

PRIORITY 1

(ACCELERATED RIDS PROCESSING)

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 9503200180 DOC. DATE: 95/03/17 NOTARIZED: NO DOCKET #
 FACIL: 50-335 St. Lucie Plant, Unit 1, Florida Power & Light Co. 05000335
 AUTH. NAME AUTHOR AFFILIATION
 LYONS, E.E. Florida Power & Light Co.
 SAGER, D.A. Florida Power & Light Co.
 RECIP. NAME RECIPIENT AFFILIATION

SUBJECT: LER 95-001-00: on 950216, during portion of surveillance test
 for 1A3 4160 volt bus degraded voltage relay, 27-5 relay
 failed to operate due to procedural deficiency. Ops verified
 all equipment responded as expected. W/950317 ltr.

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 TITLE: 50.73/50.9 Licensee Event Report (LER), Incident Rpt, etc.

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Florida Power & Light Company, P.O. Box 128, Fort Pierce, FL 34954-0128

March 17, 1995

L-95-088
10 CFR 50.73

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

Re: St. Lucie Unit 1
Docket No. 50-335
Reportable Event: 95-001
Date of Event: February 16, 1995
1A3 4160 Volt Bus Load Shed During Replacement
of Failed 2X-5 Relay Due to Procedural Deficiency.

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

Very truly yours,

A handwritten signature in cursive script that reads "D. A. Sager".

D. A. Sager
Vice President
St. Lucie Plant

DAS/EJB

Attachment

cc: Stewart D. Ebnetter, Regional Administrator, USNRC Region II
Senior Resident Inspector, USNRC, St. Lucie Plant

200063

9503200180 950317
PDR ADOCK 05000335
S PDR

an FPL Group company

Handwritten initials "LE22" with a vertical line through them, possibly indicating a date or a specific reference.

LICENSEE EVENT REPORT (LER)

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

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1) St. Lucie Unit 1	DOCKET NUMBER (2) 05000335	PAGE (3) 1 OF 4
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TITLE (4) **1A3 4160 Volt Bus Load Shed During Replacement of Failed 2X-5 Relay due to Procedural Deficiency.**

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
02	16	95	95	--001--	0	03	17	95	N/A	
									N/A	

OPERATING MODE (9) 1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)									
POWER LEVEL (10) 100	20.402(b)		20.405(c)	<input checked="" type="checkbox"/>	50.73(a)(2)(iv)		73.71(b)			
	20.405(a)(1)(i)		50.36(c)(1)		50.73(a)(2)(v)		73.71(c)			
	20.405(a)(1)(ii)		50.36(c)(2)		50.73(a)(2)(vii)					OTHER
	20.405(a)(1)(iii)		50.73(a)(2)(i)		50.73(a)(2)(viii)(A)					(Specify in Abstract below and in Text, NRC Form 366A)
	20.405(a)(1)(iv)		50.73(a)(2)(ii)		50.73(a)(2)(viii)(B)					
20.405(a)(1)(v)		50.73(a)(2)(iii)		50.73(a)(2)(x)						

LICENSEE CONTACT FOR THIS LER (12)										
NAME Edward E. Lyons, Shift Technical Advisor	TELEPHONE NUMBER (Include Area Code) (407) 465-3550 x3151									

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)										
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	
X	EB	2	A348	Y						

SUPPLEMENTAL REPORT EXPECTED (14)				EXPECTED SUBMISSION DATE (15)			MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE).	X	NO							

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

On 2/9/95 at 1840, Operations (Ops) was performing the monthly Channel Functional Test on the Undervoltage/Degraded voltage relaying scheme. During the portion of the surveillance test for the 1A3 4160 volt bus degraded voltage relaying, the 27-5 relay failed to operate. On 2/16/95 at 1100, Electrical Maintenance (EM) began the process of changing out the 2X-5 relay. At 1145, as a jumper was being removed, it inadvertently came in contact with terminal 2 on the 2X-6 relay. This made up the degraded voltage actuation circuit and the 1A3 4160 volt bus was shed. The 1A Emergency Diesel Generator started and loaded on to the 1A3 4160 volt bus. All equipment responded as expected.

