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 FACIL: 50-250 TURKEY POINT PLANT, UNIT 3, FLORIDA POWER AND LIGHT C 05000250  
 50-251 TURKEY POINT PLANT, UNIT 4, FLORIDA POWER AND LIGHT C 05000251  
 AUTH. NAME AUTHOR AFFILIATION  
 UHRIG, R.E. FLORIDA POWER & LIGHT CO.  
 RECIP. NAME RECIPIENT AFFILIATION  
 SCHWENCER, A. OPERATING REACTORS BRANCH 1

SUBJECT: FORWARDS SCHEDULE FOR PLANT MODS RE FIRE PROTECTION & ADDL  
 INFO RE SAFETY EVALUATION, PER 790321 REQUEST.

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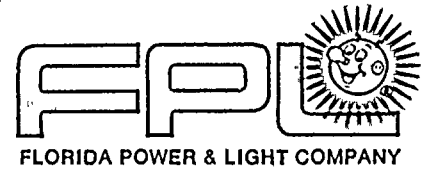
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May 21, 1979  
L-79-128

Office of Nuclear Reactor Regulation  
Attention: Mr. A. Schwencer, Chief  
Operating Reactors Branch #1  
Division of Operating Reactors  
U. S. Nuclear Regulatory Commission  
Washington, D.C. 20555

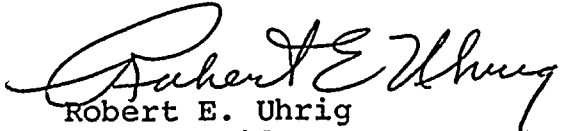
Dear Mr. Schwencer:

Re: Turkey Point Units 3 & 4  
Docket Nos. 50-250 & 50-251  
Fire Protection

In accordance with your letter of March 21, 1979 (Amendments 45 and 37 to Facility Operating Licenses DPR-31 and DPR-41, respectively), a schedule for the completion of plant modifications related to fire protection is attached.

Additional information regarding incomplete items listed in Section 3.2 of the Safety Evaluation (enclosed with your March 21 letter) is also attached.

Very truly yours,

  
Robert E. Uhrig  
Vice President  
Advanced Systems & Technology

REU/MAS/ms

Attachment

cc: Mr. James P. O'Reilly, Region II  
Robert Lowenstein, Esquire

*Add: Auxil Sys Br  
Wambach  
R. Muranaka  
OELO*

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ATTACHMENT

Re: Turkey Point Units 3 & 4  
Docket Nos. 50-250 & 50-251  
Fire Protection

- I. Plant Modification Schedule
- II. Water Supply (NRC Safety Evaluation Section 3.2.3)

# PRELIMINARY MODIFICATION SCHEDULE

## TURKEY POINT UNITS 3 & 4

### FIRE PROTECTION

<u>Item</u>	<u>Engineering Design Completion Date</u>	<u>NRC Submittal Date See (*)</u>	<u>NRC Approval Required By</u>	<u>FPL's Proposed Implementation Date</u>
3.1.1 <u>Fire Detection Syst.</u>				
1,2,3	Nov. 1979			Dec. 1980
4,5	Sept. 1979	Sept. 1979	Nov. 1979	Dec. 1980
6	Nov. 1979			Dec. 1980
7,8	Nov. 1979		Nov. 1979	Dec. 1980
9,10	Nov. 1979			Dec. 1980
11				Feb. 1979
3.1.2 <u>Fire Water Supply</u>				
1	Sept. 1979	Sept. 1979	Nov. 1979	Dec. 1980
3.1.3 <u>Yard Hydrant</u>				
1,2				Nov. 1979
3.1.4 <u>Firehouse Equipment</u>				
1				Nov. 1979
3.1.5 <u>Interior Hose Station</u>				
1	Nov. 1979			Dec. 1980
2	Nov. 1979		Nov. 1979	Dec. 1980
3	Nov. 1979			Dec. 1980
3.1.6 <u>Water Suppression System</u>				
1	Sept. 1979	Sept. 1979	Nov. 1979	Dec. 1980
3.1.7 <u>Foam Suppression</u>				
1				Nov. 1979
2	Sept. 1979	Sept. 1979	Nov. 1979	Dec. 1980

