



UNITED STATES
NUCLEAR REGULATORY COMMISSION

REGION II
SAM NUNN ATLANTA FEDERAL CENTER
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ATLANTA, GEORGIA 30303-8931

January 26, 2007

Carolina Power and Light Company
ATTN: Mr. R. 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 05000400/2006005

Dear Mr. Duncan:

On December 31, 2006, 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 11, 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/

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

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

Enclosure: NRC Inspection Report 05000400/2006005
w/Attachment: Supplemental Information

January 26, 2007

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Report to R. J. Duncan, II from Randall Musser dated January 26, 2007

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U. S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No: 50-400

License No: NPF-63

Report No: 05000400/2006005

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 through December 31, 2006

Inspectors: P. O'Bryan, Senior Resident Inspector
M. King, Resident Inspector

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

Enclosure

SUMMARY OF FINDINGS

IR 05000400/2006-005; 10/01/2006 - 12/31/2006; 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.

REPORT DETAILS

Summary of Plant Status

The unit began the inspection period at full 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 low temperature, the inspectors walked down the emergency service water (ESW) and safety injection (SI) systems. 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."

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

- AR #205813, Turbine Building HVAC System in Long Term "Winterizing Mode"
- AR #214436, HT-18751D CKT. 17, Heat Trace Cannot be Installed per Design
- AR #215094, AP-301 Concerns not Resolved by Due Date

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:

- A emergency diesel generator with the B emergency diesel generator out-of-service on October 24, 2006.
- A emergency service water with B emergency service water out-of-service on October 24, 2006.

Enclosure

- B train of the essential services chilled water system with the A train out-of-service on November 15, 2006.

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 seventeen 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.

- 286' level of the reactor auxiliary building including areas 1-A-SWBRA and 1-A-5-HVA (2 areas)
- 286' level of the reactor auxiliary building including areas 1-A-CSRA, 1-A-CSR, and 1-A-ACP (3 areas)
- 286' level of the reactor auxiliary building including areas 1-A-5-HVB and 1-A-SWBRB (2 areas)
- 286' level of the reactor auxiliary building including areas 1-A-BATA, 1-A-5-BATN, and 1-A-BATB (3 areas)
- 305' level of the reactor auxiliary building including areas 12-A-6-RT1 and 12-A-6-CR1 (2 areas)
- 305' level of the reactor auxiliary building including areas 12-A-6-RCC1, 12-A-6-ARP1, 12-A-6-CR, 12-A-6-IRR, and 12-A-6-PICR1 (5 areas)

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures

a. Inspection Scope

Internal Flooding

The inspectors walked down the Diesel Generator Building containing risk-significant SSCs which are below flood levels or otherwise 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.

The inspectors also reviewed the licensee's corrective action documents to identify any flood-related items identified in AR's written from January 1 through November 27, 2006, to verify the adequacy of the corrective actions.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification

a. Inspection Scope

On November 28, 2006, the inspectors observed/completed licensed-operator performance during requalification simulator training for crew B, to verify that operator performance was consistent with expected operator performance, as described in Exercise Guide DSS-030. This training tested the operators' ability to place the plant in a safe condition after a steam generator tube rupture. 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.

1R12 Maintenance Effectivenessa. 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.

- Damaged diaphragm on valve ED-125 due to improper assembly.
- Spent fuel pool cooling pumps overload trips.

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).

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

- AR #204519, Resolution of White Thermal Overload Lights for SFP Cooling
- AR #211525, Valve 1ED-125 Diaphragm Separated From Valve Compressor

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Controla. 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 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.

- Corrective maintenance on the B air compressor with the B emergency diesel generator and the B train of emergency service water out of service on October 24, 2006.
- Planned maintenance with a tornado watch on November 16, 2006.
- Inoperability of valve 1RC-115 (primary power-operated relief valve isolation) with planned maintenance on December 1, 2006
- Work week of December 4, 2006 including OST-1085, "1A-SA Diesel Generator Operability Test, Semiannual Interval, Modes 1-6" on December 6, 2006.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations

a. Inspection Scope

The inspectors reviewed five 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 #208844, Discrepancies in Reactor Coolant System Mid-Loop Boron Dilution Safety Analysis.
- AR #212491, Broken Turbocharger Bolts on A Emergency Diesel Generator.
- AR #213631, Containment Fan Cooler AH-3B-SA Unavailable From Auxiliary Control Panel.
- AR #210385, Drop in B Emergency Service Water Pressure.
- AR #214986, Pressure Transient When Cycling 1RC-115

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

- AR #92370, Sheared Hold Down Bolt on A Emergency Diesel Generator Turbocharger.
- AR #149912, Broken Bolts on the A Emergency Diesel Generator Turbocharger

b. Findings

No findings of significance were identified.

