



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

January 26, 2012

Mr. Christopher L. Burton
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 05000400/2011005 AND 05000400/2011502**

Dear Mr. Burton:

On December 31, 2011, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Shearon Harris reactor facility Unit 1. The enclosed inspection report documents the inspection results which were discussed on January 25, 2012, 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.

No findings were identified during this inspection.

In accordance with 10 CFR 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

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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 05000400/2011005, 05000400/2011502
w/Attachment: Supplemental Information

cc w/encl: See page 3

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Sincerely,

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cc w/encl. (continued)

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Senior Resident Inspector

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Letter to Christopher L. Burton from Randall A. Musser dated January 26, 2012

SUBJECT: SHEARON HARRIS NUCLEAR POWER PLANT - NRC INTEGRATED
INSPECTION REPORT 05000400/2011005 AND 05000400/2011502

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U. S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No.: 50-400

License No.: NPF-63

Report No.: 05000400/2011005, 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: October 1, 2011 through December 31, 2011

Inspectors: J. Austin, Senior Resident Inspector
P. Lessard, Resident Inspector
R. Patterson, Acting Resident Inspector
M. Schweg, Resident Inspector, Brunswick
R. Kellner, Health Physicist (Section 2RS1)
W. Loo, Senior Health Physicist (Section 2RS3)
W. Pursley, Health Physicist (Section 2RS4)
J. Eargle, Reactor Inspector (Section 4OA5)
A. Alen, Reactor Inspector (Section 4OA5)

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

Enclosure

SUMMARY OF FINDINGS

IR 05000400/2011005, 05000400/2011502; October 1, 2011, - December 31, 2011; Shearon Harris Nuclear Power Plant, Unit 1; Routine Integrated Report.

The report covered a three month period of inspection by resident inspectors and announced baseline inspection by regional inspectors. No findings were identified during this inspection period.

A. NRC-Identified and Self-Revealing Findings

None

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, except on October 22, 2011, the unit was reduced to 90 percent power for Main Turbine Valve Testing and was returned to RTP later that day.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection

.1 Winter Seasonal Readiness Preparations

a. Inspection Scope

On December 29, 2011, the inspectors conducted a review of the licensee's preparations for winter conditions to verify that the plant's design features and implementation of procedures were sufficient to protect mitigating systems from the effects of adverse weather. Documentation for selected risk-significant systems was reviewed to ensure that these systems would remain functional when challenged by inclement weather. During the inspection, the inspectors focused on plant specific design features and the licensee's procedures used to mitigate or respond to adverse weather conditions. 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. Cold weather protection, such as heat tracing and area heaters, was verified to be in operation where applicable. The inspectors also reviewed CAP items to verify that the licensee was identifying adverse weather issues at an appropriate threshold and entering them into their CAP in accordance with station corrective action procedures. Specific documents reviewed during this inspection are listed in the Attachment. The inspectors' reviews focused specifically on the following plant systems due to their risk significance or susceptibility to cold weather issues:

- Refueling Water Storage Tank (RWST)
- Emergency Service Water (ESW)
- Emergency Diesel Generators (EDG)

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

- AR# 505043, Exhaust Fan E-88 Did Not Secure When Required Due to Low Temperature

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- AR# 429246, Cabinet Temperature too Cold Creating Spurious Fire Trouble Alarms

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:

- The “A” Emergency Service Water (ESW) system during planned maintenance on the “B” ESW Booster Pump on October 13, 2011;
- The “A” Diesel Fuel Oil Storage and Transfer system during the “B” Essential Services Chilled Water system outage on October 19, 2011; and
- The Motor Driven Fire Pump while the Diesel Driven Fire Pump was out of service for a planned maintenance outage on November 1, 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, Technical Specification (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 CAP with the appropriate significance characterization. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

.2 Semi-Annual Complete System Walkdown

a. Inspection Scope

On October 11, 2011, the inspectors performed a complete system alignment inspection of the Alternate Seal Injection (ASI) system after a planned maintenance outage 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, 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 work orders (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. The documents used for the walkdown and issue review 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 availability, accessibility, and the condition of firefighting equipment in the following risk-significant plant areas:

- Reactor Auxiliary Building (RAB), 236' Elevation, Chemical Volume Control System (CVCS) and Boron Thermal Regeneration System (BTRS) Chillers, Boric Acid Batching and Boron Recycle System Areas
- RAB, 236' Elevation, Component Cooling Water (CCW) and Auxiliary Feedwater (AFW) Area
- RAB, Elevation 236', 1C Charging/Safety Injection pump (CSIP) Transfer and Charging Pump Rooms and Residual Heat Removal (RHR) Heat Exchanger Rooms
- Alternate Seal Injection and Filter Area
- ESW Intake Screening Structure
- Termination Cabinet 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

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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 program to verify the adequacy of the corrective actions. The inspectors performed a walkdown of the following plant area(s) 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:

- Reactor Auxiliary Building 216' Flooding Area

b. Findings

No findings were identified.

1R07 Heat Sink Performancea. Inspection Scope

The inspectors reviewed the licensee's testing of the 'A' CSIP Gear Oil Coolers, Air Handler Four (AH-4) and the 'B' EDG Jacket Water Cooler to verify that potential deficiencies did not mask the licensee's ability to detect degraded performance, to identify any common cause issues that had the potential to increase risk, and to ensure the licensee was adequately addressing problems that could result in initiating events that would cause an increase in risk. The inspectors reviewed the licensee's observations as compared against acceptance criteria, the correlation of scheduled testing and the frequency of testing, and the impact of instrument inaccuracies on test results. Inspectors also verified that test acceptance criteria considered differences between test conditions, design conditions, and testing criteria. Specific documents reviewed during this inspection are listed in the Attachment.

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification Program.1 Quarterly Reviewa. Inspection Scope

On November 7, 2011, the inspectors observed a crew of licensed operators in the plant's simulator during licensed operator training 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 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
- Control board manipulations
- Oversight and direction from supervisors
- Ability to identify and implement appropriate TS actions

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:

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- AR #479905, Operator Communications are not Consistently Meeting Established Standards

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 #496528, Failure of Nuclear Instrument High Voltage Cable during testing;
- AR #495968, The "C" Plant Air Compressor Breaker, 1E3-4C will not close in the connect position;
- AR #498794, Chemical Addition Valve 1CT-11 while testing, shut unexpectedly

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;
- 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).

