

# ACCELERATED DISTRIBUTION DEMONSTRATION SYSTEM

## REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 9402180076      DOC. DATE: 94/02/08      NOTARIZED: NO      DOCKET #  
 FACIL: 50-335 St. Lucie Plant, Unit 1, Florida Power & Light Co.      05000335  
 AUTH. NAME      AUTHOR AFFILIATION  
 WILLIAMS, J.R.      Florida Power & Light Co.  
 SAGER, D.A.      Florida Power & Light Co.  
 RECIP. NAME      RECIPIENT AFFILIATION

SUBJECT: LER 94-002-00: on 940113, inadvertant load shed of 1A3  
 4160 volt bus occurred. Caused by procedural inadequacy.  
 Electrical maint tested 2x-2 relay & proved relay to be  
 functioning correctly at time of testing. W/940208 ltr.

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

NOTES:

	RECIPIENT ID CODE/NAME	COPIES LTR ENCL	RECIPIENT ID CODE/NAME	COPIES LTR ENCL
	PD2-2 LA	1 1	PD2-2 PD	1 1
	NORRIS, J	1 1		
INTERNAL:	ACRS	2 2	AEOD/DOA	1 1
	AEOD/DSP/TPAB	1 1	AEOD/ROAB/DSP	2 2
	NRR/DE/EELB	1 1	NRR/DE/EMEB	1 1
	NRR/DORS/OEAB	1 1	NRR/DRCH/HHFB	1 1
	NRR/DRCH/HICB	1 1	NRR/DRCH/HOLB	1 1
	NRR/DRIL/RPEB	1 1	NRR/DRSS/PRPB	2 2
	NRR/DSSA/SPLB	1 1	NRR/DSSA/SRXB	1 1
	<u>REG FILE</u> 02	1 1	RES/DSIR/EIB	1 1
	RGN2 FILE 01	1 1		
EXTERNAL:	EG&G BRYCE, J.H	2 2	L ST LOBBY WARD	1 1
	NRC PDR	1 1	NSIC MURPHY, G.A	1 1
	NSIC POORE, W.	1 1	NUDOCS FULL TXT	1 1

NOTE TO ALL "RIDS" RECIPIENTS:

PLEASE HELP US TO REDUCE WASTE! CONTACT THE DOCUMENT CONTROL DESK,  
 ROOM P1-37 (EXT. 20079) TO ELIMINATE YOUR NAME FROM DISTRIBUTION  
 LISTS FOR DOCUMENTS YOU DON'T NEED!

FULL TEXT CONVERSION REQUIRED  
 TOTAL NUMBER OF COPIES REQUIRED: LTR 30 ENCL 30

R  
I  
D  
S  
/  
A  
D  
D  
S  
/  
A  
D  
D  
S





February 8, 1994

L-94-032  
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: 94-002  
Date of Event: January 13, 1994  
Inadvertant Load Shed of the 1A3 4160 Volt Bus  
due to Procedural Inadequacy

