

September 1, 1995

Mr. J. H. Goldberg
President - Nuclear Division
Florida Power and Light Company
P.O. Box 14000
Juno Beach, Florida 33408-0420

SUBJECT: ST. LUCIE UNIT 2 - ISSUANCE OF AMENDMENT RE: EMERGENCY BUS
UNDERVOLTAGE RELAYS (TAC NO. M91696)

The Commission has issued the enclosed Amendment No. 79 to Facility Operating License No. NPF-16 for the St. Lucie Plant, Unit No.2. This amendment consists of changes to the Technical Specifications in response to your application dated February 27, 1995.

This amendment will change Table 3.3-3 and 3.3-4 to accommodate an improved coincidence logic and relay replacement for the 4.16 KV Loss of Voltage Relays. Actions required for certain trip units with the number of operable channels one less than the total number of channels will also be changed. In addition, the format used to state the time delay for the 4.16 KV Degraded Voltage Trip unit will be revised.

A copy of the Safety Evaluation is also enclosed. The Notice of Issuance will be included in the Commission's biweekly Federal Register notice.

Sincerely,

Original signed by:

Jan A. Norris, Senior Project Manager
Project Directorate II-1
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Docket No. 50-389

Enclosures:

1. Amendment No. 79 to NPF-16
2. Safety Evaluation

cc w/enclosures:

See next page

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COPY	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	

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Mr. J. H. Goldberg
Florida Power and Light Company

St. Lucie Plant

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AMENDMENT NO. 79 TO FACILITY OPERATING LICENSE NO. NPF-16 - ST. LUCIE, UNIT 2

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

FLORIDA POWER & LIGHT COMPANY

ORLANDO UTILITIES COMMISSION OF

THE CITY OF ORLANDO, FLORIDA

AND

FLORIDA MUNICIPAL POWER AGENCY

DOCKET NO. 50-389

ST. LUCIE PLANT UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 79
License No. NPF-16

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Florida Power & Light Company, et al. (the licensee), dated February 27, 1995, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's rules and regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, Facility Operating License No. NPF-16 is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and by amending paragraph 2.C.2 to read as follows:

2. Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 79, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance and shall be implemented within 60 days.

FOR THE NUCLEAR REGULATORY COMMISSION



David B. Matthews, Director
Project Directorate II-1
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: September 1, 1995

ATTACHMENT TO LICENSE AMENDMENT NO. 79
TO FACILITY OPERATING LICENSE NO. NPF-16
DOCKET NO. 50-389

Replace the following pages of the Appendix "A" Technical Specifications with the enclosed pages. The revised pages are identified by amendment number and contain vertical lines indicating the area of change. The corresponding overleaf pages are also provided to maintain document completeness.

Remove Pages

3/4 3-14

3/4 3-18

Insert Pages

3/4 3-14

3/4 3-18

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

<u>FUNCTIONAL UNIT</u>	<u>TOTAL NO. OF CHANNELS</u>	<u>CHANNELS TO TRIP</u>	<u>MINIMUM CHANNELS OPERABLE</u>	<u>APPLICABLE MODES</u>	<u>ACTION</u>
4. MAIN STEAM LINE ISOLATION (MSIS)					
a. Manual (Trip Buttons)	2	1	2	1, 2, 3	16
b. Steam Generator Pressure - Low	4/steam generator	2/steam generator	3/steam generator	1, 2, 3(c)	13*, 14
c. Containment Pressure - High	4	2	3	1, 2, 3	13*, 14
d. Automatic Actuation Logic	2	1	2	1, 2, 3	12
5. CONTAINMENT SUMP RECIRCULATION (RAS)					
a. Manual RAS (Trip Buttons)	2	1	2	1, 2, 3, 4	12
b. Refueling Water Storage Tank - Low	4	2	3	1, 2, 3	17
c. Automatic Actuation Logic	2	1	2	1, 2, 3	12

