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.ACCESSION NBR: 9103260168 DOC. DATE: 91/03/18 NOTARIZED: NO DOCKET #
 FACIL: 50-335 St. Lucie Plant, Unit 1, Florida Power & Light Co. 05000335
 AUTH. NAME AUTHOR AFFILIATION
 MEAD, S.C. Florida Power & Light Co.
 SAGER, D.A. Florida Power & Light Co.
 RECIP. NAME RECIPIENT AFFILIATION

SUBJECT: LER 91-002-00: on 910219, unplanned actuation of AFW sys occurred. Caused by personnel error. Engineering revises vendor technical manual to clarify fuse designations & provide separation on circuit schematic. W/910318 ltr.

DISTRIBUTION CODE: IE22T COPIES RECEIVED: LTR 1 ENCL 1 SIZE: 5
 TITLE: 50.73/50.9 Licensee Event Report (LER), Incident Rpt, etc.

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INTERNAL:	ACNW		2	2		ACRS		2	2
	AEOD/DOA		1	1		AEOD/DSP/TPAB		1	1
	AEOD/ROAB/DSP		2	2		NRR/DET/ECMB 9H		1	1
	NRR/DET/EMEB 7E		1	1		NRR/DLPQ/LHFB11		1	1
	NRR/DLPQ/LPEB10		1	1		NRR/DOEA/OEAB		1	1
	NRR/DREP/PRPB11		2	2		NRR/DST/SELB 8D		1	1
	NRR/DST/SICB 7E		1	1		NRR/DST/SPLB8D1		1	1
	NRR/DST/SRXB 8E		1	1		REG FILE 02		1	1
	RES/DSIR/EIB		1	1		RGN2 FILE 01		1	1
EXTERNAL:	EG&G BRYCE, J.H		3	3		L ST LOBBY WARD		1	1
	NRC PDR		1	1		NSIC MAYS, G		1	1
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10 CFR 50.73

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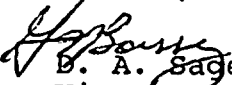
Gentlemen:

Re: St. Lucie Unit 1
Docket No. 50-335
Reportable Event: 91-02
Date of Event: February 19, 1991
Unplanned Actuation of Auxiliary Feedwater System
Components Due to Personnel Error While Troubleshooting
Problem Discovered During Monthly Surveillance

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

By 
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 #386

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LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) St. Lucie Unit 1	DOCKET NUMBER (2) 05000335	PAGE (3) 1 OF 04
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TITLE (4) **Unplanned Actuation of Auxiliary Feedwater System Components Due to Personnel Error While Troubleshooting Problem Discovered During Monthly Surveillance**

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)
0	2	1991	91	002	00	0	3	1891	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	<input type="checkbox"/> 20.402(b)	<input type="checkbox"/> 20.405(c)	<input checked="" type="checkbox"/> 50.73(a)(2)(iv)	<input type="checkbox"/> 73.71(b)	OTHER (Specify in Abstract below and in Text NRC Form 366A)
	<input type="checkbox"/> 20.405(a)(1)(i)	<input type="checkbox"/> 50.36(c)(1)	<input type="checkbox"/> 50.73(a)(2)(v)	<input type="checkbox"/> 73.71(c)	
	<input type="checkbox"/> 20.405(a)(1)(ii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(vii)		
	<input type="checkbox"/> 20.405(a)(1)(iii)	<input type="checkbox"/> 50.73(a)(2)(i)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)		
	<input type="checkbox"/> 20.405(a)(1)(iv)	<input type="checkbox"/> 50.73(a)(2)(ii)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)		
<input type="checkbox"/> 20.405(a)(1)(v)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(x)			

LICENSEE CONTACT FOR THIS LER (12)

NAME Sandra C. Mead, 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
X	B	A	R	L	Y				
			P	2	9	7			

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE) NO

EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR

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

On February 19, 1991 with Unit 1 at 100% power, an unplanned actuation of the Auxiliary Feedwater System (AFW) occurred. While troubleshooting a problem uncovered during the monthly functional testing, the Steam Admission Valve from the 1B Steam Generator (S/G) and the Trip and Throttle Valve to the turbine of the 1C AFW Pump both showed "open" indication and the 1C AFW Pump started. Troubleshooting was suspended and the AFW System components were restored to their normal status. There was no injection of Auxiliary Feedwater into the Steam Generators.

The root cause of the event was personnel error on the part of Plant Instrument and Control (I&C) personnel. While troubleshooting the AFW System to determine the cause of a failed light on the Auxiliary Feedwater Actuation System (AFAS) Channel D Initiation Relay, the incorrect fuse was pulled, resulting in the inadvertent actuation of AFW System components.

The Corrective Actions implemented as a result of this event are: 1) Engineering will revise the vendor technical manual to clarify the fuse designations and provide separation on the circuit schematic to indicate they are not located in the same fuse box. 2) As part of the Engineering Request, fuse maps will be provided to facilitate the location of fuses within the confines of each channel bay. These will be incorporated into the AFAS technical manual. 3) Personnel involved were counselled on the importance of using required Sensitive System procedures when working on such designated systems. 4) A Human Performance Enhancement System (HPES) review of the event was performed.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1) St. Lucie Unit 1	DOCKET NUMBER (2) 0 5 0 0 0 3 3 5	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
		9 1 --	0 0 2 --	0 0	0 2	OF	0 4

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

DESCRIPTION OF THE EVENT:

On February 19, 1991 Unit 1 was in Mode 1 at 100% power. Utility Instrument and Control (I&C) personnel were performing the Auxiliary Feedwater Actuation System (AFAS) (EIS:JE) Monthly Functional Check as per I&C Procedure #1-0700051. Three of the four channels had been satisfactorily tested, with only the D channel remaining to be tested. When I&C technicians started to test the D channel, they noticed an Initiation Relay light was not illuminated on the front of the panel. The test procedure requires the light to be operational before the test can be run. The surveillance procedure was suspended and a Plant Work Order submitted to troubleshoot the problem with the Initiation Relay light.