<u>Item</u>	<u>Engineering Design Completion Date</u>	<u>NRC Submittal Date See (*)</u>	<u>NRC Approval Required By</u>	<u>FPL's Proposed Implementation Date</u>
3.1.8 <u>Portable Extinguishers</u>				
1				Nov. 1979
3.1.9 <u>Fire Doors</u>				
1	Nov. 1979		Nov. 1979	Dec. 1980
2,3,4	Nov. 1979			Dec. 1980
5	Nov. 1979		Nov. 1979	Dec. 1980
6	Nov. 1979			Dec. 1980
3.1.10 <u>Fire Dampers</u>				
1	Nov. 1979			Dec. 1980
2	Nov. 1979		Nov. 1979	Dec. 1980
3	Nov. 1979			Dec. 1980
3.1.11 <u>Penetrations</u>				
1,2	Nov. 1979			Dec. 1980
3.1.12 <u>Barriers</u>				
1	Nov. 1979			Dec. 1980
3.1.13 <u>Curbs</u>				
1,2,3,4	Nov. 1979			Dec. 1980
3.1.14 <u>Fire Retardant Cable Coatings</u>				
1				Jan. 1979
2				Jan. 1980
3,4,5				Jan. 1979
3.1.15 <u>Control of Combustibles</u>				
1	Sept. 1979	Sept. 1979	Nov. 1979	Dec. 1980
2			Nov. 1979	Dec. 1979
3	Nov. 1979			Jan. 1980
4	Nov. 1979			Dec. 1980
5				Jan. 1980
6,7	Nov. 1979			Dec. 1980

Engineering  
Design  
Completion Date

NRC  
Submittal  
Date See (\*)

NRC  
Approval  
Required By

FPL's  
Proposed  
Implementation  
Date

Item

3.1.16 Fire Fighting  
Access

1

Jan. 1980

3.1.17 Smoke Venting  
Equip.

1

Dec. 1979

3.1.18 Air Breathing  
Equip.

1

Dec. 1979

3.1.19 Emergency  
Lighting

1

Nov. 1979

Dec. 1980

2

Nov. 1979

3.2.1 Smoke Detection  
System

No Modification Identified  
To Date

3.2.2 Reactor Coolant  
Pump

No Modification Identified  
To Date

3.2.3 Water Supply

See Enclosure II

3.2.4 Auxiliary Building  
Corridor

See FP&L letter dated April 5,  
1979 L-79-77

3.2.5 Cable Spreading Room

See FP&L letter dated April 5,  
1979 L-79-77

### 3.0 SUMMARY OF MODIFICATIONS AND INCOMPLETE ITEMS

#### 3.1 Modifications

The licensee plans to make certain plant modifications to improve the fire protection program as a result of both his and the staff's evaluations. These proposed modifications are summarized below. The sections of this report which discuss the modifications are noted in parentheses following each item. Further detail is contained in the licensee submittals. The licensee will provide a schedule for all modifications within 60-days of the issuance date of this Safety Evaluation. All modifications will be completed by December 1980.

Certain items listed below are marked with an asterisk to indicate that the NRC staff will require additional information in the form of design details to assure that the design is acceptable prior to actual implementation of these modifications. We request that this information be submitted within six months of the issuance date of this Safety Evaluation. The balance of the other modifications has been described in an acceptable level of detail.

##### 3.1.1 Fire Detection Systems

Early warning automatic fire detection systems will be provided in the following areas:

- (1) In the makeup air supply to the control room (5.1).
- (2) In the kitchen area of the control room (5.1).
- (3) In the rod control equipment rooms (5.5).
- \* (4) In the switchgear rooms (5.6).
- \* (5) In the diesel generator rooms (5.7).
- (6) In the charging pump rooms (5.8).
- 1 (7) In the chemistry laboratories (hot and cold labs) (5.8).
- 1 (8) In the new laundry facility (5.8).

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<sup>1</sup>The licensee is reevaluating this commitment as part of the issues identified in Section 3.2.4 and 3.2.5. We will require that this, or an equivalent improvement be made.



