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ATTN: Document Control Desk  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

Shearon Harris Nuclear Power Plant, Unit 1  
Docket No. 50-400/Renewed License No. NPF-63

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., doing business as Duke Energy Progress, LLC., is providing the enclosed Annual Environmental (Nonradiological) Operating Report for 2015.

This submittal contains no regulatory commitments. Please refer any questions regarding this submittal to John Caves, Manager – Regulatory Affairs, at (919) 362-2406.

Sincerely,

A handwritten signature in black ink that reads 'Ben C. Waldrep'.

Benjamin C. Waldrep

Enclosure

cc: Mr. J. D. Austin, NRC Sr. Resident Inspector, HNP  
Ms. M. Barillas, NRC Project Manager, HNP  
NRC Regional Administrator, Region II



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

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

**January 1, 2015 through December 31, 2015**

**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, 2015.

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.

On October 21, 2013, the NRC approved a license amendment changing the name of the Licensee in the operating license from Carolina Power & Light Company to Duke Energy Progress, Inc.

On July 6, 2015, the NRC approved Duke Energy Progress, Inc. to become the sole owner of the Harris facility. This was due to the sale of the partial ownership in the Harris facility by North Carolina Eastern Municipal Power Agency.

On August 1, 2015, Duke Energy Progress, Inc. converted to limited liability company (LLC) to become Duke Energy Progress, LLC.

On September 18, 2015, The North Carolina Department of Environment and Natural Resources (NCDENR) officially became the North Carolina Department of Environmental Quality (NCDEQ) when Governor McCrory signed the 2015-2016 state budget into law. NCDEQ will be used in this report.

## 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 was submitted to the North Carolina Department of Environmental Quality (NCDEQ) *via* monthly discharge monitoring reports and separate correspondence as warranted.

Harris Nuclear Plant (HNP) submitted an application for renewal of the NPDES Permit to NCDEQ on January 26, 2011, and NCDEQ 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 NCDEQ 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 the Harris Reservoir are considered important topics worthy of inclusion in this report. No zebra mussels were detected at any location in the Harris Lake or the auxiliary reservoir during 2015.

#### 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 2015 as a result of Asiatic clam infestation.

##### B. Monitoring aquatic vegetation

###### **Main Reservoir**

Hydrilla was found throughout the entire main reservoir during 2015. 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 less than previous years. Hydrilla was only present along the shoreline fringes of the intake canal itself. Prior to 2008, the Buckhorn Creek arm of the lake was primarily Hydrilla, but now primarily supports a large Lyngbya algal population. Other aquatic plant species found in the reservoir include fanwort (*Cabomba* sp.), and typical Atlantic slope Piedmont species such as *Chara* sp., spikerush (*Eleocharis baldwinii*), and native pondweed species in the genera *Potamogeton* and *Najas*. The shoreline aquatic plant community is typical of Piedmont reservoirs including such plants as cattails, pickerelweed, lizard tail, bulrush, and others. 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 during 2010. However, it is currently under management using sterile Asian grass carp. The most recent grass carp stockings were in 2011, 2013, 2014, and 2015. American elodea, a native non-invasive species, was observed growing concealed from the grass carp in two shallow water sites. Vegetative hydrilla was not observed in 2015, but hydrilla tubers remain in bottom sediments. Since aquatic plant root tubers are likely to be present, it was recommended that supplemental stocking of grass carp continue during 2016.

No hydrilla, American elodea, bladderwort, or southern pond weed was observed in the auxiliary intake canal or along the shoreline adjacent to the auxiliary intake canal in 2015. 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 2015.

### **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, Carolina Power & Light Company 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-year 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 work was performed in 2015 in support 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 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 NCDEQ as a Wastewater Laboratory, effective January 1, 2015, and valid through December 31, 2015. In addition, during 2015 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 2015, Treated Wastewater Spill – At approximately 10:00 p.m. on February 16, 2015, an operator noted a small stream of water flowing towards a culvert. The operator followed the leak back to its source and noted a leak coming from the area around the northwest corner of the settling basin. This settling basin receives various low volume wastes, including membrane backwash water, and is permitted to discharge through internal Outfall 004 in the NPDES permit. The source of the leak was determined to be a drain penetration in the basin. Maintenance installed a temporary plug into the opening at 10:55 p.m. An enhanced plug was installed on February 17, 2015, in place of the temporary plug.

Upon further inspection, it was determined that the leak traveled from the settling basin onto the ground and into a stormwater culvert which discharges through stormwater Outfall 007 into the Harris Auxiliary Intake Canal. Plant staff estimated that approximately 12,000 gallons might have been released with an unknown quantity reaching surface water.

The basin had been temporarily out of service for maintenance activities, which included adding a new drain path through the basin wall. This drain penetration had not been sealed when the basin was placed back in service. The lack of a drain seal allowed an exit path for the basin water.

The spill contained fully treated wastewater that was being prepared for discharge through internal Outfall 004. Test results show that total suspended solids (TSS), oil and grease, and pH levels were within NPDES permit limits.

On February 23, 2015, DEP submitted a 5-day follow-up letter to the NCDEQ as required by NPDES Permit Number NC0039586.

- April 2015, Outfall 002 Biological Oxygen Demand Maximum Exceeded – The Biochemical Oxygen Demand (BOD) daily maximum of 45 milligrams per liter (mg/L) was exceeded April 28, 2015, for the HNP Sewage Treatment Plant (STP). The sample result was 49 mg/L. This result is recorded in the April 2015 Discharge Monitoring Report (DMR) Outfall 002, page 2 of 7.

The plant was in a maintenance outage and the influent sample BOD result was 430 mg/L and the Chemical Oxygen Demand result was 1000 mg/L on April 28, 2015. This increase affected the treatment capacity of the STP. The influent sample results were elevated due an increase of over 2000 temporary personnel being on the HNP site to support the maintenance outage.

No impacts to the environment were observed.

- May 2015, Outfall 007 pH Maximum Exceeded – On May 20, 2015, at approximately 1500, while performing compliance sampling on the effluent from the Harris Environmental & Energy Center (HEEC) sewage treatment system, the pH analysis resulted in an NPDES exceedance with a pH of 9.18 standard units. This result is recorded in the May 2015 DMR Outfall 007, page 7 of 7.

The cause for the increased pH was a wide spread algae bloom in the polishing lagoon which was caused by the extended hold time. This consumed much of the carbon dioxide (CO<sub>2</sub>) and resulted in an increased amount of carbonate (CO<sub>3</sub>) and overall increased alkalinity of the lagoon.

No impacts to the environment were observed.

#### **4.1.2 NPDES Inspections**

- On July 20, 2015, NCDEQ, Division of Water Resources personnel visited the HNP and Harris Energy Center to conduct a review of the domestic wastewater treatment plants.

No violations were identified.

- On August 31, 2015 and September 1, 2015 NCDEQ, Division of Water Resources personnel visited the HNP to conduct sampling of the domestic wastewater treatment Combine Outfall 006 for permit compliance.

No violations were identified.

#### **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 2015.

**6.3 Non-routine Reports**

There were no non-routine reports submitted in accordance with EPP, Section 5.4.2, during 2015.

**6.4 Other Reporting Requirements**

There were no other EPP reportable events during 2015.