The vendor technical manual and drawings were used to assist in the troubleshooting process. The D channel was placed in bypass to prevent inadvertent actuation while troubleshooting was performed. Investigation revealed the 1-3 Interposing Relay for the D channel AFAS-2 was deenergized. Power to the actuation circuits was still being supplied through the 2-4 Interposing Relay contacts. There are three fuses in series with the circuit powering this relay. Fuses F666 and F620 were pulled, tested, and reinstalled when found to be functional. When the I&C technician attempted to pull fuse F645, he inadvertently pulled fuse F644, which is located right next to F645. This resulted in deenergizing the 2-4 interposing relay, causing an actuation of Channel D AFAS-2 Auxiliary Feedwater System (AFW) (EIS:BA) components. The Steam Admission Valve (EIS:BA) from the 1B Steam Generator (S/G) (EIS:SB) MV-08-14 and the Trip and Throttle Valve to the turbine of the 1C Auxiliary Feedwater Pump (EIS:BA), MV-08-03, both showed "open" indication and the 1C AFW Pump started. The fuse was immediately reinserted and the system was verified to have no further actuations. The 1C AFW Pump was locally tripped, reset and latched. There was no injection of Auxiliary Feedwater into the Steam Generators. The Operations crew immediately instructed I&C personnel to halt troubleshooting and began to investigate plant status. The plant remained stable at 100% power.

CAUSE OF THE EVENT:

The root cause of this event was personnel error on the part of the I&C technician who inadvertently pulled the incorrect fuse. This resulted in both of the Interposing Relays being without power, causing an actuation of AFAS-2. There were several factors which contributed to the incorrect fuse being pulled. First, the Plant Work Order required the use of the Administrative procedure governing troubleshooting of Sensitive Systems. This procedure was not used. This is a cognitive personnel error as the Sensitive System procedure should have been used. The use of this procedure may have precluded this event by requiring independent verification of the fuse location prior to pulling the fuse. Secondly, the drawings in the vendor technical manual lists components for different channels of the AFAS on a single sheet. The fuse boxes on the drawings appear to be a single fuse; only one fuse number is listed on the fuse box. The fuse boxes are in fact two separate fuses.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1) St. Lucie Unit 1	DOCKET NUMBER (2) 0 5 0 0 0 3 3 5	LER NUMBER (6)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
		9 1 --	0 0 2 --	0 0	0 3	OF 0 4

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

Finally, the labels on the fuse trays are small in size, and located between the rows of fuses, making it difficult to verify a fuse's identity if it is located on any row other than the outside row. All of the fuses are identical in appearance. The accessibility to the location of the fuse trays inside the AFAS cabinet is limited.

ANALYSIS OF THE EVENT:

While troubleshooting a problem with an Initiation Relay light, the incorrect fuse was inadvertently pulled, resulting in an unplanned actuation of Auxiliary Feedwater System components. There are two sets of three fuses which are in series on either side of an Interposing Relay. The Initiation Relay light was not illuminated due to the fact a relay contact with high resistance resulted in a loss of power to this light, which was on one side of the interposing relay. The incorrectly pulled fuse was in the series circuit of fuses providing power from the other side of the Interposing Relay. This resulted in a loss of power to both sides of the Interposing Relays and an actuation of the Channel D AFAS-2.

The interruption of power was short, due to the I&C technician immediately reinserting the fuse, and the AFAS signal reset immediately. There was no injection of Auxiliary Feedwater to either Steam Generator. At no time during this event was the AFAS unable to perform its intended safety function. Thus, the health and safety of the public were not at risk at any time during this event.

This event is reportable under the requirements of 10CFR50.73.a.2.iv. as an event which resulted in the manual or automatic actuation of any Engineered Safeguards Feature.

CORRECTIVE ACTIONS:

- 1) Engineering will revise the vendor technical manual for the following configuration clarifications:
 - a. Label the fuses on the circuit schematics to reflect their respective channel designations.
 - b. To provide separation of side by side fuses on circuit schematic to show they are not located in the same fuse box.
 - c. Incorporate fuse maps into the technical manual to facilitate the location of fuses within the confines of each AFAS channel bay.
- 2) The I&C and Operations personnel involved were counselled on the importance of using the required Sensitive System procedures when working on such designated systems.
- 3) The Plant Manager issued a letter to Operations and Maintenance personnel to increase awareness of the requirement for use of the sensitive systems procedure.
- 4) The Instrument and Controls Department will ensure these corrective actions will be implemented for Unit 2.
- 5) Training will evaluate this event to determine if further training needs to be performed in this area.
- 6) A Human Performance Enhancement System (HPES) review of the event was performed.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1) St. Lucie Unit 1	DOCKET NUMBER (2) 0 5 0 0 0 3 3 5	LER NUMBER (6)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
		9 1 --	0 0 2 --	0 0	0 4	OF 0 4

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

ADDITIONAL INFORMATION:

Failed Equipment Data:

Initiation Relay

Part Number: R10E1W2-S800

Manufacturer: Potter and Brumfield

Component Design Number: CK508

The failure of this component was not the cause of this event.

Previous Similar Events:

The following are previous similar events in which actuations of Auxiliary Feedwater System components occurred while performing surveillance testing:

LER #389-90-006

LER #389-87-001

LER #389-84-005