- (9) Modifications will be made if required to insure an unimpeded flow path for smoke for the vertical control boards and freestanding panels to the smoke detectors located in the false ceiling of the control room (5.1).
- (10) Remote alarm lamps will be provided for the smoke detectors located above the false ceiling in the control room (5.1).
- (11) A fire watch patrol will be established to inspect the lower level of the turbine area at a frequency of once per hour (5.12).

#### 3.1.2 Fire Water Supply

- \* (1) An adequately sized spool piece connection will be provided with gated valves on the fire water loop and the discharge header of the screen wash pumps. This connection will not be permanently installed (3.2.3 and 4.3.1.1).

#### 3.1.3 Yard Hydrants

- (1) A 2½-inch gate valve will be provided at the hose house for installation at one of the two outlet ports at the yard hydrants (4.3.1.3).
- (2) The equipment in the yard hydrant hose cabinets will be augmented by the addition of one portable hand light, a hose clamp, one 2½-inch fog nozzle with shutoff valve, and two 1½-inch spanner wrenches (4.3.1.3).

#### 3.1.4 Firehouse Equipment

- (1) The complement of equipment in the firehouse will be augmented by the addition of eight portable hand lights, a forceable entry tool, two 2½-inch by 2½-inch double female adaptors, and protective clothing to outfit eight men. Storage facilities will be provided in the firehouse for two smoke ejectors, six air breathing units, spare fire hose, gaskets, and nozzles (5.13.6).

#### 3.1.5 Interior Hose Stations

Booster hose stations with low flow capacity shutoff nozzles will be provided with sufficient hose reach for all of the following areas:

- (1) Control room (5.1).
- (2) Cable spreading room (5.2).
- (3) Switchgear rooms (5.6).

<sup>1</sup> The licensee is reevaluating this commitment as part of issues identified in Section 3.2.4 and 3.2.5. We will require that this, or an equivalent improvement, be made.

### 3.1.6 Water Suppression Systems

- \* (1) Fixed automatic water spray protection will be provided for the door and ventilation openings of the switchgear rooms which face main and auxiliary transformers (5.6).

### 3.1.7 Foam Suppression

- (1) Portable foam suppression equipment will be provided (4.3.1.6).
- \* (2) A means will be provided for introducing foam from a portable foam system into the diesel generator rooms and diesel fuel oil day tank rooms (5.7).

### 3.1.8 Portable Extinguishers

- (1) Two portable 2½ gallon pressurized water extinguishers will be provided in the control room (5.1).

### 3.1.9 Fire Doors

Doors in the following areas will be replaced with rated fire doors as noted:

- 1 (1) Access doors from cable spreading area to turbine building - 1½-hour rating (5.2).
- (2) Access doors from switchgear room to transformer area - three-hour rating (5.6).
- (3) Access doors from switchgear room to east turbine area - 1½-hour rating with fuse link dampers, normally closed (5.6).
- (4) Access doors to diesel day tank rooms (5.7).
- 1 (5) Corridor access doors in the auxiliary building leading to the chemistry laboratories (hot and cold labs) and new laundry facility - three-hour rating (5.8).
- (6) Access doors to containment electrical penetration rooms 1½-hour rating (5.9).

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The licensee is reevaluating this commitment as part of issues identified in Sections 3.2.4 and 3.2.5. We will require that this, or an equivalent improvement, be made.

### 3.1.10 Fire Dampers

- (1) Three-hour rated fire dampers will be provided in the ventilation openings of the switchgear room which faces the transformer areas. These dampers will be normally closed (5.6).
- 1 (2) The chemistry laboratories (hot and cold labs) and the new laundry facility will be isolated from the auxiliary building corridor by the use of 3-hour fire dampers in ventilation openings (5.8).
- (3) The side wall vent openings in the containment electrical penetration rooms will be protected by 1½-hour fire dampers (5.9).

### 3.1.11 Penetrations

- (1) The openings between the floor and south wall of the upper level of the switchgear rooms will be sealed (5.6).
- (2) Penetrations in the wall separating the diesel generator units and between the diesel generator units and day tank rooms will be sealed to provide a three-hour rated fire barrier (5.7).

### 3.1.12 Barriers

- (1) A barrier will be constructed to impede heat and smoke from entering the diesel generator rooms via the louvered openings facing the outdoor fuel oil storage tank (5.7).

