



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
REGION II
245 PEACHTREE CENTER AVENUE NE, SUITE 1200
ATLANTA, GEORGIA 30303-1257

November 20, 2012

EA-12-234

Mr. Kelvin Henderson
Site Vice President
Duke Energy Carolinas, LLC
Catawba Nuclear Station
4800 Concord Road
York, SC 29745-9635

**SUBJECT: CATAWBA NUCLEAR STATION – NRC INSPECTION REPORT
05000413/2012011 AND 0500414/2012011 AND EXERCISE OF
ENFORCEMENT DISCRETION**

Dear Mr. Henderson:

On November 14, 2012, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Catawba Nuclear Station Units 1 and 2. The enclosed inspection report documents the inspection results which were discussed on November 19, 2012, 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.

During a dual unit loss of offsite power on April 4, 2012, the Standby Shutdown Facility diesel generator was started but did not produce rated voltage rendering it inoperable. This condition was identified as an Unresolved Item in NRC Special Inspection Report 05000413, 414/2012009. The NRC reviewed the circumstances resulting in the inoperable SSF diesel generator and determined that there was no performance deficiency because the issue could not have been avoided or detected by your quality assurance program or other related control measures. The NRC performed a risk assessment and determined that the significance of the condition was bounded by a low to moderate increase in risk. The NRC also determined that a violation of Technical Specification 5.4.1 occurred when the standby shutdown system was nonfunctional for greater than its allowed outage time as specified in Selected Licensee Commitment (SLC) 16.7-9 due to the SSF DG not producing rated voltage. Therefore, the NRC is exercising enforcement discretion in accordance with Section 3.5 of the Enforcement Policy for this noncompliance. The licensee corrected this condition and restored compliance with TS 5.4.1 on April 8, 2012.

K. Henderson

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In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Website at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

/RA/

Richard P. Croteau, Director
Division of Reactor Projects

Docket Nos.: 50-413, 50-414
License Nos.: NPF-35, NPF-52

Enclosure: NRC Inspection Report 05000413/2012011, 05000414/2012011
w/Attachment: Supplemental Information

cc w/encl: (See page 3)

K. Henderson

2

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cc w/encl: (See page 3)

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LOW VOLTAGE URI CLOSEOUT REPORT.DOC

K. Henderson

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cc w/encl:
Randy D. Hart
Regulatory Compliance Manager
Duke Energy Carolinas, LLC
Electronic Mail Distribution

R. L. Gill, Jr.
Manager
Nuclear Regulatory Issues & Industry Affairs
Duke Energy Carolinas, LLC
Electronic Mail Distribution

Dhiaa M. Jamil
Group Executive and Chief Nuclear Officer
Duke Energy Carolinas, LLC
Electronic Mail Distribution

Kathryn B. Nolan
Senior Counsel
Duke Energy Corporation
526 South Church Street-EC07H
Charlotte, NC 28202

Lisa F. Vaughn
Associate General Counsel
Duke Energy Corporation
526 South Church Street-EC07H
Charlotte, NC 28202

David A. Repka
Winston Strawn LLP
Electronic Mail Distribution

North Carolina MPA-1
Suite 600
P.O. Box 29513
Raleigh, NC 27525-0513

Susan E. Jenkins
Director, Division of Waste Management
Bureau of Land and Waste Management
S.C. Department of Health and
Environmental Control
Electronic Mail Distribution

County Manager of York County
York County Courthouse
York, SC 29745

R. Mike Gandy
Division of Radioactive Waste Mgmt.
S.C. Department of Health and
Environmental Control
Electronic Mail Distribution

Beverly O. Hall
Chief, Radiation Protection Section
Department of Environmental Health
N.C. Department of Environmental
Commerce & Natural Resources
Electronic Mail Distribution

Vanessa Quinn
Federal Emergency Management Agency
500 C Street, SW
Room 840
Washington, DC 20472

Steve Weatherman, Operations Analyst
North Carolina Electric Membership
Corporation
Electronic Mail Distribution

Piedmont Municipal Power Agency
Electronic Mail Distribution

Peggy Force
Assistant Attorney General
State of North Carolina
P.O. Box 629
Raleigh, NC 27602

Enclosure

K. Henderson

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Letter to K. Henderson from Richard P. Croteau dated November 20, 2012.

