



UNITED STATES  
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

March 19, 2009

Site Vice President  
Entergy Nuclear Operations, Inc.  
Vermont Yankee Nuclear Power Station  
P.O. Box 250  
Governor Hunt Road  
Vernon, VT 05354

SUBJECT: VERMONT YANKEE NUCLEAR POWER STATION - EXEMPTION FROM THE  
REQUIREMENTS OF 10 CFR PART 50, APPENDIX R (TAC NO. MD9251)

Dear Sir or Madam:

The Commission has approved the enclosed exemption from specific requirements of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, Appendix R, for the Vermont Yankee Nuclear Power Station. This action is in response to your application dated July 11, 2008, Agencywide Documents Access and Management System (ADAMS) accession number ML082030154, as supplemented on November 20, 2008, ADAMS accession number ML083370180. This application requested a revision to a previously-granted exemption from Appendix R, Section III.G.2, to permit a reduction in minimum separation distance between cable trays from 18 feet to 17 feet -7.5 inches.

A copy of the exemption is enclosed. The exemption has been forwarded to the Office of the Federal Register for publication.

Sincerely,

A handwritten signature in black ink, reading "James Kim", is positioned above the typed name.

James Kim, Project Manager  
Plant Licensing Branch I-1  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket No. 50-271

Enclosure:  
Exemption

cc w/encl: Distribution via Listserv

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION  
ENTERGY NUCLEAR OPERATIONS, INC.  
VERMONT YANKEE NUCLEAR POWER STATION  
DOCKET NO. 50-271  
EXEMPTION

1.0 BACKGROUND

Entergy Nuclear Operations, Inc. (Entergy or the licensee) is the holder of Facility Operating License No. DPR-28, which authorizes operation of the Vermont Yankee Nuclear Power Station (VY). The license provides, among other things, that the facility is subject to all rules, regulations, and orders of the Nuclear Regulatory Commission (NRC or the Commission) now or hereafter in effect.

The facility consists of a boiling-water reactor located in Windham County, Vermont.

2.0 REQUEST/ACTION

Title 10 of the *Code of Federal Regulations* (10 CFR), Part 50, Section 50.48, requires that nuclear power plants that were licensed before January 1, 1979, of which VY is one, must satisfy the requirements of 10 CFR Part 50, Appendix R, Section III.G.2, which requires to have a minimum of 20 feet separation between redundant cable trays.

In an NRC letter dated December 1, 1986, the NRC granted the licensee the exemption from the provisions of 10 CFR Part 50, Appendix R, Section III.G.2, which in part permitted a reduction in minimum separation distance between cable trays in the northwest corner of Fire

Zone RB-3 of the reactor building to 18 feet. VY has identified that the actual minimum physical separation distance between the cable trays is actually 17 feet - 7.5 inches.

In summary, the letter dated July 11, 2008, Agencywide Documents Access and Management System (ADAMS) accession number ML082030154, as supplemented on November 20, 2008, ADAMS accession number ML083370180, Entergy on behalf of VY, requested a revision to the exemption from the provisions of 10 CFR Part 50, Appendix R, Section III.G.2, dated December 1, 1986 (ML011620492), which in part permitted a reduction in minimum separation distance between cable trays in the northwest corner of Fire Zone RB-3 of the Reactor Building to 18 feet. VY has requested a revision of the existing exemption to permit the actual minimum separation distance of 17 feet - 7.5 inches.

### 3.0 DISCUSSION

Pursuant to 10 CFR 50.12, the Commission may, upon application by any interested person or upon its own initiative, grant exemptions from the requirements of 10 CFR Part 50 when (1) the exemptions are authorized by law, will not present an undue risk to public health or safety, and are consistent with the common defense and security; and (2) when special circumstances are present. One of these special circumstances, described in 10 CFR 50.12(a)(2)(ii), is that the application of the regulation is not necessary to achieve the underlying purpose of the rule.

The underlying purpose of Subsection III.G.2 of 10 CFR Part 50, Appendix R, is to ensure that one of the redundant trains necessary to achieve and maintain hot shutdown conditions remains free of fire damage in the event of a fire.

The NRC staff reviewed the licensee's evaluation in support of the subject exemption request and concludes that the further reduction in minimum separation distance is sufficient to maintain an adequate level of safety to meet the requirements of 10 CFR 50.12(a)(2)(ii) in that the application of the regulation is not necessary to achieve the underlying purpose of the rule.

Authorized by Law

This exemption would permit a reduced minimum separation distance of 17 feet - 7.5 inches, instead of "more than 20 feet" between cable trays in Fire Zone RB-3, elevation 252 feet, provided all other passive and active forms of protection (e.g. lack of combustible fuel loading or fire hazards, fire detectors and automatic fire suppression system) are provided and maintained in accordance with III.G.2. As stated above, 10 CFR 50.12 allows the NRC to grant exemptions from the requirements of 10 CFR Part 50. The NRC staff has determined that granting of the licensee's proposed exemption will not result in a violation of the Atomic Energy Act of 1954, as amended, or the Commission's regulations. Therefore, the exemption is authorized by law.

