIL COPY?	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO
OFFICE	RII:DRP						
SIGNATURE	GTH /RA/						
NAME	GHopper						
DATE	10/29/2014						
E-MAIL COPY?	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO

OFFICIAL RECORD COPY DOCUMENT NAME: G:\DRP\IRPB4\HARRIS\REPORTS\2014 REPORTS\14-04\HARRIS IR 2014-04.DOCX

B. Waldrep

3

Letter to Benjamin C. Waldrep from George T. Hopper dated October 30, 2014.

SUBJECT: SHEARON HARRIS NUCLEAR POWER PLANT - NRC INTEGRATED  
INSPECTION REPORT 05000400/2014004

Distribution:

D. Gamberoni

L. Douglas, RII

RIDSNRRDIRS

PUBLIC

RidsNrrPMShearonHarris Resource

**U. S. NUCLEAR REGULATORY COMMISSION**

**REGION II**

Docket No.: 50-400

License No.: NPF-63

Report No.: 05000400/2014004

Licensee: Duke Energy Progress, Inc.

Facility: Shearon Harris Nuclear Power Plant, Unit 1

Location: 5413 Shearon Harris Road  
New Hill, NC 27562

Dates: July 1, 2014 through September 30, 2014

Inspectors: J. Austin, Senior Resident Inspector  
P. Lessard, Resident Inspector  
M. Bates, Senior Operations Engineer (Section 1R11)  
A. Nielsen, Senior Health Physicist (Sections 2RS6, 4OA1)  
B. Pursley, Health Physicist (Sections 2RS1, 4OA1)  
J. Rivera, Health Physicist (Section 2RS7)  
J. Dodson, Senior Project Engineer (Section 4OA2)

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

Enclosure

## SUMMARY OF FINDINGS

IR 05000400/2014004; Duke Energy Progress, Inc.; July 1, 2014 - September 30, 2014; Shearon Harris Nuclear Power Plant, Unit 1; Identification and Resolution of Problems.

The report covered a three-month period of inspection by resident inspectors, and announced inspections by a senior project engineer, a senior operations engineer and three regional health physicists. One NRC-identified finding of very low safety significance (Green) was identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, issued June 2, 2011 "Significance Determination Process" (SDP). The cross-cutting aspects were determined using IMC 0310, "Components Within the Cross-Cutting Areas," issued December 19, 2013. All violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy dated January 28, 2013. The NRC's program for overseeing the safe operations of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process" Revision 5.

### NRC-Identified

Cornerstone: Emergency Preparedness

- Green. The NRC identified a Green NCV associated with emergency preparedness planning standard 10 CFR 50.47(b)(5), which requires in part, that the means to provide alert and notification and clear instruction to the populace within the plume exposure pathway Emergency Planning Zone (EPZ) have been established. Specifically, on April 3, 2014, the licensee unintentionally initiated a complete loss of sirens while responding to a siren system alarm. The licensee entered this issue into the corrective action program (CAP) as Action Request (AR) #679984. As corrective action, the licensee replaced a failed circuit card and restored functionality of the siren system.

The licensee's failure to comply with WCP-NGGC-0300, Work Request Initiation, Screening, Prioritization and Classification, was a performance deficiency. Specifically, this failure combined with the circuit card failure caused a complete loss of siren functionality for approximately two hours. This finding was more than minor because if left uncorrected, loss of Alert Notification System function has the potential to lead to a more significant safety concern and is associated with the emergency preparedness cornerstone attribute of Facilities and Equipment (Availability of ANS). This ANS unavailability affected the cornerstone objective of ensuring that the licensee is capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. Using Manual Chapter 0609 Appendix B, Emergency Preparedness Significance Determination Process (Section 5.5) – Failure to Comply with 10 CFR 50.47(b)(5), the inspectors determined this finding to be of very low safety significance (Green) because the loss of siren function was of short duration and did not reach the Degraded Risk Significant Planning Standard (RSPS) threshold. The finding had a cross-cutting aspect of Procedure Adherence, as described in the Human Performance cross-cutting area because the EPTs failed to comply with the procedural guidance of WCP-NGGC-0300 (H.8). (Section 40A2.2)

A violation of very low safety significance which was identified by the licensee was reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's CAP. This violation and corrective action tracking number are listed in Section 4OA7 of this report.

## REPORT DETAILS

### Summary of Plant Status

Unit 1 operated at or near rated thermal power (RTP) for the entire inspection period.

#### 1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

#### 1R01 Adverse Weather Protection

##### .1 External Flooding

###### a. Inspection Scope

The inspectors evaluated the design, material condition, and procedures for coping with the design basis probable maximum flood. The evaluation included a review to check for deviations from the descriptions provided in the Updated Final Safety Analysis Report (UFSAR) for features intended to mitigate the potential for flooding from external factors. As part of this evaluation, the inspectors checked for obstructions that could prevent draining, checked that the roofs did not contain obvious loose items that could clog drains in the event of heavy precipitation, and determined that barriers required to mitigate the flood were in place and operable. Additionally, the inspectors performed a walkdown of the protected area to identify any modification to the site which would inhibit site drainage during a probable maximum precipitation event or allow water ingress past a barrier. The inspectors also reviewed the abnormal operating procedure (AOP) for mitigating the design basis flood to ensure it could be implemented as written.

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

- AR #614331, Fukushima 2.3 Flooding Un-Sealed Penetrations
- AR #606017, Fukushima 2.3 Flooding Un-Sealed Hatch On Waste Processing Building (WPB) Roof
- AR #614258, Fukushima 2.3 Flooding: Wall Flood Protection Deficiencies

###### b. Findings

No findings were identified.



## 1R04 Equipment Alignment

### .1 Quarterly Partial System Walkdowns

#### a. Inspection Scope

The inspectors performed three partial system walkdowns of the following risk-significant systems:

- “A” 6.9 kV Switchgear during routine operation on July 15, 2014
- “B” Startup Transformer and portions of the switchyard while they were protected due to a planned maintenance outage on the “B” EDG on August 7, 2014
- “1&4A” and “2&3A” Spent Fuel Pool Cooling pumps while they were protected on September 15, 2014

The inspectors selected these systems based on their risk-significance relative to the reactor safety cornerstones at the time they were inspected. The inspectors attempted to identify any discrepancies that could impact the function of the system and, therefore, potentially increase risk. The inspectors reviewed applicable operating procedures, system diagrams, applicable portions of the UFSAR, Technical Specification (TS) requirements, outstanding work orders (WOs), condition reports, and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have rendered the systems incapable of performing their intended functions. The inspectors also walked down accessible portions of the systems to verify system components and support equipment were aligned correctly and operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no obvious deficiencies. The inspectors also verified that the licensee had properly identified and resolved equipment alignment problems that could cause initiating events or impact the capability of mitigating systems or barriers and entered them into the CAP with the appropriate significance characterization.

#### b. Findings

No findings were identified.