ST. LUCIE - UNIT 2

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Amendment No. 60

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
6. LOSS OF POWER (LOV)					
a. (1) 4.16 kV Emergency Bus Undervoltage (Loss of Voltage)	2/Bus	2/Bus	1/Bus	1, 2, 3	17
(2) 480 V Emergency Bus Undervoltage (Loss of Voltage)	3/Bus	2/Bus	2/Bus	1, 2, 3	17
b. (1) 4.16 kV Emergency Bus Undervoltage (Degraded Voltage)	3/Bus	2/Bus	2/Bus	1, 2, 3	17
(2) 480 V Emergency Bus Undervoltage (Degraded Voltage)	3/Bus	2/Bus	2/Bus	1, 2, 3	17
7. AUXILIARY FEEDWATER (AFAS)					
a. Manual (Trip Buttons)	4/SG	2/SG	4/SG	1, 2, 3	15
b. Automatic Actuation Logic	4/SG	2/SG	3/SG	1, 2, 3	12
c. SG Level (2A/2B) - Low	4/SG	2/SG	3/SG	1, 2, 3	13*, 14
8. AUXILIARY FEEDWATER ISOLATION					
a. SG 2A - SG 2B Differential Pressure	4/SG	2/SG	3/SG	1, 2, 3	13*, 14
b. Feedwater Header SG 2A - SG 2B Differential Pressure	4/SG	2/SG	3/SG	1, 2, 3	13*, 14

TABLE 3.3-4

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION TRIP VALUES

<u>FUNCTIONAL UNIT</u>	<u>TRIP SETPOINT</u>	<u>ALLOWABLE VALUES</u>
1. SAFETY INJECTION (SIAS)		
a. Manual (Trip Buttons)	Not Applicable	Not Applicable
b. Containment Pressure - High	≤ 3.5 psig	≤ 3.6 psig
c. Pressurizer Pressure - Low	≥ 1736 psia	≥ 1728 psia
d. Automatic Actuation Logic	Not Applicable	Not Applicable
2. CONTAINMENT SPRAY (CSAS)		
a. Manual (Trip Buttons)	Not Applicable	Not Applicable
b. Containment Pressure -- High-High	≤ 5.40 psig	≤ 5.50 psig
c. Automatic Actuation Logic	Not Applicable	Not Applicable
3. CONTAINMENT ISOLATION (CIAS)		
a. Manual CIAS (Trip Buttons)	Not Applicable	Not Applicable
b. Safety Injection (SIAS)	Not Applicable	Not Applicable
c. Containment Pressure - High	≤ 3.5 psig	≤ 3.6 psig
d. Containment Radiation - High	≤ 10 R/hr	≤ 10 R/hr
e. Automatic Actuation Logic	Not Applicable	Not Applicable
4. MAIN STEAM LINE ISOLATION		
a. Manual (Trip Buttons)	Not Applicable	Not Applicable
b. Steam Generator Pressure - Low	≥ 600 psia	≥ 567 psia
c. Containment Pressure - High	≤ 3.5 psig	≤ 3.6 psig
d. Automatic Actuation Logic	Not Applicable	Not Applicable

ST. LUCIE - UNIT 2

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Amendment No. 8

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION TRIP VALUES

FUNCTIONAL UNIT		TRIP VALUE	ALLOWABLE VALUES
5.	CONTAINMENT SUMP RECIRCULATION (RAS)		
	a. Manual RAS (Trip Buttons)	Not Applicable	Not Applicable
	b. Refueling Water Storage Tank - Low	5.67 feet above tank bottom	4.62 feet to 6.24 feet above tank bottom
	c. Automatic Actuation Logic	Not Applicable	Not Applicable
6.	LOSS OF POWER		
	a. (1) 4.16 kV Emergency Bus Undervoltage (Loss of Voltage)	≥ 3120 volts	≥ 3120 volts
	(2) 480 V Emergency Bus Undervoltage (Loss of Voltage)	≥ 360 volts	≥ 360 volts
	b. (1) 4.16 kV Emergency Bus Undervoltage (Degraded Voltage)	≥ 3848 volts with < 10-second time delay	≥ 3848 volts with < 10-second time delay
	(2) 480 V Emergency Bus Undervoltage (Degraded Voltage)	≥ 432 volts	≥ 432 volts
7.	AUXILIARY FEEDWATER (AFAS)		
	a. Manual (Trip Buttons)	Not Applicable	Not Applicable
	b. Automatic Actuation Logic	Not Applicable	Not Applicable
	c. SG 2A & 2B Level Low	≥ 19.0%	≥ 18.0%
8.	AUXILIARY FEEDWATER ISOLATION		
	a. Steam Generator ΔP - High	≤ 275 psid	89.2 to 281 psid
	b. Feedwater Header ΔP - High	≤ 150.0 psid	56.0 to 157.5 psid



