LICENSE AUTHORITY FILE COPY
August 26, 1991

DO NOT REMOVE

Docket Nos. 50-250
and 50-251

DISTRIBUTION
See attached sheet

Posted
amdt. 141 to DPR-41

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

Dear Mr. Goldberg:

SUBJECT: TURKEY POINT UNITS 3 AND 4 - ISSUANCE OF AMENDMENTS RE: REACTOR PROTECTION SYSTEM SETPOINTS (TAC NOS. 79402 AND 79403)

The Commission has issued the enclosed Amendment No. 146 to Facility Operating License No. DPR-31 and Amendment No. 141 to Facility Operating License No. DPR-41 for the Turkey Point Plant, Units Nos. 3 and 4, respectively. The amendments consist of changes to the Technical Specifications (TS) in response to your application transmitted by letter dated December 19, 1990, as supplemented April 24, June 3, and July 8, 1991.

These amendments revise TS Section 2.2, Limiting Safety Systems Settings, and Section 3/4.3.2, Engineered Safety Features Actuation System Instrumentation for implementation of the Westinghouse setpoint five-column methodology.

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)

Rajender Auluck, Sr. Project Manager
Project Directorate II-2
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Enclosures:
1. Amendment No. 146 to DPR-31
2. Amendment No. 141 to DPR-41
3. Safety Evaluation

cc w/enclosures:
See next page

OFC	:LA:PDII-2	:PE:PDII-2	:PM:PDII-2	:D:PDII-2	:OGC	:DET/RSB	:
NAME	:DMiller	:DDorman:kdj	:RAuluck	:HBerkow	:	:MCarus	:
DATE	:8/9/91	:8/9/91	:8/9/91	:8/9/91	:8/12/91	:8/9/91	:

OFFICIAL RECORD COPY
Document Name: TP 79402/03

cc:
Harold F. Reis, Esquire
Newman and Holtzinger, P.C.
1615 L Street, N.W.
Washington, DC 20036

Jack Shreve, Public Counsel
Office of the Public Counsel
c/o The Florida Legislature
111 West Madison Avenue, Room 812
Tallahassee, Florida 32399-1400

John T. Butler, Esquire
Steel, Hector and Davis
4000 Southeast Financial Center
Miami, Florida 33131-2398

Mr. Thomas F. Plunkett, Site
Vice President
Turkey Point Nuclear Plant
Florida Power and Light Company
P.O. Box 029100
Miami, Florida 33102

Joaquin Avino
County Manager of Metropolitan
Dade County
111 NW 1st Street, 29th Floor
Miami, Florida 33128

Senior Resident Inspector
Turkey Point Nuclear Generating Station
U.S. Nuclear Regulatory Commission
Post Office Box 1448
Homestead, Florida 33090

Mr. Jacob Daniel Nash
Office of Radiation Control
Department of Health and
Rehabilitative Services
1317 Winewood Blvd.
Tallahassee, Florida 32399-0700

Intergovernmental Coordination
and Review
Office of Planning & Budget
Executive Office of the Governor
The Capitol Building
Tallahassee, Florida 32301

Administrator
Department of Environmental
Regulation
Power Plant Siting Section
State of Florida
2600 Blair Stone Road
Tallahassee, Florida 32301

Regional Administrator, Region II
U.S. Nuclear Regulatory Commission
101 Marietta Street, N.W. Suite 2900
Atlanta, Georgia 30323

Attorney General
Department of Legal Affairs
The Capitol
Tallahassee, Florida 32304

Plant Manager
Turkey Point Nuclear Plant
Florida Power and Light Company
P.O. Box 029100
Miami, Florida 33102

Mr. R. E. Grazio
Director, Nuclear Licensing
Florida Power and Light Company
P.O. Box 14000
Juno Beach, Florida 33408-0420

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

FLORIDA POWER AND LIGHT COMPANY

DOCKET NO. 50-250

TURKEY POINT PLANT UNIT NO. 3

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 146
License No. DPR-31

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Florida Power and Light Company (the licensee) dated December 19, 1990, as supplemented April 24, June 3, and July 8, 1991, 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, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 3.B of Facility Operating License No. DPR-31 is hereby amended to read as follows:

(B) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 146 , are hereby incorporated in the license. The Environmental Protection Plan contained in Appendix B is hereby incorporated into the license. The licensee shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Herbert N. Berkow, Director
Project Directorate II-2
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: August 26, 1991

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

FLORIDA POWER AND LIGHT COMPANY

DOCKET NO. 50-251

TURKEY POINT PLANT UNIT NO. 4

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 141
License No. DPR-41

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Florida Power and Light Company (the licensee) dated December 19, 1990, as supplemented April 24, June 3, and July 8, 1991, 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, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 3.B of Facility Operating License No. DPR-41 is hereby amended to read as follows:

(B) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 141, are hereby incorporated in the license. The Environmental Protection Plan contained in Appendix B is hereby incorporated into the license. The licensee shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Herbert N. Berkow, Director
Project Directorate II-2
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: August 26, 1991