### .2 Semi-Annual Complete System Walkdown

#### a. Inspection Scope

On September 4, 2014, the inspectors performed a complete system alignment inspection of the “A” and “B” EDG Starting Air System to verify the functional capability of the system. This system was selected because it was considered risk significant in the licensee’s probabilistic risk assessment. The inspectors walked down the system to review mechanical and electrical equipment line ups, electrical power availability, system pressure and temperature indications, component labeling, component lubrication, component and equipment cooling, hangers and supports, operability of support

systems, and to ensure that auxiliary equipment or debris did not interfere with equipment operation. A review of a sample of past and outstanding WOs was performed to determine whether any deficiencies significantly affected the system function. In addition, the inspectors reviewed the CAP database to ensure that system equipment alignment problems were being identified and appropriately resolved.

b. Findings

No findings were identified.

1R05 Fire Protection

.1 Quarterly Resident Inspector Tours

a. Inspection Scope

The inspectors conducted six fire protection walkdowns which were focused on availability, accessibility, and the condition of firefighting equipment in the following risk-significant plant areas:

- “A” Train Electrical Penetration Area
- “B” Train Electrical Penetration Area
- RAB, 236’ Elevation, Mechanical Penetration Area
- FHB, 236’ Elevation
- “A” Diesel Fuel Oil Storage Tank and Transfer Pump Room
- “B” Diesel Fuel Oil Storage Tank and Transfer Pump Room

The inspectors reviewed areas to assess if the licensee had implemented a fire protection program that adequately controlled combustibles and ignition sources within the plant, effectively maintained fire detection and suppression capability, maintained passive fire protection features in good material condition, and had implemented adequate compensatory measures for out-of-service, degraded or inoperable fire protection equipment, systems, or features in accordance with the licensee’s fire plan. The inspectors selected fire areas based on their overall contribution to fire risk as documented in the plant’s Individual Plant Examination of External Events with later additional insights, their potential to impact equipment which could initiate or mitigate a plant transient, or their impact on the plant’s ability to respond to a security event. Using the documents listed in the Attachment, the inspectors verified that fire hoses and extinguishers were in their designated locations and available for immediate use; that fire detectors and sprinklers were unobstructed, that transient material loading was within the analyzed limits; and fire doors, dampers, and penetration seals appeared to be in satisfactory condition. The inspectors also verified that minor issues identified during the inspection were entered into the licensee’s CAP.

b. Findings

No findings were identified.

## 1R06 Flood Protection Measures

### .1 Review of Areas Susceptible to Internal Flooding

#### a. Inspection Scope

The inspectors reviewed selected risk-important plant design features and licensee procedures intended to protect the plant and its safety-related equipment from internal flooding events. The inspectors reviewed flood analyses and design documents, including the UFSAR, engineering calculations, and abnormal operating procedures (AOPs), for licensee commitments. The specific documents reviewed are listed in the Attachment. In addition, the inspectors reviewed licensee drawings to identify areas and equipment that may be affected by internal flooding caused by the failure or misalignment of nearby sources of water, such as the fire suppression or the circulating water systems. The inspectors also reviewed the licensee's corrective action documents with respect to past flood-related items identified in the CAP to verify the adequacy of the corrective actions. The inspectors performed a walkdown of the following plant areas to assess the adequacy of watertight doors and verify drains and sumps were clear of debris and were operable, and that the licensee complied with its commitments:

- Diesel Fuel Oil Storage Tank (DFOST) Building
- "A" and "B" Emergency Diesel Generator (EDG) Building

#### b. Findings

No findings were identified.

### .2 Annual Review of Cables Located in Underground Bunkers/Manholes

#### a. Inspection Scope

The inspectors conducted an inspection of underground bunkers/manholes subject to flooding that contain cables whose failure could disable risk-significant equipment. The inspectors performed walkdowns of risk-significant areas, including Bunkers M73A-SA and M73B-SA, to verify that the cables were not submerged in water, that cables and/or splices appear intact and to observe the condition of cable support structures. When applicable, the inspectors verified proper dewatering device (sump pump) operation and verified level alarm circuits are set appropriately to ensure that the cables will not be submerged. Where dewatering devices were not installed; the inspectors ensured that drainage was provided and was functioning properly.

#### b. Findings

No findings were identified.

## 1R11 Licensed Operator Requalification Program

### .1 Quarterly Review

#### a. Inspection Scope

On July 8, 2014, the inspectors observed a crew of licensed operators in the plant's simulator during licensed operator requalification examinations to verify that operator performance was adequate, evaluators were identifying and documenting crew performance problems and training was being conducted in accordance with licensee procedures. The simulator scenario was designed to evaluate the operators' ability to respond to a loss of cooling accident. The inspectors evaluated the following areas:

- Licensed operator performance
- Crew's clarity and formality of communications
- Ability to take timely and conservative actions
- Prioritization, interpretation, and verification of annunciator alarms
- Correct use and implementation of abnormal and emergency procedures
- Control board manipulations
- Oversight and direction from supervisors
- Ability to identify and implement appropriate TS actions and Emergency Plan actions and notifications

The crew's performance in these areas was compared to pre-established operator action expectations and successful critical task completion requirements.

The inspectors reviewed the following AR associated with this area to verify that the licensee identified and implemented appropriate corrective actions:

- AR #697579, An Individual was Graded as Unsatisfactory on the Continuing Training Simulator Evaluation

#### b. Findings

No findings were identified.

### .2 Licensed Operator Performance in the Actual Plant/Main Control Room

#### a. Inspection Scope

On September 11, 2014, the inspectors observed operators in the plant's main control room during entry into Abnormal Operating Procedure (AOP-001), Malfunction of Rod Control and Indication System. This was necessary when a Rod Control Urgent alarm was received during testing due to a failed rod control circuit card. The inspectors evaluated the following areas:

- Operator compliance and use of plant procedures, including procedure entry and exit, performing procedure steps in the proper sequence, procedure place-keeping, and TS entry and exit;
- Control board/in-plant component manipulations;
- Communications between crew members;
- Use and interpretation of plant instruments, indications, and alarms; diagnosis of plant conditions based on instruments, indications, and alarms;
- Use of human error prevention techniques, such as pre-job briefs and peer checking;
- Documentation of activities, including initials and sign-offs in procedures, control room logs, TS entry and exit, entry into out-of-service logs; and
- Management and supervision of activities, including risk management and reactivity management.

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

- AR #707815, Rod Control Urgent Alarm
- AR #707920, Troubleshooting During Short Duration Rod Control Action Statement

b. Findings

No findings were identified.

.3 Annual Review of Licensee Regualification Examination Results

a. Inspection Scope

On March 4, 2014, the licensee completed the comprehensive biennial requalification written examinations and the annual requalification operating examinations required to be administered to all licensed operators in accordance with Title 10 of the *Code of Federal Regulations* 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 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

### a. Inspection Scope

The inspectors assessed performance issues with respect to the reliability, availability, and condition monitoring of the system. In addition, the inspectors verified maintenance effectiveness issues were entered into the CAP with the appropriate significance characterization. Documents reviewed are listed in the Attachment. The inspectors evaluated degraded performance issues involving the following risk-significant components:

- AR #707112, Condensate Storage Tank Level Instrument – Maintenance Rule Functional Failure
- AR #695483, “A” Air Compressor not Developing Discharge Press
- AR #696409, “A” Normal Service Water Pump High Vibration and System Pressure Changes

The inspectors focused on the following attributes:

- Implementing appropriate work practices;
- Identifying and addressing common cause failures;
- Scoping of systems in accordance with 10 CFR 50.65(b) of the maintenance rule;
- Characterizing system reliability issues for performance;
- Counting unavailability time during performance of maintenance;
- Trending key parameters for condition monitoring;
- Ensuring 10 CFR 50.65(a)(1) or (a)(2) classification or re-classification; and
- Verifying appropriate performance criteria for structures, systems, and components (SSCs)/functions classified as (a)(2) are appropriate and adequate goals and corrective actions for systems classified as (a)(1).

