Entergy

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August 22, 2002
BVY 02-67

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555

References:
(a) Letter, VYNPC to USNRC, "Technical Specification Proposed Change No. 250, Scram and Isolation Valve Closure Functions of the Main Steam Line Radiation Monitors," BVY 02-18, March 19, 2002
(b) Letter, VYNPC to USNRC, "Technical Specification Proposed Change No. 250, Supplement No. 1, Scram and Isolation Valve Closure Functions of the Main Steam Line Radiation Monitors," BVY 02-41, June 4, 2002
(c) Letter, VYNPC to USNRC, "Technical Specification Proposed Change No. 250, Scram and Isolation Valve Closure Functions of the Main Steam Line Radiation Monitors – Additional Information," BVY 02-49, July 16, 2002
(d) Letter, VYNPC to USNRC, "Technical Specification Proposed Change No. 250, Scram and Isolation Valve Closure Functions of the Main Steam Line Radiation Monitors – Additional Information No. 2," BVY 02-52, July 24, 2002

**Subject:** **Vermont Yankee Nuclear Power Station**
**License No. DPR-28 (Docket No. 50-271)**
**Technical Specification Proposed Change No. 250**
**Scram and Isolation Valve Closure Functions**
**of the Main Steam Line Radiation Monitors –**
**Additional Information No. 3**

By letter dated March 19, 2002 [Reference (a)] and supplemented by letter dated June 4, 2002 [Reference (b)], Vermont Yankee (VY) proposed to amend its Facility Operating License, DPR-28 by eliminating the reactor scram and main steam isolation valve closure requirements associated with the main steam line radiation monitors (MSLRMs) and modifying other requirements related to MSLRM trip functions. Additional information in this regard was provided by References (c) and (d). The information provided herewith supplements References (a) through (d) and responds to questions posed by NRC staff during a telephone conference conducted on August 19, 2002.

If you have any questions on this transmittal, please contact Mr. Gautam Sen at (802) 258-4111.

Sincerely,

Michael A. Balduzzi
Vice President, Operations

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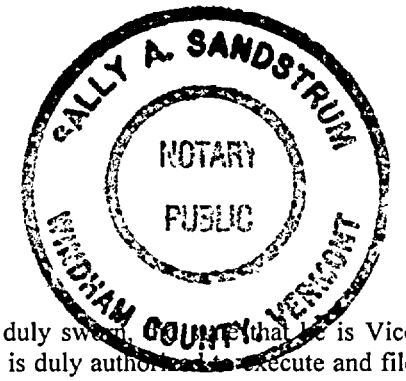


STATE OF VERMONT )
)ss
WINDHAM COUNTY )

Then personally appeared before me, Michael A. Balduzzi, who, being duly sworn, stated that he is Vice President, Operations of Vermont Yankee Nuclear Power Station, that he is duly authorized to execute and file the foregoing document, and that the statements therein are true to the best of his knowledge and belief.

Sally A. Sandstrum, Notary Public
My Commission Expires February 10, 2003

Attachment

cc: USNRC Region 1 Administrator (Attachment without CD-ROM)
USNRC Resident Inspector – VYNPS (Attachment without CD-ROM)
USNRC Project Manager – VYNPS (Attachment with CD-ROM)
Vermont Department of Public Service (Attachment without CD-ROM)

Docket No 50-271
BVY 02-67

Attachment

Vermont Yankee Nuclear Power Station

Proposed Technical Specification Change No. 250

Scram and Isolation Valve Closure Functions of the
Main Steam Line Radiation Monitors

Additional Information No. 3

# RESPONSE TO NRC REQUEST FOR ADDITIONAL INFORMATION
## Vermont Yankee Proposed Change No. 250

### RESPONSE TO RAI #4

**Question 4:** (paraphrased)

Please provide the bases (inputs and assumptions) for the following atmospheric dispersion factors ($\chi$/Qs):

a. Main stack to worst-case offsite receptor;
b. Main stack to the low population zone (LPZ);
c. Main stack to the control room intake; and
d. Turbine building to the control room intake.