ATTACHMENT TO LICENSE AMENDMENT

AMENDMENT NO. 146 FACILITY OPERATING LICENSE NO. DPR-31

AMENDMENT NO. 141 FACILITY OPERATING LICENSE NO. DPR-41

DOCKET NOS. 50-250 AND 50-251

Revise Appendix A as follows:

Remove Pages	Insert Pages
2-4	2-4
2-5	2-5
2-6	2-6
2-8	2-8
2-9	2-9
2-10	2-10
3/4 3-23	3/4 3-23
3/4 3-24	3/4 3-24
3/4 3-25	3/4 3-25
3/4 3-26	3/4 3-26
3/4 3-27	3/4 3-27
3/4 3-30	3/4 3-30
3/4 3-31	3/4 3-31

TABLE 2.2-1

REACTOR TRIP SYSTEM INSTRUMENTATION TRIP SETPOINTS

FUNCTIONAL UNIT	ALLOWANCE (TA)	Z	S	TRIP SETPOINT	ALLOWABLE VALUE
1. Manual Reactor Trip	N.A	N.A	N.A	N.A.	N.A.
2. Power Range, Neutron Flux a. High Setpoint	7.5	4.56	0.0	≤109% of RTP**	≤112.0% of RTP**
b. Low Setpoint	8.3	4.56	0.0	≤25% of RTP**	≤28.0% of RTP**
3. Intermediate Range, Neutron Flux	13.5	8.41	0.0	≤25% of RTP**	≤31.0% of RTP**
4. Source Range, Neutron Flux	13.9	10.01	0.0	$\leq 10^5$ cps	$\leq 1.4 \times 10^5$ cps
5. Overtemperature ΔT	7.2	4.8	2.5#	See Note 1	See Note 2
6. Overpower ΔT	5.3	3.1	2.0	See Note 3	See Note 4
7. Pressurizer Pressure-Low	4.5	1.12	1.4	≥1835 psig	≥1817 psig
8. Pressurizer Pressure-High	5.5	1.12	1.4	≤2385 psig	≤2403 psig
9. Pressurizer Water Level-High	8.0	6.8	4.0	≤92% of instrument span	≤92.2% of instrument span
10. Reactor Coolant Flow-Low	4.6	2.7	0.8	>90% of loop design flow*	>88.7% of loop design flow*
11. Steam Generator Water Level Low-Low	5.0	2.33	1.9	≥15% of narrow range instrument span	≥13.2% of narrow range instrument span

*Loop design flow = 89,500 gpm
**RTP = Rated Thermal Power
#2.0% span for ΔT (RTDs) and 0.5% for pressurizer pressure

TABLE 2.2-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION TRIP SETPOINTS

FUNCTIONAL UNIT	ALLOWANCE (TA)	Z	S	TRIP SETPOINT	ALLOWABLE VALUE
12. Steam/Feedwater Flow Mismatch Coincident With	20.0	3.67	7.3##	Feed Flow ≤20% below steam flow	Feed Flow ≤23.9% below steam flow
Steam Generator Water Level-Low	5.0	2.33	1.9	≥15% of narrow range instrument span	≥13.2% of narrow range instrument span
13. Undervoltage - 4.16 kV Busses A and B	20.0	1.12	0.0	≥70% bus voltage	≥69% bus voltage
14. Underfrequency - Trip of Reactor Coolant Pump Breaker(s) Open	6.5	0.03	0.0	≥56.1 Hz	≥55.9 Hz
15. Turbine Trip					
a. Auto Stop Oil Pressure	2.6	1.0	0.0	≥45 psig	≥42 psig
b. Turbine Stop Valve Closure	N.A.	N.A.	N.A.	Fully Closed***	Fully Closed***
16. Safety Injection Input from ESF	N.A.	N.A.	N.A.	N.A.	N.A.
17. Reactor Trip System Interlocks					
a. Intermediate Range Neutron Flux, P-6	N.A.	N.A.	N.A.	Nominal 1×10^{-10} amp	$\geq 6.0 \times 10^{-11}$ amps

***Limit switch is set when Turbine Stop Valves are fully closed.

##1.7% span for steam line flow, 2.9% span for feedwater flow and 2.8% span for steam line pressure.

TABLE 2.2-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION TRIP SETPOINTS

FUNCTIONAL UNIT	ALLOWANCE (TA)	Z	S	TRIP SETPOINT	ALLOWABLE VALUE
b. Low Power Reactor Trips Block, P-7					
1) P-10 input	N.A.	N.A.	N.A.	Nominal 10% of RTP**	≤13.0% RTP**
2) Turbine First Stage Pressure	N.A.	N.A.	N.A.	Nominal 10% Turbine Power	≤13.0% Turbine Power
c. Power Range Neutron Flux, P-8	N.A.	N.A.	N.A.	Nominal 45% of RTP**	≤48.0% RTP**
d. Power Range Neutron Flux, P-10	N.A.	N.A.	N.A.	Nominal 10% of RTP**	≥7.0% RTP**
18. Reactor Coolant Pump Breaker Position Trip	N.A	N.A	N.A	N.A.	N.A.
19. Reactor Trip Breakers	N.A	N.A	N.A	N.A.	N.A.
20. Automatic Trip and Interlock Logic	N.A	N.A	N.A.	N.A.	N.A.

