



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

October 27, 2011

Mr. William Jefferson, Jr.  
Vice President  
Carolina Power and Light Company  
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 05000400/2011004 AND 05000400/2011502**

Dear Mr. Jefferson:

On September 30, 2011, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Shearon Harris reactor facility. The enclosed integrated inspection report documents the inspection results, which were discussed on October 19, 2011, with you and other members of your staff.

The inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

This report documents one NRC-identified finding and one self-revealing finding of very low safety significance (Green). These findings were determined to involve violations of NRC requirements. However, because of the very low safety significance and because they are entered into your corrective action program, the NRC is treating these findings as non-cited violations (NCVs) consistent with Section 2.3.2 of the NRC Enforcement Policy. If you contest any NCV, 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. In addition, if you disagree with the cross-cutting aspect assigned to any finding 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 Senior Resident Inspector at the Shearon Harris facility.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and 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 document 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/*

Randall A. Musser, Chief  
Reactor Projects Branch 4  
Division of Reactor Projects

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

Enclosure: NRC Inspection Report 05000400/2011004, 05000400/2011502  
w/Attachment: Supplemental Information

cc w/encl: (See page 3)

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Sincerely,

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Randall A. Musser, Chief  
 Reactor Projects Branch 4  
 Division of Reactor Projects

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

Enclosure: NRC Inspection Report 05000400/2011004  
 w/Attachment: Supplemental Information

cc w/encl: (See page 3)

PUBLICLY AVAILABLE       NON-PUBLICLY AVAILABLE       SENSITIVE       NON-SENSITIVE  
 ADAMS: X Yes      ACCESSION NUMBER: ML113000409      X SUNSI REVIEW COMPLETE X FORM 665 ATTACHED

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| SIGNATURE    | JSD           | JGW1       | JDA by e mail | PBL1 by email | PBO by email | BLC2 for by email | ADN by email |
| NAME         | JDodson       | JWorosilo  | JAustin       | PLessard      | PO'Bryan     | MBates            | ANielson     |
| DATE         | 10/24/2011    | 10/25/2011 | 10/25/2011    | 10/25/2011    | 10/24/2011   | 10/27/2011        | 10/24/2011   |
| E-MAIL COPY? | YES NO        | YES NO     | YES NO        | YES NO        | YES NO       | YES NO            | YES NO       |
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| SIGNATURE    | RKH1 by email | WTL        | RAM           |               |              |                   |              |
| NAME         | RHamilton     | WLoos      | RMusser       |               |              |                   |              |
| DATE         | 10/25/2011    | 10/25/2011 | 10/27/2011    |               |              |                   |              |
| E-MAIL COPY? | YES NO        | YES NO     | YES NO        | YES NO        | YES NO       | YES NO            | YES NO       |

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CP&L

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Letter to William Jefferson, Jr. from Randall A. Musser dated October 27, 2011

SUBJECT: SHEARON HARRIS NUCLEAR POWER PLANT - NRC INTEGRATED  
INSPECTION REPORT 05000400/2011004 AND 05000400/2011502

Distribution w/encl:

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L. Douglas, RII EICS

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RidsNrrPMShearonHarris Resource

U. S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No.: 50-400

License No.: NPF-63

Report No.: 05000400/20110004, 05000400/2011502

Licensee: Carolina Power and Light Company

Facility: Shearon Harris Nuclear Power Plant, Unit 1

Location: 5413 Shearon Harris Road  
New Hill, NC 27562

Dates: July 1, 2011 through September 30, 2011

Inspectors: J. Austin, Senior Resident Inspector  
P. Lessard, Resident Inspector  
P. O'Bryan, Senior Resident Inspector, Brunswick  
M. Bates, Senior Operations Engineer (Section 1R11)  
A. Nielson, Senior Health Physicist (Section 2RS5)  
R. Hamilton, Senior Health Physicist (Sections 2RS7, 4OA1)  
W. Loo, Senior Health Physicist (Sections 2RS6, 4OA1)

Approved by: Randall A. Musser, Chief  
Reactor Projects Branch 4  
Division of Reactor Projects

Enclosure

## SUMMARY OF FINDINGS

IR 05000400/2011004, 05000400/2011502, Carolina Power and Light Company; on 07/01/2011 – 09/30/2011; Shearon Harris Nuclear Power Plant, Unit 1; Post Maintenance Testing, and Radiation Monitoring Instrumentation.

The report covers a three month period of inspection by resident inspectors, a senior operations engineer and senior health physicists. One NRC-identified finding and one self-revealing finding of very low safety significance (Green) were identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). Cross-cutting aspects are determined using IMC 0310, "Components within the Cross Cutting Areas." Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review.

### A. NRC-Identified and Self-Revealing Findings

#### **Cornerstone: Mitigating Systems**

**Green.** A self-revealing Green NCV of Technical Specifications (TS) 6.8.1, Procedures, was identified for the licensee's failure to develop an adequate post maintenance test (PMT) procedure for the replacement of a defective 6.9kV undervoltage relay (UVTXSB/1732). Specifically, the licensee failed to ensure that the PMT procedure CM-E0032 (UVTXSB/1732 relay replacement) established adequate steam isolation to the turbine driven auxiliary feedwater (TDAFW) pump to prevent an inadvertent actuation. This resulted in the TDAFW pump inadvertently starting and injecting water into the steam generators which caused an increase in reactor power to 100.2 percent for approximately one minute. As corrective actions, the licensee secured the TDAFW pump, restored reactor power to 100 percent, and replaced the failed relay. In order to return the TDAFW pump to operable, the licensee performed a surveillance test to meet the requirements of the PMT. The applicable procedures were placed on administrative hold for evaluation and revision. Additionally, an investigation was performed to determine further corrective actions. The issue was placed into the CAP as AR #472616.

The licensee's failure to develop an adequate PMT procedure CM-E0032 (UVTXSB/1732 relay replacement) to ensure adequate steam isolation to the TDAFW pump and prevent an inadvertent actuation was a performance deficiency. The performance deficiency was more than minor because it is associated with the human performance attribute of the Mitigating System cornerstone, and it affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, it resulted in the automatic start of the TDAFW pump, water flowing to the steam generators, and a resultant increase in reactor power to 100.2 percent. Using IMC 0609, Significance Determination Process, Phase 1 screening worksheet, this finding was determined to be very low safety significance because it was not a design or qualification deficiency confirmed to result in a loss of operability or functionality, did not

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represent a loss of system safety function, did not result in a loss of safety system function for a single train for greater than TS allowed outage time, did not result in a loss of safety function of one or more non-TS trains of equipment designated as risk significant for greater than 24 hours, and did not screen as potentially risk significant due to seismic, flooding, or severe weather initiating event. The finding has a cross-cutting aspect of Human Error Prevention, as described in the Work Practices component of the Human Performance cross-cutting area, because the licensee did not apply sufficient human error prevention measures during the development and implementation of the PMT procedure (CM-E0032), to establish adequate steam isolation and prevent an inadvertent TDAFW pump actuation (H.4(a)). (Section 1R19)

### **Cornerstone: Occupational Radiation Safety**

Green. The inspectors identified a Green Non-cited Violation (NCV) of 10 CFR 20.1501 for the failure to periodically calibrate radiation monitoring equipment. Specifically, in 2004 the licensee eliminated periodic calibrations for 64 radiation monitors used to evaluate the magnitude of radiation levels and quantities of radioactive material. The licensee entered the issue into their corrective action program as Action Request (AR) #477569. Planned corrective actions include re-assignment of all radiation monitors to a periodic calibration frequency and a design change to eliminate radiation monitors that are redundant or infrequently used.