1R19 Post Maintenance Testinga. Inspection Scope

For the six 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-1093, CVCS/SI System Operability Train B Quarterly Interval Modes 1-4 after maintenance on the B charging/safety injection pump on October 2, 2006
- OP-169, Containment Cooling and Ventilation after corrective maintenance on containment air handler AH-3A on October 18, 2006.
- OP-1073, Emergency Diesel Generator Operability Test Monthly Interval Modes 1 through 6 after implementation of a modification to B emergency diesel generator on October 25, 2006.
- EPT-033, Emergency Safeguards Sequencer System Test after corrective maintenance on relay 2-43 in the sequencer logic circuitry on November 8, 2006.
- OST-1411, Auxiliary Feedwater Pump 1X-SAB Operability Test Quarterly Interval Modes 1-2-3 after maintenance on November 1, 2006.
- OST-1085, 1A-SA Diesel Generator Operability Test, Semiannual Interval, Modes 1-6 after a planned modification to A emergency diesel generator on December 6, 2006.

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.

- OST-1124, Train B 6.9 KV Emergency Bus Undervoltage Trip Actuating Device Operational Test and Contact Check Modes 1-6 on October 4, 2006.
- *EPT-313, 1CC-147 Component Cooling Water from Residual Heat Removal Heat Exchanger A Generic Letter 89-10 Motor Operated Valve Test on October 11, 2006.
- OST-1076, Train B Auxiliary Feedwater Pump Quarterly Operability Test on November 27, 2006.
- OP-155, Diesel Generator Emergency Power System on December 6, 2006.

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- OST-1026, Reactor Coolant System Leakage Evaluation, Computer Calculation, Daily Interval, Modes 1-2-3-4 on December 7, 2006.

*This procedure included inservice testing requirements.

The inspectors reviewed AR #149912, Trigger Point Exceeded for RCS Unid Controlled Charts to verify that the licensee identified and implemented appropriate corrective actions.

b. Findings

No findings of significance were identified.

1R23 Temporary Plant Modifications

a. Inspection Scope

The inspectors reviewed the temporary modification described in Engineering Change 65591, to verify that the modification to the A normal service water pump control circuit did not affect the safety functions of important safety systems, and to verify that the modification satisfied the requirements of 10CFR50, Appendix B, Criterion III, Design Control.

The inspectors reviewed AR #212872, Repetitive Failures of LE-01SW-9300 to verify that the licensee identified and implemented appropriate corrective actions:

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 Annual Sample Review

a. Inspection Scope

The inspectors selected AR #214986, Pressure Transient When Cycling 1RC-115 for detailed review. This AR was associated with a packing leak in valve 1RC-115, pressurizer power-operated relief isolation valve. The inspectors reviewed this report to

Enclosure

verify that the licensee identified the full extent of the issue, performed an appropriate evaluation, and specified and prioritized appropriate corrective actions. The inspectors evaluated the report against the requirements of the licensee's corrective action program as delineated in corporate procedure CAP-NGGC-0200, Corrective Action Program, and 10 CFR 50, Appendix B.

b. Findings

No findings 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, 2006, 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. 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.

4OA3 Event Follow-up

.1 (Closed) Licensee Event Report (LER) 05000400/2006-003-00: Automatic Reactor Trip Due to Generator Lockout Signal.

a. Inspection Scope

The inspectors reviewed the licensee's actions associated with the reactor trip that occurred on September 19, 2006. The inspectors observed plant parameters for mitigating systems and fission product barriers, evaluated performance of systems and

operators, and confirmed proper classification and reporting of the event. Documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

4OA5 Other Activities

.1 (Closed) NRC Temporary Instruction (TI) 2515/169, Mitigating Systems Performance Index (MSPI) Verification

a. Inspection Scope

During this inspection period, the inspectors completed a review of the licensee's implementation of the Mitigating Systems Performance Index (MSPI) guidance for reporting unavailability and unreliability of monitored safety systems in accordance with Temporary Instruction 2515/169.

The inspectors examined surveillances that the licensee determined would not render the train unavailable for greater than 15 minutes or during which the system could be promptly restored through operator action and therefore, are not included in unavailability calculations. As part of this review, the recovery actions were verified to be uncomplicated and contained in written procedures.

On a sample basis, the inspectors reviewed operating logs, work history information, maintenance rule information, corrective action program documents, and surveillance procedures to determine the actual time periods the MSPI systems were not available due to planned and unplanned activities. The results were then compared to the baseline planned unavailability and actual planned and unplanned unavailability determined by the Licensee to ensure the data's accuracy and completeness. Likewise, these documents were reviewed to ensure MSPI component unreliability data determined by the licensee identified and properly characterized all failures of monitored components. The unavailability and unreliability data were then compared with performance indicator data submitted to the NRC to ensure it accurately reflected the performance history of these systems.

b. Findings and Observations

No findings of significance were identified. The licensee accurately documented the baseline planned unavailability hours, the actual unavailability hours and the actual unreliability information for the MSPI systems. No significant errors in the reported data were identified, which resulted in a change to the indicated index color. No significant discrepancies were identified in the MSPI basis document which resulted in: (1) a change to the system boundary, (2) an addition of a monitored component, or (3) a change in the reported index color.