**RTP = RATED THERMAL POWER

NOTE 1: (Continued)

P' $\geq$ 2235 psig (Nominal RCS operating pressure);

S = Laplace transform operator, s^{-1};

and $f_1(\Delta I)$ is a function of the indicated difference between top and bottom detectors of the power-range neutron ion chambers; with gains to be selected based on measured instrument response during plant startup tests such that:

(1) For $q_t - q_b$ between - 14% and + 10%, $f_1(\Delta I) = 0$, where q_t and q_b are percent RATED THERMAL POWER in the top and bottom halves of the core respectively, and $q_t + q_b$ is total THERMAL POWER in percent of RATED THERMAL POWER;

(2) For each percent that the magnitude of $q_t - q_b$ exceeds - 14%, the ΔT Trip Setpoint shall be automatically reduced by 1.5% of its value at RATED THERMAL POWER; and

(3) For each percent that the magnitude of $q_t - q_b$ exceeds + 10%, the ΔT Trip Setpoint shall be automatically reduced by 1.5% of its value at RATED THERMAL POWER.

NOTE 2: The channels maximum trip setpoint shall not exceed its computed setpoint by more than 1.5% of instrument span.

NOTE 3: OVERPOWER ΔT

$$\Delta T \left\{\frac{1+\tau_1 S}{1+\tau_2 S}\right\}\left(\frac{1}{(1+\tau_3 S)}\right) \leq \Delta T_o \{K_4 - K_5 \left(\frac{\tau_7 S}{1+\tau_7 S}\right)\left(\frac{1}{(1+\tau_6 S)}\right) T - K_6 [T \left(\frac{1}{(1+\tau_6 S)}\right) - T''] - f_2 (\Delta I)\}$$

Where:

ΔT	=	As defined in Note 1,
$\frac{1+\tau_1 S}{1+\tau_2 S}$	=	As defined in Note 1,
$\frac{1}{1+\tau_3 S}$	=	As defined in Note 1,
ΔT_o	=	As defined in Note 1,
K_4	$\leq$	1.09,
K_5	$\geq$	0.02/°F for increasing average temperature and 0 for decreasing average temperature,
$\frac{\tau_7 S}{1+\tau_7 S}$	=	The function generated by the rate-lag compensator for T_{avg} dynamic compensation,
τ_7	=	Time constants utilized in the rate-lag compensator for T_{avg}, $\tau_7 \geq 10$ s,
$\frac{1}{1+\tau_6 S}$	=	As defined in Note 1,

NOTE 3: (Continued)

K_6 = 0.00068/°F for T > T" and K_6 = 0 for T $\leq$ T",

T = As defined in Note 1,

T" = Indicated T_{avg} at RATED THERMAL POWER (Calibration temperature for ΔT instrumentation, $\leq$ 574.2°F),

S = As defined in Note 1, and

$f_2(\Delta I)$ = 0 for all ΔI

NOTE 4: The channel's maximum trip setpoint shall not exceed its computed trip setpoint by more than 1.4% of instrument span.

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

FUNCTIONAL UNIT	ALLOWANCE (TA)	Z	S	TRIP SETPOINT	ALLOWABLE VALUE#
1. Safety Injection (Reactor Trip, Turbine Trip, Feedwater Isolation, Control Room Ventilation Isolation, Start Diesel Generators, Containment Phase A Isolation (except Manual SI), Containment Cooling Fans, Containment Filter Fans, Start Sequencer, Component Cooling Water, Start Auxiliary Feedwater and Intake Cooling Water)					
a. Manual Initiation	N.A	N.A	N.A	N.A.	N.A.
b. Automatic Actuation Logic	N.A	N.A	N.A	N.A.	N.A.
c. Containment Pressure--High	13.3	10.3	0.0	$\leq$4.0 psig	$\leq$4.5 psig
d. Pressurizer Pressure--Low	13.0	8.4	1.4	$\geq$1730 psig	$\geq$1712 psig
e. High Differential Pressure Between the Steam Line Header and any Steam Line.	4.7	1.57	4.60*	$\leq$100 psi	$\leq$ 114 psi
f. Steam Line Flow--High	16.7	2.86	3.9	$\leq$A function defined as follows: A Δp corresponding to 40% steam flow at 0% load increasing linearly from 20% load to a value corresponding to 120% steam flow at full load.	$\leq$A function defined as follows: A Δp corresponding to 42.6% steam flow at 0% load increasing linearly from 20% load to a value corresponding to 122.6% steam flow at full load.

*2.3% span for each sensor.

