



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION II  
SAM NUNN ATLANTA FEDERAL CENTER  
61 FORSYTH STREET, SW, SUITE 23T85  
ATLANTA, GEORGIA 30303-8931**

July 28, 2008

Carolina Power and Light Company  
ATTN: Mr. Robert J. Duncan, II  
Vice President - Harris Plant  
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 05000400/2008003**

Dear Mr. Duncan:

On June 30, 2008, the US Nuclear Regulatory Commission (NRC) completed an inspection at your Shearon Harris reactor facility. The enclosed integrated inspection report documents the inspection findings, which were discussed on July 2, 2008, with Mr. C. Burton 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.

Based on the results of this inspection, the inspectors identified one issue of very low safety significance (Green). This issue was determined to involve violations of NRC requirements. Additionally, a licensee identified violation which was determined to be of very low safety significance is listed in Section 40A7. Because of the very low safety significance of these issues and because they have been entered into your corrective action program, the NRC is treating these issues as non-cited violations, in accordance with Section VI.A.1 of the NRC's Enforcement Policy. If you contest any non-cited violation in this report, you should provide a response with the basis for your denial, within 30 days of the date of this inspection report 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 accordance with 10 CFR 2.390 of the "NRC's Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) components of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> <http://www.nrc.gov/NRC/ADAMS/index.html> (the Public Electronic Reading Room).

Sincerely,

*/RA/*

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

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

Enclosure: NRC Inspection Report 05000400/2008003  
w/Attachment: Supplemental Information

cc w/encl:

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Letter to Robert J. Duncan, II from Randall A. Musser dated July 28, 2008

SUBJECT: SHEARON HARRIS NUCLEAR POWER PLANT - NRC INTEGRATED  
INSPECTION REPORT 05000400/2008003

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U. S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No: 50-400

License No: NPF-63

Report No: 05000400/2008003

Licensee: Carolina Power and Light Company

Facility: Shearon Harris Nuclear Power Plant, Unit 1

Location: 5413 Shearon Harris Road  
New Hill, NC 27562

Dates: April 1, 2008 through June 30, 2008

Inspectors: P. O'Bryan, Senior Resident Inspector  
M. King, Resident Inspector  
P. Lessard, Resident Inspector  
G. Wilson, Senior Project Engineer, Sections 1R05 and 1R22  
M. Bates, Senior Operations Engineer, Section 1R11

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

Enclosure

## SUMMARY OF FINDINGS

IR 05000400/2008-003; April 1, 2008 – June 30, 2008; Shearon Harris Nuclear Power Plant, Unit 1; Maintenance Effectiveness.

The report covered a three-month period of inspection by resident inspectors, a senior project engineer, and an announced inspection by a regional senior operations engineer. One Green non-cited violation (NCV) was identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using IMC 0609, "Significance Determination Process" (SDP). Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

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

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

- Green. The inspectors identified a non-cited violation (NCV) of 10 CFR 50.65 (a)(2) for the licensee's failure to categorize two failures of the condenser vacuum pump effluent radiation monitor (REM-3534) as maintenance rule functional failures and accordingly, failed to monitor the component as required by 10 CFR 50.65 (a)(1). The licensee entered this issue into the Corrective Action Program (CAP) as Condition Report 283579.

The finding is greater than minor because it is associated with the equipment performance attribute of the Mitigating Systems cornerstone and affects the cornerstone objective of ensuring the availability, reliability, and capability of systems which responds to initiating events to prevent undesirable consequences. In addition, Example 7.b provided in Manual Chapter 0612, Appendix E, states that violations of Paragraph 10 CFR 50.65 (a)(2), failure to demonstrate effective control of performance or condition and not putting the affected Systems, Structures, and Components (SSCs) in (a)(1), are not minor because they necessarily involve degraded SSC performance or condition. The inspectors determined this finding is of very low safety significance because the REM-3534 is not a risk-significant component and a back-up means of detecting a primary to secondary leak, the steam generator blowdown radiation monitor, was functional during the time periods when REM-3534 was not functional. The finding occurred because of the two missed failures in 2005. All of the failures of REM-3534 since 2005 have been properly counted. Therefore, the cause of this finding was not associated with a cross-cutting area because it is not reflective of current licensee performance. (Section 1R12)

### B. Licensee-Identified Violations

A violation of very low safety significance, which was identified by the licensee, has been reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's CAP. This violation and its corrective action tracking number are listed in Section 40A7 of this report.

Enclosure

## REPORT DETAILS

### Summary of Plant Status

The unit began the inspection period at rated thermal power, and operated at full power for the entire inspection period.

