

CATEGORY 1

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 9802250239 DOC. DATE: 98/02/19 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.
 RECIPIENT NAME RECIPIENT AFFILIATION

SUBJECT: LER 98-004-00: on 980121, emergency lighting outside App R design bases occurred. Caused by cognitive personnel error during translation of App R section III. Procedures ONOP 1 & 2 ONP-100.01 were issued for use on 980206.W/980219 ltr.

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 TITLE: 50.73/50.9 Licensee Event Report (LER), Incident Rpt, etc.

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	NOAC POORE, W.	1			1	NOAC QUEENER, DS	1			1	
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February 19, 1998

L-98-051
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: 98-004
Date of Event: January 21, 1998
Emergency Lighting 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

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PDR ADOCK 05000335
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NRC FORM 366 (4-95) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3160-0104 EXPIRES 04/30/98

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: 60.0 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 (3160-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1) ST LUCIE UNIT 1	DOCKET NUMBER (2) 05000335	PAGE (3) 1 OF 7
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TITLE (4)
Emergency Lighting 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
1	21	98	98	004	0	2	19	98	ST LUCIE UNIT 2	05000389
									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)						
POWER LEVEL (10) 100	<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(2)(v)	<input type="checkbox"/> 50.73(a)(2)(i)	<input type="checkbox"/> 50.73(a)(2)(viii)			
	<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input checked="" type="checkbox"/> 50.73(a)(2)(ii)	<input type="checkbox"/> 50.73(a)(2)(x)			
	<input type="checkbox"/> 20.2203(a)(2)(i)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(iii)	73.71			
	<input type="checkbox"/> 20.2203(a)(2)(iii)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.73(a)(2)(iv)	<input type="checkbox"/> OTHER	Specify in Abstract below or in NRC Form 366A		
	<input type="checkbox"/> 20.2203(a)(2)(iii)	<input type="checkbox"/> 50.36(c)(1)	<input type="checkbox"/> 50.73(a)(2)(v)				
<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(vii)					

LICENSEE CONTACT FOR THIS LER (12)

NAME K. W. Frehafer	TELEPHONE NUMBER (include Area Code) (561) 468-4284
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ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On January 21, 1998, Units 1 and 2 were in Mode 1 at 100 percent reactor power. While utility personnel were performing an extensive plant fire protection compliance analysis, FPL determined that eight-hour battery backed emergency lighting units required for Appendix R alternate shutdown were not provided for selected alternate shutdown manual action areas, and a one hour ENS phone call was made.

The apparent cause of this event was cognitive personnel error during the translation of Appendix R Section III.J requirements into the St. Lucie emergency lighting design and procedures.

Interim corrective actions include the use of existing emergency diesel generator backed lighting fixtures that were evaluated to provide adequate lighting, and the proceduralized use of battery powered lights staged in selected areas of the site. Long term corrective actions include review and update of the safe shutdown analyses for manual actions and emergency lighting enhancements, and providing the deficient areas identified with emergency lighting that meets the requirements of Appendix R, Section III.J.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL	REVISION	
ST LUCIE UNIT 1	05000335	98	004	0	2 OF 7

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

DESCRIPTION OF THE EVENT

On January 21, 1998, Units 1 and 2 were in Mode 1 at 100 percent reactor power. Utility personnel were performing an extensive plant Fire Protection compliance analysis. While reviewing the Unit 1 and 2 Off-Normal Operating Procedures (ONOPs) for Control Room Inaccessibility, ONOP 1 and 2-0030135, "Control Room Inaccessibility," FPL determined that eight-hour battery backed emergency lighting units [EIS:FH:LF] required for Appendix R alternate shutdown were not provided for selected alternate shutdown manual actions. The subject procedures provide the operating instructions to safely shut down the affected unit in the event of a control room or cable spreading room fire (i.e., alternate shutdown).