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM
INSTRUMENTATION TRIP SETPOINTS

FUNCTIONAL UNIT	ALLOWANCE (TA)	Z	S	TRIP SETPOINT	ALLOWABLE VALUE#
Coincident with: Steam Generator Pressure--Low or T_{avg}--Low	13.0	1.16	2.3	≥614 psig	≥588 psig
	4.0	2.0	1.0	≥543°F	≥542.5°F
2. Containment Spray					
a. Automatic Actuation Logic and Actuation Relays	N.A	N.A	N.A	N.A.	N.A.
b. Containment Pressure--High-High Coincident with:	21.3	2.7	0.0	≤20.0 psig	≤22.6 psig
Containment Pressure--High	13.3	10.3	0.0	≤ 4.0 psig	≤ 4.5 psig
3. Containment Isolation					
a. Phase "A" Isolation					
1) Manual Initiation	N.A	N.A.	N.A.	N.A.	N.A.
2) Automatic Actuation Logic and Actuation Relays	N.A.	N.A.	N.A.	N.A.	N.A.
3) Safety Injection	see item 1			See Item 1 above for all Safety Injection Trip Setpoints and Allowable Values.	
b. Phase "B" Isolation					
1) Manual Initiation	N.A.	N.A.	N.A.	N.A.	N.A.

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM
INSTRUMENTATION TRIP SETPOINTS

FUNCTIONAL UNIT	ALLOWANCE (TA)	Z	S	TRIP SETPOINT	ALLOWABLE VALUE#
3. Containment Isolation (Continued)					
2) Automatic Actuation Logic and Actuation Relays	N.A.	N.A.	N.A.	N.A.	N.A.
3) Containment Pressure--High-High	21.3	2.7	0.0	≤20.0 psig	≤22.6 psig
Coincident with: Containment Pressure--High	13.3	10.3	0.0	≤4.0 psig	≤4.5 psig
c. Containment Ventilation Isolation					
1) Containment Isolation Manual Phase A or Manual Phase B	N.A.	N.A.	N.A.	N.A.	N.A.
2) Automatic Actuation Logic and Actuation Relays	N.A.	N.A.	N.A.	N.A.	N.A.
3) Safety Injection	see item 1			See Item 1. above for all Safety Injection Trip Setpoints and Allowable Values.	
4) Containment Radioactivity--High (1)	N.A.	N.A.	N.A.	Particulate (R-11) $<6.1 \times 10^5$ CPM Gaseous (R-12) See (2)	Particulate (R-11) $<6.8 \times 10^5$ CPM Gaseous (R-12) See (2)
4. Steam Line Isolation					
a. Manual Initiation	N.A.	N.A.	N.A.	N.A.	N.A

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

FUNCTIONAL UNIT	ALLOWANCE (TA)	Z	S	TRIP SETPOINT	ALLOWABLE VALUE#
4. Steam Line Isolation (Continued)					
b. Automatic Actuation Logic and Actuation Relays	N.A.	N.A.	N.A.	N.A.	N.A.
c. Containment Pressure--High-High Coincident with:	21.3	2.7	0.0	≤20.0 psig	≤22.6 psig
Containment Pressure--High	13.3	10.3	0.0	≤4.0 psig	≤4.5 psig
f. Steam Line Flow--High	16.7	2.86	3.9	≤A function defined as follows: A Δp corresponding to 40% steam flow at 0% load increasing linearly from 20% load to a value corresponding to 120% steam flow at full load.	≤A function defined as follows: A Δp corresponding to 42.6% steam flow at 0% load increasing linearly from 20% load to a value corresponding to 122.6% steam flow at full load.
Coincident with: Steam Line Pressure--Low	13.0	1.16	2.3	≥614 psig	≥588 psig
or T_{avg}--Low	4.0	2.0	1.0	≥543°F	≥542.5°F
5. Feedwater Isolation					
a. Automatic Actuation Logic and Actuation Relays	N.A.	N.A	N.A.	N.A.	N.A.
b. Safety Injection	see item 1			See Item 1. above for all Safety Injection Trip Setpoints and Allowable Values.	

TABLE 3. . (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM
INSTRUMENTATION TRIP SETPOINTS

FUNCTIONAL UNIT	ALLOWANCE (TA)	Z	S	TRIP SETPOINT	ALLOWABLE VALUE#
6. Auxiliary Feedwater (3)					
a. Automatic Actuation Logic and Actuation Relays	N.A.	N.A.	N.A.	N.A.	N.A.
b. Steam Generator Water Level--Low-Low	5.0	2.33	1.9	≥15% of narrow range instrument span.	≤13% of narrow range instrument span.
c. Safety Injection	see item 1			See Item 1. above for all Safety Injection Trip Setpoints and Allowable Values.	
d. Bus Stripping	see item 7			See Item 7. below for all Bus Stripping Trip Setpoints and Allowable Values.	
e. Trip of All Main Feedwater Pump Breakers	N.A.	N.A.	N.A.	N.A.	N.A.
7. Loss of Power					
a. 4.16 kV Busses A and B (Loss of Voltage)	N.A.	N.A.	N.A.	N.A.	N.A.

