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FACIL:50-389 St. Lucie Plant, Unit 2, Florida Power & Light Co. 05000389
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SUBJECT: LER 88-003-00:on 880313,safeguards signals to containment isolation valve of redundant pair bypassed.

W/8 ltr.

DISTRIBUTION CODE: IE22D COPIES RECEIVED:LTR 1 ENCL 1 SIZE: 7
TITLE: 50.73 Licensee Event Report (LER), Incident Rpt, etc.

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	PD2-2 LA	1	1	PD2-2 PD	1	1
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	NRR/DEST/ADS 7E	1	0	NRR/DEST/CEB 8H	1	1
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NRC Form 366
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/88

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
ST. LUCIE, UNIT 2	0 5 0 0 0 3 8 9	1 OF 0 6

TITLE (4) SAFEGUARDS SIGNALS TO ONE CONTAINMENT ISOLATION VALVE OF A REDUNDANT PAIR BYPASSED DUE TO PERSONNEL ERROR

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 3	1 3	8 8	8 8	— 0 0 3	— 0 0	0 5	0 6	8 8	N/A	0 5 0 0 0
										0 5 0 0 0

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)	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)	X 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	TELEPHONE NUMBER
A. B. JOHNSON, SHIFT TECHNICAL ADVISOR	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
X	C B	P D S	I 2 0 4	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 fifteen single space typewritten lines) (16)

On April 6, 1988, it was discovered that with the NORMAL/ISOLATE switch for the Letdown Isolation Valve in the "ISOLATE" position, the Containment Isolation Actuation Signal and Safety Injection Actuation Signal were bypassed to one Containment Isolation Valve. The NORMAL/ISOLATE switch for the Letdown Isolation Valve had been placed in the "ISOLATE" position on March 13, 1988, because false electrical signals were generated from an isolated differential pressure switch associated with the valve resulting in letdown isolating. The failed differential pressure switch, located inside the containment building, was isolated to terminate a minor primary coolant leak. The root cause of the event was a cognitive personnel error by two utility-licensed operators in the misinterpretation of the Control Wiring Diagram (CWD) for the Containment Isolation Valve; thereby unknowingly operating in a condition prohibited by the Plant's Tech. Specs.

The operators were counseled on the importance of conducting a more thorough review, all operators were given new guidelines to follow prior to removing equipment from service to ensure all Plant safety concerns are properly addressed, maintenance will replace the failed differential pressure switch as soon as a replacement becomes available, switch labeling will be upgraded, additional administrative controls are being developed, and Plant Training will evaluate this event.

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

DESCRIPTION OF EVENT:

On March 13, 1988, St. Lucie Unit 2 was operating at 100% power in Mode 1 and at steady state conditions. The Reactor Control Operator (RCO) on the control board noticed a step increase of approximately 0.25 gpm on the Reactor Cavity Leakage Flow (EIIS:IJ) recorder. A surveillance on the Reactor Coolant System (RCS) (EIIS:AB) water inventory balance was performed and the results indicated that the unidentified leakage rate had increased by approximately 0.5 gpm over the previous leak rate. The total RCS unidentified leak rate was now 0.686 gpm, which was within the allowable limits of the Technical Specification of 1.0 gpm UNIDENTIFIED LEAKAGE. At 1610 hours, a containment entry was made to locate the source of the added leakage. At 1630 hours, the source of the leakage was pinpointed to differential pressure switch PDS-2216, located in the letdown portion of the Chemical Volume Control System (CVCS). The function of PDS-2216 is to provide the automatic isolation of letdown for a rupture in the non-seismic letdown line (EIIS:CB) outside the containment during a seismic event. Differential pressure switch PDS-2216 senses high flow through the regenerative heat exchanger (EIIS:CB) and automatically closes one containment isolation valve (EIIS:JM), V-2516. This containment isolation valve also receives two other closure signal inputs which are Containment Isolation Actuation Signal (CIAS) and Safety Injection Actuation Signal (SIAS) (EIIS:JE).