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

- AR #500115, Rework 1EA-E012 EDG 1B Starting Air Dryer Sequencing Timer
- AR #500457, S-3 Fans (Reactor Auxiliary Building) Access Door Left Open (prevents heater operation)

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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 the five risk-significant equipment listed below to verify that the appropriate risk assessments were performed prior to removing equipment for work:

- Reactor makeup control placed in manual to support maintenance on October 3, 2011 risk elevated to yellow;
- Elevated green risk condition that resulted from deenergizing the "B" Startup Transformer for planned maintenance on October 18, 2011;
- Unexpected unavailability due to corrective maintenance on the "C" Air Compressor on October 26, 2011, risk remained green;
- Yellow risk condition while the "B" Feed Regulating Valve was in manual for narrow range level loop operational testing on October 31, 2011; and
- Unexpected unavailability due to the "A" Heater Drain Pump being secured on December 7, 2011, risk remained green.

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 five 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

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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, 1A-SA Chiller Tripping due to Low Lube Oil Pressure;
- AR #498794, 1ET-11, Containment Spray Chemical Addition Valve "B" Train remained closed when cycled manually;
- AR #499754, 1SC-E012 Emergency Service Water Traveling Screen Chain Thickness;
- AR #501445, Operability Evaluation Needed for a Void Found on 'A' Train Low Head Safety Injection(LHSI) Discharge Line; and
- AR #505470, Operability Evaluation Needed for 'B' EDG Governor Speed Setting Drifting.

b. Findings

No findings were identified.

1R18 Plant Modifications

a. Inspection Scope

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

- Engineering Change (EC) #74822 is a permanent modification, New Security Central Alarm System

This permanent modification was performed to comply on the Part 73 upgrades. The residents reviewed the modification from both a security and plant impact aspect.

- EC #83956 is a temporary modification that removed the internals from Valve 1SW-35 (Screen Wash Pump 1A SW Supply). The temporary modification removed the internals of the valve to avoid any further impact of system performance because of erosion and corrosion in the valve guides (the valve is normally locked opened).

These documents and related documentation were reviewed for adequacy of the associated 10 CFR 50.59 safety evaluation screening, consideration of design

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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.

b. Findings

No findings were identified.

1R19 Post Maintenance Testing

a. Inspection Scope

The inspectors reviewed the following six 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>
OST-1214	Emergency Service Water System Operability Quarterly Test	WO #1899144, 1SW-124 Breaker Maintenance	October 3, 2011
EPT-033	Emergency Sequencer Safeguards Test	WO #1958410, Replacement of "B" Sequencer Relay 2-55/1163	October 12, 2011
OP-149	Fire Protection	Work Order (WO) #1702639, Diesel Driven Fire Pump Starting Battery Replacement	October 31, 2011
OP-145	Component Cooling Water (CCW)	WO #1933867, Replace "A" CCW Pump Control Switch on the Main Control Board	November 2, 2011
OST-1122	Train "A" 6.9 kV Emergency Bus Undervoltage (UV) Trip Actuating Device Operational Test and Contact Check	WO #1979143, "A" Train UV Relay Setpoint Changes	November 3, 2011
OP-139	Service Water System Operating Procedure	Maintenance on Main Reservoir Traveling Screen	December 16, 2011

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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. Documents reviewed 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 #496988, Battery Heating Pad Found Degraded
- AR #497436, Faulty "A" CCW Pump Control Switch Caused Ground

b. Findings

No findings were identified.

1R22 Surveillance Testing

.1 Routine Surveillance Testing

a. Inspection Scope

For the two surveillance tests below, the inspectors observed the surveillance tests and 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.

- OST-1023, Offsite Power Availability Verification Weekly Interval Modes 1-6
- OST-1073, "B" Emergency Diesel Generator Operability Test on December 15, 2011

b. Findings

No findings were identified.

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.2 Reactor Coolant System Leak Detection Inspection Surveillance

a. Inspection Scope

The inspectors observed and reviewed the test results for reactor coolant system leak detection surveillance, OST-1026, Reactor Coolant System Leakage Evaluation, Computer Calculation, Daily Interval, Modes 1-4 on December 5, 2011. The inspectors observed in plant activities and reviewed procedures and associated records to determine whether: effects of the testing were adequately 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; and the calibration frequency were in accordance with TSs, the UFSAR, procedures, and applicable commitments; 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; 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 CAP. Documents reviewed 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 #497776, Evaluate and Trend Potential Service Water Leakage in Containment
- AR #497457, Increased Volume Control Tank Loss Rate During Pressurizer Steam Space Vent

b. Findings

No findings were identified.

1EP6 Emergency Planning Drill Evaluation

a. Inspection Scope

The inspectors observed an emergency preparedness drill conducted on October 24, 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:

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- AR #495777, Missed Drill and Exercise Performance Opportunity
- AR #496739, Accountability Weakness During Drill

b. Findings

No findings were identified.

2. RADIATION SAFETY

Cornerstones: Occupational 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 (HRAs), and airborne radioactivity areas established within the radiologically controlled area (RCA) of the Unit 1 (U1) and auxiliary building, 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, hot particles, airborne radioactivity, gamma surveys with a range of dose rate gradients, and pre-job and post surveys for recently completed tasks. The inspectors also discussed changes to plant operations that could contribute to changing radiological conditions since the last inspection. For selected jobs, 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 U1 Locked High Radiation Area (LHRA) and Very High Radiation Area (VHRA) locations. Changes to procedural guidance for LHRA and VHRA controls were discussed with health physics (HP) supervisors. Controls and their implementation for storage of irradiated material within the spent fuel pool (SFP) were reviewed and discussed in detail. Established radiological controls (including airborne controls) were evaluated for selected work tasks in auxiliary building, and radwaste processing and storage. In addition, licensee controls for areas where dose rates could change significantly as a result of plant shutdown and refueling operations were reviewed and discussed.