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 79

TO FACILITY OPERATING LICENSE NO. NPF-16

FLORIDA POWER AND LIGHT COMPANY, ET AL.

ST. LUCIE PLANT UNIT NO. 2

DOCKET NO. 50-389

1.0 BACKGROUND

In its letter of February 27, 1995, Florida Power & Light (licensee) proposed that the technical specification (TS) for the emergency bus undervoltage protection system at St. Lucie Unit 2 be revised. The proposed TS amendment pertains to the loss of voltage (LOV) and degraded grid voltage (DGV) sections of the undervoltage protection system, which are shown under Item 6, "Loss of Power," in Tables 3.3-3 and 3.3-4, under "Engineered Safety Features Actuation System Instrumentation." The licensee proposes to change (1) the total number of channels, required number of channels to trip, and the required actions for the LOV relays to accommodate an improved coincident trip logic and relay replacement in Table 3.3-3 and (2) the format used to state the time delay for the DGV relays in Table 3.3-4.

The licensee plans to make this change during refueling cycle 9, which is scheduled for September 1995.

2.0 EVALUATION

The undervoltage protection system monitors the voltages of the emergency buses and trips the incoming circuit breakers to the emergency buses if the undervoltage condition stays below the settings (i.e., trip voltage and time delay) of its LOV or DGV relays in order to prevent continuous operation of safety-related loads below the minimum voltages required for proper operation. Should an undervoltage condition occur, the relays will initiate separation of the emergency buses from the offsite power source and sequence load onto respective emergency diesel generators.

The undervoltage protection system at St. Lucie Unit 2 provides LOV and DGV protection in two emergency buses (4.16 kV and 480 V) in each train. Any one of these (four) emergency buses in either train can initiate a transfer from the offsite power source to the onsite emergency diesel generator power source. The undervoltage protection system is covered in the TS in Tables 3.3-3 and 3.3-4. Table 3.3-3 specifies the total number of channels, required number of channels to trip, minimum required channels operable, applicable plant operational modes, and action requirements if one channel becomes inoperable for both LOV and DGV relays. Table 3.3-4 specifies the minimum acceptable trip voltage value and the maximum acceptable time delays and the respective allowable values for both LOV and DGV relays.

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The staff has reviewed the proposed changes in Tables 3.3-3 and 3.3-4 of the TS. Its evaluation of each of the proposed changes is as follows:

Table 3.3-3, 6.a.(1), 4.16-kV Emergency Bus Undervoltage (Loss of Voltage)

For the 4.16-kV LOV relays in the above table, the licensee proposes that the total number of channels and required number of channels to trip be changed from "1/Bus" to "2/Bus" and the required action statement be changed from "12" to "17" when one of the operable channels becomes inoperable. The current LOV function is provided by a single (CV-2), electromechanical, inverse time voltage relay on each 4.16-kV emergency bus and transfers to the onsite power sources when the bus falls below its characteristic curve setpoint. Timing of the trip is inversely proportional to the voltage level. Because the existing 4.16-kV LOV relay (i.e., single channel) if tripped is vulnerable to a single relay failure or spurious voltage transient, the licensee plans to replace it with two solid-state relays. The licensee believes that the solid-state relays are more reliable than the electromechanical relays and easier to calibrate and maintain in the field. With installation of new solid-state relays, a change to the coincident trip logic is also possible and can also prevent spurious trips of the offsite power source. Thus, the licensee proposes to change the trip logic to coincident two-out-of-two-trip logic.