No Undue Risk to Public Health and Safety

One of the underlying purposes of 10 CFR Part 50, Appendix R Section III.G is to protect safe shutdown capability. This is done by ensuring that one train of systems necessary to achieve and maintain hot shutdown conditions from either the control room or emergency control stations(s) is free of fire damage. III.G.2 provides the following means to ensure that a redundant train of safe shutdown equipment is free of fire damage, where redundant trains are located in the same fire area:

- a. separation of cables and equipment by a fire barrier having a 3-hour rating,
- b. separation of cables and equipment by a horizontal distance of more than 20 feet with no intervening combustibles or fire hazards and with fire detectors and an automatic fire suppression system in the fire area, or
- c. enclosure of cables and equipment in a fire barrier having a 1-hour rating and with fire detectors and an automatic fire suppression system in the fire area.

Entergy has indicated that the cable trays will be separated by a minimum distance of 17 feet - 7.5 inches for a horizontal distance of approximately 10 feet and that the remaining length of cable trays will be separated by more than 17 feet - 7.5 inches. Entergy has also

indicated that transient combustibles and hot work controls have been enhanced since the exemption was originally granted. This was accomplished by designating Fire Zone RB-3 as a "Level 2" combustible control area, which limits combustibles to moderate quantities and hot work requires prior review and approval of a fire protection engineer.

Additionally, Entergy has stated that a pre-action automatic sprinkler system is provided beneath the lowest level of cable trays and above the top level of cable trays in Fire Zone RB-3 and that manual suppression equipment is provided throughout Fire Zone RB-3 in the form of accessible fire hose stations and portable fire extinguishers. A fire detection system is provided in the form of ionization-type smoke detectors.

According to Entergy, the fire protection systems are functionally unchanged from what was previously included in the December 1, 1986, evaluation. The licensee has indicated that 1-hour 3M Interam fire barriers were installed to protect certain raceways in the northwest corner of elevation 252 feet however; no credit for the barriers has been requested as part of this exemption.

Based on the above, the exemption to allow the reduced minimum separation distance of 17 feet - 7.5 inches in lieu of the 20 feet dimension specified in III.G.2 a, b, and c, does not increase the probability of postulated accidents or undue risk. Based on the combination of a lack of combustible fuel loading and ignition sources, room configuration and the separation distance of 17 feet - 7.5 inches, the overall level of protection and defense in depth has been shown to meet or exceed the intent of the requirements included in III.G.2 and equivalent with regard to safe shutdown capability following a fire. Therefore, there is no additional risk to public health and safety.

#### Consistent with Common Defense and Security

The proposed exemption would permit a reduced minimum separation distance between cable trays in a select area in lieu of meeting the separation requirements specified in III.G.2.

This change has no relation to security issues. Therefore, the common defense and security is not impacted by this exemption.

#### Special Circumstances

Special circumstances, in accordance with 10 CFR 50.12(a)(2)(ii), are present whenever application of the regulation in the particular circumstances is not necessary to achieve the underlying purpose of the rule. Part of the underlying purpose of 10 CFR Part 50, Appendix R Section III.G is to assure safe shutdown capability. Entergy states that the active and passive fire protection features that were included in the original exemption remain functionally unchanged. This review determined that the reduction in minimum separation distance does not adversely affect the level of safety at the plant given the physical configuration of the cable trays, existing suppression and detection systems and the lack of combustible fuel loading in the area.

The combination of these safeguards is sufficient to maintain safe shutdown capability in the event of a fire even at the reduced separation distance of 17 feet - 7.5 inches. Since the underlying purpose of 10 CFR Part 50, Appendix R Section III.G to protect safe shutdown capability is achieved, the special circumstances required by 10 CFR 50.12(a)(2)(ii) for the granting of an exemption from 10 CFR Part 50, Appendix R Section III.G.2 exist.

#### 4.0 CONCLUSION

Accordingly, the Commission has determined that special circumstances are present and that, pursuant to 10 CFR 50.12(a), the exemption is authorized by law, will not present an undue risk to the public health and safety, and is consistent with the common defense and security levels intended by the rule for Nuclear Power Plants. Therefore, the Commission hereby grants Entergy an exemption from the requirements of III.G.2 b of 10 CFR Part 50, Appendix R, which is required by 10 CFR 50.48(b) for plants licensed to operate before January 1, 1979, to VY.

Pursuant to 10 CFR 51.32, the Commission has determined that the granting of this exemption will not have a significant effect on the quality of the human environment (74 FR 11612).

This exemption is effective upon issuance.

Dated at Rockville, Maryland, this 19th day of March 2009.

FOR THE NUCLEAR REGULATORY COMMISSION

A handwritten signature in black ink, appearing to read 'R. Nelson', with a long horizontal flourish extending to the right.

Robert A. Nelson, Acting Director  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

March 19, 2009

Site Vice President  
Entergy Nuclear Operations, Inc.  
Vermont Yankee Nuclear Power Station  
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Sincerely,

/RA/

James Kim, Project Manager  
Plant Licensing Branch I-1  
Division of Operating Reactor Licensing  
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ADAMS ACCESSION NUMBER: ML090270026

\*See memo dated December 30, 2008

OFFICE	LPL1-1/PM	LPL1-1/LA	PFPB/BC	OGC	LPL1-1/BC	DORL/D
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DATE	1/29/09	1/29/09	12/30/08	2/10/09	3/18/09	3/19/09

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