The inspectors determined that classifying radiation monitors as 'run-to-failure' and thereby eliminating periodic calibrations was a performance deficiency. This finding was greater than minor because it adversely impacted the cornerstone objective to ensure the adequate protection of worker health and safety from exposure to radiation from radioactive material during routine civilian nuclear reactor operation. Although operational occurrences such as low sample line flow, loss of counts, detector high voltage, or loss of communication alarms could lead to identification of significant monitor problems, the failure to perform periodic calibrations and response checks could impair the licensee's ability to reliably quantify radiation levels in the plant environs and in radioactivity released to the environment during normal and accident situations. The finding was evaluated using IMC 0609, Appendix C, Occupational Radiation Safety Significance Determination Process (SDP), and was determined to be of very low safety significance (Green) because the finding is not related to ALARA dose planning, did not result in an overexposure, and the ability to assess dose was not compromised due to the use of appropriate personnel dosimetry and frequent radiological surveys of RCA areas. This finding is not indicative of current licensee performance and therefore has no cross-cutting aspect. (Section 2RS5)

#### **B. Licensee-Identified Violations**

None.

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## 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 Readiness For Impending Adverse Weather Condition

###### a. Inspection Scope

On August 26, 2011, Hurricane Irene was approaching the North Carolina coast. The inspectors reviewed the licensee's overall preparations/protection for impending adverse weather conditions. The inspectors walked down areas of the plant susceptible to high winds, including the licensee's emergency alternating current (AC) power systems. The inspectors evaluated the licensee staff's preparations against the site's procedures to determine if the staff's actions were adequate. During the inspection, the inspectors focused on plant specific design features and the licensee's procedures used to respond to specified adverse weather conditions. The inspectors also toured the plant grounds to look for any loose debris that could become missiles during a tornado. The inspectors' evaluated operator staffing and accessibility of controls and indications for those systems required to control the plant. Additionally, the inspectors reviewed the Updated Final Safety Analysis Report (UFSAR) and performance requirements for systems selected for inspection, and verified that operator actions were appropriate as specified by plant specific procedures. The inspectors also reviewed a sample of corrective action program items to verify that the licensee identified adverse weather issues at an appropriate threshold and dispositioned them through the corrective action program in accordance with station corrective action procedures. Specific documents reviewed during this inspection are listed in the Attachment.

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

- AR #484735, Fallen Tree on Plant Access Road due to Hurricane Irene
- AR #484779, Siren System AC Power Outages, DC Power Remained Available

###### b. Findings

No findings were identified.

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## 1R04 Equipment Alignment

### .1 Quarterly Partial System Walkdowns

#### a. Inspection Scope

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

- The exhaust portion of the Containment Ventilation System after it was restored following emergent repairs to Containment Purge Radiation Monitor-3502A on August 4, 2011;
- The “A” and “B” Emergency Diesel Generators (EDG) during normal plant operations on August 10, 2011; and
- The “A” Containment Spray (CT) system while the “B” CT system was inoperable for planned maintenance on August 10, 2011.

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, TS requirements, outstanding work orders, 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 corrective action program with the appropriate significance characterization. Documents reviewed are listed in the Attachment.

#### 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

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availability, accessibility, and the condition of firefighting equipment in the following risk-significant plant areas:

- Reactor Auxiliary Building (RAB), 261' Elevation, Boric Acid Batching and Boron Recycle System Area
- RAB, 261' Elevation, Water Chiller Area "A" and "B"
- RAB, 216' Elevation, Mechanical Penetration Area
- RAB, 190' Elevation, "A" Residual Heat Removal (RHR) and CT Pump Room and Floor Drain Pump Room
- RAB, 190' Elevation, "B" RHR and CT Pump Room and Equipment Drain Pump Room
- RAB, 236' Elevation, Mechanical Penetration Area

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 corrective action program.

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

- AR #475487, June 2011 Key Performance Indicator (KPI) – Unplanned Fire Protection Action Statement Entries is Red
- AR #480615, Rag Left in Non Intervening Combustible Zone
- AR #486849, Fire Wrap Worn Down Around "B" Chiller
- AR #490585, Unsatisfactory Response to Site Fire Alarm by Site Personnel
- AR #491139, Fire Brigade Dispatch did not Meet Management Expectations

b. Findings

No findings were identified.

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## .2 Annual Fire Protection Drill Observation

### a. Inspection Scope

On August 23, 2011, the inspectors observed fire brigade performance during an announced drill. This drill exercised the fire brigade's response to a beyond design basis event in the Fuel Handling Building requiring use of the emergency diesel makeup pump and other infrequently used equipment, as well as coordinating with an offsite fire department which sent a ladder truck and personnel to assist. The observation was used to determine the readiness of the plant fire brigade to fight fires. The inspectors verified that the licensee staff identified deficiencies; openly discussed them in a self-critical manner at the drill debrief, and took appropriate corrective actions. Specific attributes evaluated were:

- Proper wearing of turnout gear and self-contained breathing apparatus
- Proper use and layout of fire hoses
- Sufficient firefighting equipment brought to the scene
- Effectiveness of fire brigade leader communications, command, and control
- Utilization of pre planned strategies
- Adherence to the pre planned drill scenario
- Fulfillment of drill objectives

### b. Findings

No findings were identified.

## 1R11 Licensed Operator Regualification Program

### .1 Quarterly Review

#### a. Inspection Scope

On September 7, 2011, the inspectors observed a crew of licensed operators in the plant's simulator during licensed operator requalification training to verify that operator performance was adequate and training was being conducted in accordance with licensee procedures. The inspectors evaluated the following areas:

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

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- 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.

b. Findings

No findings were identified.

.2 Annual Review of Licensee Requalification Examination Results

a. Inspection Scope

On April 13, 2011, the licensee completed the annual requalification operating tests required to be administered to all licensed operators in accordance with 10 CFR 55.59(a)(2). The inspectors performed an in-office review of the overall pass/fail results of the individual operating tests and the crew simulator operating tests. These results were compared to the thresholds established in Manual Chapter 609 Appendix I, Operator Requalification Human Performance Significance Determination Process.

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 corrective action program 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 #481394, Demineralized Water Transfer Pump Tripped on Low Discharge Pressure; and
- AR #480812, E-5A Breaker (Containment PRE-Entry Exhaust Fan) did not trip as required during testing.

The inspectors focused on the following attributes:

- Implementing appropriate work practices;

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- 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;
- Charging unavailability for performance;
- Trending key parameters for condition monitoring;
- Ensuring 10 CFR 50.65(a)(1) or (a)(2) classification or re-classification;
- Verifying appropriate performance criteria for structures, systems, and components (SSCs)/functions classified as (a)(2) or appropriate and adequate goals and corrective actions for systems classified as (a)(1).

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 five 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:

- Expected Yellow Risk Configuration during Demineralized Water Resin Regeneration on July 8, 2011;
- Expected Yellow Risk Condition while "B" Main Feed Regulation Valve is in manual for testing on August 1, 2011;
- Unexpected Yellow Risk Condition resulting from the Demineralized Water Transfer Pump (DWTP) tripping on August 7, 2011;
- Unexpected Risk Assessment following Seismic Event on August 23, 2011, yielded Green Risk based on present plant data; and
- Unexpected Yellow Risk Condition for a Tornado Warning on September 6, 2011.

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.

The inspectors reviewed the following ARs associated with this area to verify that the

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licensee identified and implemented appropriate corrective actions:

- AR #480828, Unexpected Trip of DWTP
- AR #486403, AP-300, Severe Weather Response Procedure Response to the Tornado Warning
- AR #486613, Public Address System Announcements Cannot be Heard in the Mail Room

b. Findings

No findings were identified.

1R15 Operability Evaluations

a. Inspection Scope

The inspectors selected the following four potential operability issues to evaluate 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. Documents reviewed are listed in the Attachment.

- AR #475602, "A" Essential Services Chilled Water (ESCW) Chiller Tripped on Low Lube Oil Pressure;
- AR #477108, Reactor Coolant System (RCS) Flow Loop "A" Channel is Drifting High;
- AR #475166, "A" Containment Spray Pump Lower Motor Oil Leakage; and
- AR #479364, 1CH-54, Essential Services Chilled Water (ESCW) Make-up Tank "B" Inlet Relief Valve is Leaking by Seat.

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

- AR #480803, Unexplained Increase in ESCW Expansion Tank
- AR #480812, Containment Pre-Entry Purge Exhaust Fan did not Trip as Required
- AR #480983, Sample Line for Tank Area Radiation Monitor Clogged
- AR #481128, Valve Hand Wheel Turns when it is Stroked Remotely

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b. Findings

No findings were identified.

