

CATEGORY 1

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 9711060266 DOC. DATE: 97/10/31 NOTARIZED: NO DOCKET #
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
HOVEY, R.J. Florida Power & Light Co.
RECIP. NAME RECIPIENT AFFILIATION
Document Control Branch (Document Control Desk)

SUBJECT: Forwards info which describes criteria to be used to determine if proposed horizontal spacing or use of radiant energy shield in outdoor fire zones excluding turbine bldg would be adequate.

DISTRIBUTION CODE: A006D COPIES RECEIVED: LTR 1 ENCL 1 SIZE: 4
TITLE: OR/Licensing Submittal: Fire Protection - App R - GL-88-12

NOTES:

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OCT 31 1997

L-97-256
10 CFR §50.12
10 CFR §50.48
10 CFR Part 50 Appendix R

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

Subject: Turkey Point Units 3 and 4
Docket Nos. 50-250 and 50-251
Response to Request for Additional
Information - Fire Barriers Exemption -
Outdoor Fire Area Excluding the Turbine Building

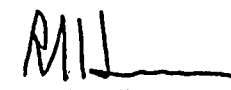
By letter L-96-318, dated December 12, 1996, Florida Power & Light Company (FPL) requested an exemption from requirements of 10 CFR Part 50, Appendix R, Section III.G.2.a, for electrical raceway fire barrier systems used at Turkey Point Units 3 and 4 in outdoor fire zones excluding the Turbine Building.

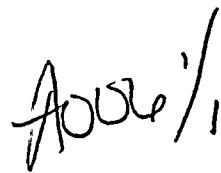
By letter L-97-182, dated July 31, 1997, FPL submitted a response to the June 16, 1997 NRC request for additional information. During the July 7, 1997 meeting between FPL and NRC Staff, FPL committed to provide criteria for the use of spatial separation and radiant energy shields in lieu of 25-minute fire barriers for safe shutdown circuits in the outdoor fire zones excluding the Turbine Building.

The information in the Attachment describes the criteria to be used to determine if the proposed horizontal spacing or use of a radiant energy shield in outdoor fire zones excluding the Turbine Building would be adequate. This information, if accepted by exemption approval, will be included in the Turkey Point Units 3 and 4 Engineering Guidelines for Fire Protection and will be used as criteria for the analysis to reevaluate fire barrier requirements for existing electrical raceways and for future design activities.

Should there be any questions, please contact us.

Very truly yours,


R. J. Hovey
Vice President
Turkey Point Plant



OIH

Attachment

cc: L. A. Reyes, Regional Administrator, Region II, USNRC
T. P. Johnson, Senior Resident Inspector, USNRC, Turkey Point Plant

9711060266 971031
PDR ADDCK 05000250
F PDR



Criteria for Horizontal Spacing and Radiant Energy Shields

By letter L-96-318, dated December 12, 1996, Florida Power and Light Co. requested an exemption to allow the use of the following criteria in lieu of the requirements in Subsection III.G.2.a of Appendix R to 10 CFR Part 50:

- 1) Separation of cables and equipment and associated non-safety circuits of redundant trains west of the Open Turbine Building Structure column line A by a 1-hour rated fire barrier until a horizontal distance of 20 feet is attained. Water suppression systems are provided for the major combustible sources, however no suppression or detection is provided for the raceways.
- 2) Separation of cables and equipment and associated non-safety circuits of redundant trains by a 25-minute rated fire barrier until a horizontal distance of 20 feet is attained. No suppression or detection is provided.
- 3) Separation of cables and equipment and associated non-safety circuits of redundant trains by a 25-minute rated fire barrier until a horizontal distance of 10 feet is attained in Roof Top locations. No suppression or detection is provided.
- 4) Separation of cables and equipment and associated non-safety circuits of redundant trains by a radiant energy shield having an equivalent 30-minute fire rating until a horizontal distance of 20 feet is attained. A radiant energy shield is a line of sight barrier between redundant equipment and/or components. No suppression or detection is provided.

Combustible Loading

Integral to the basis for the above requested exemption is the low combustible loadings in outdoor fire zones outside of the turbine building. Fire zone descriptions and fire hazard analyses are included in Appendix 9.6A, Section 4.0 of the Turkey Point Updated Safety Analysis Report (UFSAR). Combustible loading in outdoor fire zones outside of the turbine building is negligible except for major in situ combustibles located outdoors along the west side of the turbine building such as the transformers and turbine lube oil reservoirs which are contained and have automatic fire suppression systems. Nevertheless, safe shutdown circuits located within 50 feet of these significant combustibles will be protected with fire barriers as required.