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

FUNCTIONAL UNIT	ALLOWANCE (TA)	Z	S	TRIP SETPOINT	ALLOWABLE VALUE#
8. Engineering Safety Features Actuation System Interlocks					
a. Pressurizer Pressure	N.A.	N.A.	N.A.	Nominal 2000 psig	≤2018 psig
b. T_{avg}--Low	4.0	2.0	1.0	Nominal 543°F	≥542.5 °F
9. Control Room Ventilation Isolation					
a. Automatic Actuation Logic and Actuation Relays	N.A.	N.A.	N.A.	N.A.	N.A.
b. Safety Injection	see item 1			See Item 1. above for all Safety Injection Trip Setpoints and Allowable Values.	
c. Containment Radioactivity--High (1)	N.A.	N.A.	N.A.	Particulate (R-11) <6.1 x 10^5 CPM Gaseous (R-12) See (2)	Particulate (R-11) <6.8 x 10^5 CPM Gaseous (R-12) See (2)
d. Containment Isolation Manual Phase A or Manual Phase B	N.A.	N.A.	N.A.	N.A.	N.A.
e. Air Intake Radiation Level	N.A.	N.A.	N.A.	≤ 2 mR/hr	≤ 2.83 mR/hr

TABLE NOTATIONS

(1) Either the particulate or gaseous channel in the OPERABLE status will satisfy this LCO.

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM
INSTRUMENTATION TRIP SETPOINTS

TABLE NOTATIONS (continued)

(2) Containment Gaseous Monitor Setpoint = $\frac{(3.2 \times 10^4)}{(\quad F \quad)}$ CPM,

Containment Gaseous Monitor Allowable Value = $\frac{(3.5 \times 10^4)}{(\quad F \quad)}$ CPM,

Where F = $\frac{\text{Actual Purge Flow}}{\text{Design Purge Flow (35,000 CFM)}}$

Setpoint may vary according to current plant conditions provided that the release rate does not exceed allowable limits provided in Specification 3.11.2.1.

(3) Auxiliary feedwater manual initiation is included in Specification 3.7.1.2.

#If no allowable value, ALLOWANCE (TA), Z or S is specified so indicated by [ ], the trip setpoint shall also be the allowable value.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 146 TO FACILITY OPERATING LICENSE NO. DPR-31

AND AMENDMENT NO.141 TO FACILITY OPERATING LICENSE NO. DPR-41

FLORIDA POWER AND LIGHT COMPANY

TURKEY POINT UNIT NOS. 3 AND 4

DOCKET NOS. 50-250 AND 50-251

1.0 INTRODUCTION

By letter dated December 19, 1990, Florida Power and Light Company (FPL) submitted proposed amendments to Facility Operating License Nos. DPR-31 and DPR-41 to modify the Turkey Point Units 3 and 4 Technical Specifications (TS). The proposed amendments were supplemented by additional information provided in conference calls and by letters dated April 24, 1991, June 3, 1991, and July 8, 1991. The proposed amendments are a continuation of Amendment Nos. 135 and 140 that were approved by the NRC on April 23, 1991. The April 23, 1991 amendments revised Section 2.2, Limiting Safety System Settings, Section 3/4.3.2, Engineered Safety Features (ESF) Actuation System Instrumentation and the corresponding bases sections. The revisions extended the existing two-column approach used in the Reactor Trip System (RTS) and ESF setpoint table to the Westinghouse five-column approach and approved some table notations and numerical values. The current amendments, proposed December 19, 1990, incorporate the remaining numerical values and table notations necessary to complete the five-column approach. The basis for the proposed TS amendments was provided by a Westinghouse setpoint study included as part of the initial submittal. The April 24, June 3, and July 8, 1991 submittals provided clarifying information which did not change the initial proposed no significant hazards consideration determination.

2.0 DISCUSSION

The methodology used to support the five-column approach is a "square root of the sum of squares." The application of this methodology for use in determining RTS and ESF setpoints has been approved in the past by the NRC on a plant-specific basis.

The methodology statistically combines the potential instrumentation uncertainties to determine the channel statistical allowance (CSA). The total allowance (TA), which is defined as the difference between the safety analysis limit and the nominal trip setpoint, is then compared to the CSA to determine the margin and

allowable values. The five-column approach provides numerical values for TA, "S" and "Z", where "S" is the value for sensor uncertainties, and "Z" is the combination of the remaining independent uncertainty variables. A value for "R," the rack uncertainties, is measured in the field and when combined with "S" and "Z" will determine if the total allowance has been exceeded.

3.0 EVALUATION

The NRC staff (hereafter referred to as the staff) guidance for the review of instrument setpoints can be found in Chapter 7 of the Standard Review Plan (SRP), NUREG-0800. Specific guidance is located in Regulatory Guide 1.105, "Instrument Setpoints for Safety Related Systems."

The proposed numerical values will appear in the TS Table 2.2-1, "Reactor Trip System Instrumentation Trip Setpoints," and Table 3.3-3, "Engineered Safety Features Actuation System Instrumentation Trip Setpoints." The specific changes proposed by these amendments will be referenced in this Safety Evaluation by TS table and TS table functional unit number.

3.1 Evaluation of Table 2.2-1, Reactor Trip System Instrumentation Trip Setpoints

The proposed numerical values for the functional units are listed below.

