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 DENTON, H.R.      Office of Nuclear Reactor Regulation, Director  
 STOLZ, J.F.      Operating Reactors Branch 4

SUBJECT: Forwards three exemption requests from 10CFR50, App R, Section III.G.2 requirements re fire protection of safe shutdown capability, supplementing 831024 initial request. No addl fees necessary.

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August 14, 1984

Mr. Harold R. Denton, Director  
Office of Nuclear Reactor Regulation  
U. S. Nuclear Regulatory Commission  
Washington, D. C. 20555

Attention: Mr. John F. Stolz, Chief  
Operating Reactors Branch No. 4

Subject: Oconee Nuclear Station  
Docket Nos. 50-269, -270, -287

Dear Sir:

My letter of October 24, 1983 submitted an initial request for exemption to 10 CFR 50, Appendix R, and indicated that as a result of on-going internal reviews, additional exemption requests would be forthcoming. Accordingly, four exemption requests related to 10 CFR 50, Appendix R, Section III.G.2 were submitted by a November 11, 1983 letter. As a result of further internal review, please find attached three exemption requests related to 10 CFR 50, Appendix R, Section III.G.2.

The request for exemption is considered to supplement a previous request for which license fees were provided. As such, no additional license fees are deemed necessary.

Very truly yours,



Hal B. Tucker

PFG:slb

Attachment

cc: Mr. James P. O'Reilly, Regional Administrator  
U. S. Nuclear Regulatory Commission  
Region II  
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Atlanta, Georgia 30323

Mr. J. C. Bryant  
NRC Resident Inspector  
Oconee Nuclear Station

Ms. Helen Nicolaras  
Office of Nuclear Reactor Regulation  
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Attachment  
Duke Power Company  
Oconee Nuclear Station  
Request for Exemption to 10 CFR 50, Appendix R, Section III.G.2

Pursuant to 10 CFR 50, §50.12, Duke Power Company requests the following exemption to 10 CFR 50, §50.48 and Appendix R. Section 50.48(b) requires that Appendix R, III.G, Fire Protection of Safe Shutdown Capability, or alternately, III.L, Alternative and Dedicated Shutdown Capability, be implemented at Oconee. By letter dated March 28, 1980, Duke submitted a design description of the Standby Shutdown Facility (SSF). This design was approved by NRC letter dated April 28, 1983. The SSF design incorporates 3-hour fire barriers between SSF required systems and balance of plant systems. As such, the requirements of Section III.G.2 apply.

Section III.G.2 states,

2. Except as provided for in paragraph G.3 of this section, where cables or equipment, including associated non-safety circuits that could prevent operation or cause maloperation due to hot shorts, open circuits, or shorts to ground to redundant trains of systems necessary to achieve and maintain hot shutdown conditions are located within the same fire area outside of primary containment, one of the following means of ensuring that one of the redundant trains is free of fire damage shall be provided:

a. Separation of cables and equipment and associated non-safety circuits of redundant trains by a fire barrier having a 3-hour rating. Structural steel forming a part of or supporting such fire barriers shall be protected to provide fire resistance equivalent to that required of the barrier;

b. Separation of cables and equipment and associated non-safety circuits of redundant trains by a horizontal distance of more than 20 feet with no intervening combustible or fire hazards. In addition, fire detectors and an automatic fire suppression system shall be installed in the fire area; or

c. Enclosure of cable and equipment and associated non-safety circuits of one redundant train in a fire barrier having a 1-hour rating. In addition, fire detectors and an automatic fire suppression system shall be installed in the fire area;

Inside noninerted containments one of the fire protection means specified above or one of the following fire protection means shall be provided:

d. Separation of cables and equipment and associated non-safety circuits of redundant trains by a horizontal distance of more than 20 feet with no intervening combustibles or fire hazards;

e. Installation of fire detectors and an automatic fire suppression system in the fire area; or

f. Separation of cables and equipment and associated non-safety circuits of redundant trains by a noncombustible radiant energy shield.

Duke has reviewed the design of the Oconee fire protection systems and has determined that exemptions to the requirements should be requested in the following four areas:

1. For each unit the Standby Shutdown Facility cables enter the Auxiliary Building in the southwest corner of the pipe tunnel access. These cables are located about 60 feet from Column Line U where the wall separating the east and west penetration rooms is located on the elevation above. The only intervening combustible material is plastic cable insulation and pipe penetration seal insulation described in Item 2. There is a maximum of eight cables in bundles of 2 and 3 cables within 20 feet of Standby Shutdown System cables. Considering the low concentration of combustibles, a fire would not propagate between Standby Shutdown System cables and balance-of-plant functions located in east penetration rooms. Based on the information as outlined above, separation of redundant cable required for safe shutdown in this area for each unit is adequate for fire protection. However, Duke requests an exemption to Section III.G.2.d. as the horizontal distance of 20 feet can not be maintained between safety circuits and non-safety circuits.
2. Piping penetrations in floors and ceilings of east and west penetration rooms are sealed with materials used for ventilation control which are not approved fire rated assemblies. Penetrations consists of pipe sleeves with a single layer of "Rubatex" insulation attached to the sleeve. "Rubatex" has flame spread rating of 25, fuel contribution rating of 30, and smoke development of 100. Considering the small quantity of material as low flame spread fuel contribution characteristics, "Rubatex" insulating material as installed will not support fire development. In addition, there are no penetrations in the vicinity of Column Line U where the wall separating east and west penetration rooms is located. The only combustible material in the pipe tunnel access area is cable insulation as described in Item 1. Considering the above, the existing arrangement is adequate for fire protection of redundant trains of cables in the east and west penetration rooms.

3. Mechanical pipe penetration in Reactor Building walls which serve as part of the containment isolation system are not approved three-hour fire rated assemblies. As shown in FSAR Figure 3.8-2, cold water penetrations (i.e., process fluids at less than 150°F) consist of process pipe penetrating a sleeved opening with a steel housing assemble, anchored into the Reactor Building wall with a pipe closely fitted to the pipe to assure containment integrity. Hot penetrations (i.e., process fluids at more than 150°F) are similar to cold penetrations but also have insulating material between process pipe and wall sleeve. Containment integrity features preclude transmitting flame and particles of combustion through pipe penetrations. The Reactor Building wall is three feet nine inches thick. Heat from a fire in either one of the penetration rooms or in the Reactor Building would mix throughout the volume of the area rather than being concentrated at penetration assemblies. The mass of concrete in Reactor Building walls would serve as a heat sink to further mitigate heat transfer between penetration rooms and Reactor Building. Spare penetrations in the Reactor Building walls are sealed with a pipe cap welded to the Auxiliary Building side of the wall. This arrangement serves to mitigate heat transfer as described above for the process pipe penetrations. Considering the above, the existing arrangement is adequate for fire protection of redundant trains of cables in the east and west penetration rooms, in that a fire will not propagate between the east and west penetration rooms through the mechanical pipe penetrations and spare sleeves in the Reactor Building walls. In as much as this configuration has not been explicitly accepted and it is not a three-hour fire barrier, Duke requests an exemption.