The inspectors reviewed the following AR associated with this area to verify that the licensee identified and implemented appropriate corrective actions:

- AR #707288, Maintenance Rule Functional Failure not Identified at Time of Failure

### b. Findings

No findings were identified.

## 1R13 Maintenance Risk Assessments and Emergent Work Control

### a. Inspection Scope

The inspectors reviewed the licensee's evaluation and management of plant risk for the maintenance and emergent work activities affecting risk-significant equipment listed below to verify that the appropriate risk assessments were performed prior to removing equipment for work:

- Elevated green risk condition while the "B" EDG was inoperable for a planned maintenance outage on July 9, 2014;
- Yellow risk condition while performing Emergent Maintenance (troubleshooting) "C" Pressurizer Heaters on July 17, 2014;
- Yellow risk condition while charging flow control valve was placed in manual to evaluate abnormal letdown temperature on July 22, 2014;
- Yellow risk while the "B" feed regulating valve was in manual to support "B" steam generator narrow range level testing on July 28, 2014;
- Elevated green risk condition due to a rod control system control card failure and associated Rod Control Urgent Alarm on September, 11, 2014; and
- Yellow risk condition during the Demineralized Water System planned maintenance outage on September 18, 2014.

These activities were selected based on their potential risk significance relative to the reactor safety cornerstones. As applicable for each activity, the inspectors verified that risk assessments were performed as required by 10 CFR 50.65(a)(4) and were accurate and complete. When emergent work was performed, the inspectors verified that the plant risk was promptly reassessed and managed. The inspectors reviewed the scope of maintenance work, discussed the results of the assessment with the licensee's probabilistic risk analyst or shift technical advisor, and verified plant conditions were consistent with the risk assessment. The inspectors also reviewed TS requirements and walked down portions of redundant safety systems, when applicable, to verify risk analysis assumptions were valid and applicable requirements were met.

### b. Findings

No findings were identified.

## 1R15 Operability Evaluations

### a. Inspection Scope

The inspectors selected the following seven potential operability issues based on the risk significance of the associated components and systems. The inspectors evaluated the technical adequacy of the evaluations to ensure that TS operability was properly justified and the subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors compared the operability and design criteria in the appropriate sections of the TS and UFSAR to the licensee's evaluations, to

determine whether the components or systems were operable. Where compensatory measures were required to maintain operability, the inspectors determined whether the measures in place would function as intended and were properly controlled. The inspectors determined, where appropriate, compliance with bounding limitations associated with the evaluations. Additionally, the inspectors also reviewed a sampling of corrective action documents to verify that the licensee was identifying and correcting any deficiencies associated with operability evaluations.

- AR #675851, Pressurizer Spray Valves Gasket Temperature Limit Reduction
- AR #695113, "A" EDG High Lube Oil Temperature Alarm, Alarming Early
- AR #700463, Crack on Top of Cell 26 on 1A-2A Battery Bank
- AR #700524, Incipient Fire Detection Nonfunctional due to Locked in Fault
- AR #703549, Oil Leak from Outlet of 1B-SB Essential Service Chill Water Compressor Oil Filter
- AR #704882, EDG Shutdown Logic Board Test Procedure Anomaly
- AR #707300, Isolation of DFOST Building Sump Pumps and AR #696331, EDG Building Sump Pumps

The inspectors reviewed the following AR associated with this area to verify that the licensee identified and implemented appropriate corrective actions:

- AR #668829, Fisher SS-84 Style Pressurizer Spray Valve Leaks

b. Findings

(Opened) Unresolved item (URI): Potential Impact of Sump Pumps out of Service

Introduction: The inspectors identified an URI associated with an equipment clearance that inadvertently resulted in all sump pumps in the EDG and DFOST buildings being nonfunctional. This item is unresolved pending review and evaluation of the licensee's evaluation to determine the impact of a potential internal flood and if a performance deficiency exists.

Description: On June 26, 2014, the licensee placed equipment under clearance to support installation associated with an Engineering Change (EC). This clearance removed all sump pumps in the EDG and DFOST buildings from service. Inspectors identified this issue and informed the licensee, who restored the sump pumps to service.

Additional inspection activities are needed to determine the impact of a potential internal flood and if a performance deficiency exists. Pending the results of this additional inspection, an URI will be opened and designated as URI 05000400/2014004-01, Potential Impact of Sump Pumps out of Service.



1R18 Plant Modificationsa. Inspection Scope

The following engineering design package was reviewed and selected aspects were discussed with engineering personnel:

- EC #96282, Evaluate Replacement Shutdown Logic Board for EDGs

This document and related documentation were reviewed for adequacy of the associated 10 CFR 50.59 safety evaluation screening, consideration of design parameters, implementation of the modification, post-modification testing, and relevant procedures, design, and licensing documents were properly updated. The inspectors observed ongoing and completed work activities to verify that installation was consistent with the design control documents. This permanent modification evaluated the acceptability of a new design of the shutdown logic board for use in the EDG pneumatic control circuit.

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

- AR #701999, Timer does not meet Acceptance Criteria
- AR #704190, ADM-NGGC-0106, Configuration Management Procedure Questions

b. Findings

No findings were identified.

1R19 Post Maintenance Testinga. Inspection Scope

The inspectors reviewed the following six post-maintenance test (PMT) activities to verify that procedures and test activities were adequate to ensure system operability and functional capability:

<u>Procedure</u>	<u>Title</u>	<u>Related Maintenance Activity</u>	<u>Date</u>
OST-1093	"B" Chemical and Volume Control / Safety Injection System Operability Quarterly Interval Modes 1-4	Work Order (WO) #1475536, PM-M0014, Limatorque Inspection And Lubrication for 1CS-752 ("B" Charging/SI Pump Alternate Miniflow)	July 16, 2014
OST-1073	"B" Emergency Diesel Generator Operability Test Monthly Interval Modes 1-6	Work Request #11638006, New Pneumatic Shutdown Logic Board had Excessive Leaking	August 7, 2014

OPT-1512	Essential Chilled Water Turbopak Units Quarterly Inspection/Checks Modes 1-6	Work Request #11639187 – “B” Chiller Compressor Duplex Filter Oil Leak	August 19, 2014
OST-1316	Component Cooling Water (CCW) System Operability (“C” Pump in Service) Quarterly Interval Modes 1-4	WO #13422963, “C” CCW Pump has Oil Leak on Outboard Bearing	August 20, 2014
OST-1005	Control Rod and Position Indicator Exercise Quarterly Interval Modes 1 – 3	WO #13433577, Rod Control Urgent Alarm	September 11, 2014
OPT-1081	Emergency Diesel Generator 1B-SB Starting Air Compressor and Air Dryer Performance Test	WO #1348922, “B” EDG D Starting Air Compressor	September 24, 2014

These activities were selected based upon the structure, system, or component's ability to impact risk. The inspectors evaluated these activities for the following: the effect of testing on the plant had been adequately addressed; testing was adequate for the maintenance performed; acceptance criteria were clear and demonstrated operational readiness; test instrumentation was appropriate; tests were performed as written in accordance with properly reviewed and approved procedures; equipment was returned to its operational status following testing, and test documentation was properly evaluated. The inspectors evaluated the activities against TS and the UFSAR to ensure that the test results adequately ensured that the equipment met the licensing basis and design requirements. In addition, the inspectors reviewed corrective action documents associated with post-maintenance tests to determine whether the licensee was identifying problems and entering them in the CAP and that the problems were being corrected commensurate with their importance to safety.

