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

October 26, 2012

EA-11-226

Mr. T. Preston Gillespie, Jr.
Site Vice President
Duke Energy Carolinas, LLC
Oconee Nuclear Station
7800 Rochester Highway
Seneca, SC 29672-0752

SUBJECT: OCONEE NUCLEAR STATION - NRC SUPPLEMENTAL INSPECTION REPORT 05000269/2012014, 05000270/2012014, AND 05000287/2012014

Dear Mr. Gillespie:

On October 25, 2012, the U.S. Nuclear Regulatory Commission (NRC) completed a supplemental inspection using Inspection Procedure (IP) 95002, "Supplemental Inspection for One Degraded Cornerstone or any Three White Inputs in a Strategic Performance Area," at your Oconee Nuclear Station, Units 1, 2, and 3. The enclosed inspection report documents the inspection results which were preliminarily discussed on August 30, 2012, with you and other members of your staff. A final exit with Mr. Robert Guy and other members of your staff was held on October 25, 2012

In accordance with the NRC Reactor Oversight Process Action Matrix, this supplemental inspection was performed to follow-up on a finding with substantial safety significance (Yellow) which was issued in the fourth quarter of 2011. The finding involved standby shutdown facility (SSF) pressurizer heater breakers that were not qualified for the required environmental conditions. This finding was previously documented and assessed in NRC Inspection Reports (IRs) 05000269/2011017, 05000270/2011017, and 05000287/2011017, and 05000269/2011019, 05000270/2011019, and 05000287/2011019. The NRC was informed on August 9, 2012, of your staff's readiness for this portion of the inspection.

The review of the root cause evaluation was performed during an earlier inspection and documented in NRC IR 05000269, 270, 287/2012011. The objectives of this inspection were to gather information for the NRC to provide assurance that the corrective actions addressed both the root and the contributing causes and that the corrective actions would prevent recurrence for the risk-significant finding. This also included an independent NRC review of the extent-of-condition (EoCo) and extent-of-Cause (EoCa) evaluations. Although the licensee had notified the NRC of their readiness, the inspectors identified two EoCo evaluations, completion of the SSF design reconstitution and a review of breakers that could be subjected to a high temperature environment, were integral to the EoCo evaluation and were not complete. The concern was that other unqualified equipment may exist but would not be identified until these evaluations were completed. This concern was discussed with the licensee who then provided additional documentation to complete the EoCo.

No findings were identified. The NRC has determined that your staff performed an acceptable evaluation of the Yellow finding and that inspection objectives stated above have been met. Accordingly, the violation associated with this Yellow finding is closed. Since this finding was determined to be an old design issue, this finding was not assessed in the NRC's Action Matrix. Therefore, no assessment follow-up letter will be issued.

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 Agency-wide Document Access and Management 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/

Jonathan H. Bartley, Chief
Reactor Projects Branch 1
Division of Reactor Projects

Docket Nos.: 50-269, 50-270, 50-287
License Nos.: DPR-38, DPR-47, DPR-55

Enclosure: Inspection Report 05000269/2012014, 05000270/2012014,
and 05000287/2012014 w/Attachment: Supplemental Information

cc w/encl: (See page 3)

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cc w/encl: (See page 3)

X PUBLICLY AVAILABLE ☐ NON-PUBLICLY AVAILABLE ☐ SENSITIVE X NON-SENSITIVE

ADAMS: ☐ Yes ACCESSION NUMBER: ML12300A399 X SUNSI REVIEW COMPLETE ☐ FORM 665 ATTACHED

OFFICE	RII:DRP	RII:DRP	RII:DRP	RII:DRP			
SIGNATURE	Via email	Via email	Via email	JHB /RA/			
NAME	TLighty	CKontz	CRapp	JBartley			
DATE	10/25/2012	10/26/2012	10/26/2012	10/26/2012			
E-MAIL COPY?	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO

OFFICIAL RECORD COPY DOCUMENT NAME: G:\DRPII\RPB1\OCONEE\REPORTS\OCONEE 95002.DOCX

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Letter to T. Preston Gillespie, Jr. from Jonathan H. Bartley dated October 26, 2012

SUBJECT: OCONEE NUCLEAR STATION - NRC SUPPLEMENTAL INSPECTION REPORT 05000269/2012014, 05000270/2012014, AND 05000287/2012014