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/JWH/kw

Attachment

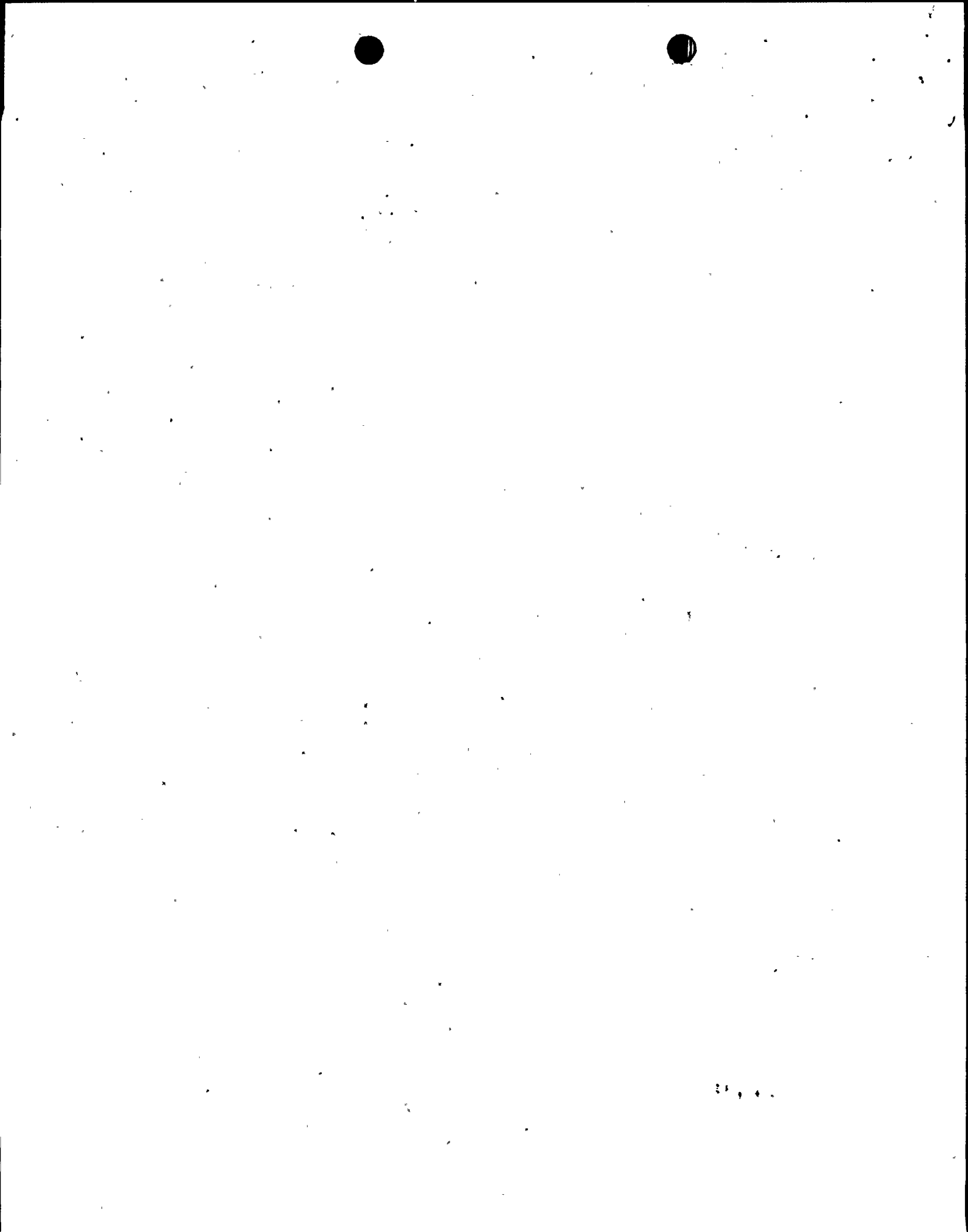
cc: Stewart D. Ebnetter, Regional Administrator, USNRC Region II  
Senior Resident Inspector, USNRC, St. Lucie Plant

DAS/PSL #1057-94

150110

9402180076 940208  
PDR ADCK 05000335  
S PDR

Handwritten initials in cursive script, possibly "JEP" or "JEP2", with a vertical line drawn through them.



**LICENSEE EVENT REPORT (LER)**

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50 21 FTS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20545, 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) 051000335	PAGE (3) 1 OF 4
---------------------------------------	--------------------------------	--------------------

TITLE (4) Inadvertant load shed of the 1A3 4160 volt bus due to procedural inadequacy.