SUBJECT: CATAWBA NUCLEAR STATION – CLOSEOUT OF THE UNRESOLVED ITEM
05000413/414/2012009-04, NRC INSPECTION REPORT 05000413/2012011
AND 0500414/2012011

Distribution w/encl:

C. Evans, RII

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U. S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos.: 50-413, 50-414

License Nos.: NPF-35, NPF-52

Report Nos.: 05000413/2012011, 05000414/2012011

Licensee: Duke Energy Carolinas, LLC

Facility: Catawba Nuclear Station, Units 1 and 2

Location: York, SC 29745

Dates: July 26 – November 14, 2012

Inspectors: A. Hutto, Senior Resident Inspector
R. Cureton, Resident Inspector

Approved by: Richard P. Croteau, Director
Division of Reactor Projects

Enclosure

SUMMARY OF FINDINGS

IR 05000413/2012-011, 05000414/2012-011; July 26 – November 14, 2012; Catawba Nuclear Station, Units 1 and 2; NRC Inspection Report.

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REPORT DETAILS

4OA5 Other Activities

.1 (Closed) Unresolved Item 05000413, 414/2012009-04, Standby Shutdown Facility (SSF) Diesel Generator (DG) Low Output Voltage

a. Inspection Scope

The inspectors reviewed the licensee's root cause evaluation and functionality assessment of the failure of the SSF DG to achieve rated voltage following a Loss of Offsite Power (LOOP) event on April 4, 2012, to evaluate the licensee's assessment of the event and to identify any licensee performance deficiencies associated with the cause.

b. Findings

Introduction: A violation of Technical Specification (TS) 5.4.1 was identified for Units 1 and 2 when the standby shutdown system (SSS) was nonfunctional for greater than its allowed outage time as specified in Selected Licensee Commitment (SLC) 16.7-9. The SSF DG would not produce the required output voltage due to a wiring error during initial SSF DG installation. No performance deficiency was identified because the licensee could not reasonably foresee and prevent the wiring error. Enforcement discretion was exercised; therefore, this violation will not be cited.

Description: The SSF DG was manually started during the LOOP event to charge the SSF batteries; however, the SSF DG was only able to achieve approximately 440 volts verses the nominal rated 600 volts. The SSS was not safety-related and was licensed to provide mitigation for fires and station blackouts. The licensee entered the issue into the corrective action program as PIP C-12-3389, initiated a root cause investigation, and performed a functionality assessment.

The licensee determined that the SSF degraded voltage was the result of a wiring error in the voltage regulator circuit which resulted in the power factor module not being bypassed when the SSF diesel was aligned to provide power to the security batteries. The licensee determined that the wiring error was a result of a misleading note on the vendor supplied wiring diagram used during initial SSF construction. This wiring discrepancy was not revealed during preoperational testing as full load testing under isochronous operation was performed using load banks. These load banks were connected to the generator before the generator output breaker which bypassed the power factor module. Additionally, SLC surveillances did not require full load testing of the SSF DG in isochronous operation. The inspectors concluded that the preoperational testing and SLC surveillances were appropriate and could not have reasonably detected the wiring error.

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Because the power factor module was wired consistent with the original vendor instructions, the deficiency was not reasonably within the licensee's ability to foresee and correct; therefore, no performance deficiency was identified. The licensee's functionality assessment of the SSF diesel generator low voltage condition concluded that at the observed 440 volts, all equipment would have operated for the 72 hour mission time with reduced margins except for the pressurizer heaters. The licensee could not show that the relays in the energization circuitry would actuate to turn the heaters on at the lower voltage; therefore the standby shutdown system (SSS) was determined to be nonfunctional with respect to the SLC requirement that the SSS have a pressurizer heater capacity of greater than or equal to 65 kilowatts. The licensee corrected this condition and restored compliance with TS 5.4.1 on April 8, 2012.

Analysis: The inspectors determined that no performance deficiency occurred because the licensee could not reasonably foresee and prevent the wiring error; however, a violation of TS 5.4.1 occurred since the SSS was nonfunctional for greater than the seven day SLC allowed outage time.