1R19 Post Maintenance Testinga. Inspection Scope

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

| <u>Test Procedure</u> | <u>Title</u>   | <u>Related Maintenance Activity</u>   | <u>Date Inspected</u> |
|-----------------------|--|---|-----------------------|
| OPT-1530              | Dedicated Shutdown Diesel Generator (DSDG) Operability Test Monthly Interval All Modes                 | Engineering Change (EC) #81662, Installation of Check Valve in Fuel Supply Line DSDG                            | July 7, 2011          |
| EPT-033/<br>EPT-443   | Emergency Safeguards Sequencer System Test/<br>Emergency Safeguards Sequencer Relay Trend and Analysis | Work Orders (WO) #1893252, 1921061, 1921062 and 1921064, Replace Selected Relays and Indicating Light Resistors | July 18, 2011         |
| MPT-E0024             | Molded Case Circuit Breaker (Safe Shutdown) Test   | WO #1899046, E-29-1B Switchgear Room "B" Exhaust Fan Scheduled Maintenance                                      | August 9, 2011        |
| OPT-1529              | Alternate Seal Injection Pump Operability Test Quarterly Intervals All Modes                           | WO #1930249, Alternate Seal Injection (ASI) Pump has Oil Leak Coming From the Gear Drive                        | August 12, 2011       |
| CM-E0032              | Undervoltage Relay (UVTXSB/1732) Replacement   | WO #1930574, Time Delay Pick Up Relay Replacement   | August 19, 2011       |
| OST-1013              | Emergency Diesel Generator Operability Test Monthly Interval Modes 1-6                                 | WO #1517714, Replace The Listed "A" EDG Pressure Switches   | September 1, 2011     |

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|          |   |  |                    |
|----------|---|--|--------------------|
| OST-1215 | Emergency Service Water System Operability Train "B" Quarterly Interval | WO #1899448, Stroke Test ISW-124 following Scheduled Maintenance (Breaker Testing) | September 19, 2011 |
|----------|---|--|--------------------|

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 corrective action program and that the problems were being corrected commensurate with their importance to safety. Documents reviewed are listed in the Attachment.

b. Findings

Introduction: A self-revealing Green NCV of TS 6.8.1, Procedures, was identified for the licensee's failure to develop an adequate post maintenance test (PMT) procedure for the replacement of a defective 6.9kV undervoltage relay (UVTXSB/1732). Specifically, the licensee failed to ensure that the PMT procedure CM-E0032, UVTXSB/1732 relay replacement, established adequate steam isolation to the TDAFW pump to prevent an inadvertent actuation. This resulted in the TDAFW pump inadvertently starting and injecting water into the steam generators which caused an increase in reactor power to 100.2 percent for approximately one minute.

Description: During the performance of a new procedure, on June 21, 2011, the licensee replaced the UVTXSB/1732 relay. The replacement of the relay was performed by procedure CM-E0032.

During the actual relay replacement efforts, no problems were encountered. During the restoration section of the procedure, DC power fuses were replaced and the Key Test Switch for KTS-SB-1732A was placed to test. This energized a relay that opened 1MS-72 (main steam line "C" to TDAFW control isolation valve) which opened and emitted steam to start the TDAFW pump. This resulted in water flowing to the steam generators, and a resultant increase in reactor power to 100.2 percent.

As corrective actions, the licensee secured the TDAFW pump, restored reactor power to 100 percent, and replaced the failed relay. In order to return the TDAFW pump to

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operable, the licensee performed a surveillance test to meet the requirements of the PMT. The applicable procedures were placed on administrative hold for evaluation and revision. Additionally, an investigation was performed to determine further corrective actions. The issue was placed into the CAP as AR #472616.

Analysis: The licensee's failure to develop an adequate PMT procedure CM-E0032 (UVTXSB/1732 relay replacement) to ensure adequate steam isolation to the TDAFW pump and prevent an inadvertent actuation was a performance deficiency. The performance deficiency was more than minor because it was associated with the human performance attribute of the Mitigating System cornerstone, and it affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, it resulted in the automatic start of the TDAFW pump, water flowing to the steam generators, and a resultant increase in reactor power to 100.2 percent. Using IMC 0609, Significance Determination Process, Phase 1 screening worksheet, this finding was determined to be very low safety significance because it was not a design or qualification deficiency confirmed to result in a loss of operability or functionality, did not represent a loss of system safety function, did not result in a loss of safety system function for a single train for greater than TS allowed outage time, did not result in a loss of safety function of one or more non-TS trains of equipment designated as risk significant for greater than 24 hours, and did not screen as potentially risk significant due to seismic, flooding, or severe weather initiating event. The finding had a cross-cutting aspect of Human Error Prevention, as described in the Work Practices component of the Human Performance cross-cutting area, because the licensee did not apply sufficient human error prevention measures during the development and implementation of the PMT procedure (CM-E0032), to establish adequate steam isolation and prevent an inadvertent TDAFW pump actuation (H.4(a)).

Enforcement: TS 6.8.1, Procedures, requires that written procedures shall be established, implemented, and maintained, covering applicable procedures recommended in Appendix A of Regulatory Guide 1.33, Revision 2, February 1978. Section 9 of Appendix A of Regulatory Guide 1.33 requires procedures for maintenance that can affect the performance of safety related systems. Procedure CM-E0032, UVTXSB/1732 relay replacement, contained the steps for the 6.9kV undervoltage relay replacement, including PMT. Contrary to this requirement, the licensee failed to establish an adequate procedure for the replacement of the 6.9kV undervoltage relay, in that the performance of procedure CM-E0032 resulted in an inadvertent start of the TDAFW pump. This caused water to be injected to the steam generators and increased power of 100.2 percent. As corrective actions, the licensee secured the TDAFW pump, restored reactor power to 100 percent, and replaced the failed relay. In order to return the TDAFW pump to operable, the licensee performed a surveillance test to meet the requirements of the PMT. The applicable procedures were placed on administrative hold for evaluation and revision. Additionally, an investigation was performed to determine further corrective actions. Because the finding is of very low safety significance and has been entered into the CAP as AR #472616, this violation is being

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treated as a Green NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy: NCV 05000400/2011005-01, "Inadvertent Actuation of Turbine Driven Auxiliary Feedwater Pump Caused by Inadequate Procedure."

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, inservice 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.

- OPT-1512, Essential Chilled Water Turbopak Units Quarterly Inspection/Checks Modes 1-6 on July 12, 2011;
- OST-1119, CT Operability Train "B" Quarterly Interval Modes 1-4 on August 11, 2011 and;
- OST-1045, Engineered Safety Features Actuation System (ESFAS) Train "B" Slave Relay Test Quarterly Interval Modes 1-4 on August 19, 2011.

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

- AR #481669, "B" CT Pump Suction Check Valve (1CT-72) Failed Acceptance Criteria
- AR #482027, 1CT-72 ("B" CT Pump Suction Check Valve) Testing Methodology needs to be Assessed

b. Findings

No findings were identified.

.2 In Service Testing (IST) Surveillance

a. Inspection Scope

The inspectors reviewed the performance of OST-1076, "B" Auxiliary Feedwater (AFW) Pump Operability Test Quarterly Interval Modes 1-4 on July 18, 2011, 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

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AFW system:

- 1AF-23, "B" AFW Pump Recirculation to Condensate storage tank (CST) Check Valve
- 1AF-4, "A" AFW Pump Recirculation to CST Check Valve
- 1AF-110, Turbine Driven AFW Pump Recirculation to CST Check Valve
- 1CE-46, CST Suction Check Valve to "B" AFW Pump
- 1AF-49, "A" AFW Pump Flow Control Valve (FCV) to "A" Steam Generator (S/G)
- 1AF-50, "A" and "B" AFW Pumps Common FCV to "C" S/G
- 1AF-51, "B" AFW Regulator Valve
- 1AF-93, "B" AFW Isolation Valve
- 1AF-201, "A" AFW Pump Line to "A" S/G Check Valve 1AF-54
- 1AF-54, "A" AFW Pump Line to "A" S/G Check Valve
- 1AF-202, "B" AFW Pump Line to "B" S/G Check Valve 1AF-92
- 1AF-92, "B" AFW Pump Line to "B" S/G Check Valve
- 1AF-203, "A" and "B" AFW Pump Common Line to "C" S/G Check Valve 1AF-73
- 1AF-73, "A" and "B" AFW Pump Common Line to "C" S/G Check Valve
- "B" AFW Pump

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

b. Findings

No findings were identified.