#### 1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

#### 1R01 Adverse Weather Protection

##### a. Inspection Scope

After the licensee completed preparations for seasonal high temperatures, the inspectors walked down the emergency service water system and the normal service water system. These systems were selected because their safety related or risk significant functions could be affected by adverse weather. The inspectors reviewed documents listed in the Attachment, observed plant conditions, and evaluated those conditions using criteria documented in Procedure AP-301, Adverse Weather.

The inspectors also verified that plant features, and procedures for operation and continued availability of offsite and alternate AC power systems are appropriate including reviewing the licensee's/nuclear power plant (NPP) procedures affecting these areas and the communications protocols between the transmission system operator (TSO) and the NPP to verify that the appropriate information is exchanged when issues arise that could impact the offsite power system. Specific areas of inspection included:

- a. The actions to be taken by the NPP when notified by the TSO that the post-trip voltage of the off-site power system at the NPP will not be acceptable to assure the continued operation of the safety-related loads without transferring to the onsite power supply.
- b. The compensatory actions identified to be performed by the NPP if it is not possible to predict the post-trip voltage at the NPP for the current grid conditions.
- c. Required re-assessment of plant risk on maintenance activities which could affect grid reliability, or the ability of the transmission system to provide OSP.
- d. Required communications between the NPP and the TSO when changes at the NPP could impact the transmission system, or when the capability of the transmission system to provided adequate OSP is challenged.

Additionally, the inspectors evaluated the licensee's plans to address the ramifications of potentially lasting effects of adverse weather conditions (e.g., drought, flood).

##### b. Findings

No findings of significance were identified.

Enclosure

## 1R04 Equipment Alignment

### a. Inspection Scope

#### Partial System Walkdowns:

The inspectors performed the following three partial system walkdowns, while the indicated structures, systems and components (SSCs) were out-of-service (OOS) for maintenance and testing:

- A residual heat removal train with the B residual heat removal train out-of-service on April 9, 2008;
- B essential services chilled water train with the A essential services chilled water train out-of-service on April 23, 2008;
- B emergency diesel generator with the A emergency diesel generator out-of-service on May 21, 2008

To evaluate the operability of the selected trains or systems under these conditions, the inspectors reviewed valve and power alignments by comparing observed positions of valves, switches, and electrical power breakers to the procedures and drawings listed in the Attachment.

#### Complete System Walkdown:

The inspectors conducted a detailed review of the alignment and condition of the demineralized water system. To determine the proper system alignment, the inspectors reviewed the procedures, drawings, and Final Safety Analysis Report (FSAR) sections listed in the Attachment.

The inspectors walked down the system, to verify that the existing alignment of the system was consistent with the correct alignment. Items reviewed during the walkdown included the following:

- Valves are correctly positioned and do not exhibit leakage that would impact the function(s) of any given valve.
- Electrical power is available as required.
- Major system components are correctly labeled, lubricated, cooled, ventilated, etc.
- Hangers and supports are correctly installed and functional.
- Essential support systems are operational.
- Ancillary equipment or debris does not interfere with system performance.
- Tagging clearances are appropriate.
- Valves are locked as required by the licensee's locked valve program.

The inspectors reviewed the documents listed in the Attachment, to verify that the ability of the system to perform its function could not be affected by outstanding design issues, temporary modifications, operator workarounds, adverse conditions, or other system-related issues tracked by the Engineering Department.

b. Findings

No findings of significance were identified.

1R05 Fire Protection

.1 Fire Protection Quarterly Inspections

a. Inspection Scope

For the 12 areas identified below, the inspectors reviewed the licensee's control of transient combustible material and ignition sources, fire detection and suppression capabilities, fire barriers, and any related compensatory measures, to verify that those items were consistent with FSAR Section 9.5.1, Fire Protection System, and FSAR Appendix 9.5.A, Fire Hazards Analysis. The inspectors walked down accessible portions of each area and reviewed results from related surveillance tests, to verify that conditions in these areas were consistent with descriptions of the applicable FSAR sections. Documents reviewed are listed in the Attachment.

- 305' level of the reactor auxiliary building including areas 12-A-RCC1 and 12-A-CRC1 (2 areas);
- 236' level of the reactor auxiliary building including area 1-A-BAL-A (1 area);
- 236' level of the reactor auxiliary building including areas 1-A-BAL-D (1 area);
- 236' level of the reactor auxiliary building including areas 1-A-BAL-G and 1-A-BAL-H, (2 areas);
- B emergency diesel generator building including areas 1-D-DGB and 1-D-DTB (2 areas)
- 286' level of the reactor auxiliary building including areas 1-A-5-HVA, 1-A-SWGRA, 1-A-5-HVB, and 1-A-SWGRB (4 areas)

Also, to evaluate the readiness of the licensee's personnel to prevent and fight fires, the inspectors observed fire brigade performance during a fire drill in the reactor auxiliary building on June 8, 2008

b. Findings

No findings of significance were identified.