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	1	1394	9	4	002	0	2	0894	N/A	01510101
									N/A	01510101

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) 1   0   0	20.402(b)		20.405(c)	X	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 (Specify in Abstract below and in Text NRC Form 366A)				
	20.405(a)(1)(iii)		50.73(a)(2)(i)		50.73(a)(2)(viii)(A)					
	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 James R. Williams, Shift Technical Advisor								TELEPHONE NUMBER	
								AREA CODE	
								4   0   7	4   6   5   -   3   5   5   0

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

SUPPLEMENTAL REPORT EXPECTED (14)						EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)				<input checked="" type="checkbox"/> NO					

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

On January 13, 1994 Unit 1 was in mode 1 at 100% power. A surveillance test on the undervoltage relays for the 1A3 safety related bus was being performed. When the utility non-licensed operator initiated the test for the 27-1 relay, the relay did not operate. Per Technical Specification 3.3.2.1., the inoperable relay must be placed in the trip position within one hour. At 0134 hours, as per the surveillance procedure, the relay was placed in the trip position by utility maintenance personnel and an invalid undervoltage actuation signal was initiated. The safety related 1A3 4160 volt bus load shed, the 1A Emergency Diesel Generator started and load sequenced onto the bus. The plant remained in a stable condition throughout the event. Normal off-site power was restored to the 1A3 bus and the 1A Emergency Diesel Generator was secured at 0225 hours.

The root cause of the event was due to a procedural inadequacy in that the procedure did not specify valid initial test conditions prior to assessing the undervoltage relay functionality. A contributing factor was that the 2X-2 relay was subsequently proven to be in the trip position prior to the surveillance. With the 2X-2 relay in the trip position prior to the test, the test circuit is rendered inoperable. This is why the 27-1 relay did not operate during the test. When the 2X-1 relay was placed in the trip position the trip logic was satisfied, and an invalid undervoltage actuation signal was initiated.

Corrective actions for the event are: 1) Electrical Maintenance tested the 2X-2 relay and proved the relay to be functioning correctly at the time of testing, 2) The relay will be replaced during the next refueling outage opportunity and root cause analysis will be performed, 3) Operations implemented a change to test the undervoltage relay test circuit on a daily basis which will detect any undervoltage relays in the trip position, 4) Revise the surveillance procedure to provide instructions on how to confirm relay status prior to and after testing.



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

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50 8 MINS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-330), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20535, 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)  0 5   0 0   0 3   3 5	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
		9 4	0 0   2	0 0	0 2	OF	0 4

