

CATEGORY 1

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR:9612020035 DOC.DATE: 96/11/22 NOTARIZED: NO DOCKET #
FACIL:50-335 St. Lucie Plant, Unit 1, Florida Power & Light Co. 05000335
AUTH.NAME AUTHOR AFFILIATION
BENKEN,E.J. Florida Power & Light Co.
STALL,J.A. Florida Power & Light Co.
RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 96-014-00:on 961027,invalid engineered safety features
actuation of containment isolation components occurred.Due
to failed relay.Failed relay was inspected & replaced.
W/961122 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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FPL

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

November 22, 1996

L-96-307
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: 96-014
Date of Event: October 27, 1996
Invalid Engineered Safety Features Actuation of
Containment Isolation Components due to Failed Relay

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,

J. A. Stall
Vice President
St. Lucie Plant

JAS/EJB

Attachment

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

12-22
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020014

9612020035 961122
PDR ADCK 05000335
S PDR

LICENSEE EVENT REPORT (LER)

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

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS MANDATORY INFORMATION COLLECTION REQUEST: 60.0 HRS. REPORTED LESSONS LEARNED ARE INCORPORATED INTO THE LICENSING PROCESS AND FEED BACK TO INDUSTRY. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (T-8 F33), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20565-0001, 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)
Invalid Engineered Safety Features Actuation of Containment Isolation Components due to Failed Relay

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
10	27	96	96	-- 14	-- 00	11	22	96	N/A	
									N/A	

OPERATING MODE (9) 1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5: (Check one or more) (11)									
POWER LEVEL (10) 100	20.2201(b)	20.2203(a)(2)(v)	50.73(a)(2)(i)	50.73(a)(2)(viii)						
	20.2203(a)(1)	20.2203(a)(3)(i)	50.73(a)(2)(ii)	50.73(a)(2)(x)						
	20.2203(a)(2)(i)	20.2203(a)(3)(ii)	50.73(a)(2)(iii)	73.71						
	20.2203(a)(2)(ii)	20.2203(a)(4)	X 50.73(a)(2)(iv)	OTHER						
	20.2203(a)(2)(iii)	50.36(c)(1)	50.73(a)(2)(v)	Specify in Abstract below or in NRC Form 366A						
	20.2203(a)(2)(iv)	50.36(c)(2)	50.73(a)(2)(vii)							

LICENSEE CONTACT FOR THIS LER (12)

NAME Edwin J. Benken, Licensing Engineer	TELEPHONE NUMBER (Include Area Code) (561) 467 - 7156
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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	JE	RLY	C649	Y					

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE).	X	NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
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ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On October 27, 1996, St. Lucie Unit 1 was operating in Mode 1 at 100 percent reactor power. At 1930, an engineered safety features (ESF) actuation relay failed which resulted in the invalid actuation of several containment isolation (CIS) components to their design ESF configuration. The components included a shield building ventilation system fan, a control room exhaust fan and exhaust isolation valve, and the isolation valves for a containment atmosphere radioactivity monitor. The actuation of these components had no adverse affect on plant operation. Plant maintenance replaced the failed relay and utility licensed operators restored the affected ESF components to their normal operating configuration at 1100 hours on October 28, 1996.

The cause of the event was the failure of an ESF subgroup actuation relay. An inspection and continuity check performed following the event confirmed that the coil circuit of the relay had opened.

Corrective actions include: 1) The failed relay was inspected and replaced. 2) The affected ESF components were restored to their original configuration following the replacement of the failed relay. 3) A review of industry and plant data was performed which concluded that an adverse failure trend does not exist for this relay model. 4) Additional failure analysis of the relay is being performed by FPL to confirm the relay failure mode and assess generic implications.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL	REVISION	
ST. LUCIE UNIT 1	05000335	96	-- 14	-- 00	2 OF 4

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

DESCRIPTION OF THE EVENT

On October 27, 1996, St. Lucie Unit 1 was operating in Mode 1 at 100 percent reactor power with no significant plant evolutions in progress. At 1930, the control room operating crew received annunciator Q-5, "CIS Channel A/B Actuation" (EIS:IB). An investigation by the operating crew revealed that a "trip" light was illuminated on the actuation module for channel "A" Containment Isolation Signal (CIS) group 7A. This light is located on the engineered safety features (ESF) actuation cabinet (EIS:JE) in the control room. No other abnormal indications or alarms were noted at the ESF cabinet.

Following receipt of the CIS actuation alarm, utility licensed operators performed a control board walkdown which verified that several components associated with CIS group 7A had actuated to their containment isolation position. The operators confirmed that no plant transient was in progress at the time of the actuation. The affected CIS components included the containment atmosphere radioactivity monitor (EIS:IC) sample isolation valves, a control room booster fan (HVE 13A) (EIS:VI) and exhaust isolation valve, and the containment shield building exhaust fan (HVE 6A) (EIS:VC). All of these components were verified to have actuated to their correct ESF position. As a result of the closure of the containment atmosphere radioactivity monitor isolations, utility licensed operators declared the containment atmosphere monitor out of service at 1930 hours. The affected CIS components were maintained in the actuated condition pending investigation by maintenance personnel.