Item 2. Power Range, Neutron Flux

a. High Setpoint
TA=7.5 Z=4.56 S=0.0
Trip: $\leq$ 109% RTP
Allowable: $\leq$ 112% RTP

b. Low Setpoint
TA=8.3 Z=4.56 S=0.0
Trip: $\leq$ 25% RTP
Allowable: $\leq$ 28% RTP

Item 3. Intermediate Range, Neutron Flux
TA=13.5 Z=8.41 S=0.0
Trip: $\leq$ 25% RTP
Allowable: $\leq$ 31% RTP

Item 4. Source Range, Neutron Flux
TA=13.9 Z=10.01 S=0.0
Trip: $\leq 10^5$ CPS
Allowable: $\leq 1.4 \times 10^5$ CPS

Item 7. Pressurizer Pressure - Low
TA=4.5 Z=1.12 S=1.4
Trip: $\geq$ 1835 PSIG
Allowable: $\geq$ 1817 PSIG

Item 8. Pressurizer Pressure - High
TA=5.5 Z=1.12 S=1.4
Trip: $\leq$ 2385 PSIG
Allowable: $\leq$ 2403 PSIG

Item 11. Steam Generator Water Level Low-Low
TA=5.0 Z=2.33 S=1.9
Trip: ≥ 15% of narrow range instrument span
Allowable: ≥ 13.2% of narrow range instrument span

Item 12. Steam/Feedwater Flow Mismatch
TA=20.0 Z=3.67 S=7.3##
Trip: Feed Flow ≤ 20% below Steam Flow
Allowable: Feed Flow ≤ 23.9% below Steam Flow

1.7% span for steam line flow, 2.9% span for feedwater flow and 2.8% span for steam line pressure

Coincident with: Steam Generator Water Level low
TA=5.0 Z=2.33 S=1.9
Trip: ≥ 15% of narrow range instrument span
Allowable: ≥ 13.2% of narrow range instrument span

Item 13. Undervoltage - 4.16 KV Busses A and B
TA=20.0 Z=1.12 S=0.0
Trip: ≥ 70% bus voltage
Allowable: ≥ 69% bus voltage

Item 14. Underfrequency - Trip of Reactor Coolant Pump Breakers Open
TA=6.5 Z=0.03 S=0.0
Trip: ≥ 56.1 Hz
Allowable: ≥ 55.9 Hz

Item 15.a. Turbine Trip - Auto Stop Oil Pressure
TA=2.6 Z=1.0 S=0.0
Trip: ≥ 45 PSIG
Allowable: ≥ 42 PSIG

The staff finds the proposed numerical values for Items 2, 3, 4, 7, 8, 11, 12, 13, 14, and 15.a (listed above) acceptable. The staff's conclusion is based on the following points:

(a) All of the trip values listed above are either unchanged from the existing TS trip setpoints or are more conservative with respect to the existing TS;

(b) In the case of item 13, Undervoltage, both the proposed trip setpoint and the proposed allowable value are more conservative with respect to the existing TS trip setpoint;

(c) The proposed values for TA, S, Z, and R are consistent with the Westinghouse setpoint methodology. The assumptions and input uncertainty values used to perform the setpoint study and derive the values for TA, Z, S, and R were verified by FPL at the request of the staff. This re-verification resulted in changes to the initial TS amendment submittal to reflect as-configured plant conditions and resulted in additional assurances by FPL that all assumptions and values are applicable and conservative with respect to the as-configured plant;

(d) The application of the Westinghouse methodology is consistent with Regulatory Guide (RG) 1.105 as applied by NRC at other nuclear facilities.

Item 17. Reactor Trip System Interlocks

a. Intermediate Range Neutron Flux, P-6
   TA=N.A. Z=N.A. S=N.A.
   Trip: Nominal 1×10^{-10} amps
   Allowable: $\geq 6.0 \times 10^{-11}$ amps

b. Low Power Reactor Trips Block, P-7
   1) P-10 Input
      TA=N.A. Z=N.A. S=N.A.**
      Trip: Nominal 10% RTP**
      Allowable: $\leq$ 13.0% RTP**
   2) Turbine First Stage Pressure
      TA=N.A. Z=N.A. S=N.A.
      Trip: Nominal 10% Turbine Power
      Allowable: $\leq$ 13.0% Turbine Power

c. Power Range Neutron Flux, P-8
   TA=N.A. Z=N.A. S=N.A.**
   Trip: Nominal 45% RTP**
   Allowable: $\leq$ 48.0% RTP**

d. Power Range Neutron Flux, P-10
   TA=N.A. S=N.A. S=N.A.**
   Trip: Nominal 10% RTP**
   Allowable: $\geq$ 7.0% RTP**

The staff finds the proposed numerical values for item 17 acceptable. The staff's conclusion is based on the following points:

(a) All of the trip values listed above are consistent with the existing TS trip setpoints;

(b) The difference between the nominal trip setpoint and the allowable value for these permissives is the same as for the protection function providing the input to the permissive bistable. The use of this difference in the determination of permissive setpoints is consistent with the Westinghouse setpoint methodology. The assumptions and uncertainty values used to perform the setpoint study have been verified by FPL to be applicable and conservative with respect to the as-configured plant.

Item 5. Overtemperature Delta T and related table notes

Amendment Nos. 135 and 140 approved values for TA, Z, and S and changes to corresponding table notes 1 and 2. As part of the December 19, 1990 submittal, FPL proposed additional changes to overtemperature delta T and the corresponding table notes. The proposed changes are as follows:

(a) S=2.5
   In a telecon held on May 6, 1991, FPL stated that the value for S was revised due to the installation of new Rosemount transmitters. The

proposed value of S is reflective of the new instrumentation accuracy and is therefore acceptable to the staff.