As stated in both the Unit 1 and Unit 2 FSARs, Appendix 9.5A, permanently installed eight-hour emergency lighting is to be provided in areas needed for manual operation of alternate and safe shutdown (hot standby) equipment and the access/egress routes thereto. Appendix R Section III.J requirements are less stringent, and do not preclude the use of portable eight-hour emergency lighting. However, contrary to Appendix R Section III.J requirements, FPL identified some manual actions areas and access/egress routes thereto that are not provided with either permanent or portable eight-hour emergency lighting. The NRC ENS notification required by 10 CFR 50.72 was completed on January 21, 1998.

In accordance with Section III.L of Appendix R, procedures shall be in effect to implement this capability. Specific discrepancies identified from the procedure reviews are as follows:

Unit 1 ONOP 1-0030135

- 1) Appendix D, Steps 1 and 2, requires that the normal/isolate switches for Power Operated Relief Valve (PORV) V1402 and V1404 be placed in the 'ISOLATE' position. These manual actions take place in the A and B electrical penetration rooms. However, there are no installed eight-hour battery powered lighting units in either room, or the proceduralized use of portable eight-hour emergency lighting, as required by Section III.J.
- 2) There are several outdoor manual actions identified in the procedure that do not have Appendix R emergency lighting. For example, Appendix B, Step 1, requires manual actions at the turbine front standard. Appendix J requires local manual operation of the atmospheric dump valves which are located on the mezzanine level of the A and B steam trestles.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL	REVISION	
ST LUCIE UNIT 1	05000335	98	004	0	3 OF 7

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

DESCRIPTION OF THE EVENT (cont'd)

Unit 2 ONOP 2-0030135

- 1) There are several outdoor manual actions identified in the procedure that do not have Appendix R emergency lighting. For example, Steps 7.2.11, 7.2.12 and 7.2.13 require manual actions in the steam trestle and Appendix B, Step 1, requires manual actions at the turbine front standard.

FPL determined that existing emergency lighting fixtures located within the affected areas are powered from A and B train emergency diesel generators, and provide adequate lighting for the performance of the manual actions. Additional battery powered lights are staged at the entrance to affected areas as compensatory measures, and no operability concern exists for continued plant operation.

CAUSE OF THE EVENT

The cause of this event was cognitive personnel error during the translation of Appendix R Section III.J requirements into the St. Lucie emergency lighting design and procedures. Areas in which manual operation of alternate and safe shutdown (hot standby) equipment is required, and the access/egress routes thereto, are required to have emergency lighting backed by an eight-hour battery power supply. However, some manual action areas or access/egress routes were not provided with either fixed eight-hour battery backed emergency lights, or the proceduralized use of portable eight-hour battery backed emergency lights. A contributing factor to this event was that the St. Lucie Safe Shutdown Analysis (SSA), which analyzed the effect of postulated fires on the ability to safely shutdown the unit, was deficient in that compensatory manual actions were not clearly described in the document.

ANALYSIS OF THE EVENT

This condition has been determined to be reportable under 10 CFR 50.73(a)(2)(ii), as a condition resulting in the nuclear power plant being operated outside its Appendix R design basis. As stated in both the Unit 1 and Unit 2 FSARs, Appendix 9.5A, permanently installed eight-hour emergency lighting is to be provided in areas needed for manual operation of alternate and safe shutdown (hot standby) equipment and the access/egress routes thereto. Appendix R requirements are less stringent, and do not preclude the use of portable eight-hour emergency lighting. However, contrary to Appendix R Section III.J requirements, FPL identified some manual actions areas and access/egress routes thereto that are not provided with either permanent or portable eight-hour emergency lighting.



LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL	REVISION	
ST LUCIE UNIT 1	05000335	98	004	0	4 OF 7

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

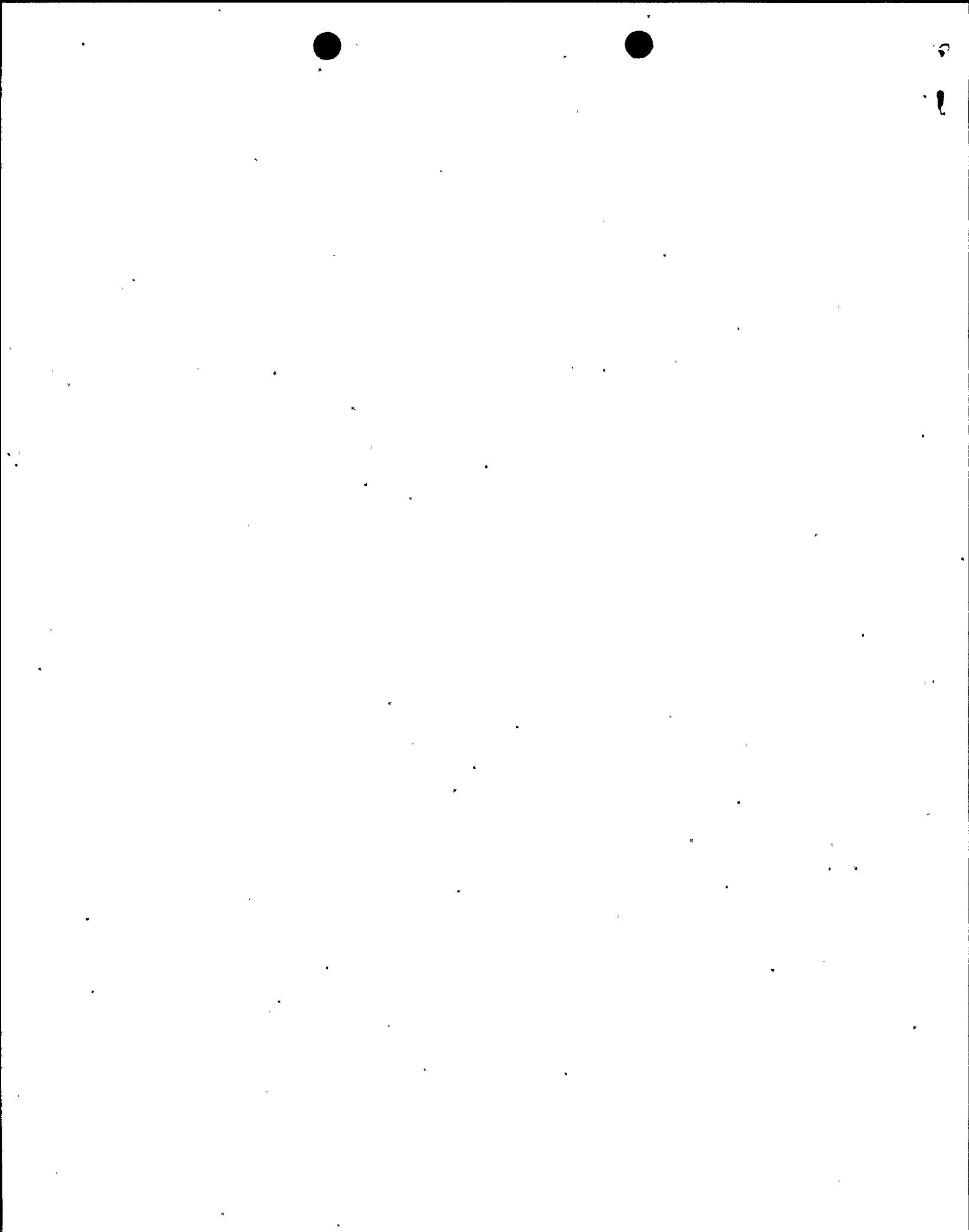
ANALYSIS OF THE EVENT (cont'd)