.2 Closeout Activities of Generic Letter 2006-03, "Potentially Nonconforming Hemyc and MT Fire Barrier Configuration"

a. Inspection Scope

A senior project engineer inspector inspected fire areas/zones that utilize Hemyc or MT as fire barriers to ensure that the licensee has established compensatory measures in accordance with the licensee's response to U.S. Nuclear Regulatory Commission Generic Letter 2006-003, "Potentially Nonconforming Hemyc and MT Fire Barrier Configuration," dated April 10, 2006.

b. Findings and Observations

The senior project engineer confirmed that the licensee continues to track Hemyc and MT installations as fire protection system impairments and that compensatory measures (e.g., 1-hour fire watch in affected fire areas or alternate compensatory measures using staff guidance provided in Regulatory Issue Summary 2005-07, "Compensatory Measures To Satisfy the Fire Protection Program Requirements," dated April 19, 2005) remain in place pending completion of the modifications and evaluations.

1R07 Heat Sink Performance

a. Inspection Scope

The inspectors reviewed the latest performance test and inspection results for the containment cooling system heat exchangers to verify that the inspection and test results were appropriately categorized against the pre-established acceptance criteria described in the procedures listed in the attachment. The inspectors also verified that the frequency of the inspection and testing was sufficient to detect degradation prior to loss of heat removal capability below design basis values. Additional documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification

.1 Licensed Operator Continuing Training

a. Inspection Scope

On April 1, 2008, the inspectors observed/completed licensed-operator performance during requalification simulator training for crew E, to verify that operator performance was consistent with expected operator performance, as described in Exercise Guides DSS-016 and DSS-046. This training tested the operators' ability to place the plant in a safe condition following a steam generator tube rupture and a steam generator fault. The inspectors focused on clarity and formality of communication, the use of procedures, alarm response, control board manipulations, group dynamics and supervisory oversight.

The inspectors observed the post-exercise critique to verify that the licensee had identified deficiencies and discrepancies that occurred during the simulator training.

b. Findings

No findings of significance were identified.

.2 Annual Review of Licensee Requalification Examination Results.

a. Inspection Scope

On February 21, 2008, the licensee completed the requalification biennial written examination and on April 24, 2008, the licensee completed the requalification annual operating tests, both required to be given to all licensed operators by 10 CFR 55.59(a)(2). The inspectors performed an in-office review of the overall pass/fail results of the individual written examinations and operating tests, as well as the crew simulator operating tests. These results were compared to the thresholds established in Manual Chapter 0609 Appendix I, Operator Requalification Human Performance Significance Determination Process.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness

a. Inspection Scope

The inspectors reviewed two degraded SSC/function performance problems or conditions listed below to verify the licensee's handling of these performance problems or conditions in accordance with 10CFR50, Appendix B, Criterion XVI, Corrective Action, and 10CFR50.65, Maintenance Rule. Documents reviewed are listed in the Attachment.

- Multiple failures of radiation monitor REM-3534; and
- Leakage from the B essential services chiller water system chiller auxiliary oil pump

The inspectors focused on the following attributes:

- Appropriate work practices,
- Identifying and addressing common cause failures,
- Scoping in accordance with 10 CFR 50.65(b),
- Characterizing reliability issues (performance),
- Charging unavailability (performance),
- Trending key parameters (condition monitoring),
- 10 CFR 50.65(a)(1) or (a)(2) classification and reclassification, and
- Appropriateness of performance criteria for SSCs/functions classified (a)(2) and/or appropriateness and adequacy of goals and corrective actions for SSCs/functions classified (a)(1).

b. Findings

Introduction: The inspectors identified a Green non-cited violation (NCV) of 10 CFR 50.65 (a)(2) for the licensee's failure to properly evaluate the performance of the condenser vacuum pump effluent radiation monitor (REM-3534) and categorize two

failures of REM-3534 as maintenance rule functional failures and accordingly, failed to monitor the component as required by 10 CFR 50.65 (a)(1).

Description: On June 14, 2005 and September 22, 2005 the condenser vacuum pump effluent radiation monitor (REM-3534) experienced functional failures. However, the licensee failed to categorize these events as maintenance rule functional failures as required by the licensee's maintenance rule implementing procedure, ADM-NGGC-0101, Maintenance Rule Program. On July 31, 2007, REM-3534 suffered an additional functional failure that was categorized as a maintenance rule functional failure by the licensee. Including the June 14, 2005 and September 22, 2005 failures, the July 31, 2007 failure was the ninth failure of REM-3534 in a three year period and therefore exceeded its performance criteria of no more than eight maintenance rule functional failures in three years. Because of the previously missed failures, the licensee did not transition REM-3534 to (a)(1) status, but inspectors determined that since this failure resulted in exceeding the criteria used to demonstrate that the performance of the system was being adequately controlled through the performance of appropriate preventative maintenance, it should have resulted in the system being placed in maintenance rule (a)(1) status.

