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United States Nuclear Regulatory Commission
ATTENTION: Document Control Desk
Washington, DC 20555

Shearon Harris Nuclear Power Plant
Docket No. 50-400

Subject: Annual Environmental (Nonradiological) Operating Report

Ladies and Gentlemen:

In accordance with Section 5.4.1 of the Environmental Protection Plan issued as Appendix B to the Renewed Operating License (NPF-63) for the Harris Nuclear Plant, Carolina Power & Light Company provides the enclosed Annual Environmental (Nonradiological) Operating Report for 2012.

If you have any questions regarding this information, please contact me at (919) 362-3137.

Sincerely,

DHC/mgw

Enclosure: Annual Environmental (Nonradiological) Operating Report

c: Mr. J. D. Austin (NRC Senior Resident Inspector, HNP)
Mr. V. M. McCree (NRC Regional Administrator, Region II)
Ms. A. T. Billoch Colón (NRC Project Manager, HNP)

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HNP

Carolina Power & Light Company
Shearon Harris Nuclear Power Plant
Unit 1

**ANNUAL ENVIRONMENTAL
(NONRADIOLOGICAL)
OPERATING REPORT**

January 1, 2012 through December 31, 2012

Renewed Facility Operating License No. NPF-63
Appendix B

Docket No. 50-400

1.0 INTRODUCTION

Carolina Power & Light Company received a low-power Facility Operating License (No. NPF-53) and full-power Facility Operating License (No. NPF-63) for the Shearon Harris Nuclear Power Plant, Unit 1, from the U.S. Nuclear Regulatory Commission (NRC) on October 24, 1986, and January 12, 1987, respectively. The NRC issued a Renewed Facility Operating License (No. NPF-63) on December 17, 2008, extending operations until October 24, 2046. Appendix B (the Environmental Protection Plan (EPP) [nonradiological]) of the renewed operating license requires submittal of an Annual Environmental (nonradiological) Operating Report to the NRC describing the implementation of the plan during the previous year. The purpose of this document is to fulfill the requirement for the period January 1 through December 31, 2012.

On January 1, 2003, Carolina Power & Light Company adopted the brand name Progress Energy Carolinas, Inc.

On July 2, 2012 Progress Energy merged with Duke Energy to form the largest regulated utility in the United States.

2.0 PLANT CONSISTENCY REQUIREMENTS

[EPP Section 3.0]

2.1 Plant Design and Operation

There were no changes in plant design or operation and there were no tests or experiments performed which involved a potentially significant unreviewed environmental question during the reporting period.

2.2 Reporting Related to the NPDES Permit

As required by National Pollutant Discharge Elimination System (NPDES) permit NC0039586, monitoring data were submitted to the North Carolina Department of Environment and Natural Resources (NCDENR) *via* monthly discharge monitoring reports and separate correspondence as warranted.

Harris Nuclear Plant (HNP) submitted an application for renewal of the NPDES Permit to NCDENR on January 26, 2011, and NCDENR received the application on January 27, 2011. HNP submitted a copy of the renewal application to the NRC by letter dated January 31, 2011.

Since the renewal application submittal requirements had been met (i.e., submitted at least 180 days prior to expiration), by regulation, HNP continues to operate under the expired NPDES Permit until NCDENR issues the new permit.

3.0 UNUSUAL OR IMPORTANT ENVIRONMENTAL EVENTS [EPP Section 4.1]

No occurrence of an unusual environmental event that would indicate or could result in a significant environmental impact causally related to plant operations occurred during the reporting period. No releases or exceedances of permit conditions caused any significant environmental impact. The existence of biofouling organisms (Asiatic clams, *Corbicula fluminea*) and the presence of troublesome aquatic vegetation (hydrilla, *Hydrilla verticillata*) in Harris Reservoir are considered important topics worthy of inclusion in this report. No zebra mussels were detected at any location in Harris Lake or the auxiliary reservoir during 2012.

3.1 Aquatic Biological Monitoring

A. Inspections for Asiatic clams (*Corbicula fluminea*) in the Harris Nuclear Plant Emergency Service Water System (e.g., intake structures)

The Emergency Service Water (ESW) intake structure is inspected once every three years in accordance with the engineering evaluation (Engineering Change 49074) of HNP's Generic Letter 89-13 Testing and Inspection Program. Inspections of ESW intake bays occurred during February and May 2012. These inspections indicated a stable Asiatic clam population.

No clogging events of HNP cooling water systems occurred during 2012 as a result of Asiatic clam infestation.

