



Florida Power & Light Company, 6351 S. Ocean Drive, Jensen Beach, FL 34957

January 18, 2000

L-2000-020
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: 1999-009-00
Date of Event: December 16, 1999
Appendix R Exemption Request K1 Not Met
Resulting in Plant Outside Design Bases

The attached Licensee Event Report 1999-009 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 'J. A. Stall', is written over the typed name.

J. A. Stall
Vice President
St. Lucie Nuclear Plant

JAS/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.

FACILITY NAME (1)

St. Lucie Unit 1

DOCKET NUMBER (2)

05000335

PAGE (3)

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TITLE (4)

Appendix R Exemption Request K1 Not Met Resulting in Plant Outside 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
12	16	1999	1999	- 009	- 00	01	18	2000	FACILITY NAME	DOCKET NUMBER
OPERATING MODE (9)			THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5: (Check one or more) (11)							
1			20.2201(b)		20.2203(a)(2)(v)		50.73(a)(2)(i)		50.73(a)(2)(viii)	
POWER LEVEL (10)			20.2203(a)(1)		20.2203(a)(3)(i)		X 50.73(a)(2)(ii)		50.73(a)(2)(x)	
100			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)

NAME: Kenneth W. Frehafer, Licensing Engineer
 TELEPHONE NUMBER (Include Area Code): (561) 467 - 7748

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
A	-	-	-	NO	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-

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 December 16, 1999, St. Lucie Unit 1 was in Mode 1 operation at 100 percent reactor power. FPL discovered inconsistencies between FPL's exemption request K1 (separation criteria for redundant safe shutdown trains inside the Unit 1 reactor containment building) and the NRC Safety Evaluation Reports for Appendix R. St. Lucie Unit 1 meets the separation criteria specified in its Appendix R submittals, but does not meet the 25 feet vertical separation criteria specified in the NRC SERs.

The cause of this event was personnel error during the original St. Lucie Unit 1 10 CFR 50 Appendix R licensing activities. FPL determined that the fire protection program remains operable in this condition.

FPL will resubmit exemption request K1 to clarify vertical separation criteria.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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St. Lucie Unit 1	05000335	1999	- 009	- 00	Page 2 of 5

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

Description of the Event

On December 16, 1999, St. Lucie Unit 1 was in Mode 1 operation at 100 percent reactor power. FPL discovered inconsistencies between FPL's exemption request K1 to Appendix R Section III.G.2.d and NRC 10 CFR 50 Appendix R Safety Evaluation Reports (SERs) dated February 21, 1985, and March 5, 1987. The inconsistencies pertain to the separation criteria for redundant safe shutdown trains inside the Unit 1 reactor containment building (RCB).

As part of the response to the NRC as required by 10 CFR 50.48 and Generic Letter 81-12, FPL submitted letters L-83-227 dated April 12, 1983, L-83-453 dated August 24, 1983, L-83-488 dated September 16, 1983, L-83-588 dated December 14, 1983, and L-84-346 dated November 18, 1984, to the NRC with information on the fire protection features and methodology for complying with Appendix R. These were submitted along with request for exemptions from Appendix R as allowed in 10 CFR 50.48. These letters stated that separation of redundant safe shutdown trains inside the RCB was met by running the cable trays at different elevations, and formed the bases for FPL's exemption request K1 to Appendix R Section III.G.2.d.

The February 21, 1985, SER stated that redundant cable trays were installed on separate elevations separated by approximately 25 feet. The March 5, 1987, SER approved separation requirements of 7 feet horizontal and 25 feet vertically. This is not the same information that was submitted by FPL in the above letters. The original submittals stated that the cable trays were run at different elevations.

FPL determined that although the St. Lucie Unit 1 RCB does not meet the NRC SER requirements of 25 feet vertical separation, it does meet all applicable requirements as set forth in FPL's submittals for exemption request K1. Therefore, for the purpose of meeting Appendix R cable separation requirements, FPL determined that the St. Lucie Unit 1 RCB remains operable. FPL made a 10 CFR 50.72 notification on December 16, 1999.

Cause of the Event

This event was caused by personnel error during the original licensing of the St. Lucie Appendix R program. The original NRC SER stated that redundant cable trays were separated by a horizontal distance of more than 7 feet and that redundant cable trays were installed on separate elevations separated by approximately 25 feet.

This is not the same information that was submitted by FPL. The original submittals stated that the cable trays were run at different elevations. The quoted elevations were approximately 25 feet apart (i.e., 18 feet elevation and 45 feet elevation). The elevations referred to by FPL were not the elevations of the installed cable trays but the floor elevations inside containment. FPL made no statement as to the exact vertical separation of redundant cable trays. The NRC issued exemption K1 wording was interpreted to be consistent with FPL's submittals.

The second NRC SER restated the original approval but definitively established a new vertical separation criteria of at least 25 feet. This was clearly not the intent of the information submitted by FPL. FPL was deficient in that the differences between the FPL submittals and the NRC SERs were not identified during the licensing activities.

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Cause of the Event (cont'd)

Since that time, St. Lucie implemented administrative controls to ensure that during the review of incoming NRC SERs, if any differences between FPL submittals and NRC SERs are identified, that those differences are resolved.

Analysis of the Event

This event is reportable pursuant 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." St. Lucie Unit 1 cable separation in the RCB meets it's design bases as documented in FPL's Appendix R submittals and the UFSAR. However, the NRC based their approval of cable separation on an erroneous 25 feet vertical separation criteria. Therefore, St. Lucie Unit 1 RCB cable separation is outside the NRC's bases for approval of Appendix R exemption K1.

Analysis of Safety Significance

Appendix R Section III.G.2.d requires redundant safe shutdown trains to have horizontal separation of 20 feet or greater. St. Lucie Unit 1 was in operation prior to January 1, 1979, and the provisions of 10 CFR 50 Appendix R Section III.G apply to Unit 1. Appendix R Section III.G.2 states that to ensure one train of equipment required for safe shutdown is free from fire damage separation for cables and equipment inside non-inerted containments shall be separated by a horizontal distance of 20 feet with no intervening combustibles or fire hazards; or installation of fire detectors and automatic fire suppression; or separation by a non combustible radiant energy shield. Appendix R Section III.G.2 further states that this separation is to protect required safe shutdown equipment from maloperation of equipment of the redundant train or associated circuits. This maloperation is defined as being caused by hot shorts, open circuits, or shorts to ground.

Information regarding the basis for maintaining one train of equipment required for safe shutdown free from fire damage is contained in multiple letters to the NRC. Separation criteria inside containment can be summarized as at least 7 feet horizontal separation and redundant cables routed on separate trays on the 18 and 45 feet elevations. The wording of the exemption with respect to separation is that separation is provided to maintain independence of electrical circuits and equipment so that the protective function required during any design basis event can be accomplished. The degree of separation varies with the potential hazards in a particular area. This is accomplished by use of spatial separation, barriers, and radiant energy shields where required. This was the basis in the first letter submitted by FPL (L-83-277 dated April 12, 1983) and remains unchanged. This justifiable information was repeated in later letters and is contained within the UFSAR.

The NRC approved exemption K1 in a letter dated February 21, 1985, which also included a SER. The exemption was approved again in a letter dated March 5, 1987. The second approval was to administratively incorporate the additional parameter of "no intervening combustibles" in the 20 feet separation area as an Appendix R Section III.G.2 requirement. This was relevant because the approved exemption allowed intervening combustibles to exist in the space between the redundant counterparts.

The potential hazards are characterized in the latter exemption in the evaluation section which states:

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Analysis of Safety Significance (cont'd)

"Reaffirming our previous evaluation of the containment fire area and its redundant cables, it is concluded that because of the small amount of combustibles, a potential fire would be of limited magnitude and extent. The products of combustion from such a fire would be dissipated up into the higher elevations of the containment structure and away from the vulnerable shutdown components. Therefore, we conclude that one shutdown division would remain free of fire damage."

This is confirmed in the conclusion section of the exemption which states that the exemption is acceptable:

"...because the removal of combustibles in the separation space between redundant cables and associated circuits would not significantly increase the level of fire protection."

Although the NRC evaluations contained in both exemptions do not site vertical separation as a significant criteria or basis for approval, an erroneous 25 feet vertical separation requirement was introduced in the March 5, 1987, NRC SER.

The unattainable 25 feet vertical separation concern does not constitute an operability concern. Except for the cables previously reported in LER 50-335/1999-005, redundant cables in the St. Lucie Unit 1 RCB have separation as described in previous FPL submittals to the NRC. The NRC did not cite vertical separation as a significant criteria or basis for approval of exemption K1. As stated in approved exemption K1, the combustible loading for containment is low and in the area where the lack of separation occurs consists of mostly cable insulation which has a high ignition temperature. All non IEEE cables in containment are covered with a fire retardant coating. The containment has a large volume with a high ceiling which would dissipate the hot gases from a fire to the upper area of containment away from the affected area. The basic statement contained within exemption K1 is that the possibility of a fire in containment is remote and that any fire would not affect anything except for a small localized area. The containment is inspected prior to operation for items that could impact sump operability, therefore, the possibility of transient combustibles is remote. In addition, the containment is a radiation area with very limited access during power operation. The possibility of introducing new transient combustibles is very small. The area of concern is primarily in the vicinity of the penetrations. This area has fire detectors which would provide prompt notification of a potential fire to the control room.

Sufficient fire fighting equipment is available to quickly extinguish any potential fire. Therefore, any fire that should occur should not cause significant damage and, as stated above, any damage is expected to be localized.

Fire protection for nuclear plants is based on the defense in depth concept. The above concerns affect only the third echelon of the fire protection program. The first two echelons (prevention of fires and prompt detection and control of fire that do occur) remain intact. Cable separation, an Appendix R design feature, for the St. Lucie Unit 1 RCB is within it's design bases as described in the UFSAR and FPL Appendix R licensing submittals for exemption K1. The NRC approval for exemption K1 did not cite vertical separation as a significant basis for approval. However, St. Lucie Unit 1 does not comply with the 25 feet vertical separation criteria, so this condition is considered in non-conformance with respect to the NRC SER requirements.

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Analysis of Safety Significance (cont'd)

In accordance with the guidance provided in Generic Letter 91-18, the fire protection program is considered to be operable. Based on the above discussions, the probability of a fire is very low, the probability of a fire causing significant damage such that required functions are impaired is very low and for high/low pressure interfaces, the probability of a hot short scenario is also very low. Based on the guidance provided in GL 91-18 the equipment and system affected by this condition can be considered operable. Therefore, this event has no adverse effect on the health and safety to the public.

Corrective Actions

1. FPL will resubmit exemption request K1 in order to clarify the design bases for cable separation inside the Unit 1 RCB.

Additional Information

Failed Components Identified

None

Similar Events

LER 50-335/1999-005, "Pressurizer Pressure Instrumentation Cable Separation Outside Appendix R Design Bases," documents inside containment cable separation issues with St. Lucie Unit 1.