The root cause of the event was due to procedural deficiency.

Corrective actions for the event are: 1) Ops verified all equipment responded as expected, 2) Ops restored power to the 1A3 4160 volt bus per ONOP 1-0910054, 3) EM completed the change out procedure for the 2X-5 relay, 4) Ops performed the surveillance test of the 1A3 4160 volt bus degraded voltage relaying with satisfactory results, 5) EM changed out all remaining 2X relays on both trains on Unit 1 and 6) A checklist will be developed to enhance St. Lucie Plant Policy 105 implementation.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)		DOCKET NUMBER (2)		LER NUMBER (6)			PAGE (3)
St. Lucie Unit 1		05000335		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	2 OF 4
				95	--001--	0	

TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

DESCRIPTION OF THE EVENT

On February 9, 1995 at 1840, Operations was performing the Technical Specification required monthly Channel Functional Test on the Undervoltage/Degraded voltage relaying scheme. During the portion of the surveillance test for the 1A3 4160 volt bus, degraded voltage relay, (EIIS:JE) 27-5 relay failed to operate. Technical Specification 3.3.2.1 states that with the number of operable Channels one less than the Total Number of Channels, operation may proceed until performance of the next required channel functional test provided the inoperable channel is placed in the tripped condition within 1 hour. The 27-5 relay was placed in the tripped condition at 1910 by installing an electrical jumper across terminals 1 and 2 on the 2X-5 relay. The 2X-5 relay is a timing relay actuated by the 27-5 relay. The 2X-5 relay, in conjunction with the 2X-6 relay that is actuated by the 27-6 relay, make up the normal 2 out of 2 logic for degraded voltage protection. With the jumper on the 2X-5 relay the logic for degraded voltage protection was 1 out of 1.

Subsequent non-intrusive trouble shooting performed by the electrical maintenance department revealed that the 2X-5 relay had failed and required replacement. A procedure was developed by Electrical Maintenance to change the relay out on line. Electrical Maintenance presented the procedure to plant management stating that the relay could be changed out on line but not without some risk of load shed of the 1A3 4160 volt bus or possibly the undervoltage/degraded voltage relaying scheme being rendered inoperable due to the confined wiring arrangement.

At this point plant management invoked St. Lucie Plant Policy PSL-105 which provides guidance for a Technical Subcommittee to be formed to review proposed actions that have risk to plant operations. The subcommittee included members from Technical Staff, Operations, Site Engineering, Electrical Maintenance and Plant Licensing. The subcommittee was tasked with reviewing the proposed procedure for impact on the plant, technical accuracy and to evaluate the consequences of various failure modes associated with the procedure. After a comprehensive review of the proposed procedure the subcommittee provided the following information to the Facility Review Group (FRG):

The relay could be changed out on line with little additional risk of a plant trip. This recommendation was based on a detailed circuit analysis and a historical review of a similar event in the past in which the 1A3 4160 volt bus was load shed due to an undervoltage relay problem and the plant remained on-line. The subcommittee also recommended the following compensatory measures to be implemented prior to the relay change out: 1) Electrical maintenance supervision shall conduct a tailboard meeting prior to commencement of work. 2) Independent verification shall be performed. 3) Electrical Maintenance shall utilize "mini-grabber" type jumpers. 4) The operating crew shall review ONOP 1-0910054, "LOSS OF A SAFETY RELATED A.C. BUS," and consider potential impact on unit and appropriate contingency actions. 5) The operating crew shall verify CEDM MG set (EIIS:AA) load is shared equally (+/- 20 amps). 6) Electrical maintenance shall insulate exposed leads. 7) Ensure spare fuses for the undervoltage relaying circuit were available at the work location in the event that the D.C. control power was inadvertently shorted.