Occupational workers' adherence to selected RWPs and HP technician (HPT) proficiency in providing job coverage were evaluated through direct observations and interviews with licensee staff. Electronic dosimeter (ED) alarm set points and worker stay times were evaluated against area radiation survey results. ED alarm logs were reviewed and worker response to dose and dose rate alarms during selected work

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activities was evaluated. For HRA tasks involving significant dose rate gradients, the inspectors reviewed and discussed the licensee's procedural requirements for the use and placement of whole body and extremity dosimetry to monitor worker exposure.

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 reviewed source check records and observed current calibration information labels for selected release point survey instruments and discussed equipment sensitivity, alarm setpoints, and release program guidance with licensee staff. The inspectors compared recent 10 Code of Federal Regulations (CFR) Part 61 results for the Dry Active Waste radwaste 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: Condition Reports (CRs or NCRs) associated with radiological hazard assessment and control were reviewed and assessed. The inspectors evaluated the licensee's ability to identify and resolve the issues in accordance with procedures CAP-NGGC-200, Condition Identification and Screening Process, Rev. 34 and CAP-NGGC-205, Condition Evaluation and Corrective Action Process, Rev. 14. The inspectors also evaluated the scope of the licensee's internal audit program and reviewed recent corporate and self-assessment results.

Radiation protection (RP) activities were evaluated against the requirements of UFSAR Section 12; TS Sections 6.8 and 6.9; 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 Section 2RS1 of the Attachment.

b. Findings

No findings were identified.

2RS3 In-Plant Airborne Radioactivity Control and Mitigation

a. Inspection Scope

Plant Airborne Radioactivity Controls and Mitigation: The inspectors reviewed the plant's UFSAR to identify areas and/or tasks with the potential for elevated airborne radionuclide concentrations. Selected engineering controls that included temporary HEPA filtration units for minimizing personnel exposure, and airborne radiation monitoring instrumentation located within various areas of the plant were discussed with RP and operations staff. In addition, selected licensee documents including TS, UFSAR, design basis documents, Emergency Response Organization rosters, and

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procedures associated with plant airborne radioactivity controls and monitoring, and with respiratory protection program and emergency planning implementation were reviewed and discussed with cognizant licensee representatives.

Engineering Controls: Licensee engineering controls to control and mitigate airborne radioactivity were reviewed and discussed. The inspectors evaluated the use of temporary and permanent engineering controls to mitigate airborne radioactivity for selected tasks and operations with the potential for generating airborne activity conditions. The inspectors observed the use of high efficiency particulate air ventilation to control contamination during surface disturbing work for the deconning of lead shielding blankets in the Waste Processing Building. The inspectors evaluated the effectiveness of continuous air monitors and air samplers placed in selected work areas to provide indication of increasing airborne levels. The evaluation included procedural guidance, operability testing, and established configurations during specific tasks. In addition, plant guidance and its implementation for the monitoring of potential airborne beta-gamma and alpha-emitting radionuclides were reviewed and discussed with licensee representatives.

Use of Respiratory Protection Equipment: The inspectors reviewed the use of respiratory protection devices to limit the intake of radioactive material. This included the review of devices used for routine tasks and devices stored for use in emergency situations. Selected Self-Contained Breathing Apparatus (SCBA) units and negative pressure respirators (NPR) staged for routine and emergency use in the U1 Control Room, Operations Support Center and Technical Support Center were inspected for material condition, SCBA bottle air pressure, number of units, and number of spare masks and air bottles available. The inspectors reviewed maintenance records for selected SCBA units and evaluated SCBA and NPR compliance with National Institute for Occupational Safety and Health certification requirements. The inspectors also reviewed records of air quality testing for supplied-air devices and SCBA bottles. The inspectors observed the onsite compressor available for supplying breathing air and verified Grade D or greater air certification for the on-site compressors to include the SCBA bottle filling unit located in the Turbine Building. The ability to fill and transport bottles to the various facilities during an emergency was assessed by the inspectors.

Program guidance for issuance and use of respiratory protection devices were reviewed and discussed with responsible licensee representatives. The inspectors verified the licensee had procedures in place to ensure that the use of respiratory protection devices was ALARA when engineering controls were not practicable. Selected whole-body count routine and investigative analysis results for occupational workers were reviewed and discussed. Respirator and medical qualifications were reviewed for selected emergency responder personnel in the Maintenance, Operations, Chemistry and RP departments. In addition, qualifications for individuals responsible for testing and repairing SCBA vital components were evaluated through review of selected training records.

The inspectors verified that the licensee has procedural requirements in place for evaluating air samples for the presence of alpha emitters and reviewed airborne radioactivity and contamination survey records for several plant areas to ensure air samples are screened and evaluated per the procedure requirements.

Self-Contained Breathing Apparatus for Emergency Use: The inspectors reviewed the status and surveillance records of SCBAs staged for in-plant use during emergencies through review of records and walk-down of SCBAs staged in the U1 Control Room, Operation Support Center and Technical Support Center. The walk-down verified the appropriate number of SCBA kits were staged as specified by the emergency plan, appropriate mask sizes and types available for use, and, through interviews, that users were knowledgeable of storage locations of SCBA, spare masks, and vision correction, as well as how to don and use the equipment to include bottle change out. Selected maintenance records for SCBA units and air cylinder hydrostatic testing documentation were reviewed. Maintenance activities for selected respiratory protective equipment, e.g., compressed gas cylinders, regulators, valves, and hose couplings, by certified vendor technicians was verified for selected SCBA units. During the onsite inspection observed the contract vendor test and repair SCBA vital components for selected units.

Problem Identification and Resolution: Licensee CAP documents associated with the control and mitigation of in-plant radioactivity were reviewed and assessed. This included review of selected CRs related to use of respiratory protection devices including SCBAs. 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. 14. The inspectors also evaluated the scope of the licensee's internal audit program and reviewed recent assessment results. Licensee CAP documents reviewed are listed in Section 2RS3 of the Attachment.

RP activities were evaluated against the requirements UFSAR Section 12; 10 CFR Parts 19 and 20; Regulatory Guide 8.15, Acceptable Programs for Respiratory Protection; and approved licensee procedures. Documents reviewed during the inspection are listed in Section 2RS3 of the Attachment.

b. Findings

No findings were identified.

