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ACCESSION NBR: 9104080008 DOC. DATE: 91/04/01 NOTARIZED: NO DOCKET #
 FACIL: 50-389 St. Lucie Plant, Unit 2, Florida Power & Light Co. 05000389
 AUTH. NAME AUTHOR AFFILIATION
 LAUVER, C. Florida Power & Light Co.
 SAGER, D.A. Florida Power & Light Co.
 RECIPIENT NAME RECIPIENT AFFILIATION

SUBJECT: LER 91-001-00: on 910304, inadvertent actuation of auxiliary feedwater sys Channel A occurred while performing routine surveillance. Caused by momentary loss of power supply. Power supply replaced & procedures changed. W/910401 ltr.

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FPL

P.O. Box 128, Ft. Pierce, FL 34954-0128

April 1, 1991

L-91-95
10 CFR 50.73

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

Gentlemen:

Re: St. Lucie Unit 2
Docket No. 50-389
Reportable Event: 91-01
Date of Event: March 4, 1991
Inadvertent Actuation of Auxiliary Feedwater
Components While Performing Monthly Auxillary
Feedwater Actuation System Test Due to Equipment Failure

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,

D. A. Sager
Vice President
St. Lucie Plant

DAS:GRM:kw

Attachment

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

DAS/PSL #394

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PDR ADOCK 05000389
S PDR

an FPL Group company

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IE22

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) St. Lucie Unit 2	DOCKET NUMBER (2) 05000389	PAGE (3) 1 OF 04
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TITLE (4) **Inadvertent Actuation of Auxiliary Feedwater Components While Performing Monthly Auxiliary Feedwater Actuation System Test due to Equipment Failure**

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 NAMES		DOCKET NUMBER(S)
03	04	91	91	001	00	04	01	91	N/A		0510101
									N/A		0510101

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

LICENSEE CONTACT FOR THIS LER (12)

NAME Catherine Lauver, Shift Technical Advisor	TELEPHONE NUMBER
	AREA CODE 407
	465-3550

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
B	B	A	J	X					
			T	032	Y				

SUPPLEMENTAL REPORT EXPECTED (14)

<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)	<input checked="" type="checkbox"/> NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR

ABSTRACT (Limit to 1400 spaces. i.e. approximately fifteen single-space typewritten lines) (16)

On March 4, 1991 at 1440, an inadvertent actuation of the Auxiliary Feedwater Actuation System (AFAS) Channel A occurred. Auxiliary Feedwater (AFW) pump 2A started. The steam admission valve from the 2B Steam Generator to the turbine-driven 2C AFW pump opened, starting the 2C AFW pump. A main feedwater isolation valve received a signal to close, but only moved from its full open position before the signal cleared. Operators returned all components to their normal position. The initiating event was a momentary loss of auctioneered power supplies to Channel A AFAS actuation relays. The actuation occurred while Instrument and Control (I&C) technicians were performing a routine surveillance and had just finished balancing and adjusting power supplies 301A and 302B.

The root cause of this event is equipment failure. One power supply was momentarily unable to pick up load from the other. Power supply 302B was found to be faulty and replaced.

Other corrective actions include: checking other AFAS power supplies; replacing AFAS power supplies with an improved model; remove balancing and adjusting from the monthly surveillance to 18 month (performed when the unit is shut down). These actions will be taken on both units.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1) St. Lucie Unit 2	DOCKET NUMBER (2) 0 5 0 0 0 3 8 9	LER NUMBER (6)			PAGE (3)		
		YEAR 9 1 --	SEQUENTIAL NUMBER 0 0 1 --	REVISION NUMBER 0 0			

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

DESCRIPTION OF THE EVENT

On March 4, 1991, Unit 2 was in Mode 1 at 100% power. Instrument and Control (I&C) personnel were performing the Auxiliary Feedwater Actuation System (AFAS) (EIS:BA) monthly functional test per I&C procedure 2-0700051. I&C personnel had just finished balancing and adjusting Channel A auctioneered power supplies (PS) to Auxiliary Feedwater (AFW) actuation relays when an actuation of Channel A components occurred. Trip Status and Lockout Status lights were lit. Operations received several AFAS related annunciators (EIS:IB) and noted that the 2A AFW pump had started and the steam admission valve from the 2B Steam Generator (EIS:SB) to the turbine-driven 2C AFW pump opened and the steam-driven 2C AFW pump started. The discharge valves for these pumps remained closed. At no time did any AFW enter either Steam Generator. A main feedwater isolation valve received a signal to close, but only moved from its full open position before the signal cleared. According to the Sequence of Events Recorder, the entire actuation time lasted 0.21 seconds. Operations instructed I&C to stop testing and returned the Plant to its normal configuration. The Plant was stable at 100% power. After extensive troubleshooting, a faulty power supply was replaced March 6, 1991. The AFAS monthly functional test was satisfactorily completed at 1500 on March 8, 1991.

CAUSE OF EVENT

A Task Response Team and the Facility Review Group met to discuss the events and necessary actions. It was determined that the initiating event was the momentary loss of the auctioneered power supplies. In this circuit, two power supplies and two diodes are connected such that the power supply with the greater voltage carries the load for the AFW actuation relays. As the voltages of the two power supplies varies, one power supply will switch the load to the other. Power supply 302B was found to be faulty.

The procedure methodology, requiring balancing and adjusting power supplies PS 301A and 302B, combined with PS 302B failure, momentarily resulted in PS 301A output voltage level below that specified for system operation. The root cause of the event was the failure of one power supply to pick up load from the other power supply.



LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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		91	001	00	03	OF

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

ANALYSIS OF THE EVENT

This event is reportable under the requirements of 10 CFR 50.73.a.2.iv as an event or condition that resulted in manual or automatic actuation of any Engineered Safety Feature.

The power supplies for Channel A are configured such that the A power supply is auctioneered with the B power supply. After reviewing the procedure and technical manuals, it was determined that parts, including the balancing and adjusting of power supplies, were not intended to be performed monthly and exposed the Plant to the unnecessary risk of a reactor trip or plant perturbation. These steps requiring monthly power supply adjustments were removed from the monthly AFAS surveillance procedure.

At no time during this event was the AFAS unable to perform its intended safety function. The health and safety of the public were not at risk at any time during this event.

CORRECTIVE ACTIONS

1. Operations instructed I&C to stop testing, identified equipment not in normal configuration, and restored plant to previous configuration.
2. I&C personnel tested the two power supplies and replaced the faulty one.
3. Engineering is evaluating the replacement of the AFAS power supplies for both units with an improved model.
4. I&C personnel changed the surveillance procedures to match the testing frequency recommended by the technical manual and required by the Technical Specifications. I&C will suspend at-power AFAS power supply testing and institute an 18 month surveillance procedure.
5. As a generic response to recent difficulties experienced with the AFAS and other sensitive systems, a cross-functional task team has been formed to review past events and to identify improvement opportunities.

ADDITIONAL INFORMATION

Failed Component Identification:

12 Volt DC Power Supply
Todd Products Corporation
Model SW12-30

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
		9 1 --	0 0 1 --	0 0	0 4	OF 0 4

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

ADDITIONAL INFORMATION (Cont.)

Previous AFAS actuations due to equipment failure:

LER 389-90-006 "Inadvertent Actuation of Auxiliary Feedwater Equipment During Monthly Testing due to Test Instrument Malfunction"

LER 389-87-001 "Reactor Trip During Auxiliary Feedwater Actuation System Surveillance due to Design Error"