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U. S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No.:	05000269, 05000270, 05000287
License No.:	DPR-38, DPR-47, DPR-55
Report No.:	05000269/2012014, 05000270/2012014 and 05000287/2012014
Licensee:	Duke Energy Carolinas, LLC
Facility:	Oconee Nuclear Station, Units 1, 2 and 3
Location:	Seneca, SC 29550
Dates:	August 27 through October 25, 2012
Inspectors:	C. Rapp, Senior Project Engineer (Lead) C. Kontz, Senior Project Engineer T. Lighty, Project Engineer
Approved by:	Jonathan H. Bartley, Chief Reactor Projects Branch 1 Division of Reactor Projects

Enclosure

SUMMARY OF FINDINGS

IR 05000269/2012014, 05000270/2012014, and 05000287/2012014; August 27 – October 25, 2012; Oconee Nuclear Station Units 1, 2, and 3; Supplemental Inspection - Inspection Procedure (IP) 95002

This supplemental inspection was conducted by two senior project engineers and a project engineer. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4.

Cornerstone: Mitigating Systems

The NRC staff performed this supplemental inspection in accordance with IP 95002, Inspection for One Degraded Cornerstone or any Three White Inputs in a Strategic Performance Area, to assess the licensee's corrective actions and extent-of-condition (EoCo) and extent-of-condition (EoCa) evaluation associated with installation of standby shutdown facility (SSF) pressurizer heater breakers that were not qualified for the design basis environmental conditions as required by 10 CFR 50 Appendix B, Criterion III, Design Control. The NRC previously characterized this condition as having moderate safety significance (Yellow) as documented in NRC Inspection Report (IR) 05000269, 270, 287/2011019. The review of the root cause evaluation was performed during an earlier inspection as documented in NRC IR 05000269, 270, 287/2012011. The objectives of this inspection were to gather information for the NRC to provide assurance that the corrective actions addressed both the root and the contributing causes, that the corrective actions would prevent recurrence for the risk-significant finding, and assess the adequacy of the EoCo and EoCa evaluations. The team determined that the corrective actions were adequate to address the identified causes and prevent recurrence. The EoCo and EoCa evaluations were adequate and the corrective actions sufficiently broad. Based on the results of NRC IR 05000269, 270, 287/2012011 and this inspection, the objectives of IP 95002 were met. Accordingly, Violation 05000269, 270, 287/2011017-01, Pressurizer Heater Breaker Installation That Would Not Have Functioned During Certain SSF-Credited Events, is closed.

No findings were identified.

REPORT DETAILS

4. OTHER ACTIVITIES

4OA4 Supplemental Inspection

01 Inspection Scope

The inspectors performed this supplemental inspection in accordance with IP 95002 to assess the licensee's evaluation of a Yellow finding, VIO 05000269, 270, 287/2011017-01, which affected the Mitigating Systems Cornerstone in the Reactor Safety strategic performance area. The inspection objectives were to:

- provide assurance that the corrective actions addressed each of the root and contributing causes, were properly prioritized, and would prevent recurrence
- verify the licensee evaluated both the EoCa and the EoCo
- perform an independent assessment of the EoCa and EoCo

The licensee remained in the Licensee Response column of the NRC's Action Matrix because the finding was determined to be an old design issue. The finding was associated with the Standby Shutdown Facility (SSF) pressurizer heater breakers that were not qualified for high containment temperatures. These breakers had thermal overload devices that may cause the breakers to open due to high containment temperature before the 72-hour SSF mission time. The finding was characterized as having Yellow safety significance based on the results of a Phase 3 analysis as discussed in NRC IR 05000269, 270, 287/2011019. The breakers were replaced with fuses and the SSF returned to operable.

The licensee notified NRC of their readiness for this portion of the supplemental inspection on August 9, 2012. In preparation for this inspection, the licensee performed a root cause evaluation (RCE) (RCE Problem Investigation Program (PIP) O-11-06700) for the Yellow finding to identify the root and contributing causes, identify appropriate corrective actions to prevent recurrence, and to assess the EoCo and EoCa.

The inspectors reviewed corrective actions that were taken or planned to verify they addressed the identified root and contributing causes and were properly planned. The inspectors also interviewed licensee personnel to ensure that the root and contributing causes were understood. The inspectors independently assessed the extent-of-condition and the extent-of-cause for the finding. Documents reviewed that are not identified in the following inspection areas are listed in the Attachment.

02 Evaluation of the Inspection Requirements

02.01 Problem Identification

All attributes for this inspection area were inspected during the 05000269, 270, 287/2012011inspection.

02.02 Root Cause Evaluation

Attributes a through c for this inspection area were inspected during the 05000269, 270, 287/2012011 inspection.

a. Determine that the RCE addresses the EoCa and EoCo of the problem.

