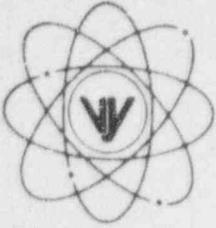


# VERMONT YANKEE NUCLEAR POWER CORPORATION



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REPL. TO  
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December 13, 1996  
BVY 96-158

United States Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, DC 20555

- References: (a) License No. DPR-28 (Docket No. 50-271)  
(b) Letter, USNRC to VYNPC, NVY 96-186, dated December 12, 1996  
(c) Letter, VYNPC to USNRC, BVY 96-43, dated April 4, 1996  
(d) Letter, VYNPC to USNRC, BVY 96-67, dated May 21, 1996  
(e) Letter, VYNPC to USNRC, BVY 96-139, dated November 4, 1996  
(f) Telecon, USNRC to VYNPC, dated December 11, 1996  
(g) Telecon, USNRC to VYNPC, dated December 12, 1996

**Subject: Response to Request for Additional Information Regarding 10CFR50,  
Appendix R Exemptions**

In Reference (b) the NRC requested additional information regarding exemption requests submitted by Vermont Yankee in References (c) and (d). The purpose of this letter is to provide the requested information. Attachment 1 provides our response.

As agreed in Reference (g), this response addresses only those questions related to Vermont Yankee's requested use of the Vernon Tie Line. In that discussion the NRC staff agreed with Vermont Yankee's intent to provide the NRC its plan for responding to the questions related to the use of ADS/CS by December 18, 1996.

We trust that this submittal provides the requested information. However, should you have questions or require additional information, please contact this office.

Sincerely,

VERMONT YANKEE NUCLEAR POWER CORPORATION

James J. Duffy  
Licensing Engineer

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PDR ADOCK 05000271  
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Attachment 1 170096

- c: USNRC Region I Administrator  
USNRC Project Manager - VYNPS  
USNRC Resident Inspector - VYNPS

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## Response to Request for Additional Information

### Question 2.1.1

**It is our understanding that the Vernon Tie will only be credited for use in the event of fire in the Control Room and Cable Spreading rooms with a concomitant loss of the normal sources of offsite power. Please confirm.**

### Response

As stated in Reference (d), only the Control Room and Cable Vault (including Battery Rooms) require Alternative Shutdown strategies. Therefore, the Vernon Tie will only be credited for use (in the Alternative Shutdown mode) in the event of fire in the control room and cable spreading room with a concomitant loss of normal sources of offsite power. However, based on our discussions with NRC staff in references (f) and (g), compliance with Appendix R may require Alternative Shutdown strategies for fires in the Reactor Building. Therefore, since loss of offsite power must be assumed for Reactor Building III.G.3 compliance, the Vernon Tie would also be credited for use (in the normal operational mode from the Control Room) in the event of a fire in those Reactor Building fire zones which may utilize III.G.3 compliance strategies.

### Question 2.1.2

**It is our understanding that the current design relies on Diesel Generator DG-1-1A powering 4160 V Bus 4 only. However, the Vernon Tie Line may be configured to power either 4160 V Bus 3, via breakers 3V4 and 3V, or 4160 V Bus 4, via breakers 3V4 and 4V. It is not clear whether the revised alternative shutdown methodology will rely on one or both of these buses being energized from the Vernon Tie Line. Please clarify.**

### Response

By procedure (OP 3126), the revised alternative shutdown methodology will rely only on 4160V Bus 4 being energized from the Vernon Tie Line.

### Question 2.1.3

The Vernon Tie originates at a 69/13.2 kV transformer located offsite at the Vernon Switchyard which also provided power to the town of Vernon. The Vernon tie is protected by a circuit breaker and the feed to the town of Vernon is protected by a vacuum recloser. Both of these devices are also located offsite, in the Vernon Switchyard. Given this configuration, it appears that the Vernon Station will supply power to both the Vermont Yankee Plant and the town of Vernon during the analyzed fire event. Please provide the results of your analysis which demonstrates that disturbances or transients that may occur in the Vernon town feed line will not affect the quality of power (e.g., voltage regulation) supplied to the plant. Additionally, this response should address what affect, if any, spurious operation of the recloser, either in response to valid

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**non-persistent transients on the Vernon feed line or other mechanisms, will have on the quality of electrical power supplied to the plant.**

#### Response

The 69/13.2 kV transformer located at the Vernon switchyard supplies two radial lines. The line to the town of Vernon is protected by a vacuum recloser. The line to Vermont Yankee is protected by an oil circuit breaker. The equipment is under control of New England Power Company.