Analysis: The failure to evaluate and categorize the June 14, 2005 and the September 22, 2005 failures of REM-3534 as maintenance rule functional failures is a performance deficiency. The finding is greater than minor because it is associated with the equipment performance attribute of the mitigating systems cornerstone and affects the cornerstone objective of ensuring the availability, reliability, and capability of systems which respond to initiating events to prevent undesirable consequences. In addition, Example 7.b provided in Manual Chapter 0612, Appendix E, states that violations of Paragraph 10 CFR 50.65 (a)(2), failure to demonstrate effective control of performance or condition and not putting the affected SSCs in (a)(1), are not minor because they necessarily involve degraded SSC performance or condition. The inspectors determined this finding is of very low safety significance because radiation monitor REM-3534 is not a risk-significant component and a back-up means of detecting a primary to secondary leak, the steam generator blowdown radiation monitor, was functional during the time periods when radiation monitor REM-3534 was not functional. The finding occurred because of the two missed failures in 2005. All of the failures of REM-3534 since 2005 have been properly counted. Therefore, the cause of this finding was not associated with a cross-cutting area because it is not reflective of current licensee performance.

Enforcement: Paragraph (a)(1) of 10 CFR 50.65, requires, in part, that the holders of an operating license shall monitor the performance or condition of SSCs within the scope of the rule as defined by 10 CFR 50.65 (b), against licensee-established goals, in a manner sufficient to provide reasonable assurance that SSCs are capable of fulfilling their functions. Paragraph (a)(2) of 10 CFR 50.65 states, in part, that monitoring as specified in 10 CFR 50.65(a)(1) is not required where it has been demonstrated that the performance or condition of an SSC is being effectively controlled through the performance of appropriate preventive maintenance, such that the SSC remains capable of performing its intended function. Contrary to the above, by not recognizing that the radiation monitor had exceeded its performance criteria, the licensee failed to adequately demonstrate that the performance of preventative maintenance on the condenser vacuum pump effluent radiation monitor was sufficient to ensure the

component was capable of performing its intended function, and the system was not placed under the requirements of 10 CFR 50.65 (a)(1). Because this finding is of very low safety significance and has been entered into the licensee's CAP as Condition Report 283579, this violation is being treated as an NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy: NCV 05000400/2008003-01, Failure to Properly Categorize Maintenance Rule Functional Failures.

#### 1R13 Maintenance Risk Assessments and Emergent Work Control

##### a. Inspection Scope

The inspectors reviewed the licensee's risk assessments and the risk management actions for the plant configurations associated with the five activities listed below. The inspectors verified that the licensee performed adequate risk assessments, and implemented appropriate risk management actions when required by 10 CFR 50.65(a) (4). For emergent work, the inspectors also verified that any increase in risk was promptly assessed, and that the appropriate risk management actions were promptly implemented.

- Planned maintenance on the B train of the residual heat removal system and planned maintenance in the switchyard on April 9, 2008;
- Emergent corrective maintenance on the rod control system on April 23, 2008;
- Maintenance on Erwin 230 kV line while the B Train essential services chilled water system was unavailable due to scheduled maintenance on May 8, 2008;
- Tornado watch during slave relay testing on May 13, 2008;
- Tornado Warning while the A Train emergency diesel generator was unavailable due to scheduled maintenance on May 21, 2008.

The inspectors reviewed AR #260428, Blown Fuse in Rod Control Cabinet 2AC, associated with this area to verify that the licensee identified and implemented appropriate corrective actions.

##### b. Findings

No findings of significance were identified.

#### 1R15 Operability Evaluations

##### a. Inspection Scope

The inspectors reviewed six operability determinations addressed in the ARs listed below. The inspectors assessed the accuracy of the evaluations, the use and control of any necessary compensatory measures, and compliance with the TS. The inspectors verified that the operability determinations were made as specified by Procedure OPS-NGGC-1305, Operability Determinations. The inspectors compared the justifications made in the determination to the requirements from the TS, the FSAR, and associated design-basis documents, to verify that operability was properly justified and the subject component or system remained available, such that no unrecognized increase in risk occurred:

- AR #231941, Isokinetic Sampling Skid Not Functional;
- AR #268566, B ESCW Chiller Oil Leak;
- AR #279437, 'A' ESW Pump Motor Found to be Cool to Touch;
- AR #278821, SSPS Switch 809 Test Lamps Improper Response During OST-1045;
- AR #280015, 'B' Chiller Inoperable Due to High Oil Level;
- AR #282054, Post Accident Monitor Recorders Out of Service

b. Findings

No findings of significance were identified.

