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10CFR50.73

June 4, 2012

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

Subject: Duke Energy Carolinas LLC (Duke Energy)
Oconee Nuclear Station, Units 1, 2, and 3
Docket Nos.: 50-269, 50-270, and 50-287
Licensee Event Report 269/2012-01, Revision 0
Problem Investigation Program Nos. O-12-3487 and O-12-3726

Gentlemen:

Pursuant to 10 CFR 50.73 Sections (a)(1) and (d), attached is Licensee Event Report 269/2012-01, Revision 0, regarding an unanalyzed condition reported on April 6, 2012, via Event Notification System (ENS) Report Number 47810. At that time, Duke Energy identified that existing thermal and hydraulic analyses do not consider some initial operating conditions, especially lower operating modes and lower decay heat.

Primarily occurring during startup and shutdown conditions, Duke Energy has concluded that Oconee Nuclear Station (ONS) has operated in conditions where the ability of the Standby Shutdown Facility (SSF) to perform its safety function is not supported by analysis. Since 1992, when the SSF Technical Specifications were approved, this anomaly would have resulted in ONS being operated outside of the Technical Specifications (TS). As a result, this report is being submitted in accordance with 10 CFR 50.73(a)(2)(ii)(B), unanalyzed condition, and 10 CFR 50.73(a)(2)(i)(B), operation in a condition prohibited by Technical Specifications.

There are no regulatory commitments contained in this report. Any questions regarding the content of this report should be directed to Sandra N. Severance at 864-873-3466.

Sincerely,

TP Gillespie

T. Preston Gillespie, Jr., Vice President
Oconee Nuclear Station

Attachment

IE22
NRR

cc: Mr. Victor McCree
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Mr. Andrew Sabisch
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Oconee Nuclear Station

Mr. John Boska
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INPO (Word File via E-mail)

NRC FORM 366 (10-2010) U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 10/31/2013
Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Service Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects.resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

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4. TITLE

Unanalyzed Conditions Exist for Standby Shutdown Facility Mitigated Events

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
									Unit 2	05000 270
04	05	2012	2012	– 001	– 00	06	04	2012	Unit 3	05000 287

9. OPERATING MODE

U1 1
U2 1
U3 1

10. POWER LEVEL

U1 099
U2 088
U3 085

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: *(Check all that apply)*

☐ 20.2201(b)	☐ 20.2203(a)(3)(i)	☐ 50.73(a)(2)(i)(C)	☐ 50.73(a)(2)(vii)
☐ 20.2201(d)	☐ 20.2203(a)(3)(ii)	☐ 50.73(a)(2)(ii)(A)	☐ 50.73(a)(2)(viii)(A)
☐ 20.2203(a)(1)	☐ 20.2203(a)(4)	☒ 50.73(a)(2)(ii)(B)	☐ 50.73(a)(2)(viii)(B)
☐ 20.2203(a)(2)(i)	☐ 50.36(c)(1)(i)(A)	☐ 50.73(a)(2)(iii)	☐ 50.73(a)(2)(ix)(A)
☐ 20.2203(a)(2)(ii)	☐ 50.36(c)(1)(ii)(A)	☐ 50.73(a)(2)(iv)(A)	☐ 50.73(a)(2)(x)
☐ 20.2203(a)(2)(iii)	☐ 50.36(c)(2)	☐ 50.73(a)(2)(v)(A)	☐ 73.71(a)(4)
☐ 20.2203(a)(2)(iv)	☐ 50.46(a)(3)(ii)	☐ 50.73(a)(2)(v)(B)	☐ 73.71(a)(5)
☐ 20.2203(a)(2)(v)	☐ 50.73(a)(2)(i)(A)	☐ 50.73(a)(2)(v)(C)	☐ OTHER
☐ 20.2203(a)(2)(vi)	☒ 50.73(a)(2)(i)(B)	☐ 50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME	TELEPHONE NUMBER (Include Area Code)
Sandra N. Severance	(864) 873-3466

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX
B	BG		G045	Y					

14. SUPPLEMENTAL REPORT EXPECTED

☐ YES (If yes, complete EXPECTED SUBMISSION DATE) ☒ NO

15. EXPECTED SUBMISSION DATE

MONTH	DAY	YEAR

16. ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)

On March 29, 2012, Duke Energy entered into the corrective action program that unanalyzed conditions exist for Standby Shutdown Facility (SSF) mitigated events since associated thermal and hydraulic analyses do not consider Oconee Nuclear Station (ONS) operating conditions during shutdown and startup, especially those involving lower operating modes and lower decay heat. Subsequent evaluation and analysis efforts did not support SSF operability for all credited events, and on April 6, 2012, the NRC was notified via Event Notification System (ENS) Report Number 47810.

Subsequently, it was determined that the SSF would be declared inoperable for Units 1 and 2 when less than 85% power and Unit 3 below 70% power, or for any unit operating at full power less than four effective full power days (4 EFPDs) since its most recent shutdown.

The apparent cause of this condition was inadequate transfer of licensing information during initial development of the SSF Technical Specifications.

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NARRATIVE

EVALUATION:

BACKGROUND

This event is reportable per 10 CFR 50.73(a)(2)(ii)(B) as a condition that resulted in the nuclear power plant being in an unanalyzed condition and per 10 CFR 50.73(a)(2)(i)(B) as operation in a condition prohibited by Technical Specifications.

