

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

In the Matter of

VERMONT YANKEE NUCLEAR  
POWER CORPORATION

(Vermont Yankee Nuclear  
Power Station)

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Docket No. 50-271

EXEMPTION

I.

The Vermont Yankee Nuclear Power Corporation (the licensee) is the holder of Facility Operating License No. DPR-28, which authorizes operation of the Vermont Yankee Nuclear Power Station (the facility) at power levels no greater than 1593 megawatts thermal. The facility is a single-unit boiling-water reactor located at the licensee's site in Windham County, Vermont.

The License provides, among other things, that the Vermont Yankee Nuclear Power Station is subject to all rules, regulations, and orders of the Nuclear Regulatory Commission (the Commission) now or hereafter in effect.

II.

On November 19, 1980, the Commission published a revised Section 10 CFR 50.48 and a new Appendix R to 10 CFR Part 50 regarding fire protection features of nuclear power plants. The revised Section 50.48 and Appendix R became effective on February 17, 1981. Section III of Appendix R contains 15 subsections, lettered A through O, each of which specifies requirements for a particular aspect of the fire protection features at a nuclear power plant. Subsection III.G is the subject of the licensee's exemption request.

Paragraph III.G.2.c of Section III.G, "Fire Protection of Safe Shutdown Capability," of Appendix R to 10 CFR Part 50, requires the following:

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

The licensee requested an exemption from these requirements to allow the use of fire-resistant cables in the cable vault instead of enclosing the cables in fire barriers having a 1-hour fire resistance rating. An exemption is needed because the Firezone R cables do not meet the literal requirements of the regulation. Installation of fire detectors and an automatic fire suppression system is not part of this exemption.

### III.

By letter dated May 28, 1996, as supplemented by letters dated July 26 and November 15, 1996, the licensee requested an exemption from Section III.G of Appendix R. In particular, the licensee requested an exemption from the requirements of Section III.G.2.c to allow the use of fire-resistant cables instead of enclosing the cables in fire barriers having a 1-hour fire resistance rating. The licensee proposed to use Rockbestos Firezone R Appendix R fireproof cable to control equipment that is necessary to ensure cooling of the corner room of the Reactor Building in the event of a fire in the cable vault. The cables of concern consist of four stainless steel sheathed cables. The Rockbestos Firezone R Appendix R fireproof cable has been tested by Underwriters Laboratories (UL) Inc., in order to provide data on the electrical characteristics of the fire resistant cable under controlled fire exposure conditions and during an extended cool down period.

The staff concluded that the cables as they were installed were bounded by the UL fire test, used to justify the 1-hour rating of the cables. Based on the automatic detection and suppression systems provided for the area, and fire brigade response for manual fire fighting activities, there is reasonable assurance that postulated fires in the Cable Vault would be detected, controlled, and extinguished prior to temperatures rising to a level that could challenge structural support capabilities of the fire resistant cables, cable tray network, and overhead conduit. Following from the discussion above, and on the bases of the same cable construction for the tested and installed cables, the test results for the Firezone R cable as contained in the UL report, and the installed and tested configurations for the cables, the staff concludes that the installed Firezone R cables provide an equivalent electrical functionality as would be provided by enclosing cables in a 1-hour fire rated barrier in the licensee's specific application. On the basis of the staff's review of the information provided by the licensee, the staff has concluded that the Firezone R cables proposed by the licensee will remain functional during postulated fires at Vermont Yankee and, therefore, postulated fires would not prevent plant operators from achieving and maintaining safe shutdown. The staff concluded, therefore, that the use of the Firezone R cables at Vermont Yankee in lieu of a 1-hour fire-rated barrier satisfies the underlying purpose of Section III.G.2.c of Appendix R to 10 CFR Part 50. Therefore, the licensee's request for exemption from Section III.G.2.c of Appendix R to 10 CFR Part 50 should be granted.

#### IV.

Pursuant to 10 CFR 50.12(a)(2), the Commission will not consider granting an exemption except under special circumstances. Under subsection (a)(2)(ii),

special circumstances are present whenever application of the subject regulation in the particular circumstances would not serve the underlying purpose of the rule or is not necessary to achieve the underlying purpose of the rule.

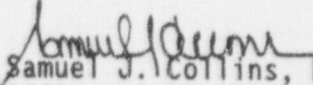
The underlying purpose of Section III.G of Appendix R is to establish fire protection features such that the plant will maintain the ability to perform safe shutdown functions in the event of a fire. The staff has reviewed the proposed alternative and has concluded, as previously described, that use of Firezone R cables in lieu of a 1-hour fire-rated barrier ensures that one train of systems that is necessary to achieve and maintain hot shutdown is free of fire damage. Therefore, the staff concludes that special circumstances exist for the licensee's requested exemption in that imposition of the literal requirements of the regulation in these particular circumstances is not necessary to achieve the underlying purpose of Appendix R to 10 CFR Part 50.

Accordingly, the Commission has determined that pursuant to 10 CFR 50.12(a)(2)(ii), special circumstances exist in that use of Firezone R cables in lieu of a 1-hour fire-rated barrier in the cable vault satisfies the underlying purpose of Appendix R to 10 CFR Part 50. Further, the staff has concluded that the requested exemption is authorized by law, will not present an undue risk to public health and safety, and is consistent with the common defense and security. Therefore, the Commission hereby grants the exemption request from the requirements of Section III.G of Appendix R to 10 CFR Part 50 described in Section III above.

Pursuant to 10 CFR 51.32, the Commission has determined that the issuance of this exemption will have no significant impact on the quality of the human environment (62 FR 30357 ).

This exemption is effective upon issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

  
Samuel J. Collins, Director  
Office of Nuclear Reactor Regulation

Dated at Rockville, Maryland, this  
9th day of June 1997