



UNITED STATES  
NUCLEAR REGULATORY COMMISSION

REGION II  
SAM NUNN ATLANTA FEDERAL CENTER  
61 FORSYTH STREET, SW, SUITE 23T85  
ATLANTA, GEORGIA 30303-8931

January 30, 2006

Carolina Power and Light Company  
ATTN: Mr. C. J. Gannon, Jr.  
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 05000400/2005005

Dear Mr. Gannon:

On December 31, 2005, 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 January 19, 2006, 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.

Based on the results of this inspection, no findings of significance were identified.

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> (the Public Electronic Reading Room).

Sincerely,

/RA/

Paul E. Fredrickson, Chief  
Reactor Projects Branch 4  
Division of Reactor Projects

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

Enclosure: NRC Inspection Report 05000400/2005005  
w/Attachment: Supplemental Information

cc w/encl: (See page 2)

cc w/encl:

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ADAMS:  Yes      ACCESSION NUMBER: \_\_\_\_\_

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NAME	RMusser	PO'Bryan					
DATE	01/30/2006	01/30/2006					
E-MAIL COPY?	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO

U. S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No: 50-400

License No: NPF-63

Report No: 05000400/2005005

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, 2005 - December 31, 2005

Inspectors: R. Musser, Senior Resident Inspector  
P. O'Bryan, Resident Inspector

Approved by: P. Fredrickson, Chief  
Reactor Projects Branch 4  
Division of Reactor Projects

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## SUMMARY OF FINDINGS

IR 05000400/2005-005; 10/1/2005 - 12/31/2005; Shearon Harris Nuclear Power Plant, Unit 1; Routine Integrated Report.

The report covered a three-month period of inspection by resident inspectors. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 3, dated July 2000.

A. Inspector-Identified and Self-Revealing Findings

None.

B. Licensee-Identified Violations

None.

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## REPORT DETAILS

### Summary of Plant Status

The unit began the inspection period at rated thermal power, and operated at rated power until October 2, 2005, when the unit was reduced to 50 percent power to perform repairs on the A condensate booster pump motor bearing. The repairs were completed and the unit returned to rated power on October 4, 2005. The unit operated at or near rated power for the remainder of the 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 low temperatures, the inspectors walked down the emergency service water (ESW) system, the emergency diesel generators (EDGs), and the refueling water storage tank. These systems were selected because their safety related 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.

##### b. Findings

No findings of significance were identified.

#### 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:

- B ESW system with A ESW system OOS on October 12, 2005.
- A EDG with B EDG OOS on October 27, 2005.
- B hydrogen analyzer with A hydrogen analyzer OOS on December 15, 2005.

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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.

b. Findings

No findings of significance were identified.

1R05 Fire Protection

a. Inspection Scope

For the sixteen 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 Final Safety Analysis Report (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.

- ESW system intake screening structure (1 area: 5-S-BAL)
- Intake structure including areas 12-I-ESW-BAL, 12-I-ESWPA, and 12-I-ESWPB (3 areas)
- 286' level of the reactor auxiliary building (RAB) including the A and B cable spreading rooms and the auxiliary control panel (areas 1-A-CSRA, 1-A-CSR, and 1-A-ACP, 3 areas)
- 286' level of the RAB including the vital battery rooms (areas 1-A-BATA, and 1-A-BATB, 2 areas)
- 286' level of the RAB including the A and B switchgear rooms (areas 1-A-SWGRA and 1-A-SWGRB, 2 areas)
- 305' level of the RAB including the computer room, process instrument cabinet room, rod-control cabinet room, auxiliary relay panel room, and the instrument & control repair shop (areas 12-A-6-RCC1, 12-A-6-ARP1, 12-A-6-CR, 12-A-6-IRR, and 12-A-6-PICR1, 5 areas)

The inspectors reviewed action request (AR) 178742, Scaffolding walkboard near sprinkler to verify that the licensee identified and implemented appropriate corrective actions.

