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SUBJECT: Forwards requested addl info re emergency power sys enhancement project.

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U. S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, D. C. 20555

Gentlemen:

Re: Turkey Point Units 3 and 4  
Docket No. 50-250 and 50-251  
Emergency Power System Enhancement Project

By letter L-88-669, dated June 23, 1988 as supplemented by letter L-89-124, dated April 3, 1989, FPL provided the Emergency Power Systems (EPS) Enhancement Report to the NRC staff. By letter dated June 15, 1990, the NRC requested additional information to demonstrate that the EPS modifications will comply with 10 CFR 50, Appendix R. Enclosed please find the additional information as requested.

Should there be any questions, please contact us.

Very truly yours,

K. N. Harris  
Vice President  
Turkey Point Plant Nuclear

KNH/GS

enclosure

cc: Stewart D. Ebnetter, Regional Administrator, Region II, USNRC  
Senior Resident Inspector, USNRC, Turkey Point Plant

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The following is a response to the NRC's questions of the June 8, 1990 teleconference on Fire Protection (NRC letter dated June 15, 1990; G. E. Edison to J. H. Goldberg).

Question 1. Provide your re-review of Appendix R compliance as a result of the implementation of this Power System Enhancement Upgrade Program. This re-review should describe the impact that this modification had on the Appendix R safe shutdown analysis and demonstrate for each fire area/zone how Appendix R Section III.G and III.L compliance will be achieved. In addition, this re-review should identify additional Appendix R fire protection features which may be required for cable/equipment protection, describe changes or modifications to existing alternative shutdown systems (i.e. addition of transfer switches), and summarize the changes required to safe shutdown procedures (i.e. fire in the cable spreading or control room).

Answer 1. The Emergency Power System Enhancement Project (EPS) installs two new Emergency Diesel Generators (EDG) and associated equipment, e.g., fuel oil storage tanks, fuel oil transfer pumps and control panels, in a new structure located northeast of the Unit 3 containment building. In addition, new electrical equipment (switchgear, load centers, and MCC's) is being installed in the new EDG building and the new Electrical Equipment Room (EER), and existing electrical equipment is being reassigned and aligned to individual units. The Essential Equipment List, Safe Shutdown Analysis, and the FSAR Fire Hazards Analysis are being updated to reflect the EPS Enhancement Project modifications and their effect on the PTP fire protection program including BTP 9.5-1 Appendix A and 10CFR50 Appendix R. These updates will be incorporated into the associated Engineering Packages (EP) and will be completed prior to completion of the EP's. The following information is based on the preliminary results of the ongoing updates to the above documents.

#### SAFE SHUTDOWN ANALYSIS

In order to assure SSD capability, circuits associated with new equipment included on the EEL are being analyzed for each fire area to verify that at least one train of redundant SSD equipment remains free from fire damage. This is accomplished for the EPS by applying the same protective features that already exist in the plant, e.g., fire areas are separated by 3-hour rated fire barriers with penetrations sealed as appropriate, one train of redundant circuits enclosed in 3-hour rated fire wrap or 1-hour rated fire wrap in areas where automatic fire detection and suppression is installed (exemptions have been granted in some areas and outdoor zones for fire detection and/or suppression where one hour wrap or 20 feet of spacial separation is provided free of intervening combustibles), or by taking credit for manual actions in lieu of providing protective features.



Generally, "B" train circuits are protected in outdoor fire zones while "A", "B", or both trains may be utilized for SSD in indoor plant areas, depending on specific scenarios. The following are examples of the types of modifications which will be implemented to assure protection of SSD capability for EPS modifications.

New EDG Rooms - Fire barriers separate individual fire areas while automatic pre-action sprinkler systems and fire detectors will be installed (see Answer 2 for a detailed description).

New Diesel Oil Transfer Pump Rooms - Fire barriers separate individual fire areas and wet pipe automatic sprinkler systems and fire detectors will be installed (see Answer 2 for a detailed description).

The EER (Fire Area G) is enclosed with 3-hour barriers and fire detection will be provided. This area was formerly the Hot Machine Shop and is now divided into two fire zones. (See answer 4 for detailed description).

As a result of safe shutdown analysis, Fire Area G (EER) will change from a train "A" shutdown train area to a train "B" shutdown train area. In addition, fire wrap will be installed to protect circuits as required. The following provides a partial listing of equipment whose circuits have been fire wrapped in certain other plant fire areas/zones.