As part of the RCE, the licensee performed a "Same/Different" evaluation which used "equipment" and "function" as the two variables reviewed. The equipment was identified as "breakers" and the function was "pressurizer heater functions." Based on that evaluation, the licensee identified that repurposing of equipment that would function during more sever environmental conditions such as higher temperatures for EoCo review. The team assessed the CAs for the EoCo and determined they were adequate.

The licensee performed an EoCa for the root cause and the six contributing causes. The licensee reviewed all Level 1 and Level 2 RCEs and ACEs for the previous five years for any trend in the identified causes. The inspectors found the associated CAs were sufficient to address the EoCa.

b. Findings

No findings were identified

02.03 Corrective Actions.

a. Determine that appropriate corrective actions are specified for each root and contributing cause or that the licensee has an adequate evaluation for why no corrective actions are necessary.

One root cause was identified. This root cause was assigned five corrective actions to prevent recurrence (CAPRs) and three corrective actions (CAs) which were assessed to be appropriate. All direct supporting actions were complete at the time of inspection, but supporting actions for the CAPRs were still in progress with an expected completion of October 2012.

Six contributing causes were identified. Each cause had CAs assigned which were assessed to be appropriate. Not all CAs were complete but were scheduled for completion.

The inspectors evaluated both the completed and planned corrective actions for weaknesses associated with the EoCo and EoCa and determined they were appropriate.

b. Determine that the corrective actions have been prioritized with consideration of risk significance and regulatory compliance.

CAs implemented to address the finding were previously completed and found acceptable. No issues were identified with the licensee's prioritization of CAs to address the root and contributing causes.

c. Determine that a schedule has been established for implementing and completing the corrective actions.

All CA and supporting action implementation was determined to have been scheduled appropriately based on safety significance. The inspectors identified some priority assignments for the CAs which were inconsistent with the guidance in the CAP procedure. The licensee initiated PIP O-12-10129 to review priority assignments for CAs. Because the inspectors did not identify any improperly closed CAs due to incorrect priority assignments, this was determined to be a minor violation of the licensee's CAP procedure and not subject to formal enforcement action. Any further inspection on corrective actions associated with this issue will be conducted as appropriate during implementation of the baseline inspection program.

d. Determine that quantitative or qualitative measures of success have been developed for determining the effectiveness of the corrective actions to prevent recurrence.

An effectiveness review has been established with qualitative measures to review the performance of the CAPRs in March 2013.

e. Determine that the corrective actions planned or taken adequately address a Notice of Violation (NOV) that was the basis for the supplemental inspection, if applicable.

Corrective actions taken to address the issues with the pressurizer heater supply breakers that are the basis for the inspection were previously implemented and determined to be adequate.

f. Findings

No findings were identified.

02.04 Independent Assessment of Extent of Condition (EoCo) and Extent of Cause (EoCa)

a. Perform a focused inspection to independently assess the validity of the licensee's conclusions regarding the EoCo and EoCa of the finding. The intent is to assess the validity of the licensee's evaluation by independently sampling performance within the key attributes of the cornerstone related to the subject performance issues.

Review of the EoCo revealed that all of the pressurizer heater breakers powered from the SSF 2 B, and C heater banks for Unit 1, 2 & 3 were removed and replaced with fuses. That was adequate to address the EoCo for the SSF safety related breakers unable to meet the EQ requirements. All remaining safety related breakers in the SSF and reactor building were reviewed to ensure they could meet the EQ requirements for operation. The SSF safety related breakers were evaluated and found to be acceptable because HVAC cooling was available for all SSF events. In addition, a review of pressurizer heater equipment and functions was performed to verify they could meet the design requirements under all necessary conditions. The licensee reviewed the normal power supply to the remaining non-SSF pressurizer heater banks and determined there were additional breakers located in the reactor building, but because they were not required for

a HELB or any other harsh environment type events they were adequate for their current design requirements.

The EoCa was reviewed to verify if there were other engineering design related processes that have unclear applicability requirements. The review included nuclear site directives, engineering directive manuals, and engineering manuals. The review found two procedures that had deficiencies. The EoCa reviewed design related processes to determine if existing guidance was adequate to ensure adequate future evaluations were completed and the right engineering change processes were used when changing the applicability or functions of SSC's. In addition to the EoCa review, another corrective action was initiated to review a sampling of previously completed documents such as engineering changes, technical procedures (APs, EPs, and Ops referenced by APs), calculations, licensing changes (SLC, TSs, and GL responses), PIP CAs, and operability determinations to determine if the design basis of the plant was changed without properly evaluating the changes or documenting them appropriately (due February 2013). This corrective action was an expansion of the EoCa review; however, the team determined that completion was not necessary to meet the inspection objectives.

