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U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

Shearon Harris Nuclear Power Plant, Unit 1  
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, Duke Energy Progress, Inc., is providing the enclosed Annual Environmental (Nonradiological) Operating Report for 2013.

This submittal contains no regulatory commitments. Please refer any questions regarding this submittal to Dave Corlett, Manager – Regulatory Affairs, at (919) 362-3137.

Sincerely,

Ernest J. Kapopoulos, Jr.

Enclosure

cc: Mr. J. D. Austin, NRC Sr. Resident Inspector, HNP  
Mr. A. Hon, NRC Project Manager, HNP  
Mr. V. M. McCree, NRC Regional Administrator, Region II

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**Duke Energy Progress, Inc.**  
**Shearon Harris Nuclear Power Plant**  
**Unit 1**

**ANNUAL ENVIRONMENTAL**  
**(NONRADIOLOGICAL)**  
**OPERATING REPORT**

**January 1, 2013 through December 31, 2013**

**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, 2013.

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.

On March 8, 2013, Carolina Power & Light Company changed its name to Duke Energy Progress, Inc.

## **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.

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 2013.

### 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. An inspection of an ESW screening structure bay occurred during April 2013. The inspection indicated a stable Asiatic clam population.

No clogging events of HNP cooling water systems occurred during 2013 as a result of Asiatic clam infestation.

#### B. Monitoring aquatic vegetation

##### **Main Reservoir**

Hydrilla was found throughout the entire main reservoir during 2013. Similar to results from 2012, biomass in the lower reservoir was relatively less than the biomass during 2011. This condition was the result of generally lower water levels during the previous two winters. Hydrilla and creeping water primrose were abundant and filled most of the available habitat at Transect S upstream of the New Hill-Holleman Rd. 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. Some fanwort, *Cabomba caroliniana*, was observed in the upper reaches of the Little White Oak arm of the reservoir. Fanwort has been periodically observed during previous years. However, the abundance of this species remains low due to competition with hydrilla. No new species of aquatic plants were observed in the main reservoir.

## Auxiliary Reservoir

Some Hydrilla and American elodea was found to be present in the auxiliary reservoir. However, the abundance was much less than discovered during 2010 and the majority was restricted to the shallow water fringes of the reservoir. Introduction and stocking of grass carp during 2011 and 2013 has successfully reduced the abundance and prevented the spread of hydrilla and American elodea within the auxiliary reservoir. Areas where small patches of hydrilla and American elodea were most often observed continue to be the three arms of the reservoir approaching US HW1. Because aquatic plant root tubers are likely to be present it was recommended that supplemental stocking of grass carp continue during 2014. 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, the hydrilla, American elodea, southern naiad, and bladderwort are of potential concern regarding intake fouling. Neither species were present in large amounts.

No hydrilla, American eleodea, 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.

No impacts to HNP operations from aquatic vegetation occurred in 2013.

### 3.2 Combined Construction and Operating License Application Evaluations

In a letter dated Feb 18, 2008, Carolina Power & Light Company submitted an application for a combined construction permit and operating license (COL) for two AP1000 advanced pressurized water reactor units to be located at the Shearon Harris Nuclear Power Plant site. In the initial application, DEP relied on Integrated Resource Plans (IRPs) prepared for the North Carolina Utilities Commission and the Public Service Commission of South Carolina to demonstrate the need for the two units. The IRPs used a 15 yr period for forecasting native load requirements, supply-side and demand side resources and options considered for satisfaction of the load requirements and other system obligation. Duke Energy Progress, Inc. (DEP) continued to evaluate the Need for Power; however the commercial operation dates for the two units no longer fell within the 15 year planning window of the IRP. As a result, in a letter to the NRC dated May 2, 2013, DEP requested suspension of the COL for the two units at the Shearon Harris Nuclear Power Plant site.

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, 2013, and valid through December 31, 2013. In addition, during 2013 Duke Energy Progress 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.

- February 2013, Sewage Treatment Plant (STP) (Outfall 002) - Total Suspended Solids (TSS) measurements (51.7 and 51.0 mg/l on 02/27/13 and 02/28/13) were above the 45 mg/l daily maximum limits. The monthly average for all of TSS samples (37.7 mg/l) was above the 30 mg/l requirement for TSS.