The combustible loading in these outdoor fire zones is considered negligible because there are virtually no floor level in situ combustibles. As stated in Enclosure 2 of Generic Letter 86-10, "negligible quantity is an admittedly judgmental criterion...". Examples of this combustible loading in outdoor fire zones include 1) a single cable tray located about 20' above grade, 3 motor operated valves and a 2 HP electric motor in Fire Zone 113, 2) 3 or 4 cable trays (depending on location) approximately 15' above grade with 1 or 2 trays dropping down to duct banks at several different locations in Fire Zone 86 adjacent to the turbine and Unit 3 diesel generator buildings, and 3) 2 cable trays that traverse through Fire Zones 88 and 89 approximately 20' to 24' above grade. Further description of combustible loading in outdoor zones is included in the December 12, 1996 (L-96-318) submittal.

Horizontal Separation

Appendix R redundant circuit separation requirements are as follows:

- Greater than twenty feet, suppression, detection and no intervening combustibles or fire hazards for indoor fire areas (per section III.G.2.b),
- Greater than twenty feet and no intervening combustibles or fire hazards for containment fire areas (per section III.G.2.d)

20' Separation

FPL intends to use separation criteria which is consistent with previous exemptions (i.e. 20' with no suppression and no detection in outdoor fire zones) and closely corresponds with Appendix R requirements for noninerted containments. The proposed separation criteria for outdoor fire zones outside the turbine building is as follows:

- Twenty feet spatial separation is acceptable where no ceiling or confining structure lower than 20 feet exists which may cause stratification of hot gases or ceiling jets.
- Twenty feet of spatial separation is acceptable where both trains of redundant safe shutdown equipment are at least 50 feet from major combustibles.
- The space between redundant counterparts must be free of intervening combustibles (greater than a negligible quantity) or fire hazards until a distance greater than 20 feet of separation is achieved. (Concurrence will be obtained from a fire protection engineer on the determination of whether or not the combustible inventory exceeds negligible.)

10' Separation on Roofs

FPL intends to apply the following criteria for separation of redundant safe shutdown cables or equipment which are located on rooftop areas.

- On open roofs where combustion products are free to dissipate to the atmosphere, ten feet of spatial separation is acceptable.
- Roof areas where 10 feet of spatial separation is provided between safe shutdown components shall not be considered as normal access paths and shall be designated as "Combustibles Free Zones" to limit the transient combustibles and the installation of in situ combustibles. (The asphalt used as weatherproofing on the Control Building roof, which is covered with gravel, would not be considered an intervening combustible. This is because the potential for ignition is extremely remote considering the heat sink provided by the concrete and the fact that there is no conceivable in situ fire hazard capable of creating a fire involving the asphalt.)

Radiant Energy Shields

Section III.G.2.f of Appendix R prescribes radiant energy shields as an acceptable fire barrier in containment due to the large volume inside the structure which prevents stratification of combustion products. Fires in outdoor zones have similar characteristics where combustion products are free to dissipate to atmosphere. As a result, the following criteria will be used to determine the acceptability of using radiant energy shields to separate redundant shutdown trains in outdoor zones excluding the turbine building.

- The radiant energy shield will separate the component from its redundant counterpart until a distance greater than 20' of horizontal separation is achieved.
- The radiant energy shield will protect at least one of the redundant counterparts from any fire exposure.
- The radiant energy shield should have an equivalent 1/2-hour fire rating.
- An existing structure or structural component (i.e. steel or masonry) may perform the functions of a radiant energy shield as described above.
- The redundant counterparts may be located such that one is on a roof and the other is located along an exterior wall of a structure with less than 20' horizontal separation with a 10' minimum vertical separation.
- The space between redundant counterparts must be free of intervening combustibles (greater than a negligible quantity) or fire hazards until a distance greater than 20' of separation is achieved. (Concurrence will be obtained from a fire protection engineer on the determination of whether or not the combustible inventory exceeds negligible.)

Installed radiant energy shields (such as a steel plate) must provide separation of redundant counterparts and prevent the exposure of both counterparts from a single fire. In this configuration, the radiant energy shield would act as a baffle to deflect the fire from exposing one of the components. The feedwater platforms represent structures which perform the functions of radiant energy shields where they separate the redundant auxiliary feedwater valves.

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