At 1935, Control Room operations personnel notified the Instrument and Control (I&C) department of the event and initiated a priority work request to perform inspection and repair. At 2102, I&C technicians reported that the partial CIS actuation was the result of a failed ESF actuation relay (K508A). The relay was found to be deenergized, which is the relay's actuated state. Work was initiated to replace relay K508A, and at 1100 hours on October 28, 1996, this work was completed.

Following the replacement of the failed relay, the control room operators reset the components actuated by the channel "A" CIS. The containment atmosphere radioactivity monitor was declared back in service at 1100. Operators verified that the CIS group 7A components affected by the invalid CIS were restored to their normal configuration.

In accordance with 10 CFR 50.72 (b) (2) (ii), a notification of the event was made to the USNRC by phone at 2116 on October 27, 1996.

CAUSE OF THE EVENT

The cause of the event was the failure of safety injection actuation relay K508A. This relay is normally energized and sends a signal to CIS group 7A actuation circuitry. An inspection performed following the event confirmed that the relay coil circuit had opened. The failure mode places the relay in the safe condition, and is therefore not considered to represent an operability concern.

Relay K508A was transferred to FPL's examination facility for additional failure analysis. The results of this analysis will be reviewed by St. Lucie system engineers and assessed for additional corrective action.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET	LER NUMBER (6)			PAGE (3)
ST. LUCIE UNIT 1	05000335	YEAR	SEQUENTIAL	REVISION	3 OF 4
		96	-- 14	-- 00	

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

ANALYSIS OF THE EVENT

This event is reportable under 10 CFR 50.72 (b) (2) (ii) and requires a four hour non-emergency notification to the USNRC. This notification was made on October 27, 1996. The event is also reportable under 10 CFR 50.73 (a) (2) (iv), as "Any event or condition that resulted in a manual or automatic actuation of any engineered safety feature... ."

Containment isolation and shield building ventilation actuation are required to reduce offsite dose in the event of a loss of coolant accident (LOCA). Any single failure will not prevent system actuation when required, and the system is designed such that a loss of power to the measurement channels or to the logic system results in system actuation. During this event the group 7A CIS components were verified to have actuated to their proper safety configuration. Actuation of these individual group 7A CIS components did not have any adverse affect on plant operation.

The closure of the containment isolation valves for the Unit 1 containment atmosphere radioactivity monitor rendered that instrument inoperable during the event. The monitor is one of two reactor coolant system (RCS) leakage detection systems, the other system being the reactor cavity sump inlet flow monitoring system. St. Lucie Unit 1 Technical Specification (TS) 3.4.6.1 permits continued operation for up to 30 days with the containment atmosphere radioactivity monitor inoperable, provided the flow monitoring system is operational and the action requirements of the TS are met. Operations complied with these requirements by performing an RCS water inventory balance at 2102 on October 27, 1996, following the closure of the containment atmosphere monitor sample isolation valves. The flow monitoring system for identifying RCS leakage remained operable during the event.

A review of industry data and St. Lucie Plant records did not indicate any failure trends associated with this relay. Actuation of the group 7A CIS components following relay failure was in accordance with system design. The event did not adversely impact plant operation, and the protection of the health and safety of the public was not affected.

CORRECTIVE ACTIONS

1. The failed ESF relay was inspected and replaced on October 28, 1996.
2. The affected CIS components were restored to their original configuration following the replacement of the failed relay.
3. A review of data from the nuclear plant reliability data system (NPRDS) and plant records was performed following the event. This review did not indicate any adverse failure trend associated with this relay model. The review concluded that failures associated with this type of relay were infrequent and random.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL	REVISION	
ST. LUCIE UNIT 1	05000335	96	-- 14	-- 00	4 OF 4

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

CORRECTIVE ACTIONS Continued

- Existing periodic replacement and testing programs are established at St. Lucie for relay types which have exhibited failure trends or for which a determinate service life exists. Additional failure analysis will be performed by FPL to confirm the failure mode associated with the subject ESF relay and the results of the analysis will be reviewed by system engineers for generic applicability and to determine if additional actions are necessary.

ADDITIONAL INFORMATION

Component Failures

Component: ESF Actuation Relay
 Manufacturer: Couch, Thomas A.
 Model: 4CP36AF

Previous Similar Events

LER 335-93-001 - "Four Safety Injection Header Isolation Valves Open due to an Engineered Safety Feature Subgroup Relay Failure" This event involved an invalid ESF partial actuation due to the failure of a subgroup relay. The affected components were actuated to their safety configuration and there was no affect on operability.