2RS4 Occupational Dose Assessment

a. Inspection Scope

External Dosimetry: The inspectors reviewed National Voluntary Laboratory Accreditation Program (NVLAP) certification data (including TLD testing for neutron, gamma, and beta exposures) and discussed program guidance for storage, processing, and results for active and passive personnel dosimeters currently in use. Licensee evaluations for shallow and deep dose assessments for workers with identified skin contaminations were reviewed and discussed. Comparisons between ED and personnel dosimeter data were discussed in detail. In addition, the inspectors reviewed station guidance for the use of extremity dosimetry, multi-badging, and re-positioning of whole body dosimetry.

Internal Dosimetry: Program guidance (including DAC-hr tracking), instrument detection capabilities, and assessment results for internally deposited radionuclides were reviewed in detail. The inspectors reviewed selected routine and investigative *in vivo* (Whole Body Count) analyses from January 2010 to October 2011. In addition, capabilities for collection and analysis of special bioassay samples were evaluated and discussed with licensee staff.

Special Dosimetric Situations: The inspectors evaluated the licensee's use of multi-badging, extremity dosimetry, and dosimeter relocation within non-uniform dose rate fields and discussed worker monitoring in neutron areas with licensee staff. The inspectors also reviewed records of monitoring for declared pregnant workers since January 2010 and discussed monitoring guidance with licensee staff. In addition, the adequacy of shallow dose assessments for selected Personnel Contamination Events occurring between January 2010 and October 2011 were reviewed and discussed.

Problem Identification and Resolution: The inspectors reviewed and discussed selected CAP documents associated with occupational dose assessment. The inspectors evaluated the licensee's ability to identify and resolve the identified issues in accordance with procedure CAP-NGGC-0205, "Condition Evaluation and Corrective Action Process," Rev. 14. The inspectors also discussed the scope of the licensee's internal audit program and reviewed recent assessment results.

HP program occupational dose assessment activities were evaluated against the requirements of UFSAR Section 12; TS Sections 6.8 and 6.9; 10 CFR Parts 19 and 20; and approved licensee procedures. Records reviewed are listed in Section 2RS4 of the report Attachment.

b. Findings

No findings were identified.

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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, Residual Heat Removal
- Mitigating Systems Performance Index, Cooling Water Systems

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

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

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 #505043, E-88 (“B” ESW Pump Room Fan) Did not secure when required due to low temperature;
- AR #497430, 1A-SA-8 (“A” Component Cooling Water Pump Breaker) causes “A” 125VAC System Trouble Alarm when Tested; and
- AR #497535, Multiple New Control Switches was Found Defective.

b. Findings

No findings were identified.

.2 Semi-Annual Trend Review

a. Inspection Scope

The inspectors performed a review of the licensee’s CAP and associated documents to identify trends that could indicate the existence of a more significant safety issue. The inspectors’ review was focused on repetitive equipment issues, but also considered the results of daily inspector CAP item screening discussed in Section 4OA2.1 above, licensee trending efforts, and licensee human performance results. The inspectors’ review nominally considered the six month period of July 1, 2011, through December 31, 2011, although some examples expanded beyond those dates where the scope of the trend warranted. The review also included issues documented outside the normal CAP in major equipment problem lists, repetitive and/or reworks maintenance lists, departmental problem/challenges lists, system health reports, quality assurance audit/surveillance reports, self assessment reports, and Maintenance Rule assessments. The inspectors compared and contrasted their results with the results contained in the licensee’s CAP trending reports. Corrective actions associated with a sample of the issues identified in the licensee’s trending reports were reviewed for adequacy.

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

- AR #497356, Three NRC Findings Linked to Cross Cutting Aspect H.4(A) Human Error Prevention

b. Findings

No findings were identified. The inspectors observed that the licensee performed adequate trending reviews. The licensee routinely reviewed cause codes, involved organizations, key words, and system links to identify potential trends in the CAP data.

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.3 Selected Issue Follow-up Inspection: Dedicated Shutdown Diesel Generator Failed to Start During Testing

a. Inspection Scope

The inspectors selected AR #487331, DSDG Failed to Start During Testing, for detailed review. This AR explored the causes of the DSDG failing to start on two separate occasions. 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 procedures CAP-NGGC-0200, Condition Identification and Screening Process and CAP-NGGC-0205, Condition Evaluation and Corrective Action Process.

b. Observations and Findings

No findings were identified.

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.

b. Findings

No findings were identified.

.2 (Closed) NRC Temporary Instruction (TI) 2515/177, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems (NRC Generic Letter (GL) 2008-01)"

a. Inspection Scope

The inspectors reviewed the implementation of the licensee's actions in response to GL 2008-01, Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems. The systems reviewed included the

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emergency core cooling system (ECCS), residual heat removal system (RHR), and the containment spray system (CSS).

The inspectors reviewed the licensing basis of the facility to verify that actions to address gas accumulation were consistent with the operability requirements of the subject systems.

The inspectors reviewed the design of the subject systems to verify that the licensee's actions taken to address gas accumulation were appropriate given the specifics of the functions, configurations, and capabilities. The inspectors reviewed the design and operation of the RHR system to determine if flashing in RHR suction lines would challenge system operability. The inspectors reviewed selected analyses performed by the licensee to verify that methodologies for predicting gas void accumulation, movement, and impact were appropriate. The inspectors verified that the licensee's void acceptance criterion was consistent with NRR's void acceptance criteria. The inspectors performed walkdowns of selected subject systems to verify that the reviews and design verifications conducted by the licensee had drawn appropriate conclusions with respect to piping configurations and pipe slope which could result in gas accumulation. The inspectors reviewed the licensee's re-analysis of the CSS water hammer calculation to verify that the reduced containment isolation valves' opening stroke times did not have an adverse effect on the peak forces and resulting structural stresses exerted on the system's piping and supports.

The inspectors also reviewed testing implemented by the licensee to address gas accumulation. Selected test procedures and completed test results were reviewed to verify that they were appropriate to detect gas accumulations that could challenge subject systems. The inspectors reviewed the specified testing frequencies to verify that the testing intervals had appropriately taken historical gas accumulation events as well as susceptibility to gas accumulation into account. The inspectors reviewed selected procedures used for filling and venting following conditions which may have introduced voids into the subject systems to verify that the procedures addressed testing for such voids and provided processes for their reduction or elimination.