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

- AR # 701999, Timer Element does not meet Acceptance Criteria
- AR # 701938, New Pneumatic Shutdown Logic Board Had Excessive Leaking

b. Findings

No findings were identified.

## 1R22 Surveillance Testing

### .1 Routine Surveillance Testing

#### a. Inspection Scope

For the three surveillance tests below, the inspectors observed the surveillance tests and/or reviewed the test results for the following activities to verify the tests met TS surveillance requirements, UFSAR commitments, in-service testing requirements, and licensee procedural requirements. The inspectors assessed the effectiveness of the tests in demonstrating that the SSCs were operationally capable of performing their intended safety functions.

- MST-I0164, Nuclear Instrumentation System Power Range N42 Operational Test on August 4, 2014
- MST-I0151, "C" Steam Generator Narrow Range Level Loop (L-0496) Operational Test on September 2, 2014
- OPT-1096, Main Feed Isolation Valve (MFIV) Nitrogen Accumulator Check and Relief Valve Test Annual Interval Mode 1-6 on September 7, 2014

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

- AR #654579, 3 Way Solenoid Valve has Nitrogen Leak
- AR #508949, 1FW-277, "B" MFIV, Nitrogen Leak at 3 Way Valve
- AR #675839, OPT-1096 Failure

#### b. Findings

No findings were identified.

### .2 In-service Testing (IST) Surveillance

#### a. Inspection Scope

The inspectors reviewed the performance of OST-1316, Component Cooling Water (CCW) System Operability ("C" Pump in Service) Quarterly Interval Modes 1-4 on July 30, 2014, to evaluate the effectiveness of the licensee's American Society of Mechanical Engineers (ASME) Section XI testing program for determining equipment availability and reliability. This surveillance satisfies the IST requirements for the following components throughout the CCW system:

- "B" and "C" CCW Pumps
- 1CC-50, "B" CCW Pump Discharge Check Valve
- 1CC-64, "C" CCW Pump Discharge Check Valve
- 1CC-179, CCW Supply Header Check Valve

- 1CC-211, CCW to RCP Seals & Motor Coolers Check Valve CIV
- 1CC-118, CCW Return From Sample Panel Check Valve Inner
- 1CC-119, CCW Return From Sample Panel Check Valve Outer

The inspectors evaluated selected portions of the following areas:

- Testing procedures and methods
- Acceptance criteria
- Compliance with the licensee's IST program, TS, selected licensee commitments, and code requirements
- Range and accuracy of test instruments
- Required corrective actions

The inspectors reviewed the following AR associated with this area to verify that the licensee identified and implemented appropriate corrective actions:

- AR #700543, CCW to "A" Residual Heat Removal (RHR) Heat Exchanger had to be Adjusted

b. Findings

No findings were identified.

2. RADIATION SAFETY

2RS1 Radiological Hazard Assessment and Exposure Controls

a. Inspection Scope

Hazard Assessment and Instructions to Workers: During facility tours, the inspectors directly observed labeling of radioactive material and postings for radiation areas, high radiation areas (HRA)s, Very High Radiation Areas (VHRA)s and airborne radioactivity areas established within the radiologically controlled area (RCA) of the Reactor Auxiliary Building (RAB), and radioactive waste (radwaste) processing and storage locations. The inspectors independently measured radiation dose rates or directly observed conduct of licensee radiation surveys for selected RCA areas. The inspectors reviewed survey records for several plant areas including surveys for alpha emitters, discrete radioactive particles, airborne radioactivity, gamma surveys with a range of dose rate gradients, and pre-job surveys for upcoming tasks. The inspectors also discussed changes to plant operations that could contribute to changing radiological conditions since the last inspection. The inspectors attended pre-job briefings and reviewed radiation work permit (RWP) details to assess communication of radiological control requirements and current radiological conditions to workers.

Hazard Control and Work Practices: The inspectors evaluated access barrier effectiveness for selected Locked High Radiation Area (LHRA) locations and discussed changes to procedural guidance for LHRA and VHRA controls with health physics (HP) supervisors. The inspectors reviewed implementation of controls for the storage of irradiated material within the spent fuel pool. Established radiological controls (including airborne controls) were evaluated by reviewing radiological records from the previous refueling outage including maintenance activities on charging system (CS) valves in containment and work under the reactor vessel head. In addition, the inspectors observed resin transfers, observed shipping cask loading, and reviewed licensee procedural controls for areas where dose rates could change significantly as a result of plant shutdown and refueling operations.

Through direct observations, review of records from the most recent refueling outage, and interviews with licensee staff, inspectors evaluated occupational workers' adherence to selected RWPs and HP technician proficiency in providing job coverage. Electronic dosimeter (ED) alarm set points and worker stay times were evaluated against area radiation survey results from selected refueling outage jobs as well as the resin sluice performed the week of the inspection. Inspectors reviewed the use of personnel dosimetry (ED alarms, extremity dosimetry, multibadging in high dose rate gradients, etc.). The inspectors also evaluated worker responses to dose and dose rate alarms during selected work activities.

Control of Radioactive Material: The inspectors observed surveys of material and personnel being released from the RCA using small article monitor, personnel contamination monitor, and portal monitor instruments. The inspectors discussed equipment sensitivity, alarm setpoints, and release program guidance with licensee staff. The inspectors compared recent 10 CFR Part 61 results for the Dry Active Waste radioactive waste stream with radionuclides used in calibration sources to evaluate the appropriateness and accuracy of release survey instrumentation. The inspectors also reviewed records of leak tests on selected sealed sources and discussed nationally tracked source transactions with licensee staff.

Problem Identification and Resolution: The inspectors reviewed and assessed Nuclear Condition Reports (NCR)s associated with radiological hazard assessment and control. The inspectors evaluated the licensee's ability to identify and resolve the issues. The inspectors also reviewed recent self-assessment results.

Radiation protection activities were evaluated against the requirements of Final Safety Analysis Report (FSAR) Sections 11 and 12; Technical Specifications (TS) Sections 6.8, 6.11 and 6.12; 10 CFR Parts 19 and 20; and approved licensee procedures. Licensee programs for monitoring materials and personnel released from the RCA were evaluated against 10 CFR Part 20 and IE Circular 81-07, "Control of Radioactively Contaminated Material". Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

## 2RS6 Radioactive Gaseous and Liquid Effluent Treatment

### a. Inspection Scope

Radioactive Effluent Treatment Systems: The inspectors walked down selected components of the gaseous and liquid radwaste processing and effluent discharge systems. To the extent practical, the inspectors observed and evaluated the material condition of in-place waste processing equipment for indications of degradation or leakage that could constitute a possible release pathway to the environment. Inspected components included liquid holding tanks, air cleaning systems for normal and emergency conditions, effluent monitoring equipment, and associated piping and valves. The inspectors interviewed licensee staff regarding radwaste equipment configuration and effluent monitor operation. The inspectors also reviewed surveillance testing records for selected RAB air cleaning systems.

