CATEGORY 1

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR:9804090252 DOC.DATE: 98/04/02 NOTARIZED: NO DOCKET #
FACIL:50-335 St. Lucie Plant, Unit 1, Florida Power & Light Co. 05000335
AUTH.NAME AUTHOR AFFILIATION
FREHAFER,K.W. Florida Power & Light Co.
STALL,J.A. Florida Power & Light Co.
RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 98-005-00:on 980305,identified two conditions that were outside App R design bases.Caused by design oversight during development of original App R safe SD design.Established 30 minute roving fire watches & provided training.W/980402 ltr.

DISTRIBUTION CODE: IE22T COPIES RECEIVED:LTR 1 ENCL 1 SIZE: 10
TITLE: 50.73/50.9 Licensee Event Report (LER), Incident Rpt, etc.

NOTES:

	RECIPIENT ID CODE/NAME	COPIES LTTR	COPIES ENCL	RECIPIENT ID CODE/NAME	COPIES LTTR	COPIES ENCL
	PD2-3 PD	1	1	GLEAVES,W	1	1
INTERNAL:	ACRS	1	1	AEOD/SPD/RAB	2	2
	AEOD/SPD/RRAB	1	1	FILE CENTER	1	1
	NRR/DE/ECGB	1	1	NRR/DE/EELB	1	1
	NRR/DE/EMEB	1	1	NRR/DRCH/HHFB	1	1
	NRR/DRCH/HICB	1	1	NRR/DRCH/HOLB	1	1
	NRR/DRCH/HQMB	1	1	NRR/DRPM/PECB	1	1
	NRR/DSSA/SPLB	1	1	NRR/DSSA/SRXB	1	1
	RES/DET/EIB	1	1	RGN2 FILE 01	1	1
EXTERNAL:	L ST LOBBY WARD	1	1	LITCO BRYCE,J H	1	1
	NOAC POORE,W.	1	1	NOAC QUEENER,DS	1	1
	NRC PDR	1	1	NUDOCS FULL TXT	1	1

CATEGORY 1 DOCUMENT

NOTE TO ALL "RIDS" RECIPIENTS:
PLEASE HELP US TO REDUCE WASTE. TO HAVE YOUR NAME OR ORGANIZATION REMOVED FROM DISTRIBUTION LISTS OR REDUCE THE NUMBER OF COPIES RECEIVED BY YOU OR YOUR ORGANIZATION, CONTACT THE DOCUMENT CONTROL DESK (DCD) ON EXTENSION 415-2083

FULL TEXT CONVERSION REQUIRED
TOTAL NUMBER OF COPIES REQUIRED: LTTR 25 ENCL 25

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

April 2, 1998

L-98-082
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: 98-005
Date of Event: March 5, 1998
Conditions Identified
Outside Appendix R Design Bases

The attached Licensee Event Report is being submitted pursuant to the requirements of 10 CFR 50.73.

Very truly yours,

J. A. Stall
Vice President
St. Lucie Plant

JAS/EJW/KWF

Attachment

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

NRC FORM 366 (4-95) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104
EXPIRES 04/30/98
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-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.

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
ST LUCIE UNIT 1	05000335	1 OF 9

TITLE (4)

Conditions Identified 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
									n/a	05000
3	5	98	98	005	0	4	2	98	FACILITY NAME	DOCKET NUMBER 05000

OPERATING MODE (9)	1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)					
		20.2201(b)		20.2203(a)(2)(v)		50.73(a)(2)(i)	50.73(a)(2)(viii)
POWER LEVEL (10)	100	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)		50.36(c)(1)		50.73(a)(2)(v)	Specify in Abstract below or in NRC Form 366A
		20.2203(a)(2)(iv)		50.36(c)(2)		50.73(a)(2)(vii)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (Include Area Code)
K W Frehafer, Licensing Engineer	(561) 468-4284

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
n/a										

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 15 single-spaced typewritten lines) (16)

On March 5, 1998, Unit 1 was in Mode 1 at 100 percent reactor power. While performing an on-going 10 CFR 50 Appendix R fire protection safe shutdown review, Engineering identified two conditions that did not meet Appendix R fire protection design requirements. The issues pertained to 1) the potential for a primary system high pressure/low pressure interface condition as a result of fire induced power operated relief valve cable faults, and 2) required one hour fire barriers not being installed on essential conduits for charging pump 1A in fire zone N.