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures

a. Inspection Scope

Internal Flooding

The inspectors walked down the service water tunnel which is directly connected to the RAB elevations containing risk-significant SSCs and susceptible to flooding from postulated pipe breaks, to verify that the area configuration, features, and equipment functions were consistent with the descriptions and assumptions used in FSAR Section 3.6A.6, Flooding Analysis, and in the supporting basis documents listed in the Attachment. The inspectors reviewed the operator actions credited in the analysis, to verify that the desired results could be achieved using the plant procedures listed in the Attachment.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification

a. Inspection Scope

On December 5, 2005, the inspectors observed licensed-operator performance during requalification simulator training for crew A, to verify that operator performance was consistent with expected operator performance, as described in Exercise Guide DSS-006. This training tested the operators' ability to cope with and recover from a station blackout. 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 instructor critique to verify that the licensee had identified deficiencies and discrepancies that occurred during the simulator training. Documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness

a. Inspection Scope

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

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- Steam generator power operated relief valve, 1MS-62, exceeded it's maintenance rule unavailability goal.
- Waste gas system leaks.

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

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Evaluation

a. Inspection Scope

The inspectors reviewed the licensee's risk assessments and the risk management actions for the plant configurations associated with the four activities listed below. The inspectors verified that the licensee performed adequate risk assessments, and implemented appropriate risk management actions when required by 10CFR50.65(a)(4). For emergent work, the inspectors also reviewed risk assessments to verify that any increase in risk was promptly assessed, and that appropriate risk management actions were promptly implemented. Documents reviewed are listed in the attachment.

- A high head safety injection (SI) availability maintained during an A ESW system outage by substituting normal service water to the A charging and safety injection (CSIP) pump heat exchangers on October 12, 2005.
- B EDG after failure of a pneumatic control valve on October 27, 2005.
- B EDG after failure of the output breaker closing circuit with a B train trip actuating device operational test scheduled on November 22, 2005.
- Breaker 52-13 maintenance with A train trip actuating device operational testing planned on December 9, 2005.

b. Findings

No findings of significance were identified.

#### 1R14 Operator Performance During Non-Routine Evolutions and Events

##### a. Inspection Scope

During the down-power and turbine valve testing on December 3, 2005, the inspectors observed plant instruments and operator performance to verify that the operators performed in accordance with the associated procedures and training. Documents reviewed are listed in the Attachment.

##### b. Findings

No findings of significance were identified.

#### 1R15 Operability Evaluations

##### a. Inspection Scope

The inspectors reviewed three 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 Technical Specifications (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 79165, High vibrations on the A EDG turbocharger
- AR 173729, Potential degradation of A essential services chilled water chiller during OST-1040
- AR 174210, B EDG field failed to flash

##### b. Findings

No findings of significance were identified.

#### 1R16 Operator Work-Arounds

##### a. Inspection Scope

The inspectors reviewed the cumulative effects of the operator workarounds listed below, to verify that those effects could not increase an initiating event frequency, affect multiple mitigating systems, or affect the ability of operators to respond in a correct and timely manner to plant transients and accidents. Documents reviewed are listed in the Attachment.

- OWA-295, Emergency service water seal flow alarm

- OWA-296, Main steam isolation valve closure post trip
- OWA-298, Water chiller expansion tank pressure

b. Findings

No findings of significance were identified.