Effluent Sampling and Release: The inspectors observed the collection and processing of liquid effluent samples from the Treated Laundry and Hot Shower Tank. The inspectors reviewed recent liquid and gaseous release permits including pre-release sampling results, effluent monitor alarm setpoints, and public dose calculations. The inspectors reviewed the 2013 Annual Radioactive Effluent Report to evaluate reported doses to the public, to review any anomalous events, to evaluate groundwater sampling results, and to review Offsite Dose Calculation Manual (ODCM) changes. The inspectors also reviewed compensatory sampling data for time periods when selected radiation monitors were out of service. The inspectors reviewed results of the 2013 and 2014 radiochemistry cross-check program. The inspectors also reviewed effluent source term evaluation and changes to effluent release points. In addition, the inspectors evaluated recent land use census results and meteorological data used to calculate doses to the public.

Ground Water Protection: The inspectors reviewed the licensee's continued implementation of the industry's Ground Water Protection Initiative (Nuclear Energy Institute (NEI) 07-07) and reviewed recent monitoring well results. The inspectors discussed program guidance for dealing with spills, leaks, and unexpected discharges with licensee staff and reviewed recent entries into the 10 CFR 50.75(g) decommissioning file. The inspectors reviewed and discussed the licensee's program for monitoring of structures, systems, and components with the potential to release radioactive material to the environment. Potential effluent release points due to onsite surface water bodies were also evaluated.

Problem Identification and Resolution: The inspectors reviewed CAP documents in the area of gaseous and liquid effluent processing and release. The inspectors evaluated the licensee's ability to identify and resolve the identified issues. The inspectors also reviewed recent self-assessment results.

Radwaste system operation, effluent processing activities, and groundwater protection efforts were evaluated against requirements and guidance documented in the following: 10 CFR Part 20; 10 CFR Part 50 Appendix I; ODCM; FSAR Section 11; Regulatory Guide (RG) 1.21, "Measuring, Evaluating, and Reporting Radioactivity in Solid Wastes and Releases of Radioactive Materials in Liquid and Gaseous Effluents from Light-Water-Cooled Nuclear Power Plants"; RG 1.109, "Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10 CFR Part 50 Appendix I"; NUREG-0133, "Preparation of Radiological Effluent Technical Specifications for Nuclear Power Plants: A Guidance Manual for Users of Standard Technical Specifications"; NEI 07-07, "Industry Groundwater Protection Initiative – Final Guidance Document"; and TS Section 6. Procedures and records reviewed during the inspection are listed in the Attachment.

b. Findings

No findings were identified.

2RS7 Radiological Environmental Monitoring Program (REMP)

a. Inspection Scope

REMP Implementation: The inspectors observed routine sample collection and surveillance activities as required by the licensee's environmental monitoring program. The inspectors noted the material condition and operability of airborne particulate filter and iodine cartridge sample stations and observed collection of weekly air samples at selected monitoring locations. The inspectors checked environmental thermoluminescent dosimeters for material condition at selected sites. The inspectors also observed collection of surface water samples in Harris Lake and the Cape Fear River. In addition, the inspectors reviewed and evaluated land use census results, changes to the ODCM, monitoring for hard-to-detect radionuclides, and sample collection/processing activities.

The inspectors reviewed calibration records for selected environmental air samplers. The inspectors also reviewed the 2013 Radiological Environmental Operating Report, the 2013 Annual Radioactive Effluent Report, and the most recent interlaboratory cross-check program results for EnRad Laboratories, and procedural guidance for environmental sample collection and processing. Selected environmental measurements were reviewed for consistency with licensee effluent data, evaluated for radionuclide concentration trends, and compared with detection level sensitivity requirements. The inspectors reviewed the licensee's groundwater monitoring program as part of Inspection Procedure 71124.06.

Meteorological Monitoring Program: The inspectors observed the physical condition of the tower and its instrumentation and discussed equipment operability and maintenance history with licensee staff. The inspectors evaluated transmission of locally generated meteorological data to other licensee groups such as main control room operators. For

the meteorological measurements of wind speed, wind direction, and temperature, the inspectors reviewed the last two calibration records for applicable tower instrumentation. The inspectors also evaluated measurement data recovery for 2013.

Problem Identification and Resolution: The inspectors reviewed CAP documents in the areas of radiological environmental monitoring and meteorological tower maintenance. The inspectors evaluated the licensee's ability to identify and resolve the issues in accordance with licensee procedures. The inspectors also reviewed recent self-assessment results.

REMP implementation and meteorological monitoring activities were reviewed against the guidance and requirements of 10 CFR Part 20; Appendices E and I to 10 CFR Part 50; TS Section 6.8; FSAR Chapter 2; ODCM; RG 4.15, "Quality Assurance for Radiological Monitoring Programs (Normal Operation) - Effluent Streams and the Environment"; Safety Guide 23, "Onsite Meteorological Programs"; Branch Technical Position, "An Acceptable Radiological Environmental Monitoring Program" – 1979; and approved licensee procedures. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

1EP6 Emergency Planning Drill Evaluation

a. Inspection Scope

The inspectors observed the following emergency preparedness drills to verify licensee self-assessment of classification, notification, and protective action recommendation development in accordance with 10 CFR 50, Appendix E.

- September 30, 2014: This scenario evaluated the licensee's ability to respond to a complicated loss of coolant accident.
- August 12, 2014: This scenario evaluated the licensee's emergency response organization's ability to respond to a significant security threat.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator (PI) Verification

a. Inspection Scope

To verify the accuracy of the PI data reported to the NRC, the inspectors compared the licensee's basis in reporting each data element to the PI definitions and guidance



contained in Nuclear Energy Institute (NEI) Document 99-02, Regulatory Assessment Performance Indicator Guideline.

.1 Mitigating Systems Cornerstone

- Mitigating Systems Performance Index (MSPI), Emergency AC Power
- MSPI, Heat Removal System
- MSPI, High Pressure Injection Systems

The inspectors sampled licensee submittals for the MSPI performance indicators listed above for the period from the third quarter, 2013 through the second quarter, 2014. The inspectors reviewed the licensee's operator narrative logs, issue reports, MSPI derivation reports, event reports and NRC Integrated Inspection reports for the period to validate the accuracy of the submittals. The inspectors reviewed the MSPI component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable NEI guidance. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the PI data collected or transmitted for this indicator and none were identified. Specific documents reviewed are described in the Attachment to this report.

.2 Occupational Radiation Safety Cornerstone

The inspectors reviewed the Occupational Exposure Control Effectiveness PI results for the Occupational Radiation Safety Cornerstone from December 2013 through June 2014. For the assessment period, the inspectors reviewed ED alarm logs and CAP documents related to controls for exposure significant areas. Documents reviewed are listed in the report Attachment.