B. Monitoring aquatic vegetation

Main Reservoir

Hydrilla (*Hydrilla verticillata*) was found throughout the entire main reservoir during 2012. Biomass of this aquatic vegetation observed in the lower reservoir was relatively less than the biomass observed during 2011. The reduced biomass may be the result of generally lower water levels during the previous winter. Hydrilla and creeping water primrose populations were abundant and filled most of the available habitat at Transect S upstream of the New Hill-Holleman Road causeway. Hydrilla was present in the shallow bay (Transect V) adjacent to the mouth of the main intake canal but the relative abundance was much less than previous years. Hydrilla was only present along the shoreline fringes of the intake canal itself. The abundance of creeping water primrose remained less at Transect V compared to previous years. No new species of aquatic plants were observed in the main reservoir.

Auxiliary Reservoir

Hydrilla continued to be present in the auxiliary reservoir during 2012, however, in much less abundance than what was observed during 2010. During late spring 2011, 800 triploid grass carp were restocked as a means of controlling aquatic vegetation. Introduction of the grass carp has successfully reduced the abundance of hydrilla and prevented the spread of hydrilla within the auxiliary reservoir. The heaviest infestations found during 2010 were located in the three arms of the reservoir approaching US Highway 1. The abundance of hydrilla found at these locations during 2012 was reduced to occasional patches with the majority being restricted to a fringe along the shoreline. The addition of grass carp during 2011 has successfully controlled the growth of hydrilla but has not completely eradicated hydrilla in the auxiliary reservoir. Some fragments of American elodea, *Elodea canadensis*, were found mixed in with the remaining patches of hydrilla.

Also present was bladderwort, *Utricularia* spp., southern naiad, *Najas* spp., slender spike rush, *Eleocharis baldwinii*, and some creeping water primrose, *Ludwigia* spp. Of these species, hydrilla, southern naiad, and bladderwort are of potential concern regarding intake fouling. Neither species were present in large amounts.

No hydrilla, bladderwort, or southern pond weed was observed in the auxiliary intake canal or along the shoreline adjacent to the auxiliary intake canal. The dominant vegetation observed along the auxiliary intake canal was *Eleocharis baldwinii*, a small grass-like submerged plant that poses no operational concern. Creeping water primrose (*Ludwigia* spp.) was also present but in small amounts.

Because of the potential presence of hydrilla and American elodea root tubers and the natural mortality of grass carp, supplemental stocking of grass carp is being considered for 2013.

No impacts to HNP operations from aquatic vegetation occurred in 2012.

3.2 Combined Construction and Operating License Application Evaluations

Progress Energy Carolinas, Inc. continues to perform engineering and natural resource evaluations related to potential future development of two new nuclear power generation units at the HNP site. The NRC is currently reviewing the Combined Construction and Operating License (COL) application submitted by Progress Energy on February 18, 2008.

In 2012 several field studies related to the COL were continued or concluded. Streams and wetland areas presenting the potential to be used for natural resource mitigation for the proposed project were screened and conceptual plans were developed for several of the opportunities. Conceptual mitigation planning was completed in 2012. In-stream Flow studies, including fish, benthic and mussel surveys, were completed for Buckhorn Creek and a section of the Cape Fear River to evaluate habitats and potential impacts from changes in flow. The results of these studies were used in conjunction with hydrologic modeling to evaluate

water withdrawal and release scenarios for the proposed project. The natural resource studies are being coordinated with the Nuclear Regulatory Commission, US Army Corps of Engineers, US Environmental Protection Agency, NC Department of Environment and Natural Resources, US Fish & Wildlife Service, and NC Wildlife Resources Commission.

No significant environmental impacts have been caused or identified by these activities.

3.3 Security Upgrades

An Erosion and Sedimentation Control Plan for land clearing at the HNP was submitted and subsequently approved by NCDENR on September 12, 2011, to support security upgrades. These land clearing and construction activities were completed in 2012.

No significant environmental impacts have been caused or identified by these activities.

4.0 ENVIRONMENTAL MONITORING

[EPP Section 4.2]

4.1 Aquatic Monitoring

[EPP Section 4.2.1]

Under the authority of the Clean Water Act, the state of North Carolina renewed the National Pollutant Discharge Elimination System (NPDES) permit (NC0039586) for the HNP on March 1, 2007. The permit includes the Harris Energy & Environmental Center (HE&EC) sewage treatment plant discharge as an outfall (007).

The permit requires that a state-certified laboratory perform the analyses on all non-field parameters analyzed for effluent samples. In accordance with this requirement, the HNP Environmental & Chemistry Laboratory was certified by NCDENR as a Wastewater Laboratory, effective January 1, 2012, and valid through December 31, 2012. In addition, during 2012 Progress Energy contracted with four NCDENR certified private laboratories, Environmental Conservation Laboratories, Inc. (ENCO), Environmental Testing Solutions, Inc. (ETS), GEL Laboratories (GEL), and PACE Analytical Laboratories (PACE), to perform analyses.

4.1.1 Effluent Monitoring

Routine effluent monitoring was conducted and reported to NCDENR as required by the NPDES permit. The following NPDES permit noncompliances occurred.