The inspectors reviewed selected licensee's assessment reports, corrective action program (CAP) documents, and trending data to assess the effectiveness of the licensee's CAP when addressing the issues associated with GL 2008-01. In addition, the inspectors verified that selected corrective actions identified in the licensee's 9-month and supplemental reports were documented. The inspectors also verified that commitments were included in the CAP.

b. Findings:

No findings were identified

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4OA6 Management Meetings

.1 Exit Meeting Summary

On January 25, 2012 the inspector presented the inspection results to Mr. Chris Burton, and other members of the licensee staff. The inspectors confirmed that proprietary information was not provided or examined during the inspection period.

A final exit with Dave Corlett and John Doorhy was conducted on October 18, 2011, via phone conference regarding TI-177.

On December 8, 2011, the inspectors discussed preliminary results of the onsite radiation protection inspection with Mr. E. Kapopoulos, Plant Manager, and other responsible staff. The inspectors noted that proprietary information was reviewed during the course of the inspection but would not be included in the documented report.

ATTACHMENT: SUPPLEMENTAL INFORMATION

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SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee personnel

C. Burton, Vice President Harris Plant
D. Corlett, Supervisor, Licensing/Regulatory Programs
J. Doorhy, Licensing Specialist
J. Dufner, Director, Engineering
D. Griffith, Training Manager
K. Holbrook, Manager, Support Services
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
G. Simmons, Emergency Preparedness Superintendent
M. Wallace, Licensing Engineer
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

None

Opened and Closed

None

Closed

05000400/2515/177

TI Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems (NRC Generic Letter (GL) 2008-01) (Section 40A5.2)

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

Work Orders

- WO#2019499, E-88 Did Not Secure When Required Due to Low Temperature,

Section 1R04: Equipment Alignment

Partial System Walkdown

Alternate Seal Injection system:

- Procedure OP-185, Alternate Seal Injection System,

Emergency Service Water system:

- Procedure OP-139 Service Water System,
- Drawing 2165-S-0547, Simplified Flow Diagram Service Water Systems

Diesel Fuel Oil system:

- FSAR 9.5.4, Diesel Generator Fuel Oil Storage and Transfer System,
- Drawing 2165-S-563, Simplified Flow Diagram Diesel Fuel Oil Systems

Complete System Walkdown

- Procedure OP-185, Alternate Seal Injection System
- Drawing 2165-S-1371, Simplified Flow Diagram Alternate Seal Injection Systems

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-012-08-SEC, Out Building Fire Pre-Plan
- FPP-012-02-RAB 236, Reactor Auxiliary Building Elevation 236 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

- Appendix I to the HNP Probabilistic Safety Assessment, Internal Flooding Analysis
- Calculation #PRA-F/E-4, RAB Unit 1 Elevation 190' & 216' Flood Analysis
- Calculation #PRA-F/E-5, RAB Unit 1 Elevation 236 Compartment Flood Analysis
- Calculation #PRA-F/E-6, RAB Unit 1 Elevation 261 Compartment Flood Analysis
- Calculation #PRA-F/E-7, RAB Unit 1 Elevation 286 Compartment Flood Analysis
- Calculation #PRA-F/E-8, RAB Unit 1 Elevation 305 Compartment Flood Analysis
- Ebasco Services Incorporated #SD-4, Turbine Building Sump Size
- Ebasco Services Incorporated #SD-1, Turbine Building Sump Data Sheet

Procedures

- AOP-022, Loss of Service Water
- OP-139, Service Water System

Other Documents

- Specification CAR-SH-E-14B, Electric Cables
- Carolina Power & Light Company Quality Release No. 5984, Power and Coaxial Cable
- The Vendor Quality Assurance Report Release for Shipment for Purchase Order N4435045, Release 12
- Cable-qualification test reports obtained from the Kerite Company under Kerite Factory Order D-857
- Kerite Engineering Memorandum No. 223, Determining Temperature 'Rating' of High Temperature Kerite Insulated Cables for Operation in Wet and Alternate Wet/Dry Locations, 5/4/77

Section 1R07: Heat Sink Performance

Procedures

- EPT-163, GL 89-13 Inspections (Raw Water Systems & Local Area Air Handler Inspection & Documentation) 10/17/2010; 5/17/2011; 4/27/2011; 5/3/2011
- PLP- 620, Service Water Program (Generic Letter 89-13)
- MPT-M0091, Heat Exchanger Opening/Closure for NRC Generic Letter 89-13 Inspections

Work Order

- WO# 1563658, Replace Cooling Coils on AH-4
- WO# 1595361, Replace with Spare CSIP Gear Oil Cooler
- WO# 1712692, Disassemble, Inspect and Clean CSIP 'A' Gear Oil Cooler
- WO# 1546405, Inspect and Clean CSIP 'A' Gear Oil Cooler

Section 1R11: Licensed Operator Requalification ProgramBenchmark 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

- 5-S-0805, Spent Fuel Pool Cooling System

Section 2RS1: Radiological Hazard Assessment and Exposure Controls

Procedures, Guidance Documents, and Manuals

- AP-504, Administrative Controls for Locked and Very High Radiation Areas, Revision (Rev.) 31
- CAP-NGGC-200, Condition Identification and Screening Process, Rev. 34
- CAP-NGGC-201, Self-Assessment/Benchmark Programs, Rev. 17
- CAP-NGGC-205, Condition Evaluation and Corrective Action Process, Rev. 14
- HPP-625, Performance of Radiological Surveys, Rev. 34
- HPP-800, Handling Radioactive Material, Rev. 56
- HPS-NGGC-0003, Radiological Posting, Labeling, and Surveys, Rev. 15
- HPS-NGGC-0013, Personnel Contamination Monitoring, Decontamination, and Reporting, Rev. 14
- HPS-NGGC-0024, Alpha Monitoring Guidelines, Rev. 4

- HPS-NGGC-0044, Radiation Work Permits, Rev. 10
- HPS-NGGC-1000, Radiation Protection – Conduct of Operations, Rev. 1
- Shearon Harris Nuclear Power Plant Unit No. 1, Technical Specifications
- SIC-710, Calibration of Semi-Portable Radiation Detection Equipment, Rev. 12