(b) Proposed change to Note 1: $P' \geq 2235$ psig

The proposed change includes an inequality sign in the definition of the P' parameter. The inequality sign is such that its effect on the "OT delta T" equation would be in the conservative direction with respect to the current TS equation. Therefore, the staff finds the proposed change acceptable.

(c) The remaining proposed changes to Note 1 and Note 2 are editorial in nature and are consistent with the basis for Amendment Nos. 135 and 140. Therefore, the staff finds the remaining changes to Note 1 and Note 2 acceptable.

Item 6. Overpower delta T table notes

Amendment Nos. 135 and 140 approved values for TA, Z, S, and changes to the corresponding table notes 3 and 4. As part of the December 19, 1990 submittal, FPL proposed additional changes as follows:

(a) Changes to Note 3: $K4 \leq 1.09$
$K_5 \geq 0.02/°F$
$\tau_7 \geq 10$ secs

The proposed changes include inequality signs in the definition of these parameters and constants. The inequality signs are such that their effects on the "OP delta T" equation would be in the conservative direction with respect to the current TS equation. Therefore, the staff finds the proposed changes acceptable.

(b) The remaining changes to Note 3 and Note 4 are editorial in nature and are consistent with the basis for Amendment Nos. 135 and 140. Therefore, the staff finds the remaining changes to Note 3 and Note 4 acceptable.

3.2 Evaluation of Table 3.3-3, Engineered Safety Features Actuation System Instrumentation Trip Setpoints

The proposed changes include numerical values for the functional units as listed below.

Item 1.c. Safety Injection - Containment Pressure -- High
TA=13.3 Z=10.3 S=0.0
Trip: $\leq$ 4.0 PSIG
Allowable: $\leq$ 4.5 PSIG

Item 1.d. Safety Injection - Pressurizer Pressure -- Low
TA=13.0 Z=8.4 S=1.4
Trip: $\geq$ 1730 PSIG
Allowable: $\geq$ 1712 PSIG

Item 1.e. Safety Injection - High Differential Pressure

TA=4.7 Z=1.57 S=4.60
Trip: ≤ 100 PSIG
Allowable: ≤ 114 PSIG
*2.3% span for each sensor

Item 1.f. Safety Injection - Steam Flow High

TA=16.7 Z=2.86 S=3.9

The functions proposed for the trip setpoint and the allowable value are addressed in Section 3.3 of this evaluation.

Coincident with Steam Generator Pressure -- Low

TA=13.0 Z=1.16 S=2.3
Trip: ≥ 614 PSIG
Allowable: ≥ 588 PSIG

Item 2.b Containment Spray - Containment Pressure - High-High

TA=21.3 Z=2.7 S=0.0
Trip: ≤ 20 PSIG
Allowable: ≤ 22.6 PSIG

Coincident with: Containment Pressure High

TA=13.3 Z=10.3 S=0.0
Trip: ≤ 4.0 PSIG
Allowable: ≤ 4.5 PSIG

Item 3.b.3) Containment Isolation - Phase "B" Isolation - Containment Pressure -- High-High

TA=21.3 Z=2.7 S=0.0
Trip: ≤ 20.0 PSIG
Allowable: ≤ 22.6 PSIG

Coincident with: Containment Pressure -- High

TA=13.3 Z=10.3 S=0.0
Trip: ≤ 4.0 PSIG
Allowable: ≤ 4.5 PSIG

Item 3.c.4) Containment Isolation - Containment Ventilation Isolation - Containment Radioactivity -- High

TA=N.A. Z=N.A. S=N.A.
Trip: Particulate (R-11) ≤ 6.1×10^5 CPM
Gaseous (R-12) see (2)
Allowable: Particulate (R-11) ≤ 6.8×10^5 CPM
Gaseous (R-12) see (2)

Item 4.c. Steam Line Isolation - Containment Pressure -- High-High

TA=21.3 Z=2.7 S=0.0
Trip: ≤ 20.0 PSIG
Allowable: ≤ 22.6 PSIG

Coincident with Containment Pressure -- High
TA=13.3 Z=10.3 S=0.0
Trip: $\leq$ 4.0 PSIG
Allowable: $\leq$ 4.5 PSIG

Item 4.f. Steam Line Isolation - Steam Line Flow -- High
TA=16.7 Z=2.86 S=3.9

The functions proposed for the trip setpoint and the allowable value are addressed in Section 3.3 of this evaluation.

