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FPL
FLORIDA POWER & LIGHT COMPANY

March 14, 1984
L-84-70

Mr. James P. O'Reilly
Regional Administrator, Region II
U. S. Nuclear Regulatory Commission
101 Marietta Street, Suite 2900
Atlanta, Georgia 30303

Dear Mr. O'Reilly:

Re: St. Lucie Unit No. 2
Docket No. 50-389
Inspection Report 84-01

Florida Power & Light Company has reviewed Inspection Report 84-01 regarding Fire Protection and Prevention, in which supplemental responses to three of the findings originally identified in Inspection Report 83-57 were requested.

Attached are these three Inspection Report 83-57 findings with our original responses, the Inspection Report 84-01 requests for supplemental responses, and our supplemental responses.

Very truly yours,

J. W. Williams, Jr.
Vice President
Nuclear Energy Department

JWW/RJS/cab

Attachment

cc: Harold F. Reis, Esquire
PNS-LI-83-714

8404170072 840405
PDR ADOCK 05000335
Q PDR

ATTACHMENT

Re: St. Lucie Plant Unit 2
Docket No. 50-389
Inspection Report 84-01

Original
Finding A

FSAR Appendix 9.5.a Section 7.E.3.(c) states that the guidelines of NFPA-13 are followed in the design of the automatic sprinkler systems. NFPA-13, Sprinkler Systems, Section 4-1 states that the basic principle for proper sprinkler protection is to provide minimum interference to the discharge pattern from beams, bracing, trusses, piping, lighting fixtures, HVAC ducts and similar obstructions. Clearance between sprinklers and building structural members is required unless tests are performed to demonstrate that no obstructions are provided to the spray discharge.

Contrary to the above, the automatic sprinkler systems provided within the auxiliary building do not meet the intent of NFPA-13 due to excessive obstructions to the sprinkler spray discharge created by cable trays, HVAC ducts, building structural components, etc. which are located between the ceiling level sprinkler nozzles and the floor.

Original
Response:

1) FPL does not concur with the finding.

2) FPL has done a detailed engineering review of the automatic sprinkler systems provided within the auxiliary building to determine if they do in fact meet the intent of NFPA-13. We found that FPL does meet the intent of NFPA-13 because factors such as obstructions were compensated for by the basic overdesign of the sprinkler system. Where in general a sprinkler density of .1 to .2 gpm/sq. ft. is called for, we used a density of .3 gpm/sq. ft. Prior to, during, and after installation concurrence of a group of fire protection specialists was obtained. The group included an Ebasco Fire Protection Engineer, a Nuclear Mutual Limited Fire Protection Engineer (M & M Consultant), our Sprinkler Contractor (Grinnell), and our Corporate Fire Protection Insurance Representative.

Report 84-01

"The licensee is to request an official code interpretation as to the maximum obstruction permitted to the water discharge from sprinkler systems."

Supplemental Information

FPL is in the process of requesting a formal interpretation of the St. Lucie Unit 2 Sprinkler Design relating to obstructions as being in compliance with NFPA-13. A copy of the request to NFPA will be sent to the NRC. FPL will inform the NRC of the results of this interpretation. A response will probably be obtained from the NFPA by September, 1984. FPL will respond further after the results of the NFPA interpretation are obtained.

Original
Finding B

FSAR Appendix 9.5A Section 7.E.1(a) states that the guidelines of NFPA-72D are utilized in the design of the fire detection system. NFPA-72D and NFPA-72D (1974 Edition), Proprietary Protective Signaling Systems, Section 3331 states that fire detection equipment shall be located on the ceiling or on the side walls near the ceiling and that all portions of the protected area shall be provided with sufficient detection equipment.

Contrary to the above, smoke detection units are not installed at the ceiling level of battery room No. A, boric acid tank room and ECCS pump room and detection units are not provided for all of the pipe tunnel area.

Original
Response

Battery Room A

1. FPL does not concur with the finding.

2. FPL utilized the most recent NFPA code for the fire protection system design in Battery Room A. The addition of detectors in the A battery room was agreed to during the site NRC walkdown. The recent code for NFPA-72D refers to NFPA 72E for specifics on detector design. NFPA-72E for smoke detectors states "The location and spacing of smoke detectors shall result from an evaluation based on engineering judgement supplemented by the guidelines detailed in this standard." Since the only source of combustion in this room is the battery, a detector placed over the battery was determined to provide maximum protection to the battery.