Records and Data Reviewed

- 2010 Goal Tracking Status Report printout
- Air Sample Results List for the period 05/01/11 through 12/07/11
- Air Sample AS-20110928-001, WPB 211 A & B Waste Gas Compressor Rms, 'B' Unbolt Flanges and Cut Pipe
- Air Sample AS-20110928-002, WPB 211 A & B Waste Gas Compressor Rms, 'B' Grind
- Air Sample AS-20110928-003, WPB 211 A & B Waste Gas Compressor Rms, 'B' Weld
- ALARA Work Plan # 2041, BX3 Box Calibrator Source Loading & Installation, Rev. 0
- Dose Rate Alarm Briefing Form, RWP 5537, Dated 10/02/10
- Fuel Handling Building Underwater Material Storage Log
- HNP DRD Alarm Evaluations for the period 10/01/10 through 12/08/11
- HNP Personnel Contamination Events Log for the period 10/01/10 through 12/07/11
- Memo to File: Location of Trash Baskets, Dated 10/31/10
- NSTS Annual Inventory Reconciliation Confirmation Anticipated, Dated 01/21/11
- NSTS Transaction, Source Serial Number 2730GP, Dated 12/02/11
- Radioactive Materials Receipt Form, Receipt # R11-060 A&B, Dated 12/02/11
- Radiological Survey Record (RSR) 0221-003, FHB Quarterly Clean Area Hot Particle Survey
- RSR 0316-016, East RMA Yard, Quarterly Survey
- RSR 0414-003, FHB Quarterly Clean Area Hot Particle Survey
- RSR 0627-006, East RMA Yard, Quarterly Survey
- RSR 0822-009, FHB Quarterly Survey
- RSR 0825-003, FHB Quarterly Clean Area Survey
- RSR 0825-007, FHB Quarterly CA Survey Including Decon Cask Pit and Head Storage Area
- RSR 0906-005, Mechanical Penetration Room Monthly Survey
- RSR 0927-008, East RMA yard in front of WPB for RFO-16 Outage
- RSR 0928-006, Waste Gas Compressor "B", Replace 3WG-E032 Seal Water Strainer
- RSR 0928-007, Waste Gas Compressor "B", Pre Decon – Work Complete
- RSR 0929-009, Waste Gas Compressor "B", Post Decon
- RSR 1003-024, Smearing Sources with Expiration Dates
- RSR 1010-008, East RMA Yard, Quarterly/Semi-annual Survey
- RSR 1012-042, East RMA Yard, Down Post Survey
- RSR 1027-002, Mechanical Penetration Room Monthly Survey
- RSR 1103-005, Mechanical Penetration Room Monthly Survey
- RSR 1127-006, "A" Primary Sample Sink Weekly Survey
- RSR 1127-007, "B" Primary Sample Sink Weekly Survey

- RSR 1202-011, Receipt Survey of Hopewell Calibrator Source Cask
- RSR 1203-007, Initial Per-training Survey of the Hopewell Box Calibrator
- RSR 1203-009, "A" Primary Sample Sink Weekly Survey
- RSR 1203-013, "B" Primary Sample Sink Weekly Survey
- RSR 1205-005, F50 and F60 Filter Change out/ Area Setup
- RSR 1205-006, Change out filter 4
- Radioactive Sealed Source Certificate and Test Report, Source Serial Number 3269CO, Dated 10/28/11
- Radiation Work Permit (RWP) 5556, Rx Head/Core Brl Lift&Set&Blind Flange/ RFO16 SOER 01-01, Rev. 0
- RWP 5685, Rx Vessel Nozzle Alloy 600 Mitigation RFO16, Rev. 0
- RWP 5915, Filter Changes on Contaminated Systems, Rev. 0
- RWP 6357, BX3 Box Calibrator Source Loading & Installation, Rev. 0
- Semi-Annual Source Inventory and Leak Test Package, Dated 10/11/11
- Source Certificate, Source Serial Number 2730GP, Dated 11/25/11

Corrective Action Program (CAP) Documents

- Apparent Cause Evaluation Report, NCR Number: 474243
- Harris Plant Radiation Protection Performance & Trend Report, Third Quarter 2011
- H-RP-11-01, Assessment of HNP Radiation Protection, Dated 07/11/11
- NCR 00438512
- NCR 00447168
- NCR 00452878
- NCR 00459161
- NCR 00459685
- NCR 00459689
- NCR 00467915
- NCR 00479334
- NCR 00481271
- NCR 00494335
- NCR 00495214
- NCR 00502426

Section 2RS3: In-Plant Airborne Radioactivity Control and Mitigation

Procedures, Guidance Documents, and Manuals

- ADM-NGGC-105, ALARA Planning, Rev. 10
- CAP-NGGC-0200, Condition Identification and Screening Process, Rev. 34
- CAP-NGGC-0205, Condition Evaluation and Corrective Action Process, Rev. 14
- HPP-630, Respiratory Protection, Rev. 25
- HPP-631, Certification and Operation of Breathing Air Supplies, Rev. 24
- HPP-715, Operation of Portable Air Sampling Equipment, Rev. 8
- HPP-720, Operation of Semi-Portable Air Sampling Equipment, Rev. 10
- HPP-730, Operation of Portable Ventilation Units and Vacuums, Rev. 15

- HPS-NGGC-0005, Calibration of Portable Radiation/Contamination Survey Instruments, Rev. 12
- HPS-NGGC-0006, Quantitative Fit Testing, Rev. 7
- HPS-NGGC-0020, Calibration and Operation of the Eberline AMS-4 Air Monitor, Rev. 2
- HPS-NGGC-0201, Self-Assessment/Benchmark Programs, Rev. 17
- OMM-002, Shift Turnover Package, Rev. 59