.3 Containment Isolation Valve Testing

a. Inspection Scope

The inspectors reviewed the test results for the following activities to determine whether risk-significant systems and equipment were capable of performing their intended safety function and to verify testing was conducted in accordance with applicable procedural and TS requirements:

- MST-I0656, Containment Vacuum Breaker (1CB-6) Functional Test
- The inspectors observed in-plant activities and reviewed procedures to determine whether: any preconditioning occurred; effects of the testing were adequately

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addressed by control room personnel or engineers prior to the commencement of the testing; acceptance criteria were clearly stated, demonstrated operational readiness, and were consistent with the system design basis; plant equipment calibration was correct, accurate, and properly documented; as left setpoints were within required ranges; and the calibration frequency were in accordance with TSs, the UFSAR, procedures, and applicable commitments; measuring and test equipment calibration was current; test equipment was used within the required range and accuracy; applicable prerequisites described in the test procedures were satisfied; test frequencies met TS requirements to demonstrate operability and reliability; tests were performed in accordance with the test procedures and other applicable procedures; test data and results were accurate, complete, within limits, and valid; test equipment was removed after testing; where applicable, test results not meeting acceptance criteria were addressed with an adequate operability evaluation or the system or component was declared inoperable; where applicable for safety-related instrument control surveillance tests, reference setting data were accurately incorporated in the test procedure; prior procedure changes had not provided an opportunity to identify problems encountered during the performance of the surveillance or calibration test; equipment was returned to a position or status required to support the performance of its safety functions; and all problems identified during the testing were appropriately documented and dispositioned in the corrective action program. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

1EP6 Emergency Planning Drill Evaluation

a. Inspection Scope

The inspectors observed an emergency preparedness (EP) drill conducted on August 29, 2011, to verify licensee self-assessment of classification, notification, and protective action recommendation development in accordance with 10 CFR 50, Appendix E.

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

- AR # 484957, Two Environmental Monitoring Teams not Manned for Drill
- AR #490317, EP Drill Evaluator No-Show
- AR #486913, EP Drill Site Area Emergency Classification

b. Findings

No findings were identified.

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## 2. RADIATION SAFETY

### 2RS5 Radiation Monitoring Instrumentation

#### a. Inspection Scope

Radiation Monitoring Instrumentation: During tours of the Reactor Auxiliary Building (RAB), spent fuel pool areas, and Radiologically Controlled Area (RCA) exit point, the inspectors observed installed radiation detection equipment including the following instrument types: area radiation monitors (ARM), continuous air monitors, personnel contamination monitors (PCM), small article monitors (SAM), portal monitors (PM), and liquid and gaseous effluent monitors. The inspectors observed the physical location of the components, noted the material condition, and compared sensitivity ranges with UFSAR details.

In addition to equipment walk-downs, the inspectors observed source checks and alarm setpoint testing of various portable and fixed detection instruments, including ion chambers, teletectors, PCMs, SAMs, portal monitors, and a whole body counter. For the portable instruments, the inspectors observed the use of a high-range calibrator and discussed periodic output value testing with a health physics technician. The inspectors reviewed the last two calibration records and evaluated alarm setpoint values for selected ARMs, PCMs, portal monitors, SAMs, and effluent monitors. This included a sampling of instruments used for post-accident monitoring such as containment high-range ARMs and effluent monitor high-range noble gas channels. Radioactive sources used to calibrate selected ARMs and effluent monitors were evaluated for traceability to national standards. Calibration stickers on portable survey instruments and air samplers were noted during inspection of storage areas for "ready-to-use" equipment. The most recent 10 CFR Part 61 analysis for dry active waste was reviewed to determine if calibration and check sources are representative of the plant source term. The inspectors also reviewed count room quality assurance records for gamma ray spectroscopy equipment and liquid scintillation detectors.

Problem Identification and Resolution: The inspectors reviewed selected ARs in the area of radiological instrumentation. The inspectors evaluated the licensee's ability to identify and resolve the issues in accordance with procedure CAP-NGGC-0200, "Condition Identification and Screening Process", Rev. 33. The inspectors also evaluated the scope of the licensee's internal audit program and reviewed recent assessment results.

Effectiveness and reliability of selected radiation detection instruments were reviewed against details documented in the following: 10 CFR Part 20; NUREG-0737, Clarification of TMI Action Plan Requirements; Technical Specifications (TS) Section 3.3.3; UFSAR Chapters 11 and 12; and applicable licensee procedures. Documents reviewed are listed in section RS05 of the report Attachment.

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b. Findings

Introduction: The inspectors identified a Green NCV of 10 CFR 20.1501 for the failure to periodically calibrate radiation monitoring equipment. Specifically, in 2004 the licensee eliminated periodic calibrations for 64 radiation monitors used to evaluate the magnitude of radiation levels and quantities of radioactive material.

Description: The inspectors noted that UFSAR Tables 11.5.2-2 and 12.3.4-1 provides lists of radiation monitors that are included in the Radiation Monitoring System (RMS) for effluent monitoring and area monitoring. Included in these tables are three RAB exhaust effluent monitors (REM-01AV-3531, REM-01AV-3532A, and REM-01AV-3532B) and 61 area monitors that were designated as 'run-to-failure' in 2004 and were removed from the licensee's periodic calibration program. As such, calibrations for the subject monitoring equipment would only be scheduled following equipment failure or other significant maintenance activities. Periodic response checks for most of these monitors were also discontinued. Although these radiation monitors are no longer calibrated, they are still used to evaluate radiological hazards. The inspectors noted that readouts from these radiation detectors are continuously monitored for abnormal radiation levels by Health Physics technicians at a central monitoring location. In addition, Section 11.5.2.3 of the UFSAR states that, "The major function of the Radiation Monitoring System (RMS) is to provide plant operations personnel and health physics personnel with both current and historical measurements of the radiological conditions in certain areas and plant systems during both normal and design basis conditions. In addition, this system automatically produces alarms to warn plant personnel and in certain cases exerts control action when unusual radiological conditions or equipment malfunctions occur." The inspectors noted that the RAB exhaust effluent monitors are not final release point monitors and that none of the 64 affected radiation monitors have any automatic actuation functions.

Analysis: The inspectors determined that classifying radiation monitors as 'run-to-failure' and thereby eliminating periodic calibrations was a performance deficiency. This finding was associated with the Occupational Radiation Safety Cornerstone and was greater than minor because it adversely impacted the cornerstone objective to ensure the adequate protection of worker health and safety from exposure to radiation from radioactive material during routine civilian nuclear reactor operation. Although operational occurrences such as low sample line flow, loss of counts, detector high voltage, or loss of communication alarms could lead to identification of significant monitor problems, the failure to perform periodic calibrations and response checks could impair the licensee's ability to reliably quantify radiation levels in the plant environs and in radioactivity released to the environment during normal and accident situations. This finding was evaluated using IMC 0609, Appendix C, Occupational Radiation Safety SDP, and was determined to be of very low safety significance (Green) because the finding is not related to ALARA dose planning, did not result in an overexposure, and the ability to assess dose was not compromised due to the use of appropriate personnel dosimetry and frequent radiological surveys of RCA areas. In addition, none of the affected

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radiation monitors have any automatic actuation functions. This finding is not indicative of current licensee performance and therefore has no cross-cutting aspect.

