



Florida Power & Light Company, 6501 South Ocean Drive, Jensen Beach, FL 34957

December 15, 2000

L-2000-260  
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: 2000-004-00  
Date of Event: November 15, 2000  
Pressurizer Level Instrumentation Conduit  
Separation Outside Appendix R Design Bases

The attached Licensee Event Report 2000-004 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 black ink, appearing to read 'Rajiv S. Kundalkar'.

Rajiv S. Kundalkar  
Vice President  
St. Lucie Nuclear Plant

RSK/EJW/KWF  
Attachment

cc: Regional Administrator, USNRC, Region II  
Senior Resident Inspector, USNRC, St. Lucie Nuclear Plant

IE22

### 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: 50 hrs. Reported lessons learned are incorporated into the licensing process and fed back to industry. Forward comments regarding burden estimate to the Records Management Branch (T-6 F33), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, and to the Paperwork Reduction Project (3150-0104), Office of Management and Budget, Washington, DC 20503. If an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

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**TITLE (4)**  
Pressurizer Level Instrumentation Conduit Separation Outside Appendix R Design Bases

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
11	15	2000	2000	004	00	12	15	2000		

<b>OPERATING MODE (9)</b> 1	<b>THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5: (Check one or more) (11)</b>										
<b>POWER LEVEL (10)</b> 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)			X 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)			50.73(a)(2)(iv)			OTHER	
	20.2203(a)(2)(iii)			50.38(c)(1)			50.73(a)(2)(v)			Specify in Abstract below or in NRC Form 366A	
20.2203(a)(2)(iv)			50.38(c)(2)			50.73(a)(2)(vii)					

**LICENSEE CONTACT FOR THIS LER (12)**

<b>NAME</b> Kenneth W. Frehafer, Licensing Engineer	<b>TELEPHONE NUMBER (include Area Code)</b> (561) 467 - 7748
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**COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)**

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-

**SUPPLEMENTAL REPORT EXPECTED (14)**

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

On November 15, 2000, St. Lucie Unit 1 was in Mode 1 at approximately 100 percent reactor power. FPL completed a reanalysis of fire protection separation requirements for all circuits required for post-fire safe shutdown in containment. The only components identified with separation issues, that had the potential to lose a post-fire safe shutdown function, was pressurizer level instrumentation. Inadequate separation for the pressurizer level circuits exists between radius lines 1 and 3 at the end of the containment annulus area.

The cause of this event is that the design basis for conduit separation was not adequately translated to the field during the original Appendix R plant backfit modification activities.

FPL determined that this 10 CFR 50 Appendix R noncompliance does not adversely affect the reasonable assurance of safety conclusions for the fire protection program. FPL will either design and implement modifications for the pressurizer level instrumentation conduit to resolve the separation issue or initiate a licensing action to resolve this discrepancy.

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

**Description of the Event**

On November 15, 2000, St. Lucie Unit 1 was in Mode 1 at approximately 100 percent reactor power. FPL was developing design change packages to resolve various fire protection cable separation issues inside containment. During development of the design packages, FPL determined that Appendix R Exemption K1 criteria for cable tray separation was incorrectly applied to conduit separation issues when performing the safe shutdown analysis (SSA). The basic design criterion applicable to cable tray separation in the St. Lucie Unit 1 containment building is seven feet of horizontal separation and 25 feet vertical separation without intervening combustibles or by radiant energy heat shields. The design criterion applicable to conduit to conduit or cable tray separation in the St. Lucie Unit 1 containment building is 20 feet of horizontal separation without intervening combustibles or the use of a radiant energy heat shield.

FPL reanalyzed all circuits inside containment that are credited in the SSA in order to verify that conduit separation requirements were met. The completed reanalysis identified that only pressurizer level instrumentation had separation issues with the potential to lose a post-fire safe shutdown function. Inadequate separation for the pressurizer level conduit exists between radius lines 1 and 3 at the end of the containment annulus area.

FPL determined that this 10 CFR 50 Appendix R noncompliance does not adversely affect the fire protection program. FPL will either design and implement modifications for the pressurizer level instrumentation conduit to resolve the separation issue or initiate a licensing action to resolve this discrepancy.

**Cause of the Event**

The cause of this event is that the design basis for conduit separation was not adequately translated to the field during the original Appendix R plant backfit modification activities. FPL identified this condition, as well as others previously reported to the NRC via 10 CFR 50.72 and 10 CFR 50.73, during the ongoing fire protection corrective action activities that resulted from self assessment. In this specific case, FPL identified the inadequate pressurizer level conduit separation during the development of modifications to correct previously identified fire protection separation noncompliances inside containment. The current design process is more robust and contributed to the identification of the conduit separation issue. FPL has previously performed a similar reanalysis for separation issues in the St. Lucie Unit 2 containment.

**Analysis of the Event**

The condition noted above is reportable with respect to 10 CFR 50.73(a)(2)(ii)(B) as "Any event or condition that resulted in... the nuclear power plant... being in a condition that was outside the design basis of the plant." The current separation of redundant circuits for pressurizer level does not meet design basis as delineated in the UFSAR, NRC SER, and does not meet Appendix R requirements or guidance.

**Analysis of Safety Significance**

Both channels of pressurizer level could be lost in the unlikely event of a fire in containment. No acceptable alternative means for monitoring pressurizer level could

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be identified. However, as discussed below, FPL concludes that a fire capable of causing a loss of pressurizer level indication is highly unlikely.

Fire protection for nuclear plants is based on the defense in depth concept with three primary barriers - prevention, detection and control, and protection of safe shutdown capabilities. The inadequate fire protection separation is considered a degradation of the protection of safe shutdown capability. The affect on the fire protection program of these concerns does not necessarily eliminate the ability to achieve safe shutdown. The remaining two "defense in depth" barriers remain intact (i.e., prevention of fires and prompt detection and control of fires that are hypothesized to occur). However, as discussed below, the probability for such a fire inside containment during power operation is remote.

The possibility of a fire in the Unit 1 containment is remote and any fire that does occur would not be subject to rapid growth. The overall combustible loading for containment is low and is comprised primarily of oil, cable insulation, charcoal absorbers, and HVAC filters. With exception of the cable insulation, the remaining combustibles are enclosed in "containers" and/or are provided with collection systems that minimize the potential for active involvement or initiation of a fire.

The predominant combustible in containment is cable insulation located in the cable tray overhead. The cables are either IEEE 383 qualified cable or non-qualified cable coated with a fire retardant. In either case, ignition is difficult and will require a substantial ignition source that is not readily available. Furthermore, spread of fire to redundant cabling with less than the required separation or protection is also unlikely given the offset provided.

Significant ignition sources such as motor control centers (MCCs), switchgear, unsealed electrical control panels, etc., are not present in containment. Electrical equipment located in containment is typically enclosed in metal cabinets or other housings that provide environmental isolation (no unsealed openings). Typically, electrical equipment enclosed in this manner are not considered as credible ignition sources. Since minimal in situ ignition and combustible sources are available, transient ignition and combustible sources require further discussion. The Unit 1 containment is a radiation area with very limited access during power operation. Therefore the potential for transient ignition or combustible sources in containment is minimal during operation. The containment is inspected prior to operation for items that could impact sump operability; therefore, the possibility for transient ignition or combustible sources to be present is minimal. In addition and for similar reasons, containment entries during power operations have strict material accountability procedures that apply.

The Unit 1 containment has a large volume and high ceiling that would dissipate the heat from a fire to the upper area. This feature would minimize the damage caused by heat stratification in the area of origin and reduce the rate of growth of the fire. For the inadequate separation, the area of concern is outside the reactor cooling system loops (annulus region) where the majority of cable trays and conduits are routed. These areas are provided with fire detectors that would provide prompt notification to the control room of an incipient fire. Upon detection of a fire, the fire brigade would be dispatched and fire fighting equipment would be used for manual fire suppression activities.

The specific location where the inadequate separation of the pressurizer level circuits exists (at the end of the annulus area) does not contain significant equipment, significant exposed combustible materials, or significant ignition

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sources. The cable trays routed in this portion of the annulus area (between radius lines 1 and 3) are relatively lightly loaded since most cables have previously exited the tray enroute to their respective equipment - only one tray continues past radius line 2 to radius line 1. In an area such as containment (large volume, high ceilings, minimal ignition sources, limited combustibles, limited access, etc.) the potential for a fire of consequence during operation is highly unlikely. In the particular area described, the potential for a fire is even more remote since the combustible loading is negligible. Based on the low fire potential and consequences, FPL determined that the probability of a fire causing both channels of pressurizer level to be impaired is very low.

In accordance with the guidance provided in Generic Letter 91-18, this condition is considered a degraded condition with respect to the fire protection program/post-fire safe shutdown capability. Based on the above discussions, the probability of a fire is very low and the probability of a fire causing both channels of pressurizer level to be impaired is very low. Based on the guidance provided in GL 91-18, there exists a reasonable assurance of safety.

FPL has previously performed a similar reanalysis for separation issues in the St. Lucie Unit 2 containment.

**Corrective Actions**

1. FPL will either design and implement modifications for the pressurizer level instrumentation conduit to resolve the separation issue or initiate a licensing action to resolve this discrepancy.

**Additional Information**

Failed Components Identified

None

Similar Events

The following LERs were submitted for fire protection deficiencies discovered during St. Lucie fire protection self-assessment activities.

1. LER 50-335,389/2000-001, "Outside Design Bases Appendix R Hi-Lo Pressure Interface and Separation Issues."
2. LER 50-335/1999-005, "Pressurizer Pressure Instrumentation Cable Separation Outside Appendix R Design Bases."
3. LER 50-335/1999-009, "Cable Separation Inside Containment Does Not Meet Appendix R Requirements."
4. LER 50-335/1998-005, "Conditions Identified Outside Appendix R Design Basis."
5. LER 50-389/1998-001, "Outside Design Basis Based on Appendix R Safe Shutdown Analysis."
6. LER 50-389/1998-007, "Appendix R Reverification Identified Potential Cable Failure Modes."