Coincident with Steam Line Pressure -- Low
TA=13.0 Z=1.16 S=2.3
Trip: $\geq$ 614 PSIG
Allowable: $\geq$ 588 PSIG

Item 6.b Auxiliary Feedwater - Steam Generator Water Level -- Low-Low
TA=5.0 Z=2.33 S=1.9
Trip: $\geq$ 15% of narrow range instrument span
Allowable: $\geq$ 13.2% of narrow range instrument span

Item 8.a. Engineering Safety Features- P-11 Pressurizer Pressure
TA=N.A. Z=N.A. S=N.A.
Trip: Nominal 2000 PSIG
Allowable: $\leq$2018 PSIG

Item 8.b Engineering Safety Features- P-12-Tavg-Low
TA=4.0. Z=2.0. S=1.0.
Trip: Nominal 543°F
Allowable: $\geq$ 542.5°F

Item 9.c. Control Room Ventilation Isolation - Containment Radioactivity -- High
TA=N.A. Z=N.A. S=N.A.
Trip: Particulate (R-11) $< 6.1 \times 10^5$ CPM
Gaseous (R-12) see (2)
Allowable: Particulate (R-11) $\leq 6.8 \times 10^5$ CPM
Gaseous (R-12) See (2)

Item 9.e. Control Room Ventilation Isolation - Air Intake Radiation Level
TA=N.A Z=N.A. S=N.A.
Trip: $\leq$ 2 mR/hr
Allowable: $\leq$ 2.83 mR/hr

Table 3.3-3 - Table Notations

(2) Containment Gaseous Monitor Allowable Value=
$\frac{(3.5 \times 10^4)}{(F)}$ CPM

The staff finds the proposed numerical values for items 1.c, 1.d, 1.e, 1.f, 2.b, 3.b.3, 3.c.4, 4.c, 4.f, 6.b, 8.a, 8.b, 9.c, 9.e, and Table 3.3-3 Notation (2), as listed above, acceptable. The staff's conclusion is based on the following points:

(a) All of the trip values listed above are either unchanged from existing TS trip setpoints or are more conservative with respect to existing TS;

(b) In the case of items 1.c, 1.e, 2.b, 3.b.3, and 4.c, both the proposed trip setpoint and the proposed allowable value are more conservative with respect to the existing TS trip setpoint;

(c) The proposed values for TA, S, Z, and R are consistent with the Westinghouse setpoint methodology. The assumptions and input uncertainty values used to perform the setpoint study and derive the values for TA, Z, S, and R were verified by FPL at the request of the staff. This re-verification resulted in changes to the initial TS amendment submittal to reflect as-configured plant conditions and resulted in additional assurances by FPL that all assumptions and values were applicable and conservative with respect to the as-configured plant;

(d) The application of the Westinghouse setpoint methodology is consistent with RG 1.105 as previously applied by NRC to other nuclear facilities.

3.3 Evaluation of the Proposed High Steamline Flow Setpoint

The high steamline flow coincident with either low RCS T-avg or low steam pressure generate signals for safety injection and steamline isolation following a postulated steamline break accident. The current setpoint for the high steam flow is 20% of nominal steam flow at zero load increasing linearly to 120% of nominal steam flow at full load. The licensee, in a letter dated June 3, 1991, proposed changes to Technical Specification (TS) Table 3.3-3 to raise the setpoint of the high steamline flow to 40% of nominal steam flow for power level between zero load and 20% load and increasing linearly from 40% of nominal steam flow at 20% load to 120% of nominal steam flow at full load. The proposed change of the TS reflects an increase of the high steamline flow setpoint below 20% load. The setpoint above 20% load remains unchanged.

There are two licensing basis steamline break analyses presented in the Turkey Point FSAR, Section 14.2.5. For the case with offsite power available, the safety injection and steamline isolation signals are generated from the high steamline flow coincident with the low RCS T-avg and for the case without offsite power available, the signals are generated from the high steamline flow coincident with the low steam pressure. In these analyses, a safety analysis limit (SAL) setpoint of 60% of the nominal steam flow is assumed at zero load. Therefore, the steamline break analyses presented in the FSAR bound a postulated accident with the proposed high steamline flow setpoint of 40% of the nominal steam flow at zero load. Also, FSAR Figures 14.2.5-5 and 14.2.5-9 indicate that the steam flow from both faulted and intact loops reach in excess of 300% of the nominal steam flow within one second into the event. It is demonstrated that the steamline break analysis is not sensitive to the high steamline flow setpoint. The portion of the logic determining the time of the ESF actuation is the time at which the low T-avg or low steam pressure setpoint is reached, which occurs over 11 seconds later than the high steamline flow signal.

Based on the above evaluation, the staff concludes that the proposed TS changes to the high steamline flow setpoint do not change the results of the postulated steamline break accident and, therefore, are acceptable.

4.0 SUMMARY

Sections 3.1, 3.2, and 3.3 of this Safety Evaluation list the proposed changes to the Turkey Point Units 3 and 4 TS and the staff's conclusions regarding the proposed values. Based on our review of FPL's submittals, it is the staff's conclusion that the application of the setpoint methodology is consistent with NRC guidance. Therefore, the staff finds the proposed TS amendments acceptable.

5.0 STATE CONSULTATION

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

6.0 ENVIRONMENTAL CONSIDERATION

These amendments change 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 amendments involve 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 amendments involve no significant hazards consideration and there has been no public comment on such finding (56 FR 6874). Accordingly, these amendments meet 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 these amendments.

7.0 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 amendments will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributors: D. Dorman
G. Garten
C. Liang

Date: August 26, 1991