Enforcement: 10 CFR 20.1501(a)(2) requires, in part, that licensees make surveys to evaluate the magnitude and extent of radiation levels and quantities of radioactive material. 10 CFR 20.1501(b) requires that the licensee shall ensure that instruments and equipment used for quantitative radiation measurements be calibrated periodically for the radiation measured. Contrary to this, from December 2004 to the present, the licensee has failed to periodically calibrate 64 radiation monitors used to evaluate the magnitude and extent of radiation levels and quantities of radioactive material. The licensee has initiated immediate and long-term corrective actions including re-assignment of all radiation monitors to a periodic calibration frequency and a design change to eliminate radiation monitors that are redundant or infrequently used. Because this violation was of very low safety significance and was entered into the licensee's corrective action program as AR #477569, this violation is being treated as an NCV, consistent with Section 2.3.2 of the Enforcement Policy: NCV 05000400/2011004-02: Failure to periodically calibrate radiation monitors.

## 2RS6 Radioactive Gaseous and Liquid Effluent Treatment

### a. Inspection Scope

Event and Effluent Program Reviews: The inspectors reviewed the 2009 and 2010 Annual Radiological Effluent Release Report (ARERR) documents for consistency with the requirements in the Offsite Dose Calculation Manual (ODCM) and TS details. Routine and abnormal effluent release results and reports, as applicable, were reviewed and discussed with responsible licensee representatives. Status of the radioactive gaseous and liquid effluent processing equipment and activities, and changes thereto, as applicable, described in the UFSAR and current ODCM were discussed with responsible staff.

Walk-Downs and Observations: The inspectors walked down accessible areas of the RAB to ascertain material condition and configuration of tanks, piping, valves, and pumps used to process and discharge gaseous and liquid radioactive waste. To the extent practical, the inspectors observed the material condition of abandoned liquid waste processing equipment for indications of degradation or leakage that could constitute a possible release pathway to the environment.

Sampling and Analyses: In addition to observing the collection of the samples from the above walkdowns, the inspector observed the preparation of samples for analysis and administrative processing for selected gaseous effluent release permits. The inspector noted independent verification of the permit results and concurrent verification of equipment manipulations performed to allow the release. The results of the chemistry count room's inter-laboratory comparison program were reviewed and discussed with cognizant licensee personnel.

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Dose Calculations: The inspectors discussed recent changes in reported dose values relative to previous ARERR reporting periods with an emphasis placed on Carbon-14 radionuclide source term quantities and resultant doses. The inspectors reviewed and evaluated a gaseous release and a liquid effluent release. The evaluations included review and discussion of set point determinations and dose calculation summaries. Dose calculations associated with potential releases were reviewed and discussed in detail. Updated results for the most recent land use census data were evaluated against assumptions used to calculate offsite dose results. In addition, the inspectors reviewed selected abnormal release data and resultant dose calculations for 2009 and 2010.

Ground Water Protection Implementation: The licensee's implementation of the Industry Ground Water Protection Initiative was reviewed for changes since the last inspection. Recent groundwater sampling results were reviewed. Licensee response, evaluation, and follow-up to spills and leaks since the last inspection were discussed with cognizant licensee representatives.

Problem Identification and Resolution: The inspectors reviewed selected Corrective Action Program (CAP) documents in the areas of effluent processing and groundwater protection. The inspectors evaluated the licensee's ability to identify, characterize, prioritize, and resolve the identified issues in accordance with CAP-NGGC-0205, "Condition Evaluation and Corrective Action Process", Rev. 12.

Effluent process and monitoring activities were evaluated against details and requirements documented in UFSAR Sections 11 and 12; TS Sections 5.4.1 Procedures, 5.5 Programs and Manuals, and 5.6 Reporting Requirements; ODCM; 10 CFR Part 20; 10 CFR, Appendix I to Part 50; and approved licensee procedures. In addition, ODCM and UFSAR changes since the last onsite inspection were reviewed against the guidance in NUREG-1301 and RG 1.109, RG 1.21, and RG 4.1. Records reviewed are listed in Sections 2RS7 and 4OA1.

b. Findings

No findings were identified.

2RS7 Radiological Environmental Monitoring Program (REMP)

a. Inspection Scope

REMP Status and Results: The inspectors reviewed and discussed recent and proposed changes applicable to Radiological Environmental and Meteorological Monitoring program activities detailed in the UFSAR and ODCM. REMP sample results presented in Annual Radiological Environmental Operating Report (AREOR) documents issued for 2009 and 2010 were reviewed and discussed. REMP vendor laboratory cross-check program results and procedural guidance for collection, processing, and analysis of airborne particulate and iodine samples and broadleaf vegetation samples

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were reviewed and discussed with knowledgeable personnel. Detection level sensitivities as document within the AREOR for selected environmental media analyzed by the offsite environmental laboratory were reviewed. The AREOR environmental measurement results were reviewed for consistency with licensee ARERR data and evaluated for radionuclide concentration trends. Licensee actions for missed airborne monitoring samples were reviewed and discussed in detail. The inspectors discussed analysis of water samples from onsite manholes and reviewed associated ODCM requirements for the lower limit of detection. The inspectors discussed the contribution to environmental iodine in air, water, and milk samples due to the Fukushima event and actions taken to accurately quantify radionuclides in the environment attributable to licensee operations.

Site Inspection: The inspectors observed and discussed implementation of selected REMP monitoring and sample collection activities for atmospheric particulates and iodine, direct radiation measurements, and broadleaf vegetation samples as specified in the current ODCM and applicable procedures. The inspectors observed equipment material condition and evaluated operability, including a review of flow rates and total sample volume results, at seven atmospheric sampling stations and two composite water sample locations. In addition, the inspectors discussed broadleaf vegetation and milk sampling for selected ODCM locations. The impact of licensee routine releases on offsite doses based on meteorological dispersion parameters and garden locations identified in the most current land use census were reviewed in detail. Changes in annual average atmospheric dispersion coefficients were discussed along with the addition of new air samplers in three sectors which had the highest calculated particulate and iodine deposition. Material condition and placement of selected environmental thermo-luminescent dosimeters were observed. Actions for missed samples including compensatory measures and/or availability of replacement equipment were discussed with vendor technicians and knowledgeable licensee staff. In addition, sample pump calibration and maintenance records for the installed environmental air monitoring equipment were reviewed.

The inspectors observed the physical condition of the meteorological tower and associated instruments and discussed equipment operability, maintenance history, and backup power supplies with responsible licensee staff. For the meteorological measurements of wind speed, wind direction, and temperature, the inspectors reviewed applicable meteorological tower instrumentation semi-annual calibration records and evaluated meteorological measurement data recovery for 2009 and 2010.

The inspectors reviewed ground and surface water sample results and discussed proposed changes to the licensee's groundwater monitoring program due to replacement of the cooling tower blowdown line. The licensee's 10 CFR 50.75(g) decommissioning file was reviewed and discussed.

Identification and Resolution of Problems: The inspectors reviewed selected ARs in the areas of radiological environmental monitoring and meteorological tower maintenance.

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The inspectors evaluated the licensee's ability to identify and resolve the issues in accordance with CAP-NGGC-0200, "Condition Identification and Screening Process", Rev. 33.

Procedural guidance, program implementation, quantitative analysis sensitivities, and environmental monitoring results were reviewed against 10 CFR Part 20; 10 CFR Part 50, and Appendix I to 10 CFR Part 50; TS Sections 6.8, Procedures and Programs, and 6.9, Reports; ODCM, Rev.22 and 23; RG 4.15, Quality Assurance for Radiological Monitoring Programs (Normal Operation) - Effluent Streams and the Environment; and the Branch Technical Position, An Acceptable Radiological Environmental Monitoring Program - 1979. Licensee procedures and activities related to meteorological monitoring were evaluated against the ODCM; RG 1.23, Meteorological Monitoring Programs for Nuclear Power Plants, and ANSI/ANS-2.5-1984, Standard for Determining Meteorological Information at Nuclear Power Sites. Documents reviewed are listed in Section 2RS07 of the report Attachment.

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.

Mitigating Systems Cornerstone

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

The inspectors sampled licensee submittals for the Mitigating Systems Performance Index performance indicators listed above for the period from third quarter 2010 through the second quarter 2011. 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

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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.