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

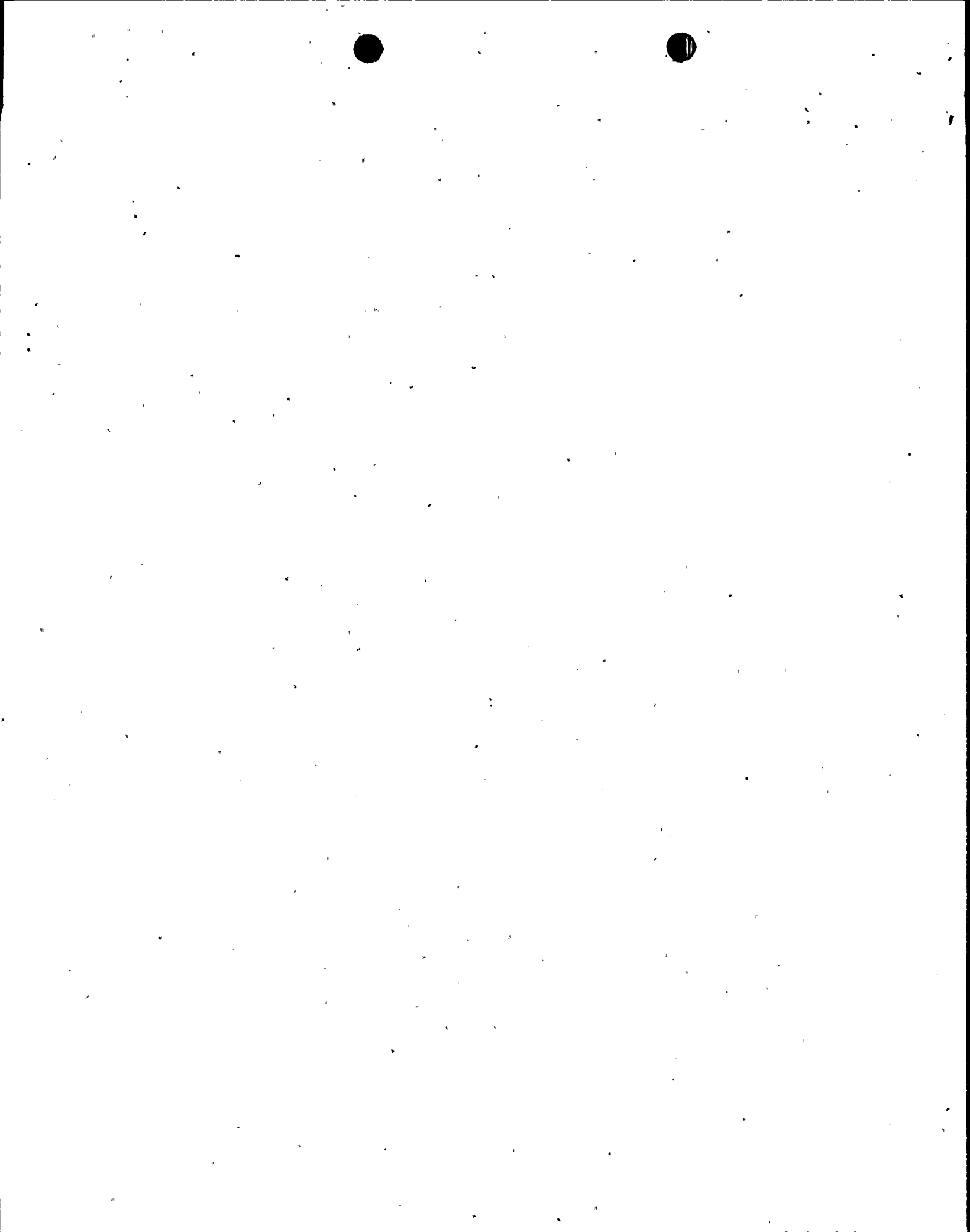
**DESCRIPTION OF THE EVENT**

On January 13, 1994 Unit 1 was in mode 1 at 100% power. Administrative Procedure 1-001025A, Data Sheet 38 surveillance "Functional Test Of Degraded Grid Voltage" was being performed. When the utility non-licensed operator initiated the test for the 27-1 relay on the safety related 1A3 4160 volt bus the relay did not operate. The procedure directs that in the case of a relay failing to operate, the relay must be placed in the tripped position within one hour in accordance with Technical Specification 3.3.2.1. Data Sheet 38 states to either jumper the 2X-1 or to lift the leads on the 2X-1 relay and bolt them together to place the 27-1 relay in trip. The option of bolting the leads together was selected due to the physical layout of the relay. When the leads on the 2X-1 relay were connected together an invalid undervoltage trip signal was initiated at 0134 hours. The 1A3 4160 volt bus load shed and the 1A Emergency Diesel Generator (EDG)(EIIIS:EK) started and load sequenced onto the bus. The utility licensed operators immediately assessed the situation, verified the plant was in a stable condition and entered Off Normal Operating Procedure 1-0910054 "Loss Of A Safety Related AC Bus". During the assessment of plant status, the utility licensed operators discovered the 1A Intake Cooling Water (ICW)(EIIIS:BI) pump and the 1A Component Cooling Water (CCW)(EIIIS:CC) pump were not running. Both pumps were manually started by the utility licensed operators.

