UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
SAM NUNN ATLANTA FEDERAL CENTER
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ATLANTA, GEORGIA 30303-8931

October 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 05000400/2006004

Dear Mr. Gannon:

On September 30, 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 October 18, 2006 with Mr. McCartney 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***

Binoy B. Desai, Acting Chief
Reactor Projects Branch 4
Division of Reactor Projects

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

Enclosure: NRC Inspection Report 05000400/2006004
w/Attachment: Supplemental Information

October 30, 2006

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Report to C. J. Gannon from Binoy Desai dated October 30, 2006

SUBJECT: SHEARON HARRIS NUCLEAR POWER PLANT - NRC INTEGRATED INSPECTION REPORT 05000400/2006004

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U. S. NUCLEAR REGULATORY COMMISSION

REGION II

| | |
|---|---|
| Docket No: | 50-400 |
| License No: | NPF-63 |
| Report No: | 05000400/2006004 |
| Licensee: | Carolina Power and Light Company |
| Facility: | Shearon Harris Nuclear Power Plant, Unit 1 |
| Location: | 5413 Shearon Harris Road<br>New Hill, NC 27562 |
| Dates: | July 1, 2006 through September 30, 2006 |
| Inspectors: | R. Musser, Senior Resident Inspector<br>P. O'Bryan, Resident Inspector |
| Approved by: | Binoy B. Desai, Acting Chief<br>Reactor Projects Branch 4<br>Division of Reactor Projects |

## SUMMARY OF FINDINGS

IR 05000400/2006-004, 07/01/2006 - 09/30/2006; 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. On September 19, 2006, with the unit at 100% power, the unit automatically tripped due to a failed relay in the main generator lockout circuitry. The unit was restarted on September 21, 2006 and operated at 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

When Tropical Storm Ernesto was approaching the site on August 31, the inspectors reviewed actions taken by the licensee in accordance with Procedure AP-300, "Severe Weather Response," prior to the onset of that weather, to ensure that the adverse weather conditions would neither initiate a plant event nor prevent any system, structure, or component from performing its design function.

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 motor driven auxiliary feed water pump and the turbine driven auxiliary feedwater pump with the A motor driven feedwater pump out-of-service on July 19, 2006
- B emergency diesel generator with the A emergency diesel generator out-of-service on September 13, 2006
- The boration flow path from the refueling water storage tank with the boration flow path from the reactor make-up water system out-of-service on September 26, 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.

Complete System Walkdown:

The inspectors conducted a detailed review of the alignment and condition of the emergency diesel generator 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, and other system-related issues tracked by the Engineering Department.

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

- 200980, "High Differential Pressure Across A EDG Fuel Oil Filter"
- 197690, "EDG Unavailability"

b. Findings

No findings of significance were identified.

1R05 Fire Protection

a. Inspection Scope

For the twelve 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.

- 190' level of the reactor auxiliary building including areas 1-A-1-PA and 1-A-1-PB (2 areas)
- Process instrument control cabinet room, area 12-A-6-PICR1 (1 area)
- Main control room, area 12-A-CR (1 area)
- 261' level of the reactor auxiliary building including areas 1-A-4-CHFA, 1-A-4-CHFB, 1-A-EPA, and 1-A-EPB (4 areas)
- 236' level of the reactor auxiliary building including areas 1-A-3-COMC, 1-A-3-COMB, and 1-A-3-COMI (3 areas)
- 236' level of the reactor auxiliary building including areas 1-A-3-PB (1 area)

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification

a. Inspection Scope

On August 22, the inspectors observed licensed-operator performance during requalification simulator training to verify that operator performance was consistent with expected operator performance as described in Exercise Guide DSS-047. This training tested the operators' ability to mitigate a stuck open PORV and a ruptured steam generator. 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 reviewed AR 204301, "Inconsistent EAL Classification During LOCT Exam" to verify that the licensee identified and implemented appropriate corrective actions.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness

a. Inspection Scope

The inspectors reviewed three 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.

- Unavailability of the emergency diesel generators
- High vibrations on the B boric acid transfer pump
- Radiation monitor functional failures

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
- 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:

- 209980, “EDG Unavailability”
- 159131, “EDG Relay Failures”
- 174210, “Faulty EDG Shuttle Valve”
- 201947, “B Boric Acid Transfer Pump Vibrations”
- 190624, “Radiation Monitor Maintenance Rule Reclassifications”
- 156321, “System Performance Trending”
- 150443, “Emerging Trend: Radiation Monitor Failures”
- 158622, “Plant Vent Stack Radiation Monitor Inoperable”

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 three activities listed below. The inspectors verified that the licensee performed adequate risk assessments, and implemented appropriate risk management actions when requred by 10 CFR 50.65(a)(4). For emergenent 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 A auxiliary feedwater pump and the grid in a system reliability alert on July 19, 2006
- Surveillance testing on the B EDG and the grid in a system reliability alert on August 2, 2006
- Emergent corrective maintenance on the reactor make-up system on September 13, 2006

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations

a. Inspection Scope

The inspectors reviewed two 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:

- 193706, TDAFW limit switch does not agree with design
- 196382, 'A' essential services chiller compressor surging

b. Findings

No findings of significance were identified.