.3 Public Radiation Safety Cornerstone

The inspectors reviewed the Radiological Control Effluent Release Occurrences PI results for the Public Radiation Safety Cornerstone from April, 2013 through June, 2014. For the assessment period, the inspectors reviewed cumulative and projected doses to the public contained in liquid and gaseous release permits and corrective actions related to Radiological Effluent Technical Specifications/ODCM issues. The inspectors also reviewed licensee procedural guidance for collecting and documenting PI data. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

## 40A2 Identification and Resolution of Problems

### .1 Routine Review of items Entered Into the Corrective Action Program

#### a. Inspection Scope

To aid in the identification of repetitive equipment failures or specific human performance issues for follow-up, the inspectors performed frequent screenings of items entered into the licensee's CAP. The review was accomplished by reviewing daily AR reports.

#### b. Findings

No findings were identified.

### .2 Selected Issue Follow-up Inspection: Loss of Emergency Planning Sirens

#### a. Inspection Scope

The inspectors selected AR #679984, Siren System Communication Problems for detailed review. The inspectors reviewed this report to verify that the licensee identified the full extent of the issue, performed an appropriate evaluation, and specified and prioritized appropriate corrective actions. The inspectors evaluated the report against the requirements of the licensee's CAP as delineated in corporate procedure CAP-NGGC-0200, Condition Identification and Screening Process, and 10 CFR 50, Appendix B.

#### b. Findings

Introduction: The NRC identified a Green NCV associated with emergency preparedness planning standard 10 CFR 50.47(b)(5), which requires in part, that the means to provide alert and notification and clear instruction to the populace within the plume exposure pathway EPZ have been established. Specifically, on April 3, 2014, the licensee unintentionally initiated a complete loss of sirens while responding to a siren system alarm.

Description: The licensee's primary means to provide alert and notification to the populace within the plume exposure pathway EPZ is comprised of the siren system and tone alert radio system, collectively referred to as the Alert and Notification System. The siren system extends to the ten-mile EPZ, while the tone alert radios are distributed to the public located within five miles of the plant.

At 1103 on April 2, 2014, an Emergency Preparedness technician (EPT) identified a Siren Communications Status Alarm. WCP-NGGC-0300, Work Request Initiation, Screening, Prioritization and Classification, was the procedure in effect to ensure equipment important to Emergency Preparedness and Response is correctly prioritized and classified. Step 9.1.4 of this procedure directs the licensee to initiate a work request for the issue. Step 9.2.1 directs a Senior Reactor Operator to review the work request to

evaluate the issue for potential impacts on operability or functionality and determine if compensatory measures are appropriate. Additionally, EPM-400, Public Notification and Alerting System, Attachment 1 directed the EPT to initiate a work request with the corporate telecommunications group for assistance. The telecommunications work request does not require reviews similar to the process outlined in WCP-NGGC-0300. For the Siren Communications Status Alarm, the EPT should have initiated work requests in accordance with both WCP-NGGC-0300 and EPM-400. However, on April 2, 2014, the EPT did not comply with either of these procedures. Instead, the EPT performed a successful test of the sirens to demonstrate that the sirens were capable of activation at that time. There is no indication that the alarm cleared on April 2, 2014.

At approximately 0815 on April 3, 2014, a different EPT identified the same Siren Communications Status Alarm. This EPT also successfully performed a test to demonstrate that the sirens were still functional. At 0825, the EPT attempted to switch the siren system to an alternate repeater to clear the alarm. During the evaluation of this issue later, it was determined that a circuit card had failed. The card failure combined with the attempt to switch to the alternate repeater caused the complete loss of siren activation capability because the system deselected the primary repeater but could not select the alternate repeater. After the loss of siren functionality, the EPT initiated the telecommunications work request in accordance with EPM-400 and informed the main control room. Approximately two hours later, the sirens were restored to functional and satisfactorily tested. If either of the EPTs had complied with WCP-NGGC-0300, additional involvement from the main control room and management could have minimized the duration of the loss of sirens.

Analysis: The licensee's failure to comply with WCP-NGGC-0300, Work Request Initiation, Screening, Prioritization and Classification, was a performance deficiency. Specifically, this failure combined with the circuit card failure caused a complete loss of siren functionality for approximately two hours. This finding was more than minor because if left uncorrected, loss of Alert Notification System function has the potential to lead to a more significant safety concern and is associated with the emergency preparedness cornerstone attribute of Facilities and Equipment (Availability of ANS). This ANS unavailability affected the cornerstone objective of ensuring that the licensee is capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. Using Manual Chapter 0609 Appendix B, Emergency Preparedness Significance Determination Process (Section 5.5) – Failure to Comply with 10 CFR 50.47(b)(5), the inspectors determined this finding to be of very low safety significance (Green) because the loss of siren function was of short duration and did not reach the "Degraded RSPS" threshold. The finding had a cross-cutting aspect of Procedure Adherence, as described in the Human Performance cross-cutting area because the EPTs failed to comply with the procedural guidance of WCP-NGGC-0300 (H.8).

Enforcement: 10 CFR 50.54(q) states, in part, that a licensee authorized to possess and operate a nuclear power reactor shall follow emergency plans which meet the standards in §50.47(b). 10 CFR 50.47(b) requires that the onsite emergency response plans for nuclear power reactors must meet each of 16 planning standards. Risk-significant

planning standard (5) states, in part, that the means to provide alert and notification and clear instruction to the populace within the plume exposure pathway EPZ have been established. The licensee's emergency plan described the means to provide alert and notification to the populace within the plume exposure pathway EPZ to include the sirens and tone alert radios. Contrary to the above, the licensee failed to maintain the means to provide alert and notification to all of the population within the plume exposure pathway EPZ. Specifically, on April 3, 2014, the licensee's failure to follow WCP-NGGC-0300 resulted in a period when sirens were nonfunctional longer than necessary. As corrective action, the licensee replaced a failed circuit card and restored functionality of the siren system. This violation is being treated as an NCV, consistent with Section 2.3.2.a of the Enforcement Policy. This violation was entered into the licensee's CAP as AR #679984 and is designated as NCV 05000400/2014-004-02, Loss of Emergency Planning Sirens.

#### 4OA6 Management Meetings

##### Exit Meeting Summary

On August 22, 2014, the inspectors discussed the results of the radiation safety inspection with licensee staff. The inspectors noted that no proprietary information had been reviewed. The inspectors re-exited via phone conference on September 22, 2014.

On October 23, 2014 the inspector presented the inspection results to Mr. Waldrep, and other members of the licensee staff. The inspectors confirmed that proprietary information was not provided or examined during the inspection period.

#### 4OA7 Licensee-Identified Violation

The following violation of very low significance (Green) was identified by the licensee and is a violation of NRC requirements which meets the criteria of the NRC Enforcement Policy for being dispositioned as a non-cited violation.

Technical Specification 6.8.1 requires the procedures recommended in RG 1.33 to be established, implemented, and maintained. Regulatory Guide 1.33 requires implementation of an RWP system. Specifically, RWP #1014, Task 4, "Valve Maintenance RCB (No HRA Access)", required HP to be notified prior to the start of work and for HP to be present and perform surveys when breaching a contaminated system. Contrary to these RWP requirements, on November 22, 2013, two workers entered the containment building and cut out two primary CS valves (CS-761 and 762) without having HP present to perform surveys when breaching a contaminated system. After they exited containment, HP discovered the valves on the ground with removable beta-gamma contamination levels up to 200,000 dpm/100 cm<sup>2</sup>. This finding was of very low safety significance (Green) because there was no substantial potential for overexposure. This was due to the fact that the external dose rates were low and the contamination levels were not high enough to constitute a substantial potential for

overexposure. The inspectors noted that no personnel were contaminated as a result of this event. The licensee entered the event into their corrective action program as AR #648061.