Boric Acid Tank Room

1. FPL concurs with the finding.

2. The detectors are mounted below the ceiling.

3. The detectors will be moved to the ceiling.

4. FPL is conducting a re-review of Appendix R commitments and their implementation.

5. Full compliance will be achieved by June 30, 1984.

Original
Response

ECCS Pump Room

1. FPL does not concur with the finding.

2. The design of fire detection in the ECCS pump room originated at St. Lucie Unit 1. The NRC letter dated November 24, 1980 listed the open items for St. Lucie Unit 1. Item 3.12.7 requested fire detection for the LPSI, HPSI, and containment spray pumps. FPL letter L-81-48 dated January 11, 1981 stated the FPL response for this open item as follows:

   "Automatic smoke detectors connected to the main fire alarm system in the control room will be provided for the LPSI, HPSI and Containment Spray Pump areas. Early warning detectors (ionization type) are to be installed in close proximity to the pumps to detect fires in the incipient stage. The fire detection design was performed in accordance with plant design criteria and utilizes components and materials similar to the original design. Both A and B zones were brought into the subject areas which will ensure redundant detection in satety-related areas in accordance with the original system design philosophy and FSAR Section 9.5.1"

   This position was accepted by the NRC in a letter dated January 14, 1983. The design criteria for PSL-2 is the same as that which was accepted by the NRC on PSL-1. PSL-1 and PSL-2 are of duplicate design.

Pipe Tunnel Area

1. FPL does not concur with the finding.

2. The section of the NFPA code which deals with location and spacing of detectors, NFPA-72E, reads as follows: "The location and spacing of smoke detectors shall result from an evaluation based on engineering judgement supplemented by the guidelines detailed in this standard." The pipe tunnel area contains negligible combustibles and is in an open area covering two stories of the reactor auxiliary building. Due to the low combustible loading and ventilation flow, the existing detectors were judged as adequate for this fire zone.

Report 84-01

"The licensee is to provide a supplemental response to their November 23, 1983 letter on this deviation."

Supplemental Information

Battery Room A

FPL utilized the most recent NFPA code for the fire protection system design in Battery Room A. The addition of detectors in the A battery room was agreed to during the site NRC walkdown. The recent code for NFPA-72D refers to NFPA 72E for specifics on detector design. NFPA 72E for smoke detectors states "The location and spacing of smoke dectors shall result from an evaluation based on engineering judgement supplemented by the guidelines detailed in this standard."

A detector placed over the battery was determined to provide maximum protection to the battery. This was determined based on the following:

1) The only essential equipment to be protected in the room is the battery.

2) Very low in-situ combustible loadings as follows:

Source	Quantity	(Btu)	(Btu/sq ft)
Cable Insulation	Negligible		
Oils	Negligible		
Others	Negligible*		
Fan Motor Grease	1 lb	18.5×10^3	53
	Totals	18.5×10^3	53

*Battery casing is made of plastic which does not support combustion.

3) The concentrated combustible loadings are as follows:

Source	Quantity	(Btu)	(Btu/sq ft)
Fan Motor Grease	1 lb	18.5×10^3	7×10^3

Boric Acid Tank Room

FPL states concurrence with the finding in letter L-83-596 dated December 20, 1983. No supplemental information is required.

ECCS Pump Room

The design of fire detection in the ECCS pump room originated at St. Lucie Unit 1. The NRC letter dated November 24, 1980 listed the open items for St. Lucie Unit 1. Item 3.12.7 requested fire detection for the LPSI, HPSI, and containment spray pumps. FPL letter L-81-48 dated January 11, 1981 stated the FPL response for this open item as follows:

" Automatic smoke detectors connected to the main fire alarm system in the control room will be provided for the LPSI, HPSI and Containment Spray Pump areas. Early warning detectors (ionization type) are to be installled in close proximity to the pumps to detect fires in the incipient stage. The fire detection design was performed in accordance with plant design criteria and utilizes components and materials similar to the original design. Both A and B zones were brought into the subject areas which will ensure redundant detection in safety-related areas in accordance with the original system design philosophy and FSAR Section 9.5.1"

This position was accepted by the NRC in a letter dated January 14, 1983. The design criteria for PSL-2 is the same as that which was accepted by the NRC on PSL 1.

