



August 8, 2013

L-2013-235  
10 CFR 50.73

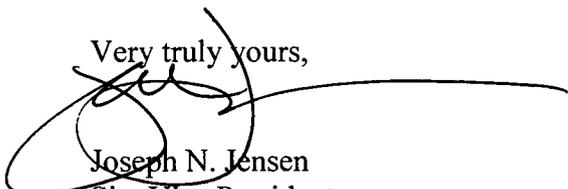
U.S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, D.C. 20555

Re: St. Lucie Unit 2  
Docket No. 50-389  
Reportable Event: 2013-003-00  
Date of Event: June 10, 2013

2A Emergency Diesel Generator Failed to Start

The attached Licensee Event Report 2013-003-00 is being submitted pursuant to the requirements of 10 CFR 50.73 to provide notification of the subject event.

Very truly yours,



Joseph N. Jensen  
Site Vice President  
St. Lucie Plant

JJ/rcs/mkm  
Attachment

JE22  
MLL

LICENSEE EVENT REPORT (LER)

1. FACILITY NAME: St. Lucie Unit 2  
 2. DOCKET NUMBER: 05000389  
 3. PAGE: 1 OF 3  
 4. TITLE: 2A Emergency Diesel Generator Failed to Start

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIA L NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
06	10	2013	2013	- 003	- 00	08	08	2013	NA	
									FACILITY NAME	DOCKET NUMBER
									FACILITY NAME	DOCKET NUMBER

9. OPERATING MODE: 1

10. POWER LEVEL: 100%

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

<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> 50.73(a)(2)(vii)
<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)
<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.73(a)(2)(ii)(B)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)
<input type="checkbox"/> 20.2203(a)(2)(i)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)(A)
<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(x)
<input type="checkbox"/> 20.2203(a)(2)(iii)	<input type="checkbox"/> 50.36(c)(2)	<input checked="" type="checkbox"/> 50.73(a)(2)(v)(A)	<input type="checkbox"/> 73.71(a)(4)
<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.71(a)(5)
<input type="checkbox"/> 20.2203(a)(2)(v)	<input type="checkbox"/> 50.73(a)(2)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(C)	OTHER
<input type="checkbox"/> 20.2203(a)(2)(vi)	<input checked="" type="checkbox"/> 50.73(a)(2)(i)(B)	<input checked="" type="checkbox"/> 50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

NAME: Richard Sciscente - Principal Engineer, Licensing  
 TELEPHONE NUMBER (Include Area Code): 772-467-7156

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

CAUSE	SYSTEM	COMPONENT	MANU- FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU- FACTURE	REPORTABLE TO EPIX
B	EK	CNTR	S345	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 June 10, 2013, during the monthly surveillance run of the 2A Emergency Diesel Generator (EDG), the EDG did not start when the local idle start pushbutton was depressed. This was accompanied by Control Room and local alarms. The 2A EDG was subsequently declared inoperable. Troubleshooting revealed an electrical short circuit caused by an uninsulated butt splice which caused a fuse in the EDG control circuit to clear. The butt splice was at a diode and arced across the coil mounting plate for the priming pump contactor.

A previous event that occurred in March 2013 led to the conclusion that this condition unknowingly existed for greater than the allowable Technical Specification action time of 14 days per Technical Specification 3.8.1.1.b and is reportable pursuant to 10 CFR 50.73(a)(2)(i)(B). Had this intermittent failure occurred while the 2B EDG was unavailable during three monthly surveillances, this condition could have prevented the fulfillment of a safety function. Therefore, this event is also reportable pursuant to 10 CFR 50.73(a)(2)(v)(A) & (D).

To correct the problem, the diode with the uninsulated butt-splice was replaced, and the new diode has been insulated.

This event had no effect on the health and safety of the public. During this period the 1A EDG, 1B EDG and station blackout crosstie were available to supply Unit 2 with emergency AC power if required.