On March 6, 2013, the treatment plant discharge was secured and diverted to fractionating tanks. An investigation to determine the cause of the elevated reading ensued. Plant personnel discovered soil entering a sewage drain lift station and associated drainage lines that had been damaged. The area around the lift station was trenched and surrounded with concrete and the underground piping was been repaired. The STP was verified to be working properly and performing to its design capability.

A Notice of Violation (NOV) was issued by NCDENR on May 16, 2013, for the February 2013 TSS exceedance. DEP responded to the NOV by letter dated May 30, 2013.

- August 2013, Oil & Grease Sample Hold time Exceeded (Outfall 005) - On August 1, 2013, an Oil & Grease sample exceeded its hold time when analyzed by the contract lab. The hold time ended on August 29, 2013, and the sample was analyzed on September 3, 2013. The sample was shipped to the lab with a quick turnaround requested. However, the sample analysis was not completed in sufficient time to meet the hold time requirement.

Actions were taken to ensure samples are shipped to the contract lab earlier in the month to not challenge the hold time. Samples are now tracked on Chemistry worksheets to increase awareness of when the samples are shipped.

- August 2013, No Back-up ORC Visit (Outfall 001) – On August 9, 2013, the Back-up Operator in Responsible Charge (ORC) failed to visit the HNP STP for the fifth time in the week as required by the NPDES Permit. The plant was being operated by a certified waste water operator on August 9, 2013.

A back-up ORC was designated during the ORC's scheduled vacation August 2 - 12, 2013. However, the Back-up ORC was not available following unscheduled work hours due to an Alert declaration at HNP on August 8, 2013. Personnel were reminded of the requirements for Back-up ORC visits when the ORC is off or out of the area.

- August 2013, Settling Basin (Outfall 004) - On August 14, 2013, the NCDENR was notified of a non-sewage spill to the ground from the HNP wastewater treatment settling basin of approximately 10,000 gallons. On August 13, 2013, maintenance was being performed on one of the pumps and although the discharge valve was closed, it allowed leakage past the valve seat through the pipe opening produced by removing the pump. As an interim action, a tag was placed on the installed pump so that it would not be restarted until the valve was repaired or replaced. The pipe and the pump were reinstalled.

On August 17, 2013, DEP submitted a 5-day follow-up letter as required by NPDES Permit Number NC0039586.

- October 2013, Sewage Plant (Outfall 002) – A sample collected on October 25, 2013, exceeded the Fecal Coliform NPDES permit daily maximum of 400 MPN/100 ml. The result was >2420 MPN/100 ml.

The HNP Sewage Treatment Plant was in the process of a complete restart after two chemical (Chlorine) overfeed events and recovery of the plant was in process. The events were attributed to the failure of two check valves which allowed additional Sodium Hypochlorite to be added by siphoning of the chemical from the feed tank. Installation of replacement check valves was completed.

The October 30, 2013, result was <1 MPN/100 ml. Chlorine feed had been optimized. The November 06, 2013, sample was also <1 MPN/100 ml.

A Notice of Violation (NOV) was issued by NCDENR on February 19, 2014, for the October 2013, Fecal Coliform exceedance. No response was required by the NOV.

#### **4.1.2 NPDES Inspections**

- On September 11, 2013, NCDENR personnel collected a grab Effluent Aquatic Toxicity sample from NPDES Outfall 007, the HEEC Sewage Treatment Plant. No negative report was received for the sample.

A grab Effluent Aquatic Toxicity sample was collected by DEP during the same release on September 12, 2013, with a Pass result.

#### **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 REVIEW and AUDIT** [EPP Section 5.1]

DEP provides for the review and audit of compliance with the EPP on a periodic frequency. The results of these reviews and audits 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 2013.

##### **6.3 Non-routine Reports**

There were no non-routine reports submitted in accordance with EPP Section 5.4.2 during 2013.

##### **6.4 Other Reporting Requirements**

There were no other EPP reportable events during 2013.