The Standby Shutdown Facility (SSF) [NB] at Oconee Nuclear Station (Oconee) is designed as a standby system for use under certain emergency conditions. The SSF includes a dedicated power system and provides additional defense-in-depth protection for the health and safety of the public by serving as a backup to existing safety systems. The SSF provides an alternate and independent means for all three of the Oconee Units to achieve and maintain a safe shutdown condition following a fire, sabotage, turbine building flood, station blackout (SBO), or Emergency Feedwater (EFW) [BA] system tornado missile damage. Failures in the SSF systems will not cause failures or inadvertent operations in other plant systems. The SSF requires manual activation and can be activated if emergency systems are not available.

The main components of the SSF are the SSF Auxiliary Service Water (ASW) System, SSF Portable Pumping System, SSF Reactor Coolant (RC) Makeup System, SSF Power System [EK], and SSF Instrumentation.

Per the Technical Specifications, the SSF is required to be operable in Modes 1, 2, and 3. On March 29, 2012, when this concern was first entered into the corrective action program, Units 1 and 2 were operating at full power, and Unit 3 was coasting down for a refueling outage.

EVENT DESCRIPTION

Duke Energy is performing a comprehensive design, licensing, and operational review of the Oconee Nuclear Station (ONS) SSF to ensure that systems, structures, and components associated with the SSF are capable of performing their design function. During conduct of this review, the SSF Comprehensive Review Team identified that unanalyzed conditions may exist for SSF-mitigated events. Technical Specification (TS) 3.10.1, Standby Shutdown Facility, requires that the SSF and associated systems be operable in Modes 1, 2, and 3. Existing thermal and hydraulic analyses which support the SSF only consider an event from 100% power for ≥ 4 EFPD (effective full power days) burn-up. Therefore, some initial operating conditions are not considered.

Lacking analyses, the ability of the SSF to mitigate events for which it is credited is in question. Since discovery of this condition, Duke Energy has declared the SSF inoperable for the applicable unit when operating in an unanalyzed condition (i.e., Mode 3 up through 100%FP for 4 EFPD). Note that the SSF TS does contain an exception to TS 3.0.4 that allows the affected unit to change modes when the Limiting Condition of Operation is not met. In the past three years, there were periods of time where this unanalyzed condition existed on each of the three units for greater than seven days, which is the allowed Required Action Completion Time. Therefore, this condition is also reportable as operation in a condition prohibited by Technical Specifications.

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NARRATIVE

CAUSAL FACTORS

Duke Energy has determined that the apparent cause of this event is inadequate transfer of licensing information during the initial development of SSF Technical Specifications.

The original Safety Evaluation (SE) for the SSF, issued on April 28, 1983, described the SSF as a "'bunkered' facility which houses the systems and components necessary to provide an alternate and independent means to achieve and maintain a hot shutdown condition for one or more of the three Oconee units." At the time the SE was issued, hot shutdown was defined as the reactor subcritical by at least 1% delta k/k and T average at or greater than 525 degrees F. However, an August 14, 1987, License Amendment Request supplement introduced a discrepancy into the facility's licensing basis, changing the licensing basis temperature from 525 degrees F to 250 degrees F. On May 11, 1992, the NRC issued the amendment to add the SSF to the Oconee Technical Specifications with the 250 degrees F operability requirement. Analysis was not performed to support SSF operability from 250 degrees F.

Duke Energy guidance for correspondence with the NRC today is more formalized and the documentation requirements more stringent than was the case in the 1980s. Current guidance requires that written communication be appropriately validated for accuracy and completeness prior to submittal. Accordingly, with this guidance in place, submittal of a proposed technical specification without a corresponding analytical basis would not be expected to occur today.

CORRECTIVE ACTIONS

Immediate:

1. When this condition was determined reportable, Unit 2 was down powering to repair a cooling water system [CC] leak, and Unit 3 was in an end of cycle coast down. Duke Energy developed analyses to establish SSF operability during these changing plant conditions.
2. Declared the SSF inoperable for Unit 2 when power decreased below 85% on April 5, 2012. Unit 2 entered Mode 3 on April 6, 2012, to support repair of a cooling water system [CC] leak.
3. Declared the SSF inoperable for Unit 3 when power decreased below 70% on April 13, 2012. Unit 3 was shut down for normal refueling activities and exited the SSF Mode of Applicability on April 14, 2012.

Planned:

Initiate actions to resolve the SSF unanalyzed condition by providing appropriate analysis or licensing changes for SSF operability in Mode 3 through 4 EFPD.

SAFETY ANALYSIS

Duke Energy used a risk-informed approach to determine the risk significance associated with the unanalyzed conditions existing for the Standby Shutdown Facility (SSF) mitigated event.

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The Conditional Core Damage Probability (CCDP) of this event was evaluated by considering the following:

- The risk increase for the event is during the period of vulnerability which is when a unit is subject to an increased chance of Pressurizer Safety Valve (PSV) liquid relief
- The short average duration of the exposure period
- The use of the average maintenance PRA model to determine the SSF challenge frequency

The CCDP associated with this event was determined to be less than 1.0E-06 due to the average exposure period. Therefore, this event is considered to have a small risk impact. This event does not pose a threat to the health and safety of the public.

ADDITIONAL INFORMATION

Duke Energy is performing a comprehensive design, licensing, and operational review of the Oconee Nuclear Station Standby Shutdown Facility (SSF). The goal of the review is to ensure that systems, structures, and components associated with the SSF functions are capable of performing their design function. This comprehensive review identified the current concern.

Energy Industry Identification System (EIIS) codes are identified in the text as [XX]. This event is considered reportable under the Equipment Performance and Information Exchange (EPIX) program. No component was selected because no specific equipment failures occurred. There were no releases of radioactive materials, radiation exposures or personnel injuries associated with this event.