1R19 Post Maintenance Testing

a. Inspection Scope

For the four 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-1211, Auxiliary Feedwater Pump 1A-SA Operability Test Quarterly Interval Modes 1-4, following maintenance on the 1A motor driven auxiliary feedwater pump on July 19, 2006
- OP-112, Containment Spray System, following maintenance on the 1A containment spray pump on August 21, 2006

- OP-139, Service Water System, following maintenance on the A emergency service water booster pump on September 14, 2006
- OST-1093, CVCS/SI System Operability Train B Quarterly Interval Modes 1-4 after maintenance on the B boric acid transfer pump on September 25, 2006

The inspectors reviewed AR 201947, "B Boric Acid Transfer Pump Vibrations", to verify that the licensee identified and implemented appropriate corrective actions:

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing

a. Inspection Scope

For the two 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-1411, Auxiliary Feedwater Pump 1X-SAB Operability Test Quarterly Interval Mode 1, 2, 3
- *OST-1076, Auxiliary Feedwater Pump 1B-SB Operability Test Quarterly Interval Modes 1-4

*This procedure included inservice testing requirements.

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluation

a. Inspection Scope

The inspectors observed an emergency preparedness drill conducted on July 25, 2006, to verify licensee self-assessment of classification, notification, and protective action recommendation development in accordance with 10CFR50, Appendix E.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA2 Identification and Resolution of Problems

Routine Review of ARs

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

4OA3 Event Follow-up

Turbine Trip/Reactor Trip - September 19, 2006

a. Inspection Scope

The inspectors responded to an turbine trip and reactor trip that occurred on September 19, 2006. The inspectors discussed the trip with operations, engineering, maintenance, and licensee management personnel to gain an understanding of the event and assess followup actions. The inspectors reviewed operator actions taken in accordance with licensee procedures and reviewed unit and system indications to verify that actions and system responses were as expected. The inspectors assessed the licensee's actions to gather, review, and assess information leading up to and following the trip. The inspectors later reviewed the initial investigation report and cause determination to assess the detail of review and adequacy of the cause determination and proposed corrective actions prior to restart.

The licensee's investigation identified the cause of the turbine trip was a main generator lockout signal that was generated by a failed relay in the generator protective circuitry. At the end of the inspection period, the licensee was investigating the root cause of the relay failure. The inspectors also reviewed the initial notification to verify that it met the requirements specified in NUREG-1022, Event Reporting Guidelines.

b. Findings

No findings of significance were identified.

40A5 Other

World Association of Nuclear Operators (WANO) Peer Review Report

a. Inspection Scope

The inspectors and branch chief reviewed the final report for the WANO peer review of the Shearon Harris Nuclear Power Plant conducted in January, 2006. The report was reviewed to ensure that issues identified were consistent with the NRC perspectives of

licensee performance and to determine if any significant safety issues were identified that required further NRC follow-up.

4OA6 Meetings, Including Exit

On October 18, 2006, the resident inspectors presented the inspection results to Mr. McCartney and other members of his staff. The inspectors confirmed that proprietary information was not provided or examined during the inspection.

ATTACHMENT: SUPPLEMENTAL INFORMATION

## SUPPLEMENTAL INFORMATION

## KEY POINTS OF CONTACT

Licensee personnel

D. Alexander, Superintendent, Environmental and Chemistry
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 Manager
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

Binoy B. Desai, Acting Chief, Reactor Projects Branch 4

## LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Closed

None

Discussed

None

## LIST OF DOCUMENTS REVIEWED

**Section 1R04: Equipment Alignment**

Partial System Walkdown

Auxiliary Feedwater System

- Procedure OP-137, Auxiliary Feedwater System
- Drawing 2165-S-0544, "Simplified Flow Diagram Feedwater System Unit 1

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

Boration flow path from the refueling water storage tank

- Drawing 2165-S-1305, Chemical and Volume Control System

Complete System Walkdown

- Procedure OP-155, Diesel Generator Emergency Power System
- System Description 155.01, "Emergency Diesel Generator System"
- Design Basis Document -201, "Emergency Diesel Generator System"

- Drawing 2165-S-0633, sheets 1 through 4, Simplified Flow Diagram Emergency Diesel Generator Systems
- FSAR section 8.3, “Onsite Power Systems”

**Section 1R05: Fire Protection**

FPP-001, Fire Protection Program Manual
Fire Pre-Plan Drawings

**Section 1R12: Maintenance Effectiveness**

- NUMARC 93-01, “Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Power Plants”
- ADM-NGGC-0101, “Maintenance Rule Program”
- HPP-780, “Radiation Monitoring System”
- SD-118, “Radiation Monitoring System”
- OP-118, “Radiation Monitoring System”
- OWP-RM-15, “Radiation, Effluent, and Explosive Gas Monitoring”

**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”

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

- CAP-NGGC-0200, “Corrective Action Program”