The cause for the identified conditions was determined to be personnel error during the original implementation of 10 CFR 50 Appendix R requirements.

Florida Power and Light established enhanced compensatory measures, including 30 minute roving fire watches in the Unit 1 reactor auxiliary building. Additional corrective actions include the issuance of fire breach permits, training, and future modifications to eliminate the identified conditions.

CAUSE OF THE EVENT (cont'd)

recognize that the common wireways at the containment electrical penetrations contained electrical cables that could be the source for spurious PORV opening. It is unclear whether the steel wireways were originally considered sufficient enough to protect the PORV cabling from spurious operation at the containment penetrations. Protection was originally provided for the PORVs' power and control cables upstream of the wireways. However, the configuration at the penetration wireways was not originally dispositioned and documented.

The root cause for the identified charging pump 1A condition was an error made during the interpretation of the Appendix R exemption for Fire Area N and its application to the physical plant design. Specifically, the original designers failed to recognize that the essential conduits associated with the 1A charging pump were to be protected with one-hour fire wrap.

ANALYSIS OF THE EVENT

These conditions are reportable under 10 CFR 50.72(a)(2)(ii)B because they resulted in the nuclear power plant being operated outside its Appendix R design bases. As stated in the Unit 1 UFSAR, Appendix 9.5A, Section 6.0, design provisions have been provided that preclude the potential for a fire induced LOCA. Contrary to this requirement, the PORV cables were not totally routed in conduit to preclude fire induced hot shorts in the A and B electrical penetration rooms. Additionally, as stated in the Unit 1 UFSAR, Appendix 9.5A, Section 4.N, conduits carrying essential cables for the 1A charging pump in Fire Zone 38 shall be provided with a minimum one-hour fire wrap. Contrary to this design requirement, the essential conduits for the 1A charging pump are not protected. Both of these conditions are outside the Unit 1 Appendix R design bases.

ASSESSMENT OF SAFETY SIGNIFICANCE

PORV Issue

To address safety significance, a review of the failure modes and current compensatory actions was performed. With respect to the potential cable failure mode, it is important to note that the DC power cables for the PORVs in the penetration wireways would have to fail such that one of the valves would spuriously energize, resulting in the PORV opening. For a PORV to spuriously open, each phase of the DC power cable conductor must become exposed as result of a fire and come in contact with the correct polarity exposed conductors of another energized 125 VDC power cable. A second scenario would exist if the positive conductor for the PORV came in contact with the positive conductor of another energized 125 VDC cable and multiple grounds

ASSESSMENT OF SAFETY SIGNIFICANCE (cont'd)

were created on the negative conductor of the PORV power cable. These are very low probability failure modes, however, they are required to be considered in the high/low pressure interface design to preclude the potential for fire induced LOCAs. The subject penetration wireways are constructed of heavy gauge sheet steel, and the wireways form a common enclosure around the cables which are contained within the wireway. The steel wireways provide a level of protection to the PORV cables for fires external to the wireways.

In addition to the presence of the faults that would cause the spurious PORV opening, the associated PORV block valve cables would have to be damaged or rendered unavailable during the fire event to preclude the block valve from being available to isolate the flow path and mitigate the event.

In addition to this low probability failure mode, compensatory measures have been in place for the subject Fire Areas A (Fire Zone 77) and C (Fire Zone 78) as a result of Thermo-Lag 330-1 fire barrier deficiencies. These compensatory measures were enhanced. The enhanced compensatory measures include the implementation of a 30 minute roving fire watch in the Unit 1 reactor auxiliary building which includes the subject Fire Areas A and C. In addition to the compensatory measures, Table 1 lists the detection and suppression systems that are available in the subject fire areas/fire zones that would prevent a potential fire from going beyond the incipient stage.

Charging Pump 1A Issue

Adequate charging pump capability is currently provided for a postulated fire in Fire Zones 38 and 76. Although with the current plant configuration, all charging pumps are analytically assumed lost for a fire in Fire Zones 36A and 75, a review of the existing compensatory measures and fire protection features was performed to address the safety significance of the missing one hour fire protection for charging pump 1A. The existing roving fire watches that were instituted to address the degraded fire barrier protection of Thermo-Lag 330-1 fire barrier systems have been in place as an interim compensatory measure for degraded fire barriers. In addition to the roving fire watches, further assurance of the adequacy of fire protection features include:

- low in-situ combustibles in the fire area,
- room dimensions help in dissipating any smoke or hot gases generated by a potential fire,
- fire detectors are located in the charging pump cubicles to provide early warning of a fire before the fire can develop beyond incipient fire stages, and
- fire extinguishers and hose stations are located in close proximity to the entrance to this room.