To determine the risk significance of the non-functional SSS, the inspectors performed a risk analysis using the Sapphire 8 assessment program with the SSF diesel generator unavailable for one year. This was conservative as the analysis assumed all equipment powered by the SSF was unavailable rather than just the pressurizer heaters. The result for this analysis was an increase in the yearly core damage frequency of $7.8E-6$ or low to moderate safety significance (White). Additionally, in order to assess the risk from external events, the inspectors used Catawba's Individual Plant Examination for External Events. The core damage frequencies for fires in the control room and cable spread rooms that would require SSF mitigation were on the order of $1E-5$ (Yellow). This risk would be further reduced because not all of these fires would result in the loss of normal power to the SSF electrical bus, requiring the use of the SSF diesel generator. Other external events (flooding, seismic, etc.) were determined to have a negligible contribution to the risk of this condition because the frequencies involved were greater than 2 orders of magnitude less than that of fire. Based on the above, the NRC estimated that the significance of the condition was bounded by a low to moderate increase in risk.

Enforcement: TS 5.4.1 required that the licensee implement the commitments contained in UFSAR Chapter 16. These commitments were contained in the licensee's SLCs. SLC 16.7-9 required that the SSS shall be functional in Modes 1, 2, and 3. Contrary to the above, from initial plant construction until April 4, 2012, the SSS was non-functional for Units 1 and 2 during Modes 1, 2, and 3 due to inadequate pressurizer heater capacity as a result of low SSF diesel generator output voltage during isochronous operation. This issue was entered into the licensee's corrective action program as PIP C-12-3389. The staff reviewed the root cause analysis of the event and concluded that the equipment failure could not have been avoided or detected by the licensee's quality assurance program or other related control measures. Therefore, because no performance deficiency was identified and in accordance with Section 3.5 of the Enforcement Policy, the NRC has concluded that the exercise of enforcement discretion is appropriate such that this violation will not be cited. Further, this issue will not be considered in the assessment process or NRC's Action Matrix.

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4OA6 Meetings, Including Exit

Exit Meeting Summary

On November 19, 2012, the resident inspectors presented the inspection results to Mr. Kelvin Henderson and other members of licensee management. The inspectors verified that no proprietary information was retained by the inspectors or documented in this report.

ATTACHMENT: SUPPLEMENTAL INFORMATION

Enclosure

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

T. Arlow, Emergency Planning Manager
S. Batson, Station Manager
D. Cantrell, Chemistry Manager
J. Ferguson, Mechanical, Civil Engineering Manager
T. Hamilton, Engineering Manager
R. Hart, Regulatory Compliance Manager
K. Henderson, Catawba Site Vice President
T. Jenkins, Superintendent of Maintenance
K. Phillips, Work Control Manager
S. Putnam, Safety Assurance Manager
R. Simril, Operations Superintendent
J. Smith, Radiation Protection Manager
W. Suslick, Modifications Engineering Manager
S. West, Security Manager

LIST OF REPORT ITEMS

Closed

05000413/414/2012009-04 URI SSF DG Low Output Voltage (Section 4OA5)

LIST OF DOCUMENTS REVIEWED

Section 4OA5: Other Activities

CNS-1560.SS-00-001, Design Basis Specification for the Standby Shutdown Facility, Rev. 30
SLC 16.7-9, Standby Shutdown System
OP/0/B/6100/013, Standby Shutdown Facility Operations, Rev. 51
CNS Root Cause Analysis Report, SSF Diesel Generator Voltage Anomaly Following the Unit 1
Loss of Offsite Power on 4/4/12, Rev. 2
CNC-1223.10-00-0006, Evaluation of SSF Low Voltage Condition, Rev. 2
CNC-1223.04-00-0112, Catawba Nuclear Station Standby Makeup Pump Degraded Voltage
Past Operability Evaluation, Rev. 0
CNM-1301.02-0016, A.C. Elementary Drawing, Cummins Carolinas Inc.
CNEE-0111-02.43, 600V Nonessential Load Center 1 SLXG.CPT.5B, Rev. 7
PIP C-12-3389, SSF DG low voltage following loss of offsite power
PIP C-12-3403, Catawba loss of offsite power event