**LICENSEE EVENT REPORT (LER)  
CONTINUATION SHEET**

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
St. Lucie Unit 2	05000389	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	Page 2 of 3
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**NARRATIVE**

**Description of the Event**

On June 10, 2013, St. Lucie Unit 2 was in Mode 1 at 100% reactor power. During the monthly surveillance run of the 2A Emergency Diesel Generator (EDG), the EDG did not start when the local idle start pushbutton was depressed. This was accompanied by Control Room and local alarms. The 2A EDG was subsequently declared inoperable. Troubleshooting revealed an electrical short circuit caused by an uninsulated butt splice which caused a fuse in the EDG control circuit to clear. The butt splice was at a diode and arced across the coil mounting plate for the priming pump contactor.

**Cause**

The cause that prevented the 2A EDG from being locally started during the monthly 2A EDG surveillance run was an uninsulated butt splice that shorted to the fuel priming pump contactor coil mounting plate (magnet frame), which caused the fuse to clear due to an actual overcurrent condition. The uninsulated butt splice was a legacy condition from the original installation of the 2A EDG.

**Analysis of the Event**

The EDGs are an emergency power source. Upon a loss of the normal power sources, the tie breakers between the normal and emergency buses will automatically open and the EDG will automatically start and begin supplying power directly to the emergency buses. Similarly, in the event of a loss of offsite power (LOOP) in conjunction with an emergency signal, the EDG will restore power to the emergency bus within 10 seconds and all required loads to mitigate the accident condition will be loaded onto the EDG in a sequential fashion (3 second time loading intervals).

The uninsulated butt-splice configuration of the fuel priming pump diode resulted in spurious intermittent contact between energized components on the 2A EDG control circuit leading to a short circuit that caused the fuse to clear on March 13, 2013, and again on June 10, 2013.

Troubleshooting for the March 13, 2013 event found the cleared fuse. The symptoms were not repeatable following replacement of the fuse. This and operating experience for the fuse led the station to determine that the fuse had intermittently failed. Subsequently, the 2A EDG was started successfully four more times before it failed to start on June 10, 2013.

The fuel priming pump contactor energizes the 2A EDG Fuel Pumps upon actuation and the subject diode is installed across the contactor coil to suppress inductive kick following deenergization of contactor. The proximity of the diode's uninsulated butt-splice to the contactor coil plate (magnet frame) afforded the opportunity for a short to occur between these components when the contactor was electrically operated. The originally installed contactor was manufactured such that the coil mounting plate was electrically floating, not at any voltage potential. Since 2008 the replacement parts have had a new design that replaced a nonconductive part with a metallic part and caused the coil mounting plate to be at line voltage potential (i.e., in this application 125V DC positive). The most recent contactor replacement was installed on September 7, 2012.

The remaining EDGs were inspected to verify that they did not have this legacy issue of an uninsulated butt-splice in a similar configuration.

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**NARRATIVE**

**Safety Significance**

Between the previous event on March 13, 2013, and the recent event on June 10, 2013, the 2A EDG had been successfully started four times. The 2A EDG was returned to service on June 11, 2013, following replacement of the defective component.

From the probabilistic risk assessment perspective, the 2A EDG was available to perform its design function during the exposure window with the exception of the actual failure times in March and June of 2013. The failure rate resulted in an increase of baseline risk of less than 1E-06.

This condition unknowingly existed for greater than the allowable Technical Specification action time of 14 days per Technical Specification 3.8.1.1.b and is reportable pursuant to 10 CFR 50.73(a)(2)(i)(B). During the period of 2A EDG inoperability, the opposite train 2B EDG was unavailable during three routine surveillances on March 25, April 22 and May 28. Had this intermittent failure occurred while the 2B EDG was unavailable during one of these three monthly surveillances, this condition could have prevented the fulfillment of a safety function. Therefore, this event is also reportable pursuant to 10 CFR 50.73(a)(2)(v)(A) & (D). This event had no effect on the health and safety of the public. During this period the 1A EDG, 1B EDG and station blackout crosstie were available to supply Unit 2 with emergency AC power if required.

**Corrective Actions**

1. To correct the problem, the diode with the uninsulated butt-splice was replaced, and the new diode has been insulated.

**Similar Events**

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

**Failed Component(s)**

Fuel Priming Pump Contactor

**Manufacturer**

The contactor was manufactured by Square-D Company, now a subsidiary of Schneider Electric.

Engine Systems, Inc. is the Emergency Diesel Generator supplier.