Item III.J of Appendix R (Emergency Lighting) requires that emergency lighting units with at least an eight-hour battery power supply be provided in all areas needed for operation of safe shutdown equipment and in access and egress routes thereto. For Unit 1, FSAR Appendix 9.5A delineates specific conformance to Appendix R. Table 2.5 indicates that conformance to Item III.J has been met with the use of permanently installed emergency lighting fixtures. The table also indicates that dedicated portable emergency lighting is available for containment access and for selected cold shutdown operations. Section 3.7 of the Unit 1 FSAR is consistent with Table 2.5. However, Section 3.7 also states that lighting is provided in areas needed for manual operation of alternate and safe shutdown (hot standby) equipment. For Unit 2, FSAR Appendix 9.5A delineates specific conformance to Appendix R. Table 2.5 indicates that conformance to Item III.J has been met with the use of permanently installed emergency lighting fixtures. The table also indicates that dedicated portable emergency lighting is available for containment access and for selected cold shutdown operations. Section 3.7 of the Unit 2 FSAR is consistent with Table 2.5, similar to Unit 1.

ASSESSMENT OF SAFETY SIGNIFICANCE

The Unit 1 and 2 cable spreading rooms are currently under a pre-existing compensatory 30 minute roving fire watch. In addition, both cable spreading rooms are equipped with automatic fire detection and fire suppression systems. The enhanced roving fire watches and the fire protection features minimize the potential for a fire that would develop beyond the incipient stages before detection and require alternate shutdown. Based on the plant design and compensatory actions currently in place, the potential for a control room or cable spreading room fire are considered significantly small and would not affect alternate shutdown capability.

In the unlikely event a fire did occur in the control room or cable spreading room, a review of the Unit 1 and 2 control room inaccessibility procedures was performed to determine what the effect would be with the lack of 8 hour battery backed emergency lighting. A comparison of the required manual actions versus available emergency lighting was performed to determine operability. The following summary of each procedure is provided below.



LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL	REVISION	
ST LUCIE UNIT 1	05000335	98	004	0	5 OF 7

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

ASSESSMENT OF SAFETY SIGNIFICANCE (cont'd)

Unit 1 Procedure ONOP 1-0030135

Upon completion of an initial review of the subject procedure, the manual actions which require a review for Appendix R emergency lighting can be grouped into either indoor actions (i.e. Reactor Auxiliary Building (RAB)) or outdoor actions (i.e. turbine building, steam trestles, RAB roof, etc.). For the indoor areas, in addition to the dedicated Appendix R emergency lights, 4 Emergency Portable Lantern Storage lockers (EPLS), each containing 4 portable lanterns, are available on each elevation (-0.5, 19.5 and 43') of the RAB. As shown on plant drawings, these lights can be utilized for access/egress and the performance of manual actions within the indoor areas. Also, as stated in Section 9.5.3 of the FSAR, normal/emergency (N/E) AC lighting is available for indoor and outdoor areas. The N/E lighting consists of 2 redundant and physically separate (A and B train) lighting systems which are backed by the emergency diesel generators.

The critical indoor manual action lacking dedicated emergency lighting is the Appendix D, Steps 1 and 2, action of placing the PORV isolate switches in the 'ISOLATE' position. Isolating the PORV switches is required to prevent spurious opening of the PORVs for fires in the control room or cable spreading room. The manual actions are taken in the A and B electrical penetration rooms which are located in the RAB 19.5' level. The required manual action is a simple action of operating a switch. No special access or tools are required. Diesel backed N/E lighting from both the A and B trains is available in each room. Also, there are 4 portable emergency lanterns in locker #3 (EPLS-Locker #3) located in the AB switchgear room for use in the fire areas associated with the isolate switches (Fire Areas A and C). An additional portable lantern locker is also available at the entrance to containment (EPLS-Locker #1). This locker is approximately 20' from the entrance to the electrical penetration rooms. Emergency lighting for access and egress within the RAB to these lockers is provided. Although portable lighting is available, this condition is not considered optimal as there is currently no procedural guidance for the specific action to obtain the portable lights. In addition, having to go to the AB switchgear room to obtain the portable lights does not yield the most direct route to the electrical penetration rooms for the PORV manual action.