At this point, the decision was made to return the wiring on the 2X-1 relay to the original configuration and to place a jumper on the 2X-1 to facilitate trouble shooting. All targets on the undervoltage relays were reset. With all indications normal, the utility licensed operators then proceeded to restore normal power to the 1A3 4160 volt bus. The tie breakers to the 1A2 4160 volt bus were closed, the EDG unloaded and its output breaker opened. When the EDG output breaker was opened, the 1A3 4160 volt bus load shed again and the EDG load sequenced onto the bus. The cause of the second load shed was due to the 2X-2 relay remaining in the trip position. After the second load shed, the 2X-2 relay reset and performed as anticipated. Plant status was again assessed by the utility licensed operators and verified to be stable. The 1A ICW pump and the 1A CCW pump both load sequenced correctly onto the EDG. The undervoltage relays were reset and off-site power was restored to the 1A3 4160 volt bus. This time all equipment functioned as anticipated and the EDG was secured at 0225 hours.

**CAUSE OF THE EVENT**

The root cause of this event was a surveillance procedure inadequacy which did not specify valid initial test conditions prior to assessing relay functionality. A contributing factor to the event was that the 2X-2 relay was subsequently proven to be in the trip position prior to the event. With the 2X-2 relay already in the trip position, the 2 out of 2 logic for the undervoltage trip signal was satisfied when the 2X-1 relay was placed in the trip position. With any of the 2X relays in the trip position the test circuit is rendered inoperable. This is why the 27-1 relay did not operate when the utility non-licensed operator first initiated the test. The test circuit being inoperable does not effect the operation of the undervoltage relays.





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

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION  
REQ. IS: 30.8 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS  
AND REPORTS MANAGEMENT BRANCH (P-529), U.S. NUCLEAR REGULATORY COMMISSION,  
WASHINGTON, DC 20555, 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	LER NUMBER (6)				PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
		94	002	00	03	OF	04

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

**ANALYSIS OF 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 Protection System (RPS)." 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. Thus, the health and safety of the public were not affected at any time during the event.

The cause of the 1A ICW and 1A CCW pumps not restarting during the initial load shed was due to the actual manipulation of the leads in the undervoltage trip circuit. If the trip signal is initiated and then reset within 250 milliseconds, the restart signal for these pumps is defeated. During an actual undervoltage condition the trip signal is not reset for approximately 10 seconds. The pumps were verified to restart per design for a valid undervoltage condition.

The design of the undervoltage relaying system is different in Unit 2, therefore this event is not applicable to Unit 2.

**CORRECTIVE ACTIONS**

- 1) Electrical Maintenance tested the 2X-2 relay and proved the relay to be functioning correctly at the time of testing. At this point, the jumper was removed from the 2X-1 relay which restored the normal 2 out of 2 logic. The cause of why the 2X-2 relay was in the trip position prior to the event is unknown.
- 2) Electrical Maintenance will replace the 2X-2 relay during the next refueling outage opportunity and a root cause investigation analysis will be performed.
- 3) Operations implemented a change to test the operability of the undervoltage relay test circuit on a daily basis. This test will detect any undervoltage relays which are in the trip position. This test will remain in effect until the relay is replaced.
- 4) Electrical Maintenance will assist Operations in the revision to the undervoltage relay test procedure prior to the next scheduled surveillance to provide instructions on how to test the status of the test circuit prior to the actual surveillance being performed and as part of test restoration.

**ADDITIONAL INFORMATION**

**Failed Components**

The 2X-2 relay proved to be functioning correctly during subsequent testing. The reason for the 2X-2 relay being in the trip position prior to the event is unknown. The 2X-2 relay is not being considered failed at this time.

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

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.8 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, 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	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
		94	002	00	04	OF	04

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

Previous Similar Events

A previous similiar evert was recorded in LER 389-92-03-00 "Inadvertant Actuation of the 2B Emergency Diesel Generator due to Design Error" in that the 2B3 bus load shed and the Diesel generator loaded onto the bus during undervoltage relay testing. This test circuitry design is different than the test circuit used on Unit 1.