- a) Normal Containment Cooler Fan 4V1D
- b) Normal Containment Cooler Fan 3V1B
- c) Battery Charger 4A1
- d) New EDG Train B Outdoor Raceways
- e) 125VDC Feeder from Battery Charger 3B2 to 125VDC Distribution Panel 3D23A
- f) 125 VDC to auxiliary feedwater flow control valve circuits in Fire Zone 25

#### ALTERNATE SHUTDOWN

Alternate shutdown (ASD) is required at Turkey Point Plant for fires located in the Cable Spreading Room and Electrical Cable Chase (Fire Area HH), Control Room, Control Room Roof and Mechanical Equipment Room (Fire Area MM) and the North-South Breezeway (Fire Area CC). ASD is accomplished from the Unit 3 and Unit 4 ASD Panels located in the respective units' "B" Switchgear Room and generally utilizes "B" train equipment.

The addition of the new EDG provides for alignment of the 3B EDG to the Unit 3 ASD Panel and the 4B EDG to the Unit 4 ASD Panel. EPS modifications will change indication from reading EDG B volts and watts (dual meter) on each ASD panel to reading volts and watts for EDG 3B on Unit 3 ASD Panel and EDG 4B on Unit 4 ASD Panel. As a result of EPS, changes affecting ASD will be necessary due to realignment of electrical power distribution to some equipment. Some examples of these changes are as follows.

- a) Normal Containment Cooler Fans 3V1B/4V1D circuits are being protected in Fire Zone 79 (outdoor fire zone) with 1 hour fire wrap.
- b) Provisions are being made for local trip of reactor coolant pump feeder breakers at 3A/4A switchgear.
- c) Boric Acid Transfer Pumps 3B/4B power and control circuits are being protected in Fire Zone 79 with 1 hour fire wrap.
- d) A Normal/Isolate switch is being provided at Load Centers 3D/4D for the train "B" feeder breaker to Load Centers 3H/4H to allow breaker trip and to mitigate spurious Charging Pump 3C/4C operation during an ASD fire.

SAFE SHUTDOWN PROCEDURE CHANGES  
(O-ONOP-105, Control Room Evacuation)  
(O-ONOP-016.10, Safe Shutdown Manual Actions)

Specific detailed changes will be made to the procedures to address modifications which affect equipment relied upon for Safe Shutdown. Examples include:

- Revised from reading EDG B volts and watts (dual meter) on each ASD panel to reading volts and watts for EDG 3B on Unit 3 ASD Panel and EDG 4B on Unit 4 ASD Panel.
- Addition of transfer/isolate switches.
- Addition and deletion of actions required due to the new electrical system.
- Fire Zone and Fire Area additions and modifications.

MODIFICATIONS AFFECTING ASSOCIATED CIRCUITS

The EPS enhancement modifications are being reviewed to ensure that the safe shutdown capability of the plant will not be adversely affected due to the maloperation of associated circuits as defined in Appendix 9.6A of UFSAR for Turkey Point Units 3 & 4. Modifications which affect the location or function of components with associated circuits, or the routing of associated circuits, are being evaluated to ensure compliance with Appendix R requirements. For those cases where associated circuits are affected by the EPS modification or associated circuits are created, the implementing PC/M will specify the necessary fire protection measures to prevent a loss of safe shutdown capability due to fire. In addition, the results of the review of plant modifications on associated circuits are being documented in the associated PC/M. The following guidance is provided to prevent creation of new associated circuits:

- a. Coordinated circuit protection is provided such that power supply to any of the required safe shutdown loads is not adversely affected due to fire effects on a non-safe shutdown circuits.
- b. Cable sizing and cable protection ensures that the protective action will take place prior to exceeding the design ratings of the cables.





- c. Design criteria for high-low pressure interfaces will be maintained.
- d. All raceways passing through a fire rated wall or barrier are sealed per existing design requirements.
- e. The SSA will identify any potential spurious actuations and will prescribe adequate protection or manual actions to ensure safe shutdown

Question 2. Section 5.3, Fire Protection System, of the subject submittal, addressed the proposed fire protection features for the diesel generator building. In that section it was identified that the diesel generator building will be protected by a pre-action sprinkler system. However, the submittal did not provide an adequate description of the system design. Additional information is requested which describes the extent of system coverage in the building (i.e. is the system going to protect the entire building or just the diesel generator rooms); sprinkler distribution/water application density; how the system is going to be automatically actuated (i.e. dedicated detection actuation system or from the general fire/smoke detection system), alarmed and annunciated upon actuation; and when in standby how system integrity is going to be supervised.

Answer 2. The new diesel generator building is built of reinforced concrete construction and is separated into six fire areas bounded on all sides with 3 hour rated fire barriers with the exception of exterior wall ventilation openings. The Fire Area/Zone designations are as follows.

Fire Area/Zone	Description
SS/133	EDG Room 4B
TT/134	Switchgear Room 3D
SS/135	EDG Control Room 4B
XX/136	Diesel Oil Transfer Pump Room 4B
XX/137	Diesel Oil Storage Tank 4B
RR/138	EDG Room 4A
UU/139	Switchgear Room 4D
RR/140	EDG Control Room 4A
WW/141	Diesel Oil Transfer Pump Room 4A
WW/142	Diesel Oil Storage Tank 4A

Grade level exterior wall ventilation openings are protected by external fire barriers such that a single exposure fire would not affect both units while potential for exposure fires to above grade ventilation openings is too insignificant, due to height above grade and the outdoor nature of the space, to warrant additional fire protection.