The EoCo review for safety related breakers was conducted by reviewing a random sampling of fifty-nine safety related breakers in 20 different areas throughout the plant that could experience environmental challenges. There were ten different groups of breakers that were encompassed in the sample set and each group was evaluated. Any breaker that was not rated for the expected environment was de-rated and the maximum current draw for the de-rated value was compared with the actual maximum current draw on the breaker. All of the de-rated breakers had adequate margin available to operate during any event. PIPs were initiated for any locations that did not have adequate temperature profiles. The evaluations were performed using a maximum temperature based on expected conditions.

The EoCo review for other repurposed equipment used for SSF event mitigation that could fail when exposed to higher environmental and process temperatures was also completed. All of the SSF equipment that was repurposed for other design requirements was reviewed and evaluated to determine if the components could meet all existing design requirements and functions as defined by the maintenance rule program. The maximum environmental conditions expected, occur during an SSF event and all of the equipment was evaluated under that event. The evaluations indicated that all of the equipment would function and operate during an SSF event. There were PIPs initiated where adequate documentation could not be located. Based on the reviews completed by the licensee the team determined that an adequate EoCo and EoCa were completed.

b. Findings

No findings were identified

02.05 Safety Culture Consideration

A safety culture review was not conducted based on the finding being considered an old design issue.

4OA5 Other

(Closed) Violation 05000269, 270, 287/2011017-01, Pressurizer Heater Breaker Installation That Would Not Have Functioned During Certain SSF-Credited Events

This violation is closed based on successful completion of this supplemental inspection.

4OA6 Meetings, Including Exit

On August 30, 2012, the inspection team leader presented preliminary inspection results to Mr. T. Preston Gillespie, Jr., Site Vice President, and members of his staff. No proprietary information is included in this inspection report. On October 25, 2012, the inspection team leader presented the final inspection results to Mr. R. Guy, Organizational Effectiveness Manager.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel
K. Alter, Regulatory Compliance Manager
S. Batson, Station Manager
D. Coyle, Operations Manager
T. Gillespie, Site Vice President
R. Guy, Organizational Effectiveness Manager
J. Kammer, Design Engineering Manager
C. Nolan, Fleet Safety Assurance Manager
T. Patterson, Safety Assurance Manager
T. Ray, Engineering Manager

NRC Personnel
J. Bartley, Chief, Reactor Projects Branch 1

LIST OF REPORT ITEMS

Closed

05000269, 270, 287/2011017-01	VIO	Pressurizer Heater Breaker Installation That Would not have Functioned During Certain SSF-Credited Events (4OA5)

LIST OF DOCUMENTS REVIEWED

PIPs

O-11-06700	O-10-05607	O-11-11014	O-11-09327
O-11-08020	O-12-06212	O-11-08094	O-11-00751
O-12-08279	O-11-07360	O-12-09881	O-12-09880
O-12-09878	O-12-07531	O-12-02891	O-12-02965
O-12-02888	O-11-11478	O-11-10317	O-12-11147
O-12-10975	O-12-02965	O-12-11139	O-12-10956

Procedures
IP/0/B/0200/0337 Pressurizer Heater Test and Surveillance, Rev 74
EM 4.16 Engineering Guidance for Resolving Operable but Degraded/ Non-Conforming Items (OBDN), Rev 006
NSD 203 Operability/Functionality, Rev 24

Documents
EC 91826 Back Power Feed Unit 1 Pressurizer Heaters & Battery Chargers 1CA & 1CB from PSW
EC 91849 Unit 2 – 400 kW Pressurizer Heater MCC and 2CA and 2CB Control Battery Charger Power Feeds from the PSW building

EC 91859 Unit 3 – 400 kW Pressurizer Heater MCC and 3CA and 3CB Control Battery Charger Power Feeds from the PSW building
NUC-9, Reliance Electric Company Summary Report Nuclear Power Motor Systems Type Test Support Analysis Random Wound Motors, Rev 8
O-ENG-SA-12-09 Common Cause Evaluation of Design Documentation Issues dated 5/10/2012
OSC-6107 Large Break Loss of Coolant Accident/Loss of Offsite Power (LBLOCA/LOOP): Event Mitigation Requirements (Type III), Rev18
OSC-6182 Main Steam Line Break (MSLB) - Event Mitigation Requirements Type III, Rev 19
OSC-6013 Environmental Qualification of SSF Reactor Building Equipment Operating in SSF Head Vent Letdown, Rev 4
OSC-10651 Event Mitigation with Protected Service Water, Rev 1