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FACIL:50-389 St. Lucie Plant, Unit 2, Florida Power & Light Co. 05000389
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SAGER,D.A. Florida Power & Light Co.
RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 94-001-00:on 940217,pressurizer auxiliary spray declared out of svc.Caused by mispositioned valve due to personnel error.Valve correctly realigned,plant records reviewed & nonlicensed operators counseled.W/940224 ltr.

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FPL

February 24, 1994

L-94-048

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

Re: St. Lucie Unit 2
Docket No. 50-389
Reportable Event: 94-001
Date of Event: February 17, 1994
Pressurizer Auxiliary Spray Out of Service
Caused by a Mispositioned Isolation Valve
Due to Personnel Error

The attached Licensee Event Report is being submitted voluntarily to provide notification of the subject event.

Very truly yours,

C L Burton for
D. A. Sager
Vice President
St. Lucie Plant

DAS/JWH/kw

Attachment

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

DAS/PSL #1073-94

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IE22 1/1

FPL Facsimile of NRC Form 366 (6-89)

U.S. NUCLEAR REGULATORY COMMISSION

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 5

TITLE (4) Pressurizer Auxiliary Spray Out of Service caused by a Mispositioned Isolation Valve 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)
									N/A	0 5 0 0 0
0 2	1 7	9 4	9 4	0 0 1	0 0	0 2	2 4	9 4	N/A	0 5 0 0 0

OPERATING MODE (9)	5	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR : (Check one or more of the following) (11)									
POWER LEVEL (10)	0 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)	X	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	TELEPHONE NUMBER
Michael J. Snyder, 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	MANUFAC-TURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	REPORTABLE TO NPRDS

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)

At 0030 on February 17, 1994, Unit 2 was in mode 5 at the beginning of a refueling outage. Operations was attempting to collapse the pressurizer steam space bubble. When the use of Auxiliary Spray was attempted the utility licensed operators noted that Pressurizer pressure was not decreasing as expected. During a subsequent valve lineup verification process a utility non-licensed operator found the Auxiliary Spray isolation valve V2483 to be mispositioned and locked closed. Valve V2483 is a manually operated 2 inch gate valve which is normally in the locked open position. The non-licensed operator was instructed to place valve V2483 in the locked open position. At this point the Auxiliary Spray system functioned as anticipated.

The root cause of the valve mispositioning was due to cognitive personnel error by utility non-licensed operators.

Corrective actions include: the valve was correctly realigned; all applicable plant records involving this valve were reviewed; the Final Safety Analysis Report was reviewed to determine that there was no safety significance for the absence of Auxiliary Spray; the non-licensed operators involved were counseled and appropriate disciplinary actions are being taken in accordance with current corporate policy; the position of accessible Unit 1 locked valves have been verified to be correct, Unit 1 inaccessible locked valves will be verified at the next opportunity, all Unit 2 locked valves are being verified; the corporate disciplinary policy on procedural non-compliance will be revised to specifically include more severe disciplinary actions for valve mispositionings, and a Human Performance Enhancement System evaluation was performed.

This Licensee Event Report is being submitted voluntarily. Auxiliary Spray is not required in any Technical Specification LCO, and alternative methods are available for depressurization of the Reactor Coolant System .

DESCRIPTION OF THE EVENT

At 0030 on February 17, 1994, Unit 2 was in mode 5 at the beginning of a refueling outage. Operations, in accordance with Operating Procedure OP 2-0030127 "REACTOR PLANT COOLDOWN - HOT STANDBY TO COLD SHUTDOWN", was attempting to depressurize the Pressurizer (EIIS:AB) using Auxiliary Spray (EIIS:AB). When Auxiliary Spray was attempted the utility licensed operators noted that Pressurizer pressure was not decreasing as expected. Subsequent troubleshooting was initiated to verify the valve lineup for the Auxiliary Spray system. During this valve lineup verification process, a utility non-licensed operator found the Auxiliary Spray isolation valve V2483 to be mispositioned, locked closed. Valve V2483 is located in the Pressurizer cubicle and is a manually operated 2 inch gate valve which is normally in the locked open position.

The utility non-licensed operator was instructed to place valve V2483 in the locked open position. At this point the Auxiliary Spray system functioned as anticipated.

Subsequent investigation revealed that the last known time that Auxiliary Spray was used was in January, 1993, when Unit 2 was shut down to mode 5 for repair of a Reactor Coolant Pump. During the same outage, valve V2483 was closed on March 13, 1993 on clearance 2-93-03-024 to support Pressurizer instrument nozzle replacement. Plant records indicate that valve V2483 was independently verified to be in the locked open position upon restoration of the clearance. Plant records also indicate that valve V2483 was verified to be in the locked open position as per the valve lineup instructions in Operating Procedure OP 2-0210020 "CHARGING AND LETDOWN - NORMAL OPERATION" and Administrative Procedure 2-0010123 "ADMINISTRATIVE CONTROL OF VALVES, LOCKS AND SWITCHES."

As March 27, 1993 is the last recorded date that V2483 was manipulated, it is conservatively assumed that the valve was mispositioned since that time until discovery on February 17, 1994.

CAUSE OF THE EVENT

The root cause of the valve mispositioning was cognitive personnel error by utility non-licensed operators.

There were several opportunities to verify the correct position of V2483. The restoration of the clearance 2-93-03-024 required that V2483 be positioned and independently verified to be locked open. The instructions in OP 2-0210020 requires that V2483 be verified to be locked open. The quarterly surveillance for valve position verification AP 2-0010123 requires that V2483 be verified to be locked open. The last surveillance was performed in March 1993, prior to Mode 1 because V2483 is located in a high radiation high temperature area during power operations.

ANALYSIS OF THE EVENT

The design basis of the Auxiliary Spray System is to provide Pressurizer spray via the Charging pumps during the final stages of a shutdown for Pressurizer depressurization and cooldown for entry to Shutdown Cooling conditions. Auxiliary Spray also enhances depressurization when Main Spray is unavailable due to "B" side Reactor Coolant Pumps (RCPs)(EIIS:AB) being out of service. Auxiliary Spray is one of several safety grade systems used to satisfy the Branch Technical Position RSB 5-1 to take the reactor plant from normal operating conditions to cold shutdown.

Operation of the Auxiliary Spray system is not credited for the mitigation of any accident release as described in the Chapter 15 analysis of the Unit 2 Final Safety Analysis Report (FSAR). Auxiliary Spray is shown in the FSAR Chapter 15 analysis to expedite entry to Shutdown Cooling conditions. The use of Auxiliary Spray to depressurize the reactor plant is outlined in the St. Lucie Emergency Operating Procedures (EOPs) when main Pressurizer spray is unavailable.

However, Auxiliary Spray is not the only method of achieving Pressurizer pressure control to Shutdown Cooling entry conditions. FSAR Table 9.3-9 mentions the complete loss of Auxiliary Spray with the assumption of simultaneous failure of I-SE-02-03 and I-SE-02-04, Auxiliary Spray control valves (see Figure 1). The compensating action is to repeatedly cool down the Reactor Coolant System (RCS)(EIIS:AB) via an available Steam Generator (EIIS:AB) with the Atmospheric Dump Valves (ADVs)(EIIS:SB) to shrink the Pressurizer level and consequently decrease RCS pressure, and then fill the Pressurizer with cooler RCS water via the surge line with the Charging Pumps (EIIS:CB). This technique uses safety grade equipment and is described in FSAR Section 9.3.4.3.1.3.4, "Shutdown Without Letdown and Without Auxiliary Spray." This technique of repeatedly shrinking the Pressurizer level via an intact Steam Generator with the ADVs and refilling the Pressurizer with cooler RCS water would be applicable for a postulated Steam Generator Tube Rupture and Small Break Loss of Coolant Accident. In the case of a Large Break Loss of Coolant Accident, Auxiliary Spray is not required due to immediate RCS depressurization. For any other design basis event with the RCS remaining intact, the only difference is that the Letdown System may be available and can be utilized to drain down the Pressurizer. The method of repeatedly shrinking and filling the Pressurizer is referenced in Combustion Engineering Emergency Procedures Guidelines, CEN-152. This method is not explicitly described in the St. Lucie EOPs, but the use of charging, letdown and ADVs is listed as a contingency action for RCS pressure control and is considered to be within the knowledge and skills of the operators.

Another success path in CEN-152 for RCS pressure control is to evaluate the need for restarting of the RCPs to regain the non safety grade Pressurizer Main Spray when the Auxiliary Spray system is not providing the desired depressurization rate. This method is explicitly described in the St. Lucie EOPs as consideration for RCS pressure control.

An additional RCS pressure control contingency described in CEN-152 and the St. Lucie EOPs is by throttling of the safety grade High Pressure Safety Injection (HPSI)(EIIS:BQ) system.

A final method of RCS depressurization would be through the use of the pressurizer power operated relief valves. This is an option described in FSAR section 5.4 to quickly depressurize the RCS. This method is described in the St. Lucie EOPs to provide a method for once through cooling.

Because Auxiliary Spray is not credited in the mitigation of accident releases, it is not delineated in any Technical Specification Limiting Condition of Operation, and because the EOPs, CEN-152 and the FSAR have alternative success paths to reach Shutdown Cooling entry conditions, this event does not require a 10CFR50.72 or 10CFR50.73 NRC notification. However, due to the serious nature of a mispositioned locked valve this Licensee Event Report is being submitted on a voluntary basis for informational purposes.

Unit 1 does not have a similar isolation valve in the Auxiliary Spray system.

Because the safety function of RCS pressure control could be maintained by other analyzed and proceduralized methods, the health and safety of the public were not affected during this condition.

CORRECTIVE ACTIONS

1. Operations diagnosed the problem and opened V2483 to restore Auxiliary Spray operation.

2. The non-licensed operators involved with the valve mispositioning have been counseled and appropriate disciplinary actions are being taken in accordance with existing corporate policy.

3. The FPL Nuclear Division corporate disciplinary policy on procedure non-compliance will be revised to provide more severe discipline for cases of valve mispositionings.

4. FPL Engineering reviewed the FSAR, CEN-152 and St. Lucie EOPs to determine that there was no safety significance to plant operation in the absence of Auxiliary Spray.

5. FPL Engineering performed a PRA review and found that no significant risk increase exists with the loss of Auxiliary Spray.

6. Operations and Quality Control inspectors have performed a walkdown of accessible Unit 1 valves listed in the quarterly procedure AP 1-0010123 and verified their position to be correct.

7. Operations and Quality Control inspectors will verify the correct position of Unit 1 inaccessible locked valves at the next available opportunity.

8. Operations and Quality Control inspectors are performing a walkdown of accessible Unit 2 valves listed in the quarterly procedure AP 2-0010123 to verify their correct position. This will be complete prior to returning Unit 2 to service.

9. An HPES review was performed on this event and the results are incorporated into this LER.

ADDITIONAL INFORMATION

Failed Components None

Previous Similar Events

389-91-003 "2A Shutdown Cooling Heat Exchanger Out of Service Due to Mispositioned Component Cooling Water Valve Caused by Personnel Error"

335-89-002 "Inoperable 1B Diesel Generator due to Fuel Oil System Valve Misalignment"

335-87-012 "Loss of Component Cooling Water System Redundancy"

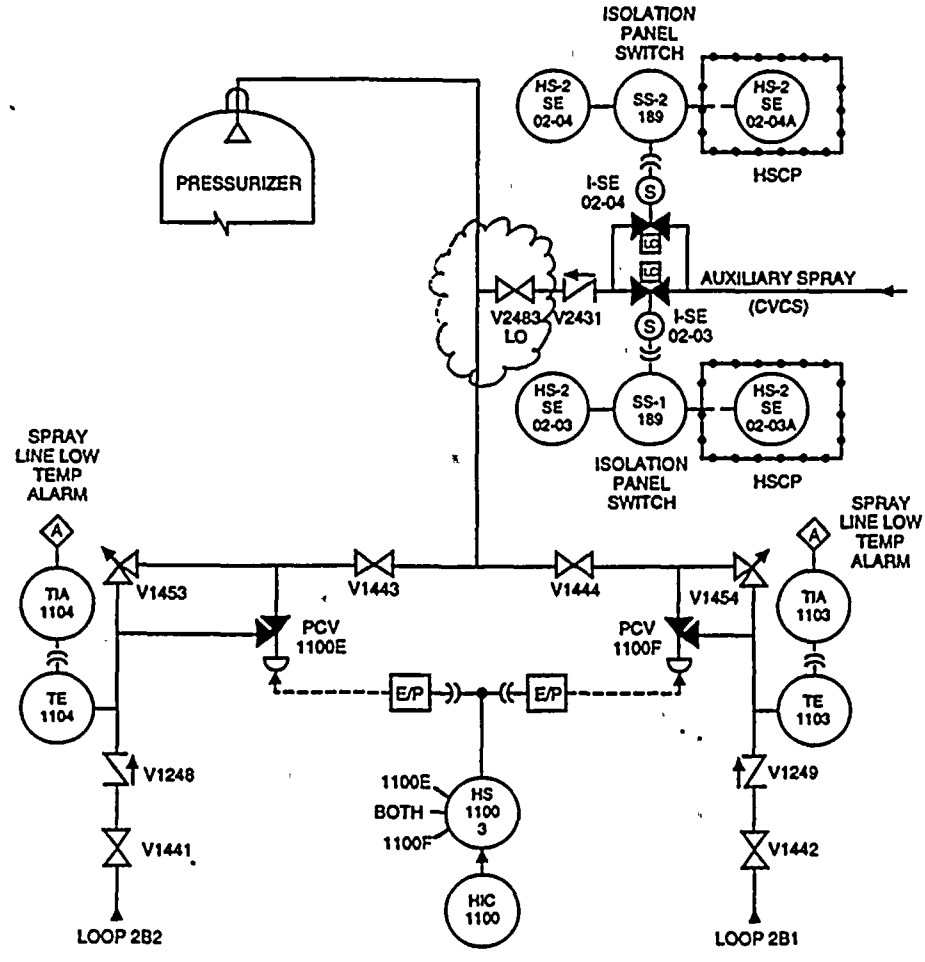

FIGURE 1 - St. Lucie Pressurizer Spray System