The recloser has an interrupting time of 0.025 seconds and will attempt to reclose three times (after 1 second, after 15 additional seconds, and again after another 15 seconds) before it locks out.

A transient on the Vernon line occurring away from the switchyard would be interrupted by the closest line fuse. The recloser would respond only if the fault current at the switchyard exceeded the pick up value. The recloser response time is approximately 0.8 seconds for a high resistance fault, or for a fault out at the end of the line away from the switchyard. The low fault current expected in such scenarios would result in an insignificant voltage drop on the Vermont Yankee circuit.

For a fault on the Vernon line which occurs upstream of any line fuse, or close to the switchyard, the recloser would respond. The worst case fault current would be derived from a zero impedance fault right outside the switchyard. In this scenario, the recloser response time would be approximately 0.08 seconds. The higher fault current would result in a higher voltage drop on the Vermont Yankee circuit. However, the fault and ensuing voltage drop would be seen for only 0.15 seconds. These short duration transients would not cause actuation of protective relaying at Vermont Yankee or affect the Appendix R Safe Shutdown loads.

Spurious operation of the Vernon line recloser which is not due to a line fault would have no effect on the Vermont Yankee circuit.

#### Question 2.1.4

**Do coordination studies bound the Vernon Tie Line protection devices?**

#### Response

Vermont Yankee has established coordination among protective devices within the plant. Circuit breaker trip settings for VY Breaker 3V4, along with Vernon Tie Transformer and cable information, have been provided to New England Power Service Company (NEPSCO). NEPSCO has used this information to establish trip settings for the circuit breaker for the Vernon Tie Line. Thus ensuring coordination with VY Breaker 3V4. NEPSCO's recloser for Vernon, and breaker for VY are coordinated with their switchyard and station breakers.

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Question 2.1.5

**Verify that procedures have been developed to implement the alternative shutdown capability when power is supplied from the Vernon Tie Line and when offsite power remains available.**

Response

OP-3126, Shutdown Using Alternate Shutdown Methods, currently requires that control circuits to Buses 4 and 9 be energized from 'A' EDG independent of the availability of offsite power. A revision of OP-3126 that would direct station operators to use the Vernon Tie in lieu of the 'A' EDG independent of the availability of offsite power has been developed and will be implemented upon approval of this exemption request. The use of the 'A' EDG or Vernon Tie ensures that power to Buses 4 and 9 is not affected by the fire any time later in the event.

Question 2.1.6

**Describe periodic surveillance tests and maintenance performed to verify the operational adequacy of the electrical power supplied by the Vernon Tie Line.**

Response

Maintenance on the Vernon Tie Transformer is conducted once per plant refueling cycle in accordance with OP-5216. This includes verifying oil level, recording pressure and liquid temperature, verifying tap changer position, checking for leaks, cleaning bushings and performing insulation resistance tests. In addition, a dielectric-loss test is performed. Surveillance consists of weekly rounds to check for general condition, and a once per refueling cycle load test in accordance with OP-4142.

Question 2.1.7

**The Vernon Hydro Generation Station, the Vernon Switchyard, and certain components essential to operation of the Vernon Tie (e.g., the circuit breaker), appear to be under control of a separate, independent, entity the New England Power Company (NEPCO). Please explain the potential for impact, if any, from this apparent difference in jurisdiction or "ownership" may have on VYNPC's ability to assure the long-term availability and operability of this power source.**

Response

While it is true that New England Power Company (NEPCO) is a separate, independent entity from Vermont Yankee Nuclear Power Corporation (VYNPC), NEPCO is also the second largest stock owner of VYNPC and has two representatives on the VYNPC Board of Directors.

Additionally, NEPCO owns the dams on the Connecticut River both upstream and downstream of the Vermont Yankee Nuclear Power Station and directly controls the flow of river water past

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the station. Because river flow directly affects the use of the Vermont Yankee station cooling towers, we maintain a close operational relationship with the Vernon Hydro Station operators and have a long standing contract indenture with NEPCO for this purpose.

In the event the ownership of the Vernon Hydro Station were to change for any reason, VYNPC will ensure a similar relationship and contract are established with any new owner.