Records and Data

- Attachment 6, Grade D Certification and Radioisotope Testing of Breathing Air, 261' WPB Resp Issue, Dated 03/31/11 and 05/24/11
- Attachment 6, Grade D Certification and Radioisotope Testing of Breathing Air, FHB 286, Service Air for Diving Operations, Dated 08/03/11
- Attachment 6, Grade D Certification and Radioisotope Testing of Breathing Air, Generator, Rewind Building Portable Air Compressor, Dated 09/18/10
- Attachment 6, Grade D Certification and Radioisotope Testing of Breathing Air, SCBA, Dated 12/21/10, 03/31/11 and 05/24/11
- Attachment 6, Grade D Certification and Radioisotope Testing of Breathing Air, Turbine Building, Service Air, Dated 10/05/10
- Carolina Power & Light Company, Harris Nuclear Plant, Radiation Control Technicians, Level I,
- Qualification Checkout Card, Disassemble, Inspect, Repair, and Test Respiratory Equipment for selected Radiation Control Technicians
- HNP Emergency Response Organization Duty Roster for December 2011
- HPP-630, Attachment 8, SCOTT AIR-PAK FIFTY Respiratory Equipment Inspection Record, Rev. 25, Records Dated January 2010 to Present
- HPP-730, Attachment 1, Percent Penetration and Bypass Leakage Test Records for selected HEPA units, Dated 03/11/10 and 10/27/11
- Lawrence Factor, Certified Pure, CGA D, Progress Energy/Harris Nuclear Plant, Blast Yard,
- Eagle Air and Service Air Compressors, Dated 10/04/10
- Respirator Practical Exercise and Odor Test, Memo to File, Dated 02/15/11
- Scott PosiChek3, Visual/Functional Test Results, Scot Air-Pak 4.5, Nos. 1196610, Dated 09/21/10 and 09/29/11; 1196633, Dated 06/30/09 and 06/16/11; 1196634, Dated 06/30/09 and 06/16/11; and 1605944, Dated 01/27/09 and 01/06/11

CAP Documents

- AR 00444374
- CR 00429456
- H-RP-11-01, Assessment of HNP Radiation Protection, Dated July 11, 2011
- NCR 453963
Quick Hit Self-Assessment Report No. 00464888, NRC Inspection Criteria for In Plant Airborne Radioactivity Control and Mitigation (71124.03)

Section 2RS4: Occupational Dose Assessment

Procedures, Guidance Documents and Manuals

- DOS-NGGC-0005, Skin Dose from Contamination, Rev. 11
- DOS-NGGC-0006, Personnel Exposure Investigations, Rev. 12
- DOS-NGGC-0007, Internal Dose Calculations, Rev. 12
- DOS-NGGC-0021, Whole Body Counter (WBC) System Operation, Rev.19
- HPP-625, Performance of Radiological Surveys, Rev. 34
- HPS-NGGC-0013, Personnel Contamination Monitoring, Decontamination, and Reporting, Rev. 14
- HPS-NGGC-1000, Radiation Protection – Conduct of Operations, Rev. 1
- Shearon Harris Nuclear Power Plant Unit No. 1, Technical Specifications

Records and Data Reviewed

- CP&L, In Vivo Monitoring Report list MDAs for prominent plant nuclides, Dated 12/07/10
- CP&L Radiological Services Unit, "Dosimetry Technical Report: 97-03, Neutron Spectra of the Spent Fuel Cask," Dated March 26th, 1997
- Form DOS-NGGC-0007-1-12, "Intake Assessment," Dated 10/25/10
- Harris Plant Bioassay Results, Purchase Order #59674, GEL Laboratories, Dated October 11, 2010
- HNP Post-Job ALARA Critique, ALARA Work Plan #10-001, Leak Inspection and Repair on AH3.
- National Voluntary Laboratory Accreditation Program Scope Of Accreditation To ISO/IEC 17025:2005, Effective dates: 10/01/11 through 09/30/12
- RB AH3 TLD/ED comparison of Neutron and Gamma Radiation Doses, Measured – vs- Estimate, Dated 01/13/10
- Radiation Protection Technical Report 08-002, RCA Exit Monitor Internal Contamination Sensitivities, Rev. 0
- RSR 1024-023, AH-3, 10-26-2010.
- RSR 0108-004, AH-3, 01-08-2010.
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- RWP 5522, RCB AH-3 Repair, Dated 11/17/10
- Tech Report #87-9, Carolina Power & Light Company Health Physics Services Unit , "Neutron Calibration Factor at SHNPP, 08-24-1987. Dosimetry Technical Report: 97-03, Neutron Spectra of the Spent Fuel Cask," Dated March 26th, 1997

CAP Documents

- NCR 00429456
- NCR 00444374
- NCR 00466427
- NCR 00503438

- NCR 00503448

Section 40A1: Performance Indicator Verification

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

Procedures

- REG-NGGC-0009, NRC Performance Indicators and Monthly Operating Report Data, Rev. 11

Work Order

- WO# 1784029, Perform Molded Cases Circuit Breaker Testing
- WO# 1517715, Limitorque Inspection and Lubrication
- WO# 1631443, 480V Cubicle and Breaker Inspection

Corrective Action Documents

- AR# 432567, ECCS Out for Greater Than Allowed Time
- AR# 460540, Extended LCO Inoperable Time for 1CC-147
- CAP-NGGC-0205, Root Cause Evaluation Report, 11/9/2010

Miscellaneous

- LER 2010-005-00, ECCS Out for Greater Than Allowed Time
- 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 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

Section 40A5: Other Activities

Licensing Basis Documents

- ML081360497, Shearon Harris Nuclear Plant, Unit No. 1 - Three Month Response to NRC Generic Letter 2008-01, Managing Gas Accumulation in Emergency Core Cooling; Decay Heat Removal, and Containment Spray Systems, May 9, 2008

- ML082910295, Shearon Harris Nuclear Plant, Unit No. 1 - Nine Month Response to NRC Generic Letter 2008-01, Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems, October 14, 2008
- ML092250226, Shearon Harris Nuclear Plant, Unit No. 1 – Nine-Month Supplemental (Post-Outage) Response to NRC Generic Letter 2008-01, Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems, August 10, 2009
- ML100430444, Shearon Harris Nuclear Plant, Unit No. 1 - Response to Request for Additional Information Regarding Generic Letter 2008-01, January 28, 2010
- ML1005503980, Closure Letter for Shearon Harris Nuclear Plant Unit No. 1 response to Generic Letter 2008-01, Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems, March 1, 2010