### 3.1.13 Curbs

- (1) Curbs will be provided for the doors on the lower level of the switchgear rooms (5.6).
- (2) A curb will be provided at the doorway in the west wall of the south diesel generator room (5.7).
- (3) A curb will be provided at the doorway in the north wall of the Unit 3 charging pump room (5.8).
- (4) Curbing will be provided around each auxiliary feedwater pump (5.12).

### 3.1.14 Fire Retardant Cable Coatings

Cables in trays with safe shutdown related cables in the following areas will be covered with a flame retardant coating:

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1 The licensee is reevaluating this commitment as part of the issues identified in Sections 3.2.4 and 3.2.5. We will require that this, or an equivalent improvement, be made.

- (1) Inverter room (5.3).
- (2) Containment (5.10).
- (3) Lower level of turbine area (5.12).
- (4) Auxiliary feed pump area (5.12).
- (5) In the vicinity of the condensate storage tank and transfer pumps (5.13).

### 3.1.15 Control of Combustibles

- \* (1) The use of the hydrogen supply lines in the auxiliary building corridor will be discontinued and new lines will be provided for use outside of this area (5.8).
- 1 (2) Plastic barrels in the auxiliary building used to collect radiation protective clothing will be replaced with barrels made of a fire retardant material (5.8).
- (3) The hydraulic coupling oil cooler lines on the charging pumps will be replaced with lines made of a noncombustible material (5.8).
- (4) The control point guard house at the entrance of the auxiliary building will be replaced by a structure of noncombustible construction (5.12).
- (5) The oil dispensing station at the south end of the turbine area will be relocated to an area which will not expose safety-related systems (5.12).
- (6) The flammable chemical storage located on the ground floor of the turbine area will be relocated (5.12).
- (7) Isolation valves will be provided within the diked area of the outdoor diesel fuel storage tank for the feed lines to the transfer pumps. Manual bypass valves will be provided for the fail-closed isolation valves (5.13).

### 3.1.16 Fire Fighting Access

- (1) Unused portions of cable trays in the containment electrical penetration rooms will be removed to improve fire fighting access. Fixed ladder access will be provided for all levels of the penetration rooms (5.9).

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The licensee is reevaluating this commitment as part of the issues identified in Sections 3.2.4 and 9.2.5. We will require that this, or an equivalent improvement, be made.

### 3.1.17 Smoke Venting Equipment

- (1) Two fire service portable smoke ejectors of the explosion proof type with a capacity of 5,000 cfm or greater will be provided for fire brigade use (4.4.1).

### 3.1.18 Air Breathing Equipment

- (1) Air breathing equipment will be augmented to provide a total of 15 self-contained air breathing apparatus and 30 spare air cylinders. At least 15 of the spare cylinders will be fully charged. Six air cylinders will be stored at a readily accessible location near the control room. A 6-bottle cascade system capable of refilling 23 air bottles will be provided (4.4.2).

### 3.1.19 Emergency Lighting

- (1) Fixed seal beam self-contained battery-operated lighting units will be provided in the control room, auxiliary building corridor, cable spreading room, and switchgear rooms (4.6).
- (2) Portable seal beam battery-operated lights will be provided for fire brigade and emergency operations personnel use (4.6).

### 3.2 Incomplete Items

In addition to the licensee's proposed modifications, a few incomplete items remain, as discussed below. The sections of this report which discuss these incomplete items are noted in parentheses. We will address the resolution of incomplete items in a supplement to this report. Your submittal should include a schedule for any additional modifications, such as may be required as a result of the resolution of the incomplete items.

#### 3.2.1 Smoke Detection Systems

- (1) Bench tests will be conducted on a minimum of 50% of the installed smoke detectors in each zone to verify that the detectors will provide prompt response and have adequate sensitivity to the products of combustion for the combustibles in the areas where they are installed. If detection systems are found to be inadequate, appropriate modifications will be made to provide adequate detection system performance.
- (2) With regard to the adequacy of the smoke detection systems, we have requested that in situ testing be conducted with a suitable smoke generation device to verify that the location and placement of smoke detectors is adequate to give prompt response and that the ventilation air flow patterns in the area do not significantly reduce or prevent detection system response. The licensee has not found a suitable means to conduct such tests in a manner which does not introduce further safety considerations. Further action is being taken in the development of a suitable test method.