1R18 Plant Modifications

a. Inspection Scope

The inspectors reviewed the temporary modifications described in Engineering Change (EC) #69791, 1RC-103 Temporary Leak Repair and EC#69604, 1" 316SS Jamesbury Ball Valve Installed Downstream of 1IA-203 (2 temporary modification samples), to verify that:

- the temporary modifications and associated 10 CFR 50.59 screenings did not degrade the system design bases and were adequately evaluated with regard to the combined effect of the modifications on mitigating systems and the integrity of radiological barriers.
- the modifications did not affect system operability/availability of the affected systems.
- the installation and restoration of the temporary modifications were consistent with the modification documents.
- the configuration control of the modifications was adequate.
- the post installation testing was satisfactory and the actual impact of the temporary modifications on the permanent systems and interfacing systems was adequately verified by testing.

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

- AR# 272247, 1RC-103, Active Body-to-bonnet Leak;
- AR# 269728, 1IA-203, Instrument Air to RAB 190 N, Valve Failure

b. Findings

No findings of significance were identified.

1R19 Post Maintenance Testinga. Inspection Scope

For the five post-maintenance tests listed below, the inspectors witnessed the test and/or reviewed the test data, to verify that test results adequately demonstrated restoration of the affected safety function(s) described in the FSAR and TS. The tests included the following:

- OST-1092, 1B RHR Pump Operability Quarterly Interval Modes 1-2-3 after preventative maintenance on valve 1RH-58 on April 9, 2008;
- OST-1216, Component Cooling Water System Operability (A-SA and B-SB Pumps in Service) Quarterly Interval Modes 1-2-3-4 after solenoid replacement on valve 1CC-305 on April 11, 2008;
- OP-155, Diesel Generator Emergency Power System after replacement of 60BX1 relay for A EDG on May 21, 2008;
- OP-155, Diesel Generator Emergency Power System following repairs to the air pilot valve on cylinder R3 of A EDG on May 23, 2008;
- OST-1017, Pressurizer PORV Block Valve Test following repairs to valve RC-115 on June 18, 2008

b. Findings

No findings of significance were identified.

1R22 Surveillance Testinga. Inspection Scope

For the five surveillance tests identified below, the inspectors witnessed testing and/or reviewed test data, to verify that the systems, structures, and components involved in these tests satisfied the requirements described in the TS and the FSAR, and that the tests demonstrated that the SSCs were capable of performing their intended safety functions.

- MST-I0137, Main Steam/Feedwater Flow Loop 2 (F-0485/F-0486) Operational Test conducted on April 15, 2008;
- EPT-199, Emergency Diesel Generator 1B-SB Starting Air Compressor and Air Dryer Performance Test conducted on May 6, 2008;
- \*OST-1216, Component Cooling Water System Operability (A-SA and B-SB Pumps in Service) Quarterly Interval Modes 1-2-3-4 conducted on April 3, 2008;
- \*\*EST-221, Type C LLRT of Containment Purge Exhaust Penetration (M-57) conducted on May 13, 2008;
- OST-1026, Reactor Coolant System Leakage Calculation on June 24, 2008

\*This procedure included inservice testing requirements.

\*\*This procedure included testing of a large containment isolation valve.

b. Findings

No findings of significance were identified.

1EP6 Drill Evaluation

a. Inspection Scope

The inspectors observed an emergency preparedness drill conducted on April 22, 2008 and a simulator drill on April 1, 2008 to verify licensee self-assessment of classifications, notifications, and protective action recommendations development in accordance with 10CFR50, Appendix E.

b. Findings

No findings of significance were identified.

**3. OTHER ACTIVITIES**

4OA1 Performance Indicator Verification

a. Inspection Scope

To verify the accuracy of the PI data reported during that period, the inspectors compared the licensee's basis in reporting each data element to the PI definitions and guidance contained in NEI 99-02, Regulatory Assessment Indicator Guideline.

Initiating Events Cornerstone

For the initiating events and barrier integrity cornerstone performance indicators (PIs) listed below, the inspectors sampled licensee submittals for the period from April 1, 2007 through March 31, 2008.