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

- AR #409271, Unexpected Indications on Opening Power Panel Breaker
- AR #437073, "A" EDG Tripped on Low Jacket Water Pressure
- AR #445372, "A" EDG Overspeed Trip Pressure Regulator Leaking Air
- AR #467018, "B" EDG Test Circuit Relay Failure
- AR #413400, Control Switch for "B" MDAFW will not Spring Return to Normal
- AR #417336, Control Switch for TDAFW will not Spring Return to Normal
- AR #436641, Several Oil Leaks on "A" CSIP Oil Cooler

#### Occupational Radiation Safety Cornerstone

The inspectors reviewed the Occupational Exposure Control Effectiveness PI results for the Occupational Radiation Safety Cornerstone from December 2010 through August 2011. For the assessment period, the inspectors reviewed ED alarm logs for exposure significant areas. The inspectors also reviewed licensee procedural guidance for collecting and documenting PI data. Documents reviewed are listed in section 4OA1 of the report Attachment.

#### Public Radiation Safety Cornerstone

The inspectors reviewed the Radiological Control Effluent Release Occurrences PI results for the Public Radiation Safety Cornerstone from October 2010 through July 2011. For the assessment period, the inspectors reviewed cumulative and projected doses to the public and AR documents related to Radiological Effluent Technical Specifications/Offsite Dose Calculation Manual issues. The inspectors also reviewed various calculations and release permits associated with the waste gas processing system. Documents reviewed are listed in section 4OA1 of the Attachment.

#### b. Findings

No findings were identified.

#### 4OA2 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

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issues for follow-up, the inspectors performed frequent screenings of items entered into the licensee's corrective action program. The review was accomplished by reviewing daily action request reports.

b. Findings

No findings were identified.

.2 Annual Sample: Review of Operator Workarounds (OWAs)

a. Inspection Scope

The inspectors evaluated the licensee's implementation of their process used to identify, document, track, and resolve operational challenges. Inspection activities included, but were not limited to, a review of the cumulative effects of the OWAs on system availability and the potential for improper operation of the system, for potential impacts on multiple systems, and on the ability of operators to respond to plant transients or accidents.

The inspectors performed a review of the cumulative effects of OWAs. The inspectors reviewed both current and historical operational challenge records to determine whether the licensee was identifying operator challenges at an appropriate threshold, had entered them into their corrective action program and proposed or implemented appropriate and timely corrective actions which addressed each issue. Reviews were conducted to determine if any operator challenge could increase the possibility of an Initiating Event, if the challenge was contrary to training, required a change from long-standing operational practices, or created the potential for inappropriate compensatory actions. Daily plant and equipment status logs, degraded instrument logs, and operator aids or tools being used to compensate for material deficiencies were also assessed to identify any potential sources of unidentified operator workarounds.

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

- AR #408027, June OWA KPI Yellow
- AR #412763, July OWA KPI Yellow

b. Findings

No findings were identified.

.3 Selected Issue Follow-up Inspection: Eight Significant Human Performance Events

a. Inspection Scope

The inspectors selected AR #441282, Eight Significant Events from Refueling Outage (RFO) 16 Related to Human Performance, for detailed review. This AR explored the

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behaviors that contributed to the series of events that occurred during RFO-16 and any associated common causes. 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 corrective action program as delineated in corporate procedure CAP-NGGC-0200, Corrective Action Program, and 10 CFR 50, Appendix B.

b. Findings

No findings were identified.

4 Selected Issue Follow-up Inspection: "A" Chiller Tripped on Low Oil Pressure

a. Inspection Scope

The inspectors selected AR #475602, "A" Chiller Tripped on Low Oil Pressure, for detailed review. This AR explored the potential causes of the "A" Chiller trip as well as operations response, including compensatory actions. 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 corrective action program as delineated in corporate procedure CAP-NGGC-0200, Corrective Action Program, and 10 CFR 50, Appendix B.

b. Findings

No findings were identified.

4OA3 Follow-up of Events

.1 (Closed) Licensee Event Report (LER) 05000400/2011-001-00, Containment Vacuum Relief System Inoperable for Greater Than Time Allowed by Technical Specification

On April 12, 2011, at 100 percent power, CB-Z2SN, "B" Train Containment Vacuum Relief tornado damper, was found inoperable during a function check. The damper was stuck in an open position due to an incorrectly installed seal clamping bar which prevented the blades from being moved. The failure of this damper to close caused the Containment Vacuum Relief System to be inoperable. This condition may have existed since May of 1999 caused by incorrectly performed maintenance on the damper which was not discovered during periodic functional checks. This condition likely existed for longer than allowed by TS and is reportable under 10 CFR 50.73(a)(2)(i)(B). Immediate corrective actions were to perform maintenance and post-maintenance testing to return the damper to operable, other tornado dampers were also inspected and repaired as

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necessary. Additionally, a new procedure, PM-M0123 Tornado Damper Maintenance and Testing, was written to prevent recurrence of this event.

This event was determined to be an inspector identified NCV of TS 6.8.1 and of very low safety significance (Green). This NCV was previously documented and closed in NRC Inspection Report 05000400/2011008 as NCV 05000400/2011008-10. This LER is closed.

.2 (Closed) LER 05000400/2010-002-01, Manual Actuation of the Reactor Protection System due to Hydrogen Seal Oil Leak

This LER was issued as a supplement to LER 05000400/2010-002-00 to discuss the failure of a MSIV to fully close. This event was previously documented in NRC Inspection Report 05000400/2010003. On November 15, 2009, with the unit at 100 percent power the licensee experienced a significant leak of the Hydrogen Seal Oil (HSO) system that led to a manual reactor trip. Following the reactor trip the operators made the decision to break condenser vacuum, which required the Main Steam Isolation Valves (MSIVs) to be shut. The "B" steam generator MSIV failed to fully close on demand from its control switch in the main control room, the MSIV was subsequently closed by locally isolating instrument air to the valve. This condition is prohibited by TS and reportable under 10 CFR 50.73(a)(2)(i)(B), as the MSIV was likely inoperable for a period of time longer than allowed by TS. It is also reportable under 10 CFR 50.73 (a)(2)(v)(C) and 10 CFR 50.73 (a)(2)(v)(D).

The licensee determined the cause of the MSIV failure to fully shut was due to two Solenoid Operated Shuttle Valves (SOVs), 1MS-82:006 SOV and 1MS-82:007 SOV, failing to fully realign to vent air after de-energizing. Corrective actions were to replace the two SOVs on 1MS-82 and also one additional SOV on 1MS-80 that was found to have been manufactured in the same lot as the two that failed. The enforcement aspects of this issue are discussed in Inspection Report 05000400/2010003. The failure to report the event was determined to be a Severity Level IV, NCV of 10 CFR 50.73(b)(2)(ii) and was documented in NRC Inspection Report 05000400/2011008 as NCV 05000400/2011008-01. This LER is closed.

.3 Event Notification (EN) 47171, Invalid Actuation of the TDAFW Pump

On June 21, 2011, the licensee experienced an invalid actuation of the TDAFW pump which resulted in flowing water into the steam generators and a corresponding increase in reactor power to 100.2 percent. This event was entered into the CAP as AR #472616. The licensee reported this to the NRC via telephone which resulted in the generation of this EN. This event was determined to be a Green NCV and is documented in section 1R19 of this inspection report.

.4 EN 47193, Notice of Unusual Event (NOUE) due to Seismic Disturbance

On August 23, 2011, the licensee declared an NOUE due to an earthquake felt at the plant with confirmation by the National Earthquake Center. As a result, the licensee entered their Seismic Disturbances Procedure, AOP-021. The plant continued to operate at 100 percent power and experienced no damage to equipment. Following the earthquake, the licensee determined that the seismic motion experienced at the plant was within their design basis. The inspectors reviewed the licensee's actions to determine adequacy of the operators' response. Additionally, the inspectors performed walkdowns in the plant to identify any potentially earthquake related damage, with no discrepancies noted.