However, if a practical solution to this type of testing cannot be established within six months of the date of this Safety Evaluation, an evaluation by an independent registered fire protection engineer (as defined in our guidance dated February 23, 1978 attachment 1 page 3.) knowledgeable in fire detection will be performed within nine months of the date of this Safety Evaluation to certify the adequacy of smoke detection systems in lieu of in situ testing. No additional information is requested from the licensee (4.2).

### 3.2.2 Reactor Coolant Pumps

- (1) We have requested that an oil collection system be provided for each of the reactor coolant pumps. The licensee has deferred action on this recommendation pending the final resolution of an EPRI study, "Evaluation and Test of Improved Fire Resistant Fluid Lubricants for Water Reactor Coolant Pump Motors." If a suitable lubricant is not found, the licensee will provide a system to suppress potential fires or provide for the removal of potential oil leakage to a safe location by December 1980. No additional information is required from the licensee (5.10):

### 3.2.3 Water Supply

- (1) We have requested that an adequate supply of water for fire protection be physically dedicated (e.g. by a vertical standpipe). We have requested that the licensee confirm his calculations on the adequacy of the screen wash pumps, as an alternate source of water for fire fighting, to meet the maximum area of demand for fixed systems. We will request, should the screen wash pumps prove to be an adequate alternate water source, that the spool piece, which the licensee proposed, be permanently connected to the screen wash system to provide a completely redundant water supply. When the above information on the water demand is available we will evaluate it and report our findings in a supplement to this report. This information will be provided within 60 days from the date of this Safety Evaluation (4.3.1).

### 3.2.4 Auxiliary Building Corridor

- (1) We have requested the installation of sprinklers to provide protection for safety-related cables from exposure fires in the auxiliary building corridor. We have also requested additional information in our letter dated March 2, 1979 regarding the shutdown of both units following a fire in this area. After our review of the additional information we will report on the adequacy of the fire protection for the Auxiliary Building corridor (5.8).

### 3.2.5 Cable Spreading Area

- (1) It is our position that a capability independent of the cable spreading room should be provided to safely shutdown both units. We have requested additional information from the licensee in our letter dated March 2, 1979

to demonstrate that both units can be shut down independent of a fire in the cabling and equipment located in the cable spreading room. After we have reviewed the additional information we will report on the adequacy of the fire protection plans for the cable spreading room (5.2).

#### 3.2.6 Technical Specifications for Existing Equipment

On November 8, 1978 amendments 42 and 34 were issued with limiting conditions for operation and surveillance requirements for existing fire protection systems and administrative controls. Certain exception taken by the licensee were identified as being subject to further staff review. The staff position in regard to those items is unchanged. No additional information is required from the licensee.

## II. WATER SUPPLY

Florida Power & Light Company (FPL) has evaluated the hydraulic sprinkler demand calculations for the Turkey Point Unit 4 Wet Pipe Sprinkler System. Due to the zonal nature of the sprinkler system, FPL has determined that the largest area is located under the Unit 4 turbine operating floor between columns 30.1 and 32.1 North/South and between columns E and A East/West, including the condensate pump pit, for a total area of 3945 square feet. However, by precluding an unmitigated oil fire from flowing into the condensate pump pit, this area of concern can be effectively reduced to 2685 square feet. Based on the smaller area, FPL has confirmed the adequacy of the fire pumps and the screen wash pumps as follows:

1. Assuming one fire pump is supplying the wet pipe system under the North end of the turbine deck on Unit 4, and the wet pipe system is operating in its entirety, the total flow would be 2090 gpm at 145 psig. 750 gpm would be utilized for fire hose streams, leaving 1340 gpm for the wet pipe system. This provides about  $0.50 \text{ gpm/ft}^2$  to the area of concern.
2. Assuming one screen wash pump (connected to the fire main) is supplying the wet pipe system under the North end of the turbine deck on Unit 4, and the wet pipe system is operating in its entirety, the total flow would be 1600 gpm at 63 psig. 750 gpm would be utilized for hose streams, leaving 850 gpm for the wet pipe system. This provides about  $0.32 \text{ gpm/ft}^2$  to the area of concern.

We propose to install curbing to preclude an unmitigated oil fire from flowing into the condensate pump pit.