4OA6 Meetings, Including Exit

On January 11, 2007, the resident inspectors presented the inspection results to Mr. Duncan and other members of his staff. The inspectors confirmed that proprietary information was not provided or examined during the inspection.

ATTACHMENT: SUPPLEMENTAL INFORMATION

Enclosure

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee personnel

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G. Simmons, Superintendent - Radiation Control
E. Wills, Operations Manager

NRC personnel

R. Musser, Chief, Reactor Projects Branch 4

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Closed

2515/169	TI	Mitigating Systems Performance Index Verification (Section 4OA5.1)
05000400/2006-03-00	LER	Automatic Reactor Trip Due to Generator Lockout Signal

LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

Procedures:

AP-301, "Seasonal Weather Preparations and Monitoring", Revision 45
OP-161.01, "Operations Freeze Protection and Temperature Maintenance Systems,"
Revision 22

Other Documents:

AP-301 2006 Cold Weather Plan, as Updated on Nov 14, 2006

Section 1R04: Equipment Alignment

Partial System Walkdown

Emergency diesel generator system:

- Procedure OP-155, Diesel Generator Emergency Power System
- Drawing 2165-S-0633, Simplified Flow Diagram Emergency Diesel Generator Systems

Emergency service water system:

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

Essential services chilled water system:

- Procedure OP-148, Essential Services Chilled Water System
- Drawing 2165-S-0998, Simplified Flow Diagram Essential Services Chilled Water Systems

Section 1R05: Fire Protection

- FPP-012-02-RAB286, Reactor Auxiliary Building Elevation 286 Fire Pre-Plan
- FPP-012-02-RAB305, Reactor Auxiliary Building Elevation 305 Fire Pre-Plan

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"
- OP-139, "Service Water System"

Section 1R11: Licensed Operator Requalification

- AOP-005, "Radiation Monitoring System"
- AOP-016, "Excessive Primary Plant Leakage"
- EOP-EPP-004, "Reactor Trip Response"
- EOP-PATH-1, "Path-1"
- EOP-PATH-2, "Path-2"

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"
- ODM Number 06-005, ODM Level 1 Risk Determination
- MEC043H, 3rd Quarter Mechanical Maintenance Continuing Training 2004
- QCC MEQ6528H, Power Plant Mechanics Level I Qualification Checkout Card
- QCC QME0652N, Power Plant Mechanics Level I Qualification Checkout Card
- ME207G, Basic Valve Repair Lesson Plan, Revision 11 and 12

Section 1R13: Maintenance Risk Assessments and Emergent Work Evaluation

- WCM-001, "On-line Maintenance."

Section 1R15: Operability Evaluations

- OPS-NGGC-1305, "Operability Determinations"
- ESR #00-00270, Operability Determination for Turbocharger on B Emergency Diesel Generator.

Section 1R23: Temporary Plant Modifications

- OP-139, Service Water System
- SD-139, Service Water System
- DBD-128, Service Water System Traveling Screens and Screen Wash System Waste Processing Building Cooling Water System
- 6-B-401, Normal Service Water Pump 1A-NNS Control Circuit Drawing

Section 4OA2: Identification and Resolution of Problems

- CAP-NGGC-0200, "Corrective Action Program."
- HNP-Site Trend Report - third quarter, 2006 and fourth quarter, 2006.

Section 4OA: Event Follow-up

- OMM-004, "Post Trip/Safeguards Actuation Report"
- OMP-003, "Outage Shutdown Risk Management"

Section 4OA5: Mitigating Systems Performance Index (MSPI) Verification

Procedures, Manuals, and Guidance Documents

- HNP-F/PSA-0068, Mitigating System Performance Index (MSPI) Basis Document, Revision 2
- NEI 99-02, Regulatory Assessment Performance Indicator Guideline, Revision 4
- OST-1861, Remote Shutdown Individual Component Test
- OP-145, Component Cooling Water Operating Procedure
- OP-155, Diesel Generator Emergency Power System
- OST-1124, Emergency Bus Trip Actuating Device Operational Test and Contact Check
- OP-139, Service Water System Operating Procedure
- OP-1214, Emergency Service Water System Operability Test

Records and Data

- Main Control Room Logs
- Maintenance Rule Unavailability and Failure Reports for each of the MSPI systems
- NRC Performance Indicators for each of the MSPI systems
- Equipment Inoperability Database
- Corrective Action Program Database