ATTACHMENT: SUPPLEMENTAL INFORMATION

## **SUPPLEMENTAL INFORMATION**

### **KEY POINTS OF CONTACT**

#### **Licensee personnel**

D. Corlett, Supervisor, Licensing/Regulatory Programs  
J. Dufner, Plant Manager  
D. Griffith, Manager, Training  
L. Hughes, Superintendent, Environmental and Chemistry  
S. O'Connor, General Manager, Engineering  
M. Parker, Superintendent, Radiation Control  
T. Slake, Director, Security  
J. Warner, Manager, Work Management  
B. Waldrep, Vice President  
F. Womack, Manager, Oversight

#### **NRC personnel**

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

## LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

### Opened

05000400/2014004-01	URI	Potential Impact of Sump Pumps out of Service (Section 1R15)
---------------------	-----	---

### Opened and Closed

05000400/2014004-02	NCV	Loss of Emergency Planning Sirens (Section 4OA2.2)
---------------------	-----	--

## LIST OF DOCUMENTS REVIEWED

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

#### Work Orders

WO #2260793, Install Steel Flood Barrier

WO #2241857, Seal WPB Roof Hatch

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

#### Partial System Walkdown

Startup Transformer and Switchyard system:

Procedure OP-156.02 AC Electrical Distribution System,

FSAR 8.2 Offsite Power System

Drawing PD-5165-BC0001, Electrical Distribution System

Fuel Pool Cooling system:

Procedure OP-116 Fuel Pool Cooling System,

Drawing 2165-S-0805, Simplified Flow Diagram Fuel Pool Cooling System

FSAR 9.1.3 Fuel Pool Cooling

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

FPP-001 Fire Protection Program Manual

FPP-013, Fire Protection – Minimum Requirements, Mitigating Actions and Surveillance Requirements

FPP-012-02-RAB261, Reactor Auxiliary Building Elevation 261 Fire Pre-Plan

FPP-012-04-DBG, Diesel Generator Building Fire Pre-Plan

FPP-012-01-CNMT, Containment Building Fire Pre-Plan

FPP-012-03-FHB, Fuel Handling Building Fire Pre-Plan

FPP-012-07-TB, Turbine Building Fire Pre-Plan

FPP-012-06-WPB, Waste Processing Building Fire Pre-Plan

FPP-012-08-SEC, Out Building Fire Pre-Plan

FPP-012-09-LAF, Large Area Fire Pre-Plan

FPP-012-02-RAB 236, Reactor Auxiliary Building Elevation 236 Fire Pre-Plan

FPP-012-02-190-216, Reactor Auxiliary Building Elevations 190 and 216 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**

#### UFSAR Sections

2.4.10, Flooding Protection Requirements

3.6A.6, Flooding Analysis

#### Calculations

Calculation #PRA-F/E-9, Unit 1 EDG Compartment Flood Analysis

Calculation #PRA-F/E-10, Unit 1 DFOST Compartment Flood Analysis

#### Procedures

AOP-022, Loss of Service Water

OP-139, Service Water System

OP-149, Fire Protection System



**Section 1R12: Maintenance Effectiveness**

NUMARC 93-01, Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants  
ADM-NGGC-0101, Maintenance Rule Program

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

OMM-001, Conduct of Operations  
WCP-NGGC-1000, Conduct of On-Line Work Management  
WCM-001, On-line Maintenance  
ADM-NGGC-0006, Online Equipment Out of Service (EOOS) Models for Risk Assessment

**Section 1R15: Operability Evaluations**

OPS-NGGC-1305, Operability Determinations

**Section 1R18: Plant Modifications**

ADM-NGGC-0106, Configuration Management Program Implementation  
EGR-NGGC-0153, Engineering Instrument Setpoints  
EGR-NGGC-0009, Engineering Change Product Selection and Initiation  
EGR-NGGC-0028, Engineering Evaluation

**Section 1R22: Surveillance Testing**

OP-145, Component Cooling Water  
FSAR Section 9.3.1, Compressed Air Systems  
WO #2029212, 1FW-277 3-Way Valve has Small Nitrogen Leak through Vent

**Section 2RS1: Radiological Hazard Assessment and Exposure Controls****Procedures, Guidance Documents, and Manuals**

HPP-625, Performance of Radiological Surveys, Rev 43  
OP-120.04, Spent Resin Storage and Transfer System, Rev 27  
AD-RP-ALL-2001, Taking, Counting, And Recording Surveys, Rev 0  
AD-RP-ALL-2002, ED Alarms, Rev. 0  
AD-RP-ALL-2005, Posting of Radiological Hazards, Rev 0  
AD-RP-ALL-2009, Personnel Contamination Monitoring and Reporting, Rev 0  
AD-RP-ALL-2014, Work in Alpha Environments, Rev 0  
AD-RP-ALL-2015, Alpha Radiation Characterization, Rev 0  
AD-RP-ALL-3001, Control of Radioactive Material and Use of Radioactive Material Labels, Rev 0  
AD-RP-ALL-3002, Unconditional Release of Material, Rev 0  
AP-504, Administrative Controls for Locked and Very High Radiation Areas, Rev. 33  
HPP-063, Resin Sample/Sluice/Transfer and Filter Backwash Activities, Rev 30  
HPP-730, Operation of Portable Ventilation Units and Testing Portable Ventilation Units and Vacuums, Rev. 22  
HPP-801, Unconditional Release of Materials from Radiation Control Areas, Rev. 1  
TE-RP-ALL-2000, Preparation of Radiation Work Permit, Rev. 0  
TE-RP-ALL-4003, Placement of Personnel Dosimetry for Non-Uniform Radiation Fields, Rev. 0

