

RADIOACTIVE EFFLUENT
RELEASE REPORT
FOR 2013
INCLUDING ANNUAL RADIOLOGICAL
IMPACT ON MAN

Entergy Nuclear Vermont Yankee, LLC
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Radiological Effluent Release Report for 2013
[Including Annual Radiological Impact on Man]
Entergy Nuclear Vermont Yankee, LLC

1.0 INTRODUCTION

Tables 1 through 3 list the recorded radioactive liquid and gaseous effluents and solid waste shipments for the year, with data summarized on a quarterly basis for both liquids and gases. Table 4A summarizes the estimated radiological dose commitments from all radioactive liquid and gaseous effluents released during the year 2013 in response to the ALARA objectives of 10 CFR Part 50, Appendix I. Also included in Table 4A is the estimate of direct dose from fixed station sources along the limiting west site boundary line. Tables 5A through 6H report the cumulative joint frequency distributions of wind speed, wind direction, and atmospheric stability for the 12-month period, January to December 2013. Radioactive effluents reported in Tables 1 and 2 were used to determine the dose to the maximum exposed individual for 2013.

Dose commitments resulting from the release of radioactive materials in liquids and gases during the reporting period were estimated in accordance with the plant's Off-Site Dose Calculation Manual (ODCM), Section 10.1 (Reference 1). These dose estimates were made using a "Method II" analysis as described in the ODCM, and as reported in Tables 4A and 4B of this report. A "Method II" analysis incorporates the methodology of Regulatory Guide 1.109 (Reference 2) and actual measured meteorological data recorded concurrently with the quarterly reporting period.

As required by ODCM Section 10.1, this report shall also include an assessment of the radiation doses from radioactive effluents to member(s) of the public due to allowed recreational activities inside the site boundary during the year. As discussed in Section 3.6, there were no such recreational activities permitted and, therefore, there is no associated dose assessment.

An assessment of radiation doses (including direct radiation) to the likely most exposed real member(s) of the public for the calendar year for the purposes of demonstrating conformance with 40 CFR Part 190, "Environmental Radiation Protection Standards for Nuclear Power Operations," is also required to be included in this report if the conditions indicated in ODCM 3/4.4, "Total Dose," have been exceeded during the year. Since the conditions indicated in the action statement under ODCM 3/4.4 were not entered into during the year, no additional radiation dose assessment is required. However, Table 4B does provide the combination of off-site doses and dose commitments from plant effluents and direct radiation sources for the limiting member of the public as a demonstration of compliance with the dose standards of 40 CFR Part 190.

All calculated dose estimates for members of the public at the site boundary or beyond for the 2013 annual reporting period are below the dose criteria of 10 CFR Part 50, Appendix I, and 40 CFR Part 190.

Appendices B through H indicate the status of reportable items per the requirements of ODCM Section 10.1.

2.0 METEOROLOGICAL DATA

Meteorological data were collected in 2013 from the site's 300-foot meteorological tower located approximately 2,200 feet northwest of the reactor building, and about 1,400 feet from the plant stack. The 300-foot tower is approximately the same height as the primary plant stack (308 feet) and is designed to meet the requirements of Safety Guide 23 (Reference 3) for meteorological monitoring. In mid-2009, the tower was moved to a location approximately 200 feet northwest of the original location.

χ/Q and D/Q values for elevated releases were derived for all receptor points from the site meteorological record for each quarter using a straight-line airflow model. All dispersion factors have been calculated employing appropriate source configuration considerations, as described in Regulatory Guide 1.111 (Reference 4). A source depletion model as described in "Meteorology and Atomic Energy - 1968" (Reference 5) was used to generate deposition factors, assuming a constant deposition velocity of 0.01 m/sec for all stack (elevated) releases. Changes in terrain elevations in the site environment were also factored into the meteorological models as appropriate.

In the event of a ground-level release, χ/Q and D/Q values would be derived for the site boundary receptor points from the site meteorological record for each quarter using a straight-line airflow model. During this reporting period, there were no routine ground-level releases. On March 18, 2013, there was a non-routine gaseous effluent release from the Reactor Building due to an over-pressurization condition which resulted in the release of a blow out panel from the west wall.

Table 4C lists the distances from the plant stack to the nearest site boundary, resident, and milk animal in each of the 16 principle compass directions as determined during the 2013 land use census. These locations were used in the calculation of atmospheric dