

# CATEGORY 1

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ACCESSION NBR: 9705060087      DOC. DATE: 97/04/30      NOTARIZED: NO      DOCKET #  
 FACIL: 50-335 St. Lucie Plant, Unit 1, Florida Power & Light Co.      05000335  
 AUTH. NAME      AUTHOR AFFILIATION  
 FREHAFFER, K.W.      Florida Power & Light Co.  
 STALL, J.A.      Florida Power & Light Co.  
 RECIP. NAME      RECIPIENT AFFILIATION

Document Control Branch (Document Control Desk)

SUBJECT: LER 97-004-00: on 970402, refueling machine was operating in manner prohibited by TS due to original design of refueling machine bypass feature conflicting w/TS requirements. Eliminated overload cut off limit bypass. W/970430 ltr.

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 TOTAL NUMBER OF COPIES REQUIRED: LTR 25 ENCL 25



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

April 30, 1997

L-97-120  
10 CFR 50.73

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

Re: St. Lucie Units 1 and 2  
Docket Nos. 50-335 and 50-389  
Reportable Event: 97-004  
Date of Event: April 2, 1997  
Operation of Refueling Machine in a Manner  
Prohibited by Technical Specifications

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,

J. A. Stall  
Vice President  
St. Lucie Plant

JAS/KWF

Attachment

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

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**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: 50.0 HRS. REPORTED LESSONS LEARNED ARE INCORPORATED INTO THE LICENSING PROCESS AND FED BACK TO INDUSTRY. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (T-8 F33), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20565-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)

ST LUCIE UNIT 1

DOCKET NUMBER (2)

05000335

PAGE (3)

1 OF 3

TITLE (4)

Operation of Refueling Machine in a Manner Prohibited by Technical Specifications

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	
04	02	97	97	-- 004	-- 0	04	30	97	St. Lucie Unit 2	05000389	
									FACILITY NAME	DOCKET NUMBER	
										05000	
OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)									
1		20.2201(b)			20.2203(a)(2)(v)			<input checked="" type="checkbox"/> 50.73(a)(2)(i)		50.73(a)(2)(viii)	
POWER LEVEL (10)		20.2203(a)(1)			20.2203(a)(3)(i)			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 <sup>us</sup>	
		20.2203(a)(2)(iii)			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

K. W. Frehafer, Licensing Engineer

TELEPHONE NUMBER (include Area Code)

(561) 468-4284

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NFRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NFRDS

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE).

NO

EXPECTED SUBMISSION DATE (15)

MONTH DAY YEAR

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On April 2, 1997, St. Lucie Units 1 and 2 were operating at 100 percent reactor power. As a result of reviewing operating experience concerning the original design and past operation of the refueling machine, a deficiency was identified that represented a failure to satisfy Technical Specification requirements regarding the manipulator crane overload cut off limit.

The cause of this event was due to the original design of the refueling machine automatic bypass feature, which conflicts with the Technical Specification requirements for the manipulator crane.

The corrective action is to eliminate overload cut off limit bypass by modifying the refueling machine overload protection circuitry. This modification has been implemented for Unit 2 and is planned for Unit 1.

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TEXT CONTINUATION**

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ST LUCIE UNIT 1	05000335	97	-- 004	-- 0	2 OF 3

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

DESCRIPTION OF THE EVENT

On April 2, 1997, St. Lucie Units 1 and 2 were operating at 100 percent reactor power. Engineering personnel identified a deficiency regarding the operation and design of the refueling machine [EIS:DA] during a review of operating experience pertaining to refueling machine discrepancies identified at other utilities. The deficiency relates to the automatic bypassing of the hoist [EIS:DA:HOI] overload cutout [EIS:DA:IMEC] when the lift is in the hoist box transition area.

Technical Specification 3.9.6 for both units requires the manipulator crane (refueling machine) to be OPERABLE with an overload cut off limit of  $\leq 3000$  pounds. This Limiting Condition of Operation (LCO) is applicable during movement of fuel assemblies or Control Element Assemblies (CEAs) "within the reactor pressure vessel." Technical Specification Surveillance Requirement 4.9.6 for both units requires the manipulator crane to be demonstrated operable, in part, by demonstrating an automatic load cut off when the crane load exceeds 3000 pounds.

The automatic bypassing of the hoist overload cutout when the lifted load is in the hoist box transition area represents a failure to satisfy the Technical Specification requirements regarding the manipulator crane overload cut off limit.

CAUSE OF THE EVENT

This event was caused by the original design of the refueling machine. The automatic bypass feature of the refueling machine overload cut off interlock is a feature that is common on refueling machines provided by Programmed And Remote (PAR), the equipment Vendor. Since the design was part of the original refueling machine circuitry, the failure to correctly translate the design into the Technical Specifications is considered an administrative error during original plant licensing.

ANALYSIS OF THE EVENT

Bases section 3/4.9.6 of the Technical Specifications, as applicable to the automatic overload cut off, describes the intent of the Technical Specification 3/4.9.6 as protecting the core internals and pressure vessel from excessive lifting forces in the event they become inadvertently engaged during lifting operations.

During a normal fuel assembly lift the refueling machine hoist is initially only lifting the weight of a fuel assembly (with or without a CEA). In this phase of the lift the fuel assembly is protected by a "fuel only" overload interlock which will automatically stop the hoist when the load cell reaches a predetermined "fuel only" load set point (~1430 pounds). Once the fuel assembly has been lifted into the hoist box, the hoist box starts to lift off of its stops. At this point the weight of the hoist box is added to the total load displayed on the refueling machine indicator. In this latter phase of the lift the "fuel plus hoist box" overload interlock provides the overload protection and will stop the hoist when the load cell reaches a predetermined set point (~2800 pounds). In order to prevent an erroneous overload condition, the refueling

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

ANALYSIS OF THE EVENT (Continued)

machine load monitoring system was designed with an automatic bypass feature which momentarily bypasses the automatic overload circuitry when the lift is transitioning from the "fuel only" region to the "fuel plus hoist box" region. The refueling machine vendor (PAR) has indicated that the overload bypass is in effect (i.e., blocks any automatic overload trip) for approximately 6" of fuel assembly/hoist box travel. The bypass feature is an original design feature which is common on PAR refueling machines used throughout the industry.

The intent of the overload interlock Technical Specification requirement as described in the Technical Specification bases is to protect the core internals and reactor vessel from the effects of lifting a stuck fuel assembly. The bypass feature is momentarily engaged at a point in the lift where the fuel assembly has been completely removed from the core region and has been retracted into the hoist box. At this point in the lift there is no further potential for contact between the fuel assembly being lifted and the core internals or pressure vessel, thus there is no opportunity for the lift to result in damage to core internals or the pressure vessel. Although the intent of the Technical Specifications bases have been satisfied by the time the bypass is engaged, the refueling machine is still technically "within the reactor pressure vessel." Therefore, this constitutes a condition which is prohibited by Technical Specifications, and is reportable under 10 CFR 50.73(a)(2)(i)(b).

ASSESSMENT OF SAFETY SIGNIFICANCE

There is no safety significance associated with the momentary automatic bypassing of the hoist overload cut off. At the point in the fuel lift that the bypass feature is engaged, there is no opportunity for the lift to result in damage to the core internals or the pressure vessel because there is no further contact between the assembly being lifted and the core internals or pressure vessel. Additionally, the fuel assembly has been retracted within the hoist box at this time. The intent and bases of Technical Specification 3.9.6 have been satisfied. Therefore, this condition had no adverse effect on the health and safety of the public.

CORRECTIVE ACTIONS

1. A modification (PC/M 97021) was implemented on Unit 2 to modify the refueling machine overload protection circuitry such that the fuel plus hoist box overload interlock is active at all times when the hoist motor is engaged in the upward direction.
2. A similar modification will be performed on the Unit 1 refueling machine overload protection circuitry prior to the Fall 1997 Unit 1 refueling outage.
3. An INPO Network entry on this event was made.

ADDITIONAL INFORMATION

None

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