November 27, 2012

L-2012-403
10 CFR 50.73

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D.C. 20555

Re: St. Lucie Unit 2
Docket No. 50-389
Reportable Event: 2012-002
Date of Event: October 3, 2012

Non-Segregated Phase Bus Fault Resulting in Partial Loss of Offsite Power

The attached Licensee Event Report 2012-002 is being submitted pursuant to the requirements of 10 CFR 50.73 to provide notification of the subject event.

Very truly yours,

Joseph Jensen
Site Vice President
St. Lucie Plant

JJ/rcs
Attachment

IE22
NRR

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

LICENSEE EVENT REPORT (LER)

1. FACILITY NAME	2. DOCKET NUMBER	3. PAGE
St. Lucie Unit 2	05000389	1 OF 3

4. TITLE
Non-Segregated Phase Bus Fault Resulting in Partial Loss of Offsite Power

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
10	03	2012	2012	- 002 -	00	11	27	12	NA	
									FACILITY NAME	DOCKET NUMBER

N/A

10. POWER LEVEL
0%

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

NAME	TELEPHONE NUMBER
Richard Sciscente - Principal Engineer, Licensing	772-467-7156

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

CAUSE	SYSTEM	COMPONENT	MANU-FACTURE	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURE	REPORTABLE TO EPIX
E	EA	NSBU	C770	YES					

14. SUPPLEMENTAL REPORT EXPECTED
☐ YES *(If yes, complete 15. EXPECTED SUBMISSION DATE)* ☒ NO

15. EXPECTED SUBMISSION DATE

MONTH	DAY	YEAR

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

On October 3, 2012 at 0843 with St. Lucie Unit 2 in a defueled condition, the collapse of a corroded non-segregated phase bus vent assembly resulted in a fault on the 6.9kV non-segregated phase bus for the 2B Startup Transformer. The 2B Startup Transformer locked out resulting in a partial loss of offsite power to Unit 2.

The lockout caused a loss of voltage condition on essential 4.16kV Bus 2B3, and the automatic start and loading of the 2B Emergency Diesel Generator (EDG). All equipment responded as expected.

Risk associated with susceptibility of the perforated metal screen to corrosion was not recognized with respect to the collapse on to the phase bus duct bars.

Immediate corrective actions included repairs to the degraded vents on the affected non-segregated phase bus run. An additional corrective action includes updates to the preventive maintenance bases for startup and auxiliary transformers to improve periodic maintenance of non-segregated phase bus run vent assemblies.

This event had no effect on the health and safety of the public.

LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET

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NARRATIVE

Description of the Event

On October 3, 2012 at 0843 with St. Lucie Unit 2 in a defueled condition, the collapse of a corroded non-segregated phase bus vent assembly resulted in a fault on the 6.9kV non-segregated phase bus [NSBU:EA] for the 2B Startup Transformer. The 2B Startup Transformer locked out resulting in a partial loss of offsite power to Unit 2.

The lockout caused a loss of voltage condition on essential 4.16kV Bus 2B3, and the automatic start and loading of the 2B Emergency Diesel Generator (EDG). All equipment responded as expected.

Cause

Risk associated with susceptibility of the perforated metal screen to corrosion was not recognized with respect to the collapse on to the phase bus duct bars.

Analysis of the Event

On October 3, 2012 at 0843 with St. Lucie Unit 2 in a defueled condition, a transformer differential current was detected by the phase A and phase B transformer differential protection relays for the 2B Startup Transformer. The protective relay operation initiated a 2B Startup Transformer lockout. The lockout caused a loss of voltage condition on essential 4.16kV Bus 2B3, and the automatic start and loading of the 2B Emergency Diesel Generator (EDG).

The non-segregated phase bus runs are provided with vents in the top and bottom to ventilate the duct. The vents in the top of the bus enclosures have baffles providing a labyrinth to prevent a direct path into the duct. The inner baffle includes a perforated metal debris exclusion screen which covers the vent opening into the bus. A phase bus vent assembly collapsed as a result of corrosion. The vent fell into the non-phase duct bus run creating a fault and subsequent lock out of the 2B SUT.

This licensee event report is being reported in accordance with 10 CFR 50.73(a)(2)(iv)(A) as an event or condition that resulted in automatic actuation of emergency AC electric power systems including emergency diesel generators.

Safety Significance

Unit 2 was in a shutdown and defueled condition at the time of the 2B Startup Transformer lockout. The 4.16kV Switchgear 2B2 and 2B3, and the associated downstream electrical buses, were de-energized as a result of the lockout. As a result of the 4.16kV Switchgear 2B3 loss of power, there was a valid emergency start of the 2B Emergency Diesel Generator.

The 2B Emergency Diesel Generator was required to be in emergency mode service for approximately four days as offsite power was being restored through the 2B Startup Transformer. During this period the shutdown safety assessment overall color was yellow per the site's qualitative risk assessment and control procedure. All safety functions were green with the exception of electric power and fuel pool cooling, which were yellow. This event had no effect on the health and safety of the public.

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NARRATIVE

Due to the common high side electrical feed, the 2B Startup Transformer lockout resulted in the concurrent loss of the 1B Startup Transformer. Unit 1 was operating in Mode 1, with the normal electrical alignments to the Auxiliary Transformers, and the 1A EDG out of service for maintenance. There was no immediate impact on Unit 1. However, Unit 1 entered Technical Specification action statement 3.8.1.1.c due to the loss of one offsite A.C. circuit and one diesel generator being out of service for maintenance. The 1B Startup Transformer was returned to service within the specified time period and Technical Specification 3.8.1.1.c was exited.

Prompt Corrective Action

Immediate corrective actions included repairs to the degraded vents on the affected non-segregated phase bus run.

Corrective Actions

The corrective action below has been entered into the site corrective action program. Any changes to the action will be managed under the corrective action program.

1. Update the preventive maintenance bases for startup and auxiliary transformers to improve periodic maintenance of non-segregated phase bus run vent assemblies.

Similar Events

A search of the corrective action database for three years was performed and identified no issues that were related to the faults identified with this event.

Failed Component(s)

2B Startup Transformer 6.9kV non-segregated phase bus [NSBU:EA] vent assembly.

Manufacture: Cutler Hammer **Model:** Medium Voltage Nonsegregated Phase Bus Run