The FRG concluded that the relay change out could proceed without imposing undue safety risk.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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FACILITY NAME (1)		DOCKET NUMBER (2)		LER NUMBER (6)			PAGE (3)
St. Lucie Unit 1		05000335		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	3 OF 4
				95	--001--	0	

TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

DESCRIPTION OF THE EVENT (continued)

On 2/16/95 at 1100, following extensive tailboards with Operations and Maintenance personnel, Electrical Maintenance began the process of changing out the 2X-5 relay. Steps 1 through 34 of a 38 step procedure were completed without incident. Step 35 called for the jumper that was keeping the 27-5 relay in trip to be removed to allow the surveillance test to be completed. This jumper was from terminal 1 on the 2X-1 relay to terminal 1 on the 2X-6 relay. At 1145, after the 2X-5 relay was replaced, as the jumper was being removed from terminal 1 on the 2X-6 relay it inadvertently came in contact with terminal 2 on the 2X-6 relay. This made up the degraded voltage actuation circuit and the 1A3 4160 volt bus was shed. The 1A Emergency Diesel Generator (EIIS:EK) started and loaded on to the 1A3 4160 volt bus. All equipment responded as expected. The event had minimal impact on the plant due to the compensatory measures recommended by the subcommittee being in place. Offsite power was restored to the 1A3 4160 volt bus at 1207 and the channel functional test for degraded voltage was completed at 1247.

CAUSE OF THE EVENT

The root cause of the event was due to procedural deficiency. The Technical subcommittee was asked to critically reevaluate the event. The team came up with the following considerations for future Technical subcommittee reviews: Provide more detailed review of the sequence in which the ends of jumpers are landed and removed to minimize the impact of inadvertent contact with adjacent terminals, evaluate consequences of shorting of adjacent wires and other wires which could be easily shorted, review specific methods of insulating close proximity adjacent terminals and possibly utilize jumpers with series toggles switches to open circuit the jumper prior to disconnection.

ANALYSIS OF THE EVENT

This event is reportable under 10 CFR 50.73.a.2.iv as "any event or condition that resulted in manual or automatic actuation of any engineered safety feature, including the Reactor Protective System (RPS) (EIIS:JC)."

Only one train of safety related components was temporarily de-energized during the event. The 1A EDG started and loaded onto the safety related bus as designed. The redundant safety related train was available for service and the plant remained in a stable condition throughout the entire event. Offsite power was always available to both electrical trains during this event. Thus, the health and safety of the public were not affected at any time during the event.

FPL supplied failed DSC relays to National Technical Systems (NTS) so that they could be analyzed and a cause for the failures could be determined. NTS concluded from visual inspections and unit functional testing that the failures were caused by natural aging of the units since installation, in the environment in which the relays were being installed.

This event is not applicable to both units as Unit 2 does not use Agastat DSC relays in the degraded grid circuit.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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St. Lucie Unit 1	05000335	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER
		95	--001--	0
4 OF 4				

TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

CORRECTIVE ACTIONS

- 1) Operations verified all equipment responded as expected.
- 2) Operations restored power to the 1A3 4160 volt bus per ONOP 1-0910054.
- 3) Electrical Maintenance completed the change out procedure for the 2X-5 relay.
- 4) Operations performed the surveillance test of the 1A3 4160 volt bus degraded voltage relaying with satisfactory results.
- 5) Electrical Maintenance changed out all remaining 2X relays on both trains on Unit 1.
- 6) A checklist will be developed to enhance St. Lucie Plant Policy 105 implementation.

ADDITIONAL INFORMATION

Component Failures: Amerace Corp Agastat Time Delay Relay
Model DSCXX0125DP

Previous Similar Events

LER 335-94-002 "Inadvertent Load Shed of the 1A3 4160 Volt Bus due to Procedural Inadequacy"