**Records and Data**

National Source Tracking System, Annual Inventory Reconciliation Report, 1/14/2014  
 Semi-Annual Source Inventory Verification, 04/29/2014  
 Location of Trash Baskets in Fuel Handling Building Spent Fuel Pools, 08/04/2014  
 Radiation Protection Technical Report 08-001, Alarm Setpoints for AMS-4 Continuous Monitors, Rev 0  
 Radiation Protection Technical Report 08-001, Alarm Setpoints for AMS-4 Continuous Monitors, Rev 0  
 RWP 23, Task #3, Operations Activities in LHRA's, Rev 03  
 RWP 40, Task #3, Work Activities in the Seal Table (High Risk), Rev 03  
 RWP 1014, Task #8, Valve Maintenance RCB (Medium Risk), Rev 04  
 RWP 1014, Task #4, Valve Maintenance RCB (Medium Risk), Rev 04  
 RWP 1025, Task #1, ECT Vent Line, LHRA <10R/Hr Rev 02  
 RWP 1025, Task #2, NUMAN Tool Change, LHRA <10R/Hr, Rev 02  
 HPP-625, Performance of Radiological Surveys, Attachment 6, HRA Walkdown Checklist, dated 08/15/2014  
 Daily LHRA/VHRA Door Checklist, dated 08/15/2014  
 Air Sample Calculation Form for AS-20131124-006, Repair Prep under Head, 11/24/2013  
 Air Sample Calculation Form for AS-20131124-011, Under Rx Head Repair, 11/24/2013  
 Radiological Survey Record (RSR) #1117-017 (including air sample result), Rx Head Controlled Area, 11/17/2013  
 RSR #0523-014 (including air sample result), Initial Survey Under Rx Head, 05/23/2013  
 RSR #0524-005 (including air sample result), Under Rx Head Post Shielding Survey Around Penetration #49, 05/24/2013  
 RSR #0530-017 (including air sample result), Under Rx Head on Head Stand, 05/30/2013  
 RSR #1114-027 (including air sample result), Under Rx Head on Head Stand, 11/14/2013  
 RSR #1124-020 (including air sample result), Under Rx Head on Head Stand, 11/23/2013  
 RSR #0423-007 (including air sample result), RCB 236' Scaffold #236-376, 04/23/12012  
 RSR #1123-019 (including air sample result), RCB 236' CS 761/762 Welding Work, 11/23/2013  
 RSR #1123-023 (including air sample result), RCB 236' CS 761/762 Welding Work Post Job survey, 11/23/12013  
 RFO-18 Radiological Control Planning Valve Breach Checklist for 1CS-761/762  
 W/O #02075029-04, Replace valves 1CS-762 (Normal Charge Line RTest Conn. Isol) & 1CS761, (Normal Charge Line Test Conn) and piping.  
 Multibadging Results for 3 Workers Performing Work Under the Rx-Head-Stand on RWP-1023, 5/25-30/2014.  
 HPP-730, " ", Percent Penetration and Bypass Leakage Test Records for HEPA#1109, HEPA #1147, HEPA #30 and HEPA #31

#### CAP Documents

Quick Hitter Assessment #654304-09, RWP ED Dose and Dose Rate Alarm Set points, 01/28/2014  
 Quick Hitter Assessment #654838, Radiological Hazard Assessment and Exposure Controls, 06/04/2014  
 Quick Hitter Assessment #648850, HRA/LHRA Controls, 05/30/2014  
 AR #588884  
 AR #606686  
 AR #608788

AR #636835  
 AR #646011  
 AR #648061  
 AR #646595  
 AR #664819  
 AR #697919

**Section 2RS6: Radioactive Gaseous and Liquid Effluent Treatment**

Procedures and Manuals

Offsite Dose Calculation Manual, Rev. 24  
 AP-556, Effluent Management Program, Rev. 7  
 OP-1210.10.04, Treated Laundry and Hot Shower Tanks, Rev. 39  
 AD-CP-ALL-0017, Radiological Groundwater Protection, Rev. 0  
 EMP-012, Groundwater Monitoring Program, Rev. 6  
 AD-PI-ALL-0100, Correctiv Action Program, Rev. 0

Records and Data

Annual Radioactive Effluent Release Report, 2013  
 E-6-1A-SA, RAB Emergency Exhaust, 2/1/12, 8/29/13  
 E-6-1A-SB, RAB Emergency Exhaust, 7/22/11, 11/20/11, 5/18/13  
 E-18, RAB Normal Exhaust, 9/13/12, 10/24/12, 5/5/14  
 Gaseous Radioactive Waste Release Permits, G-2014-0124, G-2014-0119  
 Liquid Radioactive Waste Release Permit, L-2014-0022  
 Results of Radiochemistry Cross-Check Program, 1<sup>st</sup> Quarter 2013, 2<sup>nd</sup> Quarter 2013, 1<sup>st</sup>  
 Quarter 2014  
 Inoperable Monitor Tracking Sheet, 2/25/13 – 3/13/13  
 10 CFR 50.75(g) Decommissioning Records  
 Groundwater Monitoring Well Sample Results, January 2010 – May 2014  
 Environmental and Chemistry Technical Report, Evaluation of Design of Treated Laundry and  
 Hot Shower Radiation Monitor-REM-\*1WL-3540 Against ODCM Operational Requirements  
 (ODCMOR 3/4.3.3.10, 3/4.11.1.1, and 3/4.11.1.2  
 NEI 07-07 Five Year Assessment Report, December 2013  
 Groundwater Protection Plan

CAP Documents

Self-Assessment No. 673972, Harris Assessment of Liquid Radwaste Processing  
 AR #704355  
 AR #592532  
 AR #631523  
 AR #597349  
 AR #594591  
 AR #697676  
 AR #622397  
 AR #698406  
 AR #697013

## **Section 2RS7: Radiological Environmental Monitoring Program (REMP)**

### Procedures and Guidance Documents

AD-PI-ALL-0100, Corrective Action Program, Rev. 0

ENRAD-PROC-748, Water Sampling at Harris Nuclear Plant, Rev. 0

ENRAD-PROC-749, Airborne Radioiodine and Airborne Particulate Sampling at Harris Nuclear Plant, Rev. 0

MPT-I0129, Maintenance Periodic Test, Meteorology Tower Equipment Calibration, Rev. 13

### Records and Data

10 CFR Part 61 Analysis, Dry Active Waste, 4/24/13

2013 Annual Radioactive Effluent Release Report

2013 Annual Radiological Environmental Operating Report

2013 Annual XOQDOQ Modeling and Meteorological Evaluation for Shearon Harris Nuclear Station, 2/28/14

2013 Meteorological Tower Instrument Data Recovery Results

Duke Energy, Interlaboratory Cross Check Program, Sample Analysis Forms, Sample IDs Q141TWR1, Q141TWR2, and Q141TWR3, 5/26/14

EnRad Laboratories Certificates of Calibration, Air Samplers, 09048 (1/2/14), 09049 (1/2/14), 09050 (1/2/14), 09051 (1/13/14), 09052 (1/13/14), 09053 (1/13/14), 09055 (1/13/14), 09056 (1/2/14), and 09089 (1/2/14)

EnRad Laboratories Certificates of Calibration, ISCO Portable Samplers, 09057 and 09059, 3/24/14

ERA's RadChem Proficiency Testing, RAD-97, 5/27/14

Environmental Cross Check Program Results, Eckert & Ziegler Analytics, 1<sup>st</sup> Quarter 2014

Quick Hitter Self-Assessment Report, NRC Readiness Review for Radioactive Effluent and Radiological Environmental Monitoring Baseline Inspection, 5/24/14

Quick Hitter Self-Assessment Report, Radiological Environmental Monitoring Program (REMP) at Shearon Harris Nuclear Plant, 6/9/14

Systems, Structures, Components (list), Groundwater Protection Plan, Harris Nuclear Plant

WO 02148002-01, Met Tower Equipment Calibration, 9/6/13

WO 02295349-01, Met Tower Equipment Calibration, 4/14/14

### CAP Documents

AR #604191

AR #615167

AR #616641

AR #631295

AR #634519

AR #654084

AR #675743

AR #699946

## **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

REG-NGGC-0009, NRC Performance Indicators and Monthly Operating Report Data, Rev. 12  
Gaseous Radioactive Waste Release Permit Number G-2014-0149  
Liquid Radioactive Waste Release Permit Number L-2014-0023  
ED Alarm Assessment Report, 2014  
List of Dose Rate Alarms, December 2013 – July 2014

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

CAP-NGGC-0200, Condition Identification and Screening Process  
CAP-NGGC-0205, Condition Evaluation and Corrective Action Process  
CAP-NGGC-0206, Performance Assessment and Trending  
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