The Nuclear Plant Supervisor (NPS) and Assistant Nuclear Plant Supervisor (ANPS) determined there were adequate indications available to the control room operators to diagnose and respond to a break in the letdown piping downstream of the containment isolation valves. The differential pressure switch was isolated to stop the small primary coolant leak. Approximately thirty minutes after the differential pressure switch was isolated, the Reactor Control Operator (RCO) observed closure of the letdown isolation valve, V-2516; thus causing a pertubation on pressurizer level. Isolating the differential pressure switch caused letdown flow to isolate due to a false high differential pressure across the instrument. The NPS and ANPS made the decision to place the NORMAL/ISOLATE switch for V-2516 in the "ISOLATE" position to remove the signal from PDS-2216 to the letdown isolation valve. By placing the NORMAL/ISOLATE switch to the "ISOLATE" position, the control for the valve is transferred to the Hot Shutdown Control Panel. Prior to the decision to place the NORMAL/ISOLATE switch to the "ISOLATE" position, a review of the Piping and Instrumentation Diagram (P&ID) and the Control Wiring Diagram (CWD) was made to ensure that by placing the NORMAL/ISOLATE switch in "ISOLATE", V-2516 was still capable of automatic closure on Containment Isolation Actuation Signal (CIAS) and Safety Injection Actuation Signal (SIAS). At 1715 hours, the NORMAL/ISOLATE switch was placed in the "ISOLATE" position and the letdown isolation valve stayed open and pressurizer level was restored to its proper level.

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

DESCRIPTION OF EVENT (continued)

On April 6, 1988 (Discovery Date), an RCO trainee, who was an experienced Instrument and Control technician, reviewed the Control Wiring Diagram for V-2516 and discovered that with the NORMAL/ISOLATE switch of V-2516 in the "ISOLATE" position, the valve lost the capability of automatic closure on CIAS and SIAS. This information was immediately brought to the attention of the NPS. The containment isolation valve was placed in the Equipment Out-of-Service Log. Technical Specification 3.6.3 requires two letdown containment isolation valves to be operable in Modes 1, 2, 3, and 4. At 0715 hours, the Plant entered the ACTION statement of Technical Specification 3.6.3.

At 1056 hours on April 6, 1988, the failed differential pressure switch (PDS-2216) was isolated via direct jumper and the NORMAL/ISOLATE switch for V-2516 was restored to the "NORMAL" position. Containment isolation valve V-2516 was tested to verify it would close automatically on CIAS and SIAS. The Plant exited the ACTION statement and the containment isolation valve was placed back in service. This configuration will allow V-2516 to close automatically on a CIAS and SIAS, but not on a high differential pressure across the regenerative heat exchanger since the differential pressure switch is inoperable.

From 1714 hours on March 13, 1988 to 1056 hours of April 6, 1988, the NORMAL/ISOLATE switch for V-2516 was in the "ISOLATE" position and the Plant unknowingly was operating in a condition prohibited by Technical Specification by having the safeguard signal bypassed, thus preventing automatic closure of V-2516 on CIAS and SIAS.

CAUSE OF EVENT:

A major contributing factor to this event was that the Piping and Instrumentation Drawing (P&ID) incorrectly indicated V-2516 was capable of automatic closure on CIAS and SIAS with the NORMAL/ISOLATE switch in either the "NORMAL" or the "ISOLATE" position. The root cause of the event was a cognitive personnel error by two utility-licensed operators who subsequently misinterpreted the Control Wiring Diagram (CWD) for the containment isolation valve. There were no unusual characteristics of the work location that directly contributed to the personnel error.

ANALYSIS OF THE EVENT:

The event is reportable under 10 CFR 50.73 (a)(2)(i)(B) "any operation or condition prohibited by the Plant's Technical Specifications."