- Unplanned Scrams PI
- Unplanned Scrams with Complications
- Unplanned Power Changes PI

The inspector reviewed a selection of licensee event reports, operator log entries, daily reports (including the daily corrective action reports), monthly operating reports, and PI data sheets to verify that the licensee had adequately identified the number of scrams and unplanned power changes greater than 20 percent that occurred during the previous four quarters. The inspectors compared this number to the number reported for the PI during the current quarter. The inspectors also reviewed the accuracy of the number of critical hours reported and the licensee's basis for classifying each of the reported scrams as uncomplicated scrams. In addition, the inspectors interviewed licensee personnel associated with the PI data collection, evaluation, and distribution.

- Safety System Functional Failures

The inspectors reviewed Licensee Event Reports, records of inoperable equipment, and Maintenance Rule records, to verify that the licensee had adequately accounted for functional failures that the subject systems had experienced during the previous four quarters. The inspectors also reviewed the number of hours those systems were required to be available and the licensee's basis for identifying functional failures. In addition, the inspectors interviewed licensee personnel associated with the PI data collection, evaluation, and distribution.

#### Barrier Integrity Cornerstone

- Reactor Coolant System Leakage PI
- Reactor Coolant System Specific Activity PI

For this PI, the inspectors reviewed licensee sampling and analysis of reactor coolant system samples, and compared the licensee-reported performance indicator data with records developed by the licensee while analyzing previous samples.

#### b. Findings

No findings of significance were identified.

### 4. **OTHER ACTIVITIES**

#### 4OA2 Identification and Resolution of Problems

##### .1 Routine Review of ARs

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

##### .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 inspector CAP item screenings, licensee trending efforts, and licensee human performance results. The inspectors' review nominally considered the six-month period of January, 2008 through June, 2008, although some examples expanded beyond those dates when the scope of the trend warranted. The review also included issues documented outside the normal CAP in system health reports, self assessment reports, and Maintenance Rule assessments. The inspectors compared and contrasted their results with the results contained in the licensee's latest semi-annual trend reports.

The inspectors also evaluated the licensee's trend reports against the requirements of the CAP as specified in CAP-NGGC-0200, Corrective Action Program.

b. Findings

No findings of significance were identified.

4OA3 Event Follow-up

.1 (Closed) LER 2008-001-00, Containment Spray Additive System Eductor Test Flow Outside of Technical Specification Limits

The licensee failed to meet Technical Specification Surveillance Requirement 4.6.2.2.d for the containment spray additive system several times between October 21, 2007 and May 18, 2008 because they were unable to maintain sodium hydroxide flow between 19.5 and 20.5 gpm in both eductors of the spray additive system. The inability to control sodium hydroxide flow in the required range impacts the post-accident pH of the water in containment. Improper pH in containment could impact fission product removal if pH is too low and cause adverse chemical reactions to take place if pH is too high. The licensee determined the causes to be air entrainment in the system that occurred during a surveillance test and inadequate design of a throttle valve in the sodium hydroxide flow path. Corrective actions included removing air from the system, performing ultra-sonic testing of the system to ensure an excessive amount of air was not still present in the system, and changing the flow characteristics of the sodium hydroxide flow loop to enable the throttle valve to control flow more reliably. Future corrective actions include evaluating other models of throttle valves to improve performance. This finding is greater than minor because it affects the design control attribute of the barrier integrity cornerstone and the cornerstone objective of providing reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. The finding was considered to have very low safety significance (Green) because the spray additive system is not a risk-significant component, and therefore does not increase core damage frequency (CDF) or large early release frequency (LERF). This licensee-identified finding represents a violation of TS 3.6.2.2, Containment Spray Additive System. The enforcement aspects of this finding are discussed in Section 4OA7. This LER is closed.

4OA5 Other Activities

.1 Quarterly Resident Inspector Observations of Security Personnel and Activities

a. Inspection Scope

During the inspection period, the inspectors conducted the following 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 review and inspection activities.

b. Findings

No findings of significance were identified.

.2 Institute of Nuclear Power Operations (INPO) Plant Assessment Report Reviewa. Inspection Scope

The inspectors reviewed the interim report for the INPO plant assessment of Harris Nuclear Power Plant conducted in January and February, 2008. The report was reviewed to ensure that issue identified were consistent with the NRC perspectives of licensee performance and to verify if any significant safety issues were identified that required further NRC follow-up.

b. Findings

No findings of significance were identified.

4OA6 Meetings, Including Exit

On July 2, 2008, the resident inspectors presented the inspection results to Mr. C. Burton and other members of the licensee staff. The inspectors confirmed that proprietary information was not provided or examined during the inspection.

4OA7 Licensee-Identified Violations

The following violation of very low safety significance was identified by the licensee and is a violation of NRC requirements which meet the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600 for being dispositioned as a Non-Cited Violation.

- TS 3.6.2.2 requires that the containment spray additive system be operable with two spray additive eductors each capable of adding sodium hydroxide solution from the chemical additive tank to a containment spray system pump flow. Contrary to this, between October 21, 2007 and May 18, 2008 the licensee was unable to maintain proper sodium hydroxide flow in both eductors of the spray additive system. Additional details are located in section 4OA3 of this report. This was identified in the licensee's CAP as AR 00254402.

ATTACHMENT: SUPPLEMENTAL INFORMATION

## **SUPPLEMENTAL INFORMATION**

### **KEY POINTS OF CONTACT**

#### **Licensee personnel**

C. Burton, Director, Site Operations  
D. Corlett, Supervisor, Licensing/Regulatory Programs  
J. Dills, Manager, Outage and Scheduling  
J. Dufner, Manager, Maintenance  
R. Duncan, Vice President Harris Plant  
M. Findlay, Superintendent, Security  
W. Gurganious, Training Manager  
K. Harshaw, Manager, Site Support Services  
K. Henderson, Plant General Manager  
C. Kamiliaris, Manager, Nuclear Assessment Section  
S. O'Connor, Manager, Engineering  
J. Pierce, Supervisor, Nuclear Assessment  
M. Robinson, Superintendent, Environmental and Chemistry  
G. Simmons, Superintendent, Radiation Control  
J. Warner, Manager, Operations

#### **NRC personnel**

R. Musser, Chief, Reactor Projects Branch 4

## LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

### Opened and Closed

05000400/2008003-01	NCV	Failure to Properly Categorize Maintenance Rule Functional Failures (Section 1R12).
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### Closed

05000400/2008-01-00	LER	Containment Spray Additive System Eductor Test Flow Outside of Technical Specification Limits. (Section 4OA3).
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## LIST OF DOCUMENTS REVIEWED

### Section 1R01: Adverse Weather Protection

- AP-300, Severe Weather
- AP-301, Seasonal Weather Preparations and Monitoring
- Work orders 1180688, 1299343, 1292051, 1076063, and 1301180.
- SOMRMC-NUC-040, Emergency Control Center System Operations Reference Manual – Carolinas
- SORMC-VAR-010, Emergency Control Center System Operations Reference Manual – Carolinas
- AOP-028, Grid Instability

### Section 1R04: Equipment Alignment

#### Partial System Walkdown

Residual heat removal system:

- Procedure OP-111, Residual Heat Removal System
- Drawing 2165-S-1324, Simplified Flow Diagram Residual Heat Removal Systems

Essential services chilled water system:

- Procedure OP-148, Essential Services Chilled Water System,
- Drawing 2165-S-0999, Simplified Flow Diagram Essential Services Chilled Water Systems

Emergency diesel generator power system:

- Procedure OP-155, Emergency Diesel Generator,
- Drawing 5-S-0633 S01, Simplified Flow Diagram Emergency Diesel Generator Lube Oil & Air Intake & Exhaust System – Unit 1
- Drawing 5-S-0633 S04, Simplified Flow Diagram Emergency Diesel Generator 1A-SA & 1B-SB Starting Air System Unit 1

#### Complete System Walkdown

- Procedure OP-143.03
- System Description 143.03, Demineralized Water System
- Design Basis Document-102, Reactor Make-up Water System
- Drawing 2165-S-0549, Simplified Flow Diagram Potable and Demineralized Water System
- Drawing 2165-S-0610, Simplified Flow Diagram Misc. Water Treatment System, Make-up Demineralized Water System
- Drawing 2165-S-0799, Simplified Flow Diagram Primary and Demineralized Water Systems – Reactor Auxiliary Building.
- FSAR section 9.2.3, Demineralized Water Makeup Systems
- AR #226054, B Demin Eater Degassifier Vacuum Pump Not Available
- AR #230508, Abnormal Noise in A Demin Water Transfer Pump
- WO #1052095, Failed Thrust Bearing, A Demin Water Transfer Pump
- AR #200286, High Sodium Levels in Demin Water Storage Tank

**Section 1R05: Fire Protection**

- FPP-012-02-RAB286, Reactor Auxiliary Building Elevation 286 Fire Pre-Plan
- FPP-012-04-DBG, Diesel Generator Building Fire Pre-Plan
- FPP-012-02-RAB236, Reactor Auxiliary Building Elevation 236 Fire Pre-Plan
- FPP-012-02-RAB305-324, Reactor Auxiliary Building Elevations 305 and 324 Fire Pre-Plan
- 261 RAB MCC 1A-35 SA Fire Drill Planning Guide and Critique Form
- 261 RAB MCC 1A-35 SA Fire Drill Brief

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

- EPT-163, Generic Letter 89-13 Inspections
- PLP-620, Service Water Program (Generic Letter 89-13)
- EPT-058, HVAC Flow Balance
- EPT-250, A Train ESW Flow Verification/Balance
- EPT-251, B Train ESW Flow Verification/Balance
- OST-1010, Containment Cooling System Operability Test Monthly Interval Modes 1-4

**Drawings:**

- 5-S-0547, Simplified Flow Diagram for Circulating and Service Water Systems, Sheet 1, Unit 1
- 5-S-0548, Simplified Flow Diagram for Circulating and Service Water Systems, Sheet 2, Unit 1

**Work Orders:**

- WO# 626366, M, Perform Section 7.2 of MPT-M0091 ON AH-2, AH-3
- WO# 626366, M, Perform Section 7.2 of MPT-M0091 ON AH-1, AH-4

**Section 1R11: Licensed Operator Requalification**

- EOP-Path-1, Path 1
- PEP-110, Emergency Classification and Protective Action Recommendations
- AOP-014, Loss of Component Cooling Water
- EOP-Path-2, Path 2
- AOP-022, Loss of Service Water

**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
- Work order 1307352, Oil leak from 1B-SB chiller

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

- OMP-003, Outage Shutdown Risk Management.
- WCM-001, On-line Maintenance.

### **Section 1R15: Operability Evaluations**

- OPS-NGGC-1305, Operability Determinations
- OPS-NGGC-1307, Operational Decision Making Process
- PIC-I094, Non-Safety Related (PIG) Airborne Radiation Monitor Calibration
- SHNPP Offsite Dose Calculation Manual (ODCM)
- Radiation Safety & Control Services, Inc. Report TSD-07-007, Evaluation of the Particulate and Iodine Primary Vent Stack Sampling System at HNP
- ANSI N13.1- 1969 – American National Standard Guide to Sampling Airborne Radioactive Materials in Nuclear Facilities
- CRC-240, Plant Vent Stack 1 Effluent Sampling
- Drawing 2165-S-552 S04, Simplified Flow Diagram Isokinetic Sampling System Plant Vent Stack RAB EL. 286.00 & 305.00 Unit 1
- FSAR Section 11.5, Process and Effluent Radiological Monitoring and Sampling Systems

### **Section 1R18: Plant Modifications**

- NRC Information Notice 93-90, Unisolatable Reactor Coolant System Leak Following Repeated Applications of Leak Sealant
- 1983 ASME Boiler and Pressure Vessel Code VIII, Pressure Vessels – Division I
- 1983 ASME Boiler and Pressure Vessel Code, Material Specifications Part A – Ferrous Materials
- CM-M0227, Pressurizer Spray Valve Maintenance
- CM-M0172, Online Leak Repair Using Sealant Injection
- PLP-605, ASME Boiler and Pressure Vessel Code Section XI Repair/Replacement Activity Program
- System Description SD-100.01, Reactor Coolant
- Design Basis Document DBD-100, Reactor Coolant System
- Design Basis Document DBD-133, Compressed Air System
- Operating Procedure OP-100, Reactor Coolant System
- Operating Procedure OP-151.01, Compressed Air
- Drawing 5-S-1301, Simplified Flow Diagram Reactor Coolant System-SH 2
- Drawing 5-S-0801, Simplified Flow Diagram Instrument Air System, Unit 1
- Drawing 1364-003370, 4 IN. 1500 LB. SS AO PZR Spray Control Ball V 4-SA88 RGA
- EGR-NGGC-0005, Engineering Change
- EGR-NGGC-0308, Pipe Stress Analysis

### **Section 1R19: Post Maintenance Testing**

- Drawing 2165-S-1322, Simplified flow diagram Component Cooling Water System, Sheet 4, Unit 1

- Drawing 2166-B-401 Sheet 1991A, Diesel Generator 1A-SA Excitation Control
- Drawing 2166-B-401 Sheet 1993, Diesel Generator 1A-SA Protection and Instrumentation (Potential)

**Section 40A1: Performance Indicator Verification**

- NEI 99-02, Regulatory Assessment Performance Indicator Guideline

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

- CAP-NGGC-0200, Corrective Action Program.
- AR# 77153, MST-I0411 Plant Stack Flow Rate Monitor and Isokinetic
- AR# 84107, Clearance 42072 on System 7005 Hanging > 3 Months
- AR# 174771, HEPA Filter Not Installed as Described in the FSAR
- AR# 183466 Jan 06 KPI for Particulate Releases Yellow
- AR# 188397, Plant, WPB 5, WPB 5A Vent Stack Effluent Monitoring
- AR# 191137 KPI for Particulate Effluent Release Turning Red
- AR# 231941 Isokinetic Sampling Skid