- August 2012, HNP Cooling Tower Blowdown (Outfall 001) - Severe weather conditions caused the power on the evening of August 19, 2012, to be lost to the chemical feed at the Normal Service Water structure. This event caused a malfunction of zinc chloride feed control. These malfunctions lead to siphoning of zinc chloride product from the bulk tank through the feed system. On the morning of August 20th total zinc samples were taken for both operational and NPDES compliance. The operational sample was analyzed by Harris chemistry lab. Sample results were 1.39 mg/L Zinc. Another sample was pulled at 1540. The second operational sample result was 1.38 mg/L Zinc. The NPDES results were confirmed on the evening of August 21, 2012, by the certified lab. The result was 1.56 mg/L Zinc which exceeded the daily maximum limit of 1.0 mg/L.

The August 22, 2012, follow-up sample zinc analysis confirmed that zinc was back within limits. The result was 0.533 mg/L Zinc.

Progress Energy asserts that this exceedence was caused by an upset condition as defined in the facility's NPDES permit and therefore is not a violation of the facility's NPDES permit. Notification of this upset condition was made to NCDENR on August 22, 2012.

Back pressure regulators have been installed and tested to prevent siphoning of the zinc product in the future upon loss of power events.

- August 2012, HNP Combined Outfall (Outfall 006) - The facility failed its quarterly toxicity test that was sampled on August 21, 2012. Upon notification of the failure, an investigation into the chemical characteristics of the toxicity sample was commenced. It does not appear that this failure was related to the upset condition described for Outfall 001. Further, there were no metal concentrations that were high enough to cause toxicity. Conversations with the toxicity testing laboratory provided no conclusive causes for the tests failure. The facility commenced monthly sampling as required by the NPDES permit.

A visual survey by company personnel of Harris Lake following notification of test failure on August 24, 2012, was also conducted and no environmental impact was observed.

On September 17, 2012, the required monthly toxicity test sample was collected and the results passed.

A Notice of Violation (NOV) was issued by NCDENR on November 1, 2012, for the August 2012 acute toxicity failure. Progress Energy submitted a response to the NCDENR NOV on December 20, 2012, citing the investigation into the test failure and the successful follow-up tests performed in accordance with permit requirements.

- October 2012, Waste Neutralization Basin (Outfall 006) - On October 16, 2012, plant personnel identified the underground Waste Neutralization Basin Flash Mixer Return Pipe had developed a leak. The pipe carries secondary plant and water treatment building waste water for chemical processing. The leak was estimated to be 15,000 gallons of water containing a low level of tritium (10,760 picocuries per liter) which leaked into the surrounding soil. Once the leak was discovered, the system was secured and the leak was isolated. The spill was contained within the plant backfill. However, a minimal amount of the treated waste water did migrate to the storm drain catch basins in the area of the leak and was discharged to the Harris Reservoir via NPDES permitted storm water Outfall 006. The normal discharge route for the treated effluent from the waste neutralization basin is NPDES waste water Outfall 006. The piping has been repaired.

In accordance with the NPDES permit, a report was made to NCDENR on October 16, 2012. A follow-up letter was issued to NCDENR on October 18, 2012. This event was also reported to the NRC via Event Notification #48416 on October 17, 2012, based on the voluntary notification to state agencies per NEI 07-07, Industry Groundwater Protection Initiative – Final Guidance Document.

4.1.2 NPDES Inspections

- On March 20, 2012, a North Carolina Wastewater/Groundwater Laboratory Certification Maintenance Inspection for the Harris Nuclear Plant was conducted by NCDENR. No significant issues were identified in the NCDENR Letter dated April 24, 2012.
- On December 14, 2012, an NPDES Compliance Inspection was conducted at Harris Nuclear Plant and Harris Energy & Environmental Center by NCDENR. No issues were identified in the NCDENR Letter dated December 21, 2012.

4.2 Terrestrial Monitoring

[EPP Section 4.2.2]

Terrestrial monitoring is not required.

4.3 Noise Monitoring

[EPP Section 4.2.3]

Noise monitoring is not required.

5.0 EPP AUDIT

[EPP Section 5.1]

An audit conducted by an independent corporate entity was performed to verify the completeness and accuracy of the conditions and activities described in this Annual Environmental Operating Report. The results of the audit are on file and available for inspection.

6.0 PLANT REPORTING REQUIREMENTS

[EPP Section 5.4]

6.1 EPP Noncompliances

There were no EPP noncompliances identified during the reporting period.

NPDES permit noncompliances are discussed in Section 4.1.1 of this report.

6.2 Changes in Station Design and Operation

There were no changes in station design or operation and there were no tests or experiments performed which involved a potentially significant unreviewed environmental question during 2012.

6.3 Non-routine Reports

There were no non-routine reports submitted in accordance with EPP Section 5.4.2 during 2012.

6.4 Other Reporting Requirements

There were no other EPP reportable events during 2012.