The actions to be performed outside the control room in outdoor areas are either contingency actions (Step 7.1.2 and Appendix B Step 1 - tripping the turbine at the front standard, Step 7.1.6 - closing manual steam generator blowdown isolation valves, Step 7.2.11 - locally closing the Main Steam Isolation Valves (MSIVs) or a longer term manual action required for plant cooldown (Appendix J - local Atmospheric Dump Valve (ADV) operation)). For these outdoor manual actions, emergency power backed N/E lighting is available to general access/egress walkways. Tripping the turbine at the front standard and isolation of blowdown on the RAB

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET	LER NUMBER (8)			PAGE (3)
		YEAR	SEQUENTIAL	REVISION	
ST LUCIE UNIT 1	05000335	98	004	0	6 OF 7

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

ASSESSMENT OF SAFETY SIGNIFICANCE (cont'd)

roof are relatively simple contingency actions that likely could be accommodated with the current available level of N/E lighting. Access/egress is also provided by N/E lights. N/E lights are also available for access/egress to the steam trestle and redundant N/E lights are available in the steam trestles themselves. Portable emergency lanterns could be utilized in the steam trestles to perform local isolation of the MSIVs and the longer term action of locally operating the ADVs to accommodate plant cooldown.

Unit 2 Procedure ONOP 2-0030135

Upon completion of an initial review of the subject procedure, the manual actions which require a review for Appendix R emergency lighting outside the control room are performed in outdoor areas. As stated in Section 9.5.3 of the FSAR, normal/emergency (N/E) AC lighting is available for indoor and outdoor areas. The N/E lighting consists of 2 redundant and physically separate (A and B train) systems which are backed by the emergency diesel generators.

The actions to be performed outside the control room are contingency actions (Step 7.1.2 and Appendix B Step 1 - tripping the turbine at the front standard, Step 7.1.6 - closing manual steam generator blowdown isolation valves, Step 7.2.11 - locally closing the MSIVs). For these outdoor manual actions, emergency power backed N/E lighting is available to illuminate access/egress walkways. Tripping the turbine at the front standard and isolation of blowdown on the RAB roof are relatively simple contingency actions that likely could be accommodated with the current available level of N/E lighting. Access/egress is also provided by N/E lights. N/E lights are also available for access/egress to the steam trestle and redundant N/E lights are available in the steam trestles themselves. Portable emergency lanterns could be utilized in the steam trestles to perform the action of locally isolating the MSIVs.

As discussed above, the available lighting is considered adequate for the performance of the necessary manual actions, and both St. Lucie Units 1 and 2 are considered operable. To further enhance operability, several short term compensatory actions were implemented as discussed below.



LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL	REVISION	
ST LUCIE UNIT 1	05000335	98	004	0	7 OF 7

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

CORRECTIVE ACTIONS

1. As an interim measure, portable battery backed lights have been positioned at locations to support manual actions in areas where no fixed lights are located and portable light lockers are not located nearby. Procedures ONOP 1 and 2-0030135, "Control Room Inaccessibility," and procedures 1 and 2 ONP-100.01, "Response to Fire," were revised to specify the existence, location, and use of the portable lights in areas where no fixed battery backed emergency lighting is provided. Procedures ONOP 1 and 2-0030135 were issued for use on January 30, 1998. Procedures 1 and 2 ONP-100.01 were issued for use on February 6, 1998.
2. FPL will complete a detailed line-by-line evaluation of the current plant control room inaccessibility and general response to fire procedures to identify any SSA manual actions which require enhanced Appendix R emergency lighting. Upon completion of the SSA reviews for manual action clarifications, the emergency light requirement evaluation will be finalized.
3. The deficient areas identified are to be supplemented by emergency lighting that meets the requirements of Appendix R, Section III.J.

ADDITIONAL INFORMATION

Failed Components Identified:

None

Past Similar Events:

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.

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.