**Response:**

The $\chi$/Qs in question appear in Table 1.2 of BVY 02-49 (Ref. c) for main stack releases to the worst-case offsite receptor and the LPZ, and in Table 3.2 of BVY 02-49 for main stack and turbine building releases to the control room. These $\chi$/Qs are based on the design inputs and assumptions in Tables 4.1 through 4.4 of this document. Refer also to Table 2.1 of BVY 02-52 (Ref. d) for turbine building releases and receptors at the exclusion area boundary (EAB)

The attached CD ROM provides an update to the hourly meteorological data collected on site at Vermont Yankee during the years 1989-1993 that was transmitted in Reference (d). Namely, the stabilities derived from these files were based on the temperature difference between the upper (295-ft) and lower (33-ft) $\Delta$T instrument levels. It is noted that the hourly meteorological databases employed in the computation of the $\chi$/Qs addressed in this response (i.e., the databases for 1979 and 1985) are not included in the attached CD ROM.

All $\chi$/Q values were generated with the Framatome ANP DE&S computer code SKIRON-II which implements the Regulatory Guide 1.145 methodology, along with a "sliding window" approach for averaging time spans greater than one hour.

# RESPONSE TO NRC REQUEST FOR ADDITIONAL INFORMATION
## Vermont Yankee Proposed Change No. 250

### Table 4.1

### Design Input and Assumptions for Atmospheric Dispersion Factor Calculation
### Main Stack Releases toWorst-Case Offsite Receptor

| Seq. | DESCRIPTION | | VALUE |
|---|---|---|---|
| 1 | Atmospheric dispersion factors ($\chi$/Q) | 0 - 0.5 hr<br>0.5 – 1 hr<br>1 – 2 hr | 2.03E-04 (fumig.)<br>1.54E-04<br>9.17E-05 |
| 2 | Release height (stack height) | | 93.9 m |
| 3 | Building cross-sectional area and height for building wake effects | | Not applicable |
| 4 | Plume meander | | Not applicable |
| 5 | Minimum wind speed acceptable as valid observation, and wind speed assigned to calms | | 0.268 m/sec |
| 6 | Temperature sensor separation (295'-33') | | 79.9 m |
| 7 | Plume rise | | Not applicable |
| 8 | Average depth of limited mixing layer (for plume reflection) | | 950 m |
| 9 | Critical receptor distances from stack, and associated terrain heights<br>1. 0-0.5 hr - fumigation condition (shortest distance from the stack to a receptor on the Site Area Boundary for Gaseous Effluents within a 45-degree sector centered on the compass direction of interest, per Sec. C.1.2 of Reg. Guide 1.145)<br>2. 0.5 – 2 hr (where the terrain height first exceeds the stack height) | | D = 253 m (WSW)<br>$h_t$ = 2.4 m<br>D = 2100 m (W)<br>$h_t$ = 106.1 m |
| 10 | Recirculation correction | | Not considered |
| 11 | Meteorological data base | | Hourly site data for 1985 |

# RESPONSE TO NRC REQUEST FOR ADDITIONAL INFORMATION
## Vermont Yankee Proposed Change No. 250

### Table 4.2

### Design Input and Assumptions for Atmospheric Dispersion Factor Calculation
### Main Stack Releases to LPZ

| Seq. | DESCRIPTION | | VALUE |
|---|---|---|---|
| 1 | Atmospheric dispersion factors ($\chi$/Q) | 0 - 0.5 hr<br>0.5 – 1 hr<br>1 – 2 hr<br>2 – 8 hr<br>8 – 24 hr<br>24 – 96 hr<br>96 – 720 hr | 2.55E-05<br>2.55E-05<br>1.87E-05<br>1.01E-05<br>1.09E-06<br>6.90E-07<br>4 61E-07 |
| 2 | Release height (stack height) | | 93.9 m |
| 3 | Building cross-sectional area and height for building wake effects | | Not applicable |
| 4 | Plume meander | | Not applicable |
| 5 | Minimum wind speed acceptable as valid observation, and wind speed assigned to calms | | 0.268 m/sec |
| 6 | Temperature sensor separation (295'-33') | | 79.9 m |
| 7 | Plume rise | | Not applicable |
| 8 | Average depth of limited mixing layer (for plume reflection) | | 950 m |
| 9 | Receptor distance from stack (all sectors) | | 5 miles (8047 m) |
| 10 | Terrain height at receptors (arbitrarily set higher than the release height of 93.9 m; i.e., plume centerline is at ground level) | | 100 m |
| 11 | Recirculation correction | | Not considered |
| 12 | Meteorological data base | | Hourly site data for 1985 |