The Diesel Fuel Oil Tanks 4A and 4B are integral to the EDG structure, but are accessible only through removable concrete hatches located on the roof.

Automatic pre-action sprinkler systems, actuated by dedicated rate compensated thermal detectors, will be installed in the diesel generator rooms. Wet pipe sprinklers will be installed in the diesel fuel oil transfer pump rooms. Each system, upon actuation, will be alarmed/annunciated both locally at EDG Building fire protection panels and in the Main Control Room at the existing Main Fire Alarm Panel C39A.

The local panels are manufactured by Pyrotronics (System 3), and include the feature of supervising the alarm circuits when in standby, i.e., monitoring (1) the removal of a detector from the detector circuit, (2) an open circuit in the detector circuit, (3) an open circuit in the Main Control Room annunciator circuit, (4) an open or shorted condition on the audible circuit line, (5) the removal of a supervised system module, (6) the loss of main power, and (7) a ground fault on any detector circuit, audible signal circuit or dc power line within the system.

In addition, a separate fire detection system that will annunciate in the Control Room will be installed in all accessible areas of the diesel generator building.

Question 3. Section 5.3 of the subject submittal does not provide any information regarding manual hose station and standpipe provisions inside the diesel generator building. NRC SRP 9.5.1, Guidelines for Fire Protection for Nuclear Power Plants, Section C.1.c, indicates that total reliance should not be placed on a single fire suppression system and that appropriate backup fire suppression capability should be provided. Interior hose stations along with the appropriate distribution of fire extinguishers is considered acceptable as backup fire suppression. Therefore, in order to verify that an adequate level of backup fire protection is being provided, additional information, which describes the backup fire suppression capability for the new Diesel Generator Structure, is requested.

Answer 3. There are no manual hose stations nor standpipe provisions inside the EDG Building. Hose stations inside the building could be considered to be inaccessible in a fire. Note, however, that three portable fire extinguishers are available in each EDG room (two on the bottom floor in each EDG Room and one upstairs between the Switchgear and Control Rooms). A hose cabinet will be located by hydrant HY18 which is located within a hundred feet of the building. Any location within the new diesel generator building will be accessible with no more than 200 feet of hose which will be available in the hose cabinet. Additionally, a standpipe and hose cabinet will be located just outside on the north side of the EDG Building. Also, FPL's on site fire brigade has access to fire fighting foam.

In the event the fire cannot be controlled by the fire brigade, large scale fire fighting foam capability is provided by the Mutual Aid Program from the Dade County Fire Department and Homestead Air Force Base.

Question 4. The subject submittal does not address the fire protection features being provided for the diesel generator building switchgear rooms or the additional electrical equipment (i.e. spare battery bank, battery chargers and inverters, MCCs etc.) being installed in the auxiliary building as part of the upgrade modifications. Additional information, which describes the existing/proposed fire protection features for these areas (i.e. fire detection capability, fire suppression capabilities, fire barriers, etc.) is requested in order to verify that the existing/proposed level of fire protection is consistent with the NRC guidelines.

Answer 4. Fire detection (smoke detectors) has been provided for the new EDG Building Switchgear and Control Panel rooms and tied-into the local EDG Building fire detection panels which will alarm/annunciate in the Main Control Room at the existing Main Fire Alarm Panel C39A. No fire suppression features have been provided for the new EDG Building Switchgear or Control Panel Rooms.

The Electrical Equipment Room (EER) is a redesignated fire area formally used as the Hot Machine Shop. The fire area is separated into two fire zones and is bounded on all walls with 3 hour fire barriers with all penetrations and doors protected by 3 hour rated assemblies. Exterior walls and penetrations which do not serve to separate redundant trains of equipment and cable may not be 3 hr. fire rated (i.e. HVAC penetrations). An interior room has been created from non-combustible construction at the east end of the EER which houses a spare station battery. A mezzanine, open to the EER, is located above the spare battery room and contains battery chargers and an air handling unit.

Portable fire extinguishers will be installed in the area in accordance with NFPA 10 and a standpipe hose station is located in the Auxiliary Building Hallway which is adjacent to and accessible from this area. Smoke detectors tied to the existing Auxiliary Building fire detection system will be installed throughout the EER which will alarm/annunciate in the Main Control Room at the existing main fire alarm panel C39A.

No additional fire protection features have been provided for the existing Auxiliary Building. Fire detection systems for electrical equipment located in other areas of the plant are existing and will not be modified.