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

- AR #484042, Unusual Event Declaration and AOP-021 Entry
- AR #484255, Emergency Response Organization Notification of Unusual Event
- AR #484330, Failed to Make Follow Up Notification of Unusual Event Termination

4OA5 Other Activities

.1 Quarterly Resident Inspector Observations of Security Personnel and Activities

a. Inspection Scope

During the inspection period the inspectors conducted observations of security force personnel and activities to ensure that the activities were consistent with licensee security procedures and regulatory requirements relating to nuclear plant security. These observations took place during both normal and off-normal plant working hours. These quarterly resident inspector observations of security force personnel and activities did not constitute any additional inspection samples. Rather, they were considered an integral part of the inspectors' normal plant status reviews and inspection activities.

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

- AR #477683, Security Tactical Drill Requirements not Met
- AR #485608, Control of Security Badge and Proximity Reader
- AR #485616, Project Compliance Due Date in Jeopardy

b. Findings

No findings were identified.

Enclosure



4OA6 Management Meetings

.1 Exit Meeting Summary

On October 19, 2011, the inspector presented the inspection results to Mr. William Jefferson, Jr., and other members of the licensee staff. The inspectors confirmed that proprietary information was not provided or examined during the inspection period.

ATTACHMENT: SUPPLEMENTAL INFORMATION

Enclosure

## **SUPPLEMENTAL INFORMATION**

### **KEY POINTS OF CONTACT**

#### **Licensee personnel**

D. Corlett, Supervisor, Licensing/Regulatory Programs  
J. Dufner, Director, Engineering  
D. Griffith, Manager, Training  
K. Holbrook, Manager, Support Services  
W. Jefferson, Vice President Harris Plant  
E. Kapopoulos, Plant General Manager  
B. McCabe, Manager, Nuclear Oversight  
M. Parker, Superintendent, Radiation Control  
M. Robinson, Superintendent, Environmental and Chemistry  
T. Slake, Manager, Security  
J. Warner, Manager, Outage and Scheduling  
F. Womack, Manager, Operations

#### **NRC personnel**

R. Musser, Chief, Reactor Projects Branch 4, Division of Reactor Projects, Region II

## LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

### Opened and Closed

05000400/2011004-01      NCV    Inadvertent Actuation of Turbine Driven Auxiliary Feedwater Pump Caused by Inadequate Procedure (Section 1R19)

05000400/2011004-02      NCV    Failure to Periodically Calibrate Radiation Monitors. (Section 2RS5)

### Closed

05000400/2011-001-00      LER    Containment Vacuum Relief System Inoperable for Greater Than Time Allowed by Technical Specification (Section 4OA3.1)

05000400/2010-002-01      LER    Manual Actuation of the Reactor Protection System due to Hydrogen Seal Oil Leak (Section 4OA3.2)

## LIST OF DOCUMENTS REVIEWED

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

#### Procedures

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

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

#### Partial System Walkdown

##### Containment Ventilation System:

- Procedure OP-168 Containment Ventilation System,
- Drawing 2165-S-0517, Simplified Flow Diagram Containment Ventilation System

##### Containment Spray System:

- Procedure OP-112, Containment Spray System,
- Drawing 2165-S-0550, Simplified Flow Diagram Containment Spray System

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

- FPP-001 Fire Protection Program Manual
- FIR-NGGC-0009, NFPA 805 Transient Combustibles And Ignition Source Controls Program
- 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 1R11: Licensed Operator Requalification Program**

### Benchmark Tests

- SST-001, "Steady State Accuracy and Stability Test", Performed 11/16/09, 12/15/10
- SST-002, "Steady State Accuracy and Stability Test", Performed 11/16/09, 12/15/10
- SST-003, "Steady State Accuracy Test", Performed 11/16/09, 12/15/10
- TT-001, "Reactor Trip", Performed 10/10

### Job Performance Measure (JPM) Packages

- Transfer Control to The ACP
- Reset Turbine Driven Aux Feedwater Pump
- Isolate Ruptured SG – MSIV Will Not Close
- Place Containment Cooling in the Maximum Cooling Mode
- Classify an Event – ALERT

### General Documentation Reviewed

- Biennial written examination for 2010 – weeks 1 through 5
- Calculation E-5525, Safe Shutdown in Case of Fire
- Remedial Action Plan – 2009 – 2010
- Requal attendance records 2009-2010
- EOP-User's Guide, Part 4, Rev 29
- LERs 2009 to 2010

### Procedures

- OSP-NGGC-1000, Fleet Conduct of Operations, Revision 3
- Operations Management Manual, OMM-001, Operations Administrative Requirements, Rev 92
- Training Administrative Procedure (TAP) -403, Examination and Testing, Rev 19
- TAP 410, NRC License Examination Security Program, Rev 15
- TAP-412, Simulator Operations, Maintenance and Testing, Rev 8
- Training Program Procedure (TPP)-206 Training Program Procedure-Simulator Rev 10
- TPP- 306, Licensed Operator Continuing Training Program, Revision 20
- TRN-NGGC-0002, Performance Review and Remedial Training, Rev 0
- TRN-NGGC-0420, Conduct of Simulator Training and Evaluation, Rev 0,
- TRN-NGGC-0440, Rev 0
- TRN-NGGC-1000, Conduct of Training, Rev 3
- AOP- 004, Remote Shutdown
- HNP-E/ELEC-0001 Appendix 1 Compliance Assessment by Scenario  
TRN-NGGC-1000, Conduct of Training, Rev 3

**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**

- OMP-003, Outage Shutdown Risk Management
- OMM-001, Conduct of Operations
- WCP-NGGC-1000, Conduct of On-Line Work Management
- OPS-NGGC-1311, Protected Equipment
- 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 1R22: Surveillance Testing**

- FSAR 3.11A, NUREG-0588 Comparison
- ISI-802, In-Service Testing of Pressure Relief Devices

**2RS5: Radiation Monitoring Instrumentation****Procedures and Guidance Documents**

- AOP-005, "Radiation Monitoring System", Rev. 27
- HPP-500, "Radiation Monitoring System Data Base Manual", Rev. 20
- HPS-NGGC-0005, "Calibration of Portable Radiation/Contamination Survey Instruments", Rev. 12
- CAP-NGGC-0200, "Condition Identification and Screening Process", Rev. 33

**Records and Data**

- Work Order 01701027 01, 1EOF-E007 EOF Outside Air Intake Rad Monitor Calibration, 2/19/10
- Work Order 00863982 01, 1EOF-E007 EOF Outside Air Intake Rad Monitor Calibration, 3/7/08
- Work Order 01132751 01, RM-01CR-3589SA Containment High Range Accident Monitor Calibration, 5/12/09
- Work Order 01530979 01, RM-01CR-3589SA Containment High Range Accident Monitor Calibration, 11/11/10
- Work Order 01157530 01, RM-01CR-3590SB Containment High Range Accident Monitor Calibration, 4/27/09

- Work Order 01553034 01, RM-01CR-3590SB Containment High Range Accident Monitor Calibration, 11/18/10
- Work Order 01409921 01, REM-21WL-3541 Waste Tanks Discharge Monitor Calibration, 6/17/10
- Work Order 01024182 01, REM-21WL-3541 Waste Tanks Discharge Monitor Calibration, 11/17/08
- Work Order 01175686 01, RM-21AV-3509-1SA Plant Vent Stack Accident Monitor Channel Calibration, 12/8/09
- Work Order 01575509 01, RM-21AV-3509-1SA Plant Vent Stack Accident Monitor Channel Calibration, 5/5/11
- GEM-5 No. 0711-102, Calibration Records, 4/2/10 and 4/5/11
- ARGOS No. 0510-016, Calibration Records, 1/13/09 and 1/9/10
- ARGOS No. 0510-013, Calibration Records, 1/14/09 and 1/11/10
- SAM-9 No. 142, Calibration Records, 5/25/10 and 5/25/11
- Eberline RO-20 No. 3130, Calibration Record, 5/31/11
- Ludlum 9-3 No. 278523, Calibration Record, 7/27/11
- Remball No. 27261, Calibration Record, 11/11/10
- Calibration Data Sheets, Model 89 Shepherd Calibrator, 2/16/10
- Cesium-137 Source No. 86-001, Certificate of Gamma Standard Source
- High-purity Germanium Detector No. 1, Annual Efficiency Calibrations, 3/23/10 and 1/12/11
- Liquid Scintillation Detector 2100TR, Calibration, 8/28/09 and 8/19/10
- 10 CFR Part 61 Analysis, Dry Active Waste, 4/21/11
- Work request 496703
- HNP Shift Narrative Log, 8/16/11