The assessment of the safety consequences and implications of this event determined that containment isolation was not in jeopardy because the letdown penetration would have been automatically isolated on CIAS by the redundant containment isolation valve. Furthermore, if the redundant valve failed to isolate letdown, an upstream isolation valve, which automatically closes on SIAS, could have been closed from the control room. V-2516 could also have been closed from the Hot Shutdown Control Panel. The valve arrangement to provide letdown isolation uses three valves in series, two in the containment upstream of the regenerative heat exchanger and one outside of the containment downstream of the regenerative heat exchanger. By design, two of the valves are dedicated containment isolation valves that close on CIAS, with one of the valves also closing on SIAS and high differential pressure. The third valve is dedicated to closing on SIAS and high letdown temperature.

Concerning the issue of losing the capability of automatic isolation of letdown on high differential pressure, there were adequate indications available to the control room operators to diagnose and respond to a break in the letdown piping downstream of the containment isolation valves; such indications are: letdown flow indication, letdown pressure, Volume Control Tank (VCT) level, letdown temperature, safeguards sump level alarms, Fire Detection System and Area Radiation Monitors. Furthermore, the analysis for the loss of PDS-2216 on a hypothetical double-ended break in the letdown line outside the containment with no credit taken for PDS-2216 to automatically close V-2516 was well enveloped by the St. Lucie #2 Final Updated Safety Analysis Report (FUSAR) section 15.6.5.1 "Limiting Offsite Dose Event-Large Loss of Primary System Fluid Outside Containment with a High Pre-existing Iodine Concentration and a High Steam Generator Tube Leakage Rate". The conclusions attained in Section 15.6.5 of the FUSAR are that the maximum offsite doses as a result of this line break are well within the acceptance guidelines of 10 CFR 100 nor does the event produce a significant approach to fuel performance limits.

The Facility Review Group reviewed the event and concluded that the health and safety of the public were not affected by this event.

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

CORRECTIVE ACTIONS:

1. The specific licensed operators involved were counseled on the importance of conducting a more thorough review when taking a component or equipment out of service to ensure the Plant's safety is not compromised or in violation of the Plant's Technical Specifications.

2. All licensed operators were informed through night orders of new guidelines to follow prior to removing equipment from service to ensure all concerns for Plant safety are properly addressed. These guidelines require additional qualified technical review.

3. The Shift Technical Advisors (STAs) were given additional instructions concerning independent review of operational abnormalities and the countermeasures taken.

4. Maintenance will replace the failed differential pressure switch as soon as the replacement part for PDS-2216 is available. The failure mode was unusual and the required spare part is not normally stocked. The expected delivery date for the part is June 24, 1988.

5. The Plant Training Group will evaluate this item to determine appropriate training requirements and methods. This Licensee Event Report (LER) will be incorporated in the subsequent License Operator Requalification cycle.

6. Engineering will identify all "NORMAL/ISOLATE" switches that could defeat Engineered Safety Features Actuation System signals and local caution labels will be applied.

7. A program is being developed to administratively control the repositioning of NORMAL/ISOLATE switches through Plant procedures. The procedure will require documentation and evaluation for the repositioned switches.

8. The Piping and Instrumentation Drawing (P&ID) for the Chemical Volume and Control System (CVCS) will be revised to correct the NORMAL/ISOLATE switch configuration to preclude future similar events. All P&IDs containing Containment Isolation Valves for both nuclear units were reviewed for similar misleading information and none were found.

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

ADDITIONAL INFORMATION:

FAILED COMPONENT IDENTIFICATION:

Pressure Differential Switch (PDS-2216)
ITT Barton
Model #288/224

PREVIOUS SIMILAR EVENTS:

This is the first event involving the loss of automatic closure on a CIAS & SIAS to a Containment Isolation Valve due to transfer of controls to the Hot Shutdown Control Panel.

P. O. BOX 14000, JUNO BEACH, FL 33408-0420

FPL

MAY 0 6 1988

L-88-212
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: 88-03
Date of Event: March 13, 1988
Safeguard Signal to One Containment Isolation Valve of a Redundant Pair Bypassed Due to Personnel Error

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,

W. F. Conway
for Acting Group Vice President
Nuclear Energy

WFC/GRM/gp

Attachment

cc: Dr. J. Nelson Grace, Regional Administrator,
Region II, USNRC
Senior Resident Inspector, USNRC, St. Lucie Plant

GRM2/029.LER

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