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ACCESSION NBR: 9008130309 DOC. DATE: 90/08/07 NOTARIZED: NO DOCKET # 05000389
 FACIL: 50-389 St. Lucie Plant, Unit 2, Florida Power & Light Co.
 AUTH. NAME: WEEKS, J.W. AUTHOR AFFILIATION: Florida Power & Light Co.
 SAGER, D.A. Florida Power & Light Co.
 RECIP. NAME: RECIPIENT AFFILIATION:

SUBJECT: LER 90-002-00: on 900731, 480VAC emergency bus degraded
 voltage relay setpoint below TS min due to design error.
 W/9 ltr.

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FPL

P.O. Box 14000, Juno Beach, FL 33408-0420

August 7, 1990

L-90-285
10 CFR 50.73

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

Gentlemen:

Re: St. Lucie Unit 2
Docket 50-389
Reportable Event: 90-02
Date of Event: July 13, 1990
480 VAC Bus Degraded Voltage Relay Setpoint
Below Technical Specifications Minimum
Due to Design 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,

D. A. Sager
Vice President
St. Lucie Plant

DAS:JWH:kw

Attachment

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

DAS/PSL #223

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LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) St. Lucie Unit 2	DOCKET NUMBER (2) PAGE (3) 0 5 0 0 0 3 8 9 1 OF 0 3
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TITLE (4) 480VAC Emergency Bus Degraded Voltage Relay Setpoint Below Technical Specification Minimum Due to Design 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 N/A		DOCKET NUMBER(S)
0	7	1390	9	0	2	0	8	0790			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)			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 J. W. Weeks, Shift Technical Advisor	TELEPHONE NUMBER AREA CODE 4 0 7 4 6 5 - 3 5 5 0
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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

SUPPLEMENTAL REPORT EXPECTED (14)

<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)	<input type="checkbox"/> NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
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ABSTRACT (Limit to 1400 spaces. i.e. approximately fifteen single-space typewritten lines)(16)

On July 13, 1990, with Unit 2 at 100% power, it was discovered by the Florida Power & Light Company (FPL) Nuclear Engineering Department that the 480VAC emergency bus degraded voltage relays were specified to be set below the minimum voltage allowed by the Technical Specifications.

The root cause of the event was a design error on the part of FPL Engineering. While final Unit 2 licensing activities and Technical Specification approval were taking place in April of 1983, a new Engineering evaluation of degraded bus conditions was conducted to include the latest bus loading and as built information. This evaluation determined that the vital bus design degraded voltage conditions had changed slightly, from 90% of 480VAC or 432VAC, to 89.3% of 480VAC or 428.8VAC. These lower setpoints were then installed in the field by St. Lucie Plant personnel.

Corrective actions taken were to develop new setpoints that complied with the Technical Specifications minimum value of 90% of 480VAC or 432VAC, and to check the actual setpoints of the relays and reset as necessary to the new setpoints. These setpoints will be placed on design drawings to preclude this event from recurring. Unit 1 degraded voltage relay setpoints were also checked and no discrepancies were found. Other equipment setpoints are being verified to be in compliance with Technical Specifications.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1) St. Lucie Unit 2	DOCKET NUMBER (2) 05000389	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
		90	002	00	02	OF	03

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

DESCRIPTION OF THE EVENT

On July 13, 1990, while Unit 2 was in Mode 1 at 100% power, during a design change review, Florida Power & Light's (FPL) Nuclear Engineering Department discovered that the setpoints specified for the 480VAC emergency bus (E1S:ED) degraded voltage relays corresponded to a value slightly less than the minimum of the Technical Specifications. The Technical Specifications require the setpoints to be greater than or equal to 432VAC. The Engineering specification called for the relays to be set at 428.8VAC. When this was discovered, the design bases for these setpoints was reviewed and it was determined that the Engineering specification setpoints were still bounded by the existing Safety Analysis. This condition had existed from the time Unit 2 was initially licensed in April of 1983.

FPL Engineering determined new setpoints that are in compliance with the Technical Specifications and also met all other engineering requirements: The actual field setpoints were tested and found to be at the value specified by Engineering in 1983, but below the Technical Specification minimum. These setpoints were then changed to above the Technical Specification minimum values within the time limitations of the Limiting Condition for Operation.

CAUSE OF THE EVENT

The root cause of the event was a design error by FPL Engineering. During the initial licensing phase of Unit 2 in April of 1983, the Technical Specification value for minimum degraded voltage setpoints was 432VAC. This value was accepted by the NRC via the St. Lucie Unit 2 Safety Evaluation Report (SER), Supplement #1, that stated the setpoint would be set at 90% of 480VAC, or 432VAC. A new Engineering evaluation was conducted by the Architect/Engineer, in April of 1983, that included the latest bus loading information in order to accurately assess the actual as-built bus conditions. This evaluation determined that the minimum allowable voltage for a degraded condition had changed to 89.3% of 480VAC, or 428.8VAC. This deviation from the values specified in the SER or the Technical Specifications was never addressed.

A Utility Engineering letter was issued in April of 1983 which specified the settings to use for the System Protection personnel who actually tested and adjusted the 480VAC degraded voltage relays. The Technical Specifications were also issued at approximately the same time. The discrepancy was not discovered until FPL Engineering was reviewing a Request for Engineering Assistance that dealt with setpoint adjustment on these relays. The Technical Specifications were consulted and compared to the setpoint requirement and the discrepancy was found.

A contributing factor to this condition is that plant personnel reviewing System Protection surveillance data sheets for conformance prior to the discovery of the discrepancy had no information to correlate the data sheet setpoint values, provided by FPL Engineering, with actual bus voltages. Therefore, Quality Control personnel did not know that these values corresponded to bus voltages less than that allowed by the Technical Specifications.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
		90	002	00	03	OF	03

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

ANALYSIS OF THE EVENT

FPL Engineering performed a review of a potential degraded voltage condition and determined that the as found setpoints for the degraded voltage relays were still bounded by the existing Safety Analysis. That is, during a postulated degraded voltage condition, the 428.8VAC undervoltage relay setpoints would have assured that the safety related 480VAC electrical equipment would have been able to perform its design function. Additionally, the setpoints found installed in the field deviated from Technical Specification values by less than 1 %. Therefore, the health and safety of the public were not affected by this event.

This event is reportable to the NRC under 10CFR50.73(a)(2)(i)(B) as any operation or condition prohibited by the plant's Technical Specification.

CORRECTIVE ACTIONS

1. New setpoints for the degraded voltage relays were determined by FPL Engineering that complied with the Technical Specifications.
2. System Protection personnel field tested the relay setpoints and set them to the new values determined by FPL Engineering.
3. Unit 1 degraded voltage relay setpoints were verified to be in compliance with the Technical Specifications.
4. Other Technical Specifications with setpoints will be reviewed to ensure St. Lucie Plant's compliance.
5. FPL currently requires the Technical Specifications and the FSAR to be reviewed for impact as part of the design change process. To further assure that the Undervoltage and Degraded voltage setpoints and their compliance with Technical Specifications are clearly addressed, FPL Engineering will include them on design drawings within 90 days of this LER.
6. To aid in future setpoint validation efforts, Undervoltage and Degraded voltage setpoints will be expressed in corresponding Technical Specification unit values on these drawings.

ADDITIONAL INFORMATION

COMPONENT FAILURES

None.

PREVIOUS SIMILAR EVENTS

The following describe other similar LERs at St. Lucie where setpoints were less conservative than the Technical Specification requirements:

335-90-001 335-79-030 335-78-016 335-77-024



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