In addition, if one channel is found to be inoperable during plant operating modes (1, 2, 3), the current action 12 statement in Table 3.3-3 requires a plant shutdown if the inoperable channel cannot be restored to operable status within 48 hours. The licensee states this action is appropriate for the existing design of a single relay per bus. However, with the installation of new solid-state LOV relays that use the coincident trip logic, the licensee proposes an action 17 statement that allows plant operation to continue after the inoperable channel is placed in the tripped condition. The licensee also states that a similar replacement of the relays and their logic for the 4.16-kV LOV protection scheme has already been implemented at St. Lucie, Unit 1.

The staff has reviewed the proposed changes for the total number of channels and required number of channels to trip from "1/Bus" to "2/Bus" and the required action statement for the 4.16-kV LOV protection system. It finds that the proposed changes represent improvements to the LOV system, since they eliminate the present LOV trip vulnerability from a single relay failure or random voltage transient and make it easier to test and maintain the system as well as provide operational flexibility.

The staff concludes that the proposed change from "1/Bus" to "2/Bus" for the 4.16-kV LOV protection system is acceptable. With the design upgrade to solid-state relays, the staff also concludes that the change in the required action statement from "12" to "17" for one inoperable channel is acceptable.

Table 3.3-3, 6.a.(2), 480-V Emergency Bus Undervoltage (Loss of Voltage)

The licensee proposes that the total number of channels be changed from "2/Bus" to "3/Bus" and the required action be changed from "12" to "17" when one channel becomes inoperable. The licensee contends that Table 3.3-3 erroneously lists the total number of channels for the 480-V LOV function as "2/Bus" instead of "3/Bus." With this correction, Table 3.3-3 for the 480-V LOV channels coincides with the 480-V LOV relay configurations currently existing at St. Lucie Unit 2. On this basis, the licensee also contends that it can afford to change the required action statement from "12" to "17" if one channel is found to be inoperable during plant operational modes.

With regard to the change in the total number of channels for 480-V LOV relays from "2/Bus" to "3/Bus," the staff reviewed the current minimum operable channels required for the coincident logic scheme (i.e., two out of three). With three 480-V LOV relay channels, the staff finds that the LOV protection function can preserve plant operation with one channel in the tripped condition. Therefore, the proposed change of the required action statement from "12" to "17," when one of the channels becomes inoperable, is acceptable.

Table 3.3-4, 6.b.(1), 4.16-kV Emergency Bus Undervoltage (Degraded Voltage)

For a DGV condition coincident with a safety injection actuation signal, Table 3.3-4 lists the trip value for the 4.16-kV DGV relays as ≥ 3848 V with a 10-second time delay. The licensee proposes that "with a 10-second time delay" be changed to "with < 10-second time delay." The DGV relays are designed to initiate the disconnection of offsite power when the prescribed minimum acceptable trip voltage value and the maximum acceptable time delay limits (i.e., ≥ 3848 V and 10 seconds) are exceeded. Although the time delay establishes the existence of a sustained degraded voltage condition, it does not allow exceeding the maximum time delay that is assumed in the final safety analysis report (FSAR) accident analysis. The licensee asserts that the proposed TS changes only the format used for stating the time delay. This is to ensure that the 10-second time limit would not be exceeded and to allow optimizing the field settings to account for component and calibration equipment tolerances.

Because setting the time delays exactly at 10 seconds for the DGV relays is difficult, the licensee states that the proposed TS wording will allow the DGV time delay settings to account for tolerances for the relays and testing equipment without exceeding the 10-second time limit. In fact, these time delays are actually set at 9 seconds with allowed tolerances of ± 0.1 second in the field-controlled (engineering) drawings and their surveillances are performed every 18 months.

Because there is no change in the DGV allowed time delay of maximum of 10 seconds as used in the original accident analysis, and a similar TS format has been previously approved for St. Lucie Unit 1, the staff concludes that the proposed time delay format "with < 10-second time delay" for the 4.16-kV DGV relays is acceptable.

3.0 STATE CONSULTATION

Based upon the written notice of the proposed amendment, the Florida State official had no comments.

4.0 ENVIRONMENTAL CONSIDERATION

This amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration and there has been no public comment on such finding (60 FR 16187). Accordingly, this amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of this amendment.

5.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: P. Kang

Date: September 1, 1995