In determining the design, the following combustible loading was considered:

ECCS Room A

Source	Quantity	(Btu)	(Btu/sq ft)
Cable Insulation	Negligible	--	--
Oils:			
LPSI & HPSI 2A Pump	14 gal	1.96×10^6	$.98 \times 10^3$
CS 2A Pump	7 gal	$.98 \times 10^6$	$.49 \times 10^3$
Reactor Drain 2A & 2B	1 gal	$.14 \times 10^6$	$.07 \times 10^3$
Sump Pump 2A & 2B	2 gal	$.28 \times 10^6$	$.14 \times 10^3$
Others:			
Grease (15) M.O. Valves	135 lbs.	$2.5.10^6$	1.28×10^3
Neoprene seals	125 lbs	2.5×10^6	1.28×10^3
	TOTALS	8.4×10^6	4.24×10^3

ECCS Room B

Source	Quantity	(Btu)	(Btu sq ft)
Cable Insulation	Negligible		
Oils:			
HPSI & LPSI 2B Pumps	14 gal	1.96×10^6	$.98 \times 10^3$
CS 2B Pump	7 gal	$.98 \times 10^6$	$.49 \times 10^3$
Sump Pumps 2B1 & 2B2	2 gal	$.28 \times 10^6$	$.14 \times 10^3$
Others:			
Grease (15) M.O. Valves	135 lbs	2.50×10^6	1.28×10^3
Neoprene boot seals	125 lbs.	2.50×10^6	1.28×10^3
	TOTALS	8.22×10^6	4.1×10^3

The following concentrated combustible loading for essential equipment was considered:

ECCS Room A

Source	Quantity	(Btu)	(Btu sq ft)
Lube Oil LPSI Pump	7 gal	$.98 \times 10^6$	7×10^3

ECCS Room B

Source	Quantity	(Btu)	(Btu sq ft)
Lube Oil LPSI Pump 2B	7 gal	$.98 \times 10^6$	7×10^3

Pipe Tunnel Area

The section of the NFPA code which deals with location and spacing of detectors, NFPA-72E, reads as follows: "The location and spacing of smoke detectors shall result from an evaluation based on engineering judgement supplemented by the guidelines detailed in this standard." The pipe tunnel area contains negligible combustibles and is in an open area covering two stories of the reactor auxiliary building. Due to the low combustible loading and ventilation flow the existing detectors were judged as adequate for this fire zone.

The following combustible loading was used in determining the design:

Source	Quantity	(Btu)	(Btu/sq ft)
Cable Insulation	Negligible		
Oils	Negligible		
Others			
Grease	135 lbs	2.5×10^6	1.4×10^3
(15) M.O. Valves			
	Totals	2.5×10^6	1.4×10^3

The following concentrated combustible loading was used in determining the design:

Source	Quantity	(Btu)	(Btu/sq ft)
M.O.Valve	9 lbs.	1.66×10^5	7×10^3

Original
Finding E

FSAR Appendix 9.5A Section 7.E.3.(d) and responses to FSAR Questions 280.7 state that the interior fire hose systems are designed to the guidelines of NFPA-14.

Contrary to the above, the interior fire hose systems for the reactor and fuel handling buildings do not meet NFPA-14, Standpipe and Hose Systems, in that the systems are supplied by the primary water system which is inadequate to meet the minimum volume and pressure requirements of NFPA-14. NFPA-14 Section 54 requires a supply sufficient to maintain a residual pressure of 65P psi at the top most outlet with 100 gpm flowing.

Original
Response

1) FPL does not concur with the finding.

2) The intent of the response in 280.7 was to state that we comply with NFPA-14 with the exception of the fire hose systems for the reactor and fuel handling building. It should be noted that evaluations have been performed to show that the hose stations inside containment are approximately equivalent to NFPA-14 and provides adequate flow and pressure for the nozzles used in containment and the FHB.

Report 84-01

"The licensee is to revise their November 23, 1983, response on this deviation....The existing fire hose systems are to be evaluated by NRR for acceptance."

Supplemental Information

The hose stations at strategic locations in the Reactor Containment Building, and subsequently in the Fuel Handling Building, are supplied by the Primary Water System as agreed upon with the NRC at the site fire protection audit conducted during the week of June 1, 1982.

The Primary Water System was not originally designed to the criteria of NFPA 14. However, we have hydraulically analyzed the Primary Water System and determined the pressure available at any hose nozzle inlet over a range of flow including the friction losses in 100 ft of 1½ inch lined fire hose. Since straight stream type nozzles are considered inappropriate for the electrical equipment in the areas protected, fog type nozzles are used. The nozzle selected has a listed rating of 75 GPM and 22 ft effective spray pattern at 50 psi nozzle inlet pressure. The Primary Water System does provide this flow and pressure.