# RESPONSE TO NRC REQUEST FOR ADDITIONAL INFORMATION
## Vermont Yankee Proposed Change No. 250

### Table 4.3

### Design Input and Assumptions for Atmospheric Dispersion Factor Calculation
### Main Stack Releases to Control Room Intake

| Seq. | DESCRIPTION | | VALUE |
|---|---|---|---|
| 1 | Atmospheric dispersion factors ($\chi$/Q) | 0 - 0.5 hr<br>0.5 – 1 hr<br>1 – 2 hr<br>2 – 8 hr<br>8 – 24 hr<br>24 – 96 hr<br>96 – 720 hr | 2.39E-04 (fumig.)<br>1.05E-06<br>8.70E-07<br>4.79E-07<br>2.34E-07<br>1.23E-07<br>6.90E-08 |
| 2 | Release height (stack height) | | 93.9 m |
| 3 | Building cross-sectional area and height for building wake effects | | Not applicable |
| 4 | Plume meander | | Not applicable |
| 5 | Minimum wind speed acceptable as valid observation, and wind speed assigned to calms | | 0.268 m/sec |
| 6 | Temperature sensor separation (295'-33') | | 79.9 m |
| 7 | Plume rise | | Not applicable |
| 8 | Average depth of limited mixing layer (for plume reflection) | | 950 m |
| 9 | Receptor distances to critical locations, and terrain heights<br>1. 0 – 0.5 hr (Fumigation condition – d istance from stack to control room (CR) building)<br>2. 0.5 – 720 hrs (worst sector, distance from stack to CR air intake) [Note: The concentration at the intake is higher than at the CR building, since, for elevated plumes, the plume spreads closer to the ground as the distance from the release point increases.] | | D = 213 m<br>$h_t$ = 2.4 m<br><br>D = 259 m (SSE)<br>$h_t$ = 2.4 m |
| 10 | Recirculation correction | | Not considered |
| 11 | Meteorological data base | | Hourly site data for 1985 |

# RESPONSE TO NRC REQUEST FOR ADDITIONAL INFORMATION
## Vermont Yankee Proposed Change No. 250

### Table 4.4

### Design Input and Assumptions for Atmospheric Dispersion Factor Calculation
### Turbine Building Releases to Control Room Intake

| Seq. | DESCRIPTION | | VALUE |
|---|---|---|---|
| 1 | Atmospheric dispersion factors ($\chi$/Q) | 0 – 1 hr<br>1 – 2 hr<br>2 – 8 hr<br>8 – 24 hr<br>24 – 96 hr<br>96 – 720 hr | 3.665E-03<br>2.187E-03<br>7.572E-04<br>3.934E-04<br>2.705E-04<br>2.044E-04 |
| 2 | Release height | | Ground level |
| 3 | Building cross-sectional area for building wake effects (CR-affecting sectors) [Note: In view of the short distance to the CR, plume meander was excluded, and no limit was imposed on the building-wake correction.] | | 2114 $m^2$ |
| 4 | Building height (for building wake effects, sector averaging model) | | 21 m |
| 5 | Minimum wind speed acceptable as valid observation | | 0.268 m/sec |
| 6 | Wind speed assigned to calms | | 0.134 m/sec |
| 7 | Temperature sensor separation (198'-33') | | 50.3 m |
| 8 | Plume rise and terrain heights | | Not applicable |
| 9 | Average depth of limited mixing layer (for plume reflection) | | 1000 m |
| 10 | Downwind sectors which may potentially affect the control room [Note: Selected $\chi$/Q was for worst-case individual sector] | | NE, ENE, E, ESE and SE |
| 11 | Receptor distance (release point to CR) | | 25 m (all sectors) |
| 12 | Recirculation correction | | Not considered |
| 13 | Meteorological data base | | Hourly site data for 1979 |

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