#### CAP Documents

- H-RP-11-01, Assessment of HNP Radiation Protection, 7/11/11
- AR 381548
- AR 405099
- AR 477569
- AR 241895
- AR 165629
- AR 383155
- AR 404435
- AR 425878

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

##### Procedures, Guidance Documents, and Manuals

- AP-556, Effluent Management Program, Rev.7
- CAP-NGGC-0205, Condition Evaluation and Corrective Action Process, Rev. 12
- CHE-NGGC-0057, Groundwater Protection Program, Rev. 1
- CRC-240, Plant Vent Stack 1 Effluent Sampling, Rev.13

- CRC-241, Turbine Building Vent Stack 3A Effluent Sampling, Rev. 17
- CRC-242, Waste Processing Building Vent Stack 5 Effluent Sampling, Rev.17
- CRC-243, Waste Processing Building Vent Stack 5a Effluent Sampling, Rev.14
- CRC-244, Containment Air And Condenser Vacuum Pump Effluent Sampling, Rev.12
- CRC-245, Particulate And Iodine Grab Sampling On Wide Range Gas Monitors, Rev. 8
- CRC-283, Reporting Radioactive Gaseous Releases, Rev.17
- CRC-284, Reporting Radioactive Liquid Releases, Rev.18
- EMP-012, Groundwater Monitoring Program, Rev. 2
- ERC-009, Handling Inoperable Monitors, Rev. 7
- EST-400, Engineered Safety Feature Air Filtration Testing, Rev. 17
- SHNPP Off-Site Dose Calculation Manual (ODCM), Rev. 23

### Records and Data

- Count Room Interlaboratory Comparisons for 2009 and 2010
- EST-400, Engineered Safety Feature Air Filtration Testings, Rev. 17, E-6-1A-SA AB Emergency Exhaust, Dated 10/28/10 and 03/31/11; E-6-1B-SB RAB Emergency Exhaust, Dated 09/01/10 and 01/18/11
- Gaseous Radioactive Waste Release Permits: 110039.043.001.G, WGDT J – Batch Gas, WPB Stack 5, Dated 03/01/11; 110045.043.002.G, WGDT J – Batch Gas, WPB Stack 5, Dated 03/03/11; 110062.042.001.G, WGDT I – Batch Gas, WPB Stack 5, Dated 04/04/11; 110110.011.026.G, PVS-1 Continuous, Plant Vent Stack 1, Dated 06/21/11; 110111.021.032.G, TBVS-3A Continuous, Turbine Building Vent Stack 3A, Dated 06/21/11; 110152.042.003.G, WGDT I – Batch Gas, WPB Stack 5, Dated 08/24/11
- HNP Chemistry System Health Reports, 1<sup>st</sup> Quarter 2010 to 1<sup>st</sup> Quarter 2011
- HNP Radiological Environmental Monitoring Analysis Report for Groundwater, Undated
- HNP Radiological Environmental Monitoring Gamma Isotopic Report for Groundwater, Undated
- Liquid Radioactive Waste Release Permit 110019.002.004.L, Treated Laundry & Hot Shower B, Discharge from Cooling Tower, Dated 06/30/11
- Low-Level Radioactive Waste Analysis Data Sheets, Sample Types: Waste Oil, Low “A” SRST Resin, DAW Comp. Filters, Filter Composite, Low “A” Resin, Low “B” Resin; Sample Tracking Nos. 08R024194, 11R033251, 11R033252, 1111R033608, 11R033609; Dated 01/29/09, 01/04/10, 01/29/11, 04/21/11, 04/21/11, 05/03/11, 05/11/11; respectively
- PCHG-DESG, Engineering Changes: 0000062608R3, Replace the vent stack flow rate monitor controls for the WPB Stack 5, WPB Stack 5A and Plant Vent Stack; 0000069988R3, Return the isokinetic sampling skids to operable by replacing the current obsolete pumps and flow meters with new parts qualified by the RMS vendor; and 0000073426R0, Develop design inputs and provide evaluations required for the software application developed for the flow rate monitor controls upgrade for the Plant Vent Stack



- Selected Inoperable Monitor Tracking Sheets from 01/07/10 through 06/09/11
- SHNPP Annual Radioactive Effluent Release Reports, 2009 and 2010
- Tritium Concentration for Wells along CTBD Graph from Jan 2009 to June 2011

#### CAP Documents

- AR 442341
- AR 450249
- AR 457376
- AR 471041
- AR 480784
- AR 482470
- AR 481994
- NEI 07-07, NEI Groundwater Protection Initiative, NEI Peer Assessment Report, Harris, Dated 11/10/09
- Progress Energy, Report File No. H-EC-10-01, Serial No. HNOS 10-020, Assessment of Harris Environmental and Chemistry Section, Dated 04/06/10

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

##### Procedures and Reports

- 2009 and 2010 Annual Radiological Environmental Operating Reports
- EVC-NGGC-0003, Radiological Environmental Monitoring Program for HNP, Rev. 10
- EVC-NGGC-0004, HNP land use census, Rev. 3
- EVC-NGGC-0009, Determination of Tritium in Aqueous Samples, Rev. 5
- EVC-NGGC-0010, Determination of Gross Alpha and Gross Beta Activities, Rev. 5
- EVC-NGGC-0011, Determination of Radioiodine in Milk and Water Samples, Rev. 6
- EVC-NGGC-0012, Preparation of Samples for Gamma Counting, Rev. 7
- Met Tower Calibrations for 10/23/09, 2/22/10, 7/28/10, and 3/15/11
- MPT-I0129, Meteorology Tower Equipment Calibration, Rev. 8
- Environmental Cross Check Results 1<sup>st</sup> Quarter 2010 through 1<sup>st</sup> Quarter 2011
- H-EC-10-01, Assessment of Harris Environmental and Chemistry Section, Dated 4/6/2010
- ERC-10-005, Selection of Cooling Tower Blowdown Wells for Long Term Sampling, Rev. 0
- ERC-08-005, Evaluation of Systems, Structures, Components or Work Practices for the Groundwater Protection Program Rev. 2
- 2010 HNP Land Use Census, 10/14/2010

##### Records and Data

- Met Tower Calibration, 10/23/09, 4/14/10, 7/28/10, and 3/15/11
- Report of Environmental Iodine Measurements for period 3/1/11 to 5/1/11 showing Fukushima Japan contribution on 3/28-4/11/2011
- Air Sample Calibration Records, 10/23/09, 4/30/10, 10/21/10, and 4/14/11

- Environmental Program Cross Checks for first quarter 2010 through first quarter 2011

#### CAP Documents

- AR 00309988
- AR 00393030
- AR 00374252
- AR 435924
- AR 436220
- AR 438362
- AR 441977
- AR 446861
- AR 456588
- AR 458543
- AR 460716

#### **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

#### **Section 4OA2: Identification and Resolution of Problems**

- CAP-NGGC-0200, Corrective Action Program
- CAP-NGGC-0205, Condition Evaluation and Corrective Action Process
- CAP-NGGC-0206, Performance Assessment and Trending
- OPS-NGGC-1305, Operability Determinations
- OP-148, Essential Services Chilled Water System
- Drawing 5-S-0998, Multiple Sheets, HVAC Essential Services Chilled Water
- WO #1954435, "A" Chiller Compressor Oil Pressure Gauge
- WO #1954156, Investigate "A" Chiller Trip
- WO #1954435, Calibrate Agastat Relay

#### **Section 4OA3: Event Follow-up**

- AOP-021, Seismic Disturbances Procedure, Rev. 31
- AOP-021, Seismic Disturbances Procedure, Rev. 32