ASSESSMENT OF SAFETY SIGNIFICANCE (cont'd)

Based on the above, there are sufficient design features and compensatory actions in place to provide a reasonable assurance that a fire of sufficient magnitude to disable the 1A charging pump would not occur.

Conclusion

FPL concludes that the existing conditions had no significant impact on the health and safety of the public. The possibility of a fire induced LOCA or fire induced loss of the 1A charging pump was highly unlikely. This assessment is based on the highly unlikely cable failure mode for the PORV condition, and the fire protection defense in depth philosophy of detection, suppression, or local fire fighting capability provided for all affected areas such that fires would not develop beyond the incipient stages for both conditions.

CORRECTIVE ACTIONS

A complete review of the Unit 1 and 2 Safe Shutdown Analyses (SSA) is currently being performed. Included in the SSA review scope is a review of all potential high/low pressure interface concerns. As such, any potential generic issues concerning high/low pressure interfaces will be dispositioned as part of this continuing effort. Specific corrective actions include the following:

1. Fire Impairments were written to document the current deficiencies associated with the PORV cabling in the wireways located in the A Electrical Penetration Room (Fire Area A, Fire Zone 77) and the B Electrical Penetration Room (Fire Area C, Fire Zone 78), and Operations personnel were advised of this condition and are aware of the susceptibility to spurious PORV opening in Fire Areas A (Fire Zones 77) and C (Fire Zone 78) by the issuance of a night order.

2. The roving fire watch personnel were advised of the current deficiencies associated with the PORV cabling and are sensitive to the potential consequences of a fire in Fire Areas A (Fire Zones 77) and C (Fire Zone 78) by the issuance of fire impairments and a training memo.

3. Training was provided to all St. Lucie Engineering personnel on the importance of, and requirement for, protecting potential high/low pressure interfaces from potential fire induced cable faults during the First Quarter 1998 Engineering Support Personnel (ESP) Continuing Training.

CORRECTIVE ACTIONS (cont'd)

4. Fire Impairments were written to document the current deficiencies associated with the conduits associated with charging pump 1A, and Operations personnel were advised of this condition and are aware of the susceptibility to loss of charging capability in Fire Area N (Fire Zones 36A and Fire Zone 75) by the issuance of a night order.

5. FPL is scoping the design modification required to eliminate the current Unit 1 PORV high/low pressure interface concern, and the associated design package will be prepared and implemented no later than startup following the 1999 Unit 1 refueling outage.

6. FPL will provide circuit modifications and/or add raceway fire barriers for the conduits carrying the power and control cables for charging pump 1A.

ADDITIONAL INFORMATION

Failed Components Identified:

None

Past Similar Events:

LER 50-389/98-001, "High/Low Pressure Shutdown Cooling Interface Outside Appendix R Design Bases." Describes an event where design error led to inadequate implementation of Appendix R requirements.

LER 50-335/98-004, "Emergency Lighting Outside Appendix R Design Bases." Describes event where design error led to inadequate Appendix R emergency lighting.

LER 50-389/97-004, "Incorrect Original Cable Tray Fire Stop Assemblies Outside Appendix R Design Bases." Describes event where initial design was inadequate to meet Appendix R requirements.

LER 50-335, 389/97-007, "RCP Oil Collection System Outside Appendix R Design Bases." Describes event where initial design was inadequate to meet Appendix R requirements.

Table 1

Detection and Suppression Capabilities in PORV Affected Fire Areas/Zones

FIRE AREA	FIRE ZONE	DETECTION	SUPPRESSION
A	77	Smoke detection with local and control room alarms. Note that numerous detectors are located directly above the penetration wireways in this fire zone.	Fire extinguishers and hose stations are available in adjacent fire zones.
C	78	Smoke detection with local and control room alarms. Note that numerous detectors are located directly above the penetration wireways in this fire zone.	Fire extinguishers and hose stations are available in adjacent fire zones.

FACILITY NAME (1)	DOCKET	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL	REVISION	
ST LUCIE UNIT 1	05000335	98	-- 005 --	0	9 OF 9

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

Figure 1