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- APP-ALB-001, Main Control Board, Rev. 16
- GP-002, Normal Plant Heat-up from Cold Solid to Hot Subcritical - MODE 5 to 3 –
- OP-111, Residual Heat Removal System, Rev. 52
- OP-112, Containment Spray System, Rev. 36
- OPS-NGGC-1305, Operability Determinations, Rev 4
- OPS-NGGC-1309, System Drain, Fill and Vent Procedure, Rev. 0
- OST-1107, ECCS Flow Path And Piping Filled Verification Monthly Interval Modes 1-2-3-4-5, Rev. 29
- PLP-400, Post Maintenance Testing, Rev. 49

Drawings

- CAR-2165-G-0050, Flow Diagram Containment Spray System Unit 1, Rev. 26
- CAR-2165-G-116, Containment Spray Piping – Reactor Auxiliary Building - Plan EL. 190.00' - Unit 1, Rev. 13
- CAR-2165-G-117, Containment Spray Piping – Reactor Auxiliary Building – Plan EL. 236.00' - Unit 1, Rev. 12
- CAR-2165-G-118, Containment Spray Piping – Reactor Auxiliary Building - Partial Plan & Sections - Unit 1, Rev. 15
- CAR-2165-G-119, Containment Spray Piping – Containment Building Plan & Sections, Unit 1, Rev. 14
- CPL-2165-S-0550, Simplified Flow Diagram Containment Spray System Unit 1, Rev. 17
- CPL-2165-S-1300, Simplified Flow Diagram Reactor Coolant System Unit 1 (Sheet 1), Rev. 23
- CPL-2165-S-1305, Simplified Flow Diagram Chemical & Volume Control Sys Unit 1 (Sheet 3), Rev. 23
- CPL-2165-S-1308, Simplified Flow Diagram Safety Injection System Unit 1, Rev. 12
- CPL-2165-S-1310, Simplified Flow Diagram Safety Injection System Unit 1 (Sheet 3), Rev. 12
- CPL-2165-S-1324, Simplified Flow Diagram Residual Heat Removal Unit 1, Rev. 11

- D-74-49, Containment Spray Additive Tank, Rev. 8

Completed Procedures

- GP-002, Normal Plant Heat-up from Cold Solid to Hot Subcritical - MODE 5 to 3 -, Rev. 49 (Completed 11/7/2010)

Completed Surveillance Procedures

- OST-1107, ECCS Flow Path And Piping Filled Verification Monthly Interval Modes 1-2-3-4-5, (Completed 4/10/10, 5/08/10, 6/05/10, 7/03/10, 7/31/10, 8/28/10, 9/26/10, 11/07/10, 11/20/10, 12/18/10, 1/15/11, 2/13/11, 3/19/11)

Calculations

- 3-E-8-012, Water Hammer Analysis on Containment Spray Piping, Rev. 2
- CT-0063, Void Size Acceptance Criteria for Presence of Air within the Containment Spray Additive System, Rev. 0
- FAI/08-78, Methodology for evaluating water hammer in the containment spray header and hot leg piping during switchover piping, Rev. 0
- FAI/09-41, Evaluation of the Shearon Harris HHSI and LHSI Discharge Piping, Rev. 0
- FAI/10-08, Thermal Hydraulic Analysis of the Shearon Harris RHR Suction System in the Case of RHR Initiation with Elevated Hot Leg Suction Temperatures, Rev. 1
- HNP-M/MECH-1095, Limiting Void Sizes for CSIP Suction Piping, Rev. 0
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- 359693-09, Quick Hits Self Assessment Report For GL 2008-01, 11/19/2009

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- 071104, NRC Generic Letter 08-01 Evaluation for HNP, Rev. 0
- 080820, Potential Voids due to Adverse Slopes on GL 08-01 Systems, Rev. 0
- 306234-09, Potential for RHR trains to be inoperable during Mode change, Wolf Creek, Rev. 0

Work Orders (WO)

- 01676361-02, Performance of UT void checks at pre-OST-1107 selected locations, 9/22/2010
- 01676362-02, Performance of UT void checks at pre-OST-1107 selected locations, 11/05/2010
- 01676363-02, Performance of UT void checks at pre-OST-1107 selected locations, 11/20/2010

- 01676364-02, Performance of UT void checks at pre-OST-1107 selected locations, 12/14/2011
- 01794772-02, Performance of UT void checks at pre-OST-1107 selected locations, 1/11/2011
- 01815696-02, Performance of UT void checks at pre-OST-1107 selected locations, 2/8/2011
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- ASME Section III, Subsection NC, 1974 Edition
- Curve No. D-3, Containment Additive Tank, Rev. 0
- HNP Student Text, Containment Spray System, Rev. 2
- NSAL No 09-08, Presence of Vapor in Emergency Core Cooling System/Residual Heat Removal System in Modes 3/4 Loss-of-Coolant Accident Conditions, 2009
- Quick Cause Evaluation Report for NCR00438223, Rev. 1
- RWA-L-1110-001, Containment Spray Additive Tank Vortexing and Air Entrainment Potential for Harris Nuclear Plant, 5/13/2011

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- 00058670, Gas found in the CSIP suction piping from the RWST, 4/3/2002
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- 00368342, QHSA #359693, D1, GL08-01 Evaluation Documentation not Complete, 11/30/2009
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- 00456748, Need Formal Methodology For Evaluating Voids, 03/31/2011
- 00458474, Fill And Vent Flow Criteria For OP-107.03, 04/07/2011
- 00459317, NRC Question On NCR Initiation Threshold, 04/12/2011
- 00459294, Potential for Vortexing On CSAT Not Evaluated, 04/12/2011
- 00459617, Flex Conduit Bending Radius, 04/13/2011
- 00459613, As Found Slopes Not Incorporated Into Drawings, 04/13/2011
- 00459620, Section Of Pipe Run Not Measured For Adverse Slope, 04/13/2011
- 00459612, Gas Intrusion Inspection Team Concern, 04/13/2011
- 00459572, Venting Procedures With Inadequate Guidance, 04/12/2011
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- 00461415, Slope measurements needed on containment spray piping, 04/25/2011