1R19 Post Maintenance Testing

a. 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-1086, 1B-SB Emergency Diesel Generator Operability Test, after corrective maintenance on October 27, 2005.
- OST-1093, CVCS/SI System Operability, Train B and OST-1072, CVCS/SI System Remote Position Indication Test, after corrective maintenance on November 4, 2005.
- OPT-1528T, Temporary Leak Test For 'A' Essential Services Chiller Service Air Valves, after corrective maintenance on November 9, 2005.
- OST-1013, 1A-SA Emergency Diesel Generator Operability Test Monthly Interval Modes 1-2-3-4-5-6, after corrective maintenance on December 7-8, 2005.
- OST-1216, Component Cooling Water System Operability (A-SA and B-SB pumps in service) Quarterly Interval Modes 1-2-3-4, after maintenance on the B Component Cooling Water Pump on December 30, 2005.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing

a. Inspection Scope

For the six surveillance tests identified below, the inspectors witnessed testing and/or reviewed test data, to verify that the SSCs 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-I0210, Pressurizer Level Loop (L-0461) Operational Test on October 18, 2005.
- \*OST-1093, CVCS/SI System Operability Train B, Quarterly Interval on October 31, 2005.
- MST-I0362, Main Control Room Normal Outside Air Intake Radiation Monitor,

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- RM-01CZ-3504BSB Operational Test on November 21, 2005.
- OPT-1014, Turbine Valve Test on December 3, 2005.
- \*OST-1040, Essential Services Chilled Water Systems Operability Quarterly Interval Modes 1-6 on December 4, 2005.
- \*\*EST-220, Type C LLRT of Containment Exhaust Penetration - 58 on December 5, 2005.

\*This procedure included inservice testing requirements.

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

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 licensee's Corrective Action Program (CAP). The review was accomplished by reviewing daily AR reports.

.2 Annual Sample Review

a. Inspection Scope

The inspectors selected AR 156237 for detailed review to verify that conditions adverse to quality were addressed in a manner commensurate with the safety significance of the issue. This AR was associated with over pressurization and seal failure of C CSIP.

The inspectors reviewed the actions taken to verify that the licensee adequately addressed the following attributes:

- Complete, accurate, and timely identification of the problem.
- Evaluation and disposition of operability and reportability issues.
- Consideration of previous failures, extent of condition, generic or common cause implications.
- Prioritization and resolution of the issue commensurate with its safety significance.
- Identification of the root cause and contributing causes of the problem.
- Identification and implementation of corrective actions commensurate with the safety significance of the issue.

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The inspectors also reviewed this AR to verify licensee compliance with the requirements of the licensee's corrective action program as delineated in corporate procedure CAP-NGGC-0200, Corrective Action Program, and 10 CFR 50, Appendix B.

Documents reviewed are listed in the Attachment.

b. Findings and Observations

No findings of significance were identified.

.3 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 inspector's review nominally considered the six-month period of July through December, 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 specific items reviewed are listed in the Attachment. 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. Assessment and Observations

There were no findings of significance 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. The inspectors compared the licensee process results with the results of the inspectors' daily screening and did not identify any discrepancies or potential trends in the CAP data that the licensee had failed to identify.

40A6 Meetings, Including Exit

.1 Quarterly Integrated Inspection Report Exit

On January 19, 2006, the resident inspectors presented the inspection results to Mr. Gannon and other members of his staff. The inspectors confirmed that proprietary information was not provided or examined during the inspection.

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.2 Management Meeting Summary

On November 15, 2005, NRC Region II Management and staff conducted a public meeting with Progress Energy - Carolina Power & Light (CP&L) to discuss security initiatives at Shearon Harris. Attendees included Harris management and site staff.

This meeting was open to the public. The licensee's presentation material used during the meeting is available from the NRC's document system (ADAMS) as accession number ML060270344. ADAMS is accessible from the NRC website at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

ATTACHMENT: SUPPLEMENTAL INFORMATION

Enclosure

## SUPPLEMENTAL INFORMATION

### KEY POINTS OF CONTACT

#### Licensee personnel

D. Alexander, Superintendent, Environmental and Chemical  
A. Barginere, Superintendent, Security  
D. Corlett, Supervisor - Licensing/Regulatory Programs  
R. Duncan, Director - Site Operations  
P. Fulford, Manger, Nuclear Assessment  
C. Gannon, Vice President Harris Plant  
W. Gurganious, Training Manager  
K. Henderson, Maintenance Manger  
C. Kamiliaris, Manager - Support Services  
E. McCartney, Plant General Manager  
T. Natale, Manager -Outage and Scheduling  
S. O'Connor, Manager - Engineering  
T. Pilo, Supervisor - Emergency Preparedness  
G. Simmons, Superintendent - Radiation Control  
E. Wills, Operations Manager

#### NRC personnel

P. Fredrickson, Chief, Reactor Projects Branch 4

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

Opened

None

Closed

None

Discussed

None



## LIST OF DOCUMENTS REVIEWED

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

Administrative Procedure 301 (AP-301) 2005 Action Plan

Work order 759651-01 for electric heater repair.

Caution tag 20050962 for providing temporary heating to the emergency service water pump bay B.

Work Order 648636 for electric heater repair.

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

#### Partial System Walkdown

##### Emergency Service Water System

Procedure OP-139, Service Water System

Drawing 2165-S-0547, Simplified Flow Diagram Circulating and Service Water Systems

##### Emergency Diesel Generator System

Procedure OP-155, Diesel Generator Emergency Power System,

Drawing 2165-S-0633, sheets 1 through 4, Simplified Flow Diagram Emergency Diesel Generator Systems

##### Post Accident Hydrogen System

Procedure OP-125, Post Accident Hydrogen System

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

FPP-001, "Fire Protection Program Manual"

MNT-NGGC-0004, "Scaffolding Control"

Fire Pre-Plan Drawings

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

#### FSAR Sections

2.4.10, Flooding Protection Requirements

3.6A.6, Flooding Analysis

#### Calculations

Appendix I to the HNP Probabilistic Safety Assessment, Internal Flooding Analysis

#### Procedures

AOP-022, Loss of Service Water

**Section 1R11: Licensed Operator Requalification**

EOP-EPP-001, Loss of All AC Power to 1A-SA and 1B-SB busses  
EOP-EPP-002, Loss of All AC Without SI Required  
EOP-EPP-002, Loss of All AC With SI Required

**Section 1R12: Maintenance Effectiveness**

AR 172596, 1MS-62 'C' PORV Exceeded MR Unavailability  
AR 171754, Frequent S/G PORV Trouble Alarms  
AR 170456, 1MS-62 Repair  
AR 170416, 'C' S/G PORV Oil Pump Running Continuously  
AR 157757, 1MS-62 Hydraulic Oil Leak  
AR 148268, 'C' S/G PORV Inoperable  
AR 146418, 1MS-62 Motor Running Continuously  
AR 136675, Repetitive Oil Leaks on 'C' Main Steam PORV  
AR 111083, Slow Loss of Waste Gas Decay Tank Pressure  
AR 128570, Entry Into AOP-009 Due to Slow Leak from WGDT C  
AR 150107, Leakage from the G Waste Gas Decay Tank  
AR 154177, Waste Gas System Leak  
AR 156832, Decreasing Pressure on B WGDT  
AR 157563, Adverse Trend in Waste Gas System Leaks  
AR 162736, Waste Gas System Leakage  
AR 173330, AOP-009 Entry - Depressurization of Waste Gas Decay Tank J  
NUMARC 93-01, Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants  
ADM-NGGC-0101, Maintenance Rule Program  
AOP-009, Accidental Release of Waste Gas  
ADM-NGGC-0107, Equipment Reliability Process Guideline

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

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

**Section 1R14: Operator Performance During Non-Routine Evolutions and Events**

OPT-1014, Turbine Valve Test Quarterly Interval, Modes 1-5

**Section 1R16: Operator Work-Arounds**

OP-148, Essential Services Chilled Water System  
EOP-EPP-004, Reactor Trip Response

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

CAP-NGGC-0200, Corrective Action Program.

CAP Working Meeting reference material - 12/07/05

ODM-001, Operational Decision Making

EGR-NGGC-0010, System and Component Trending Program and System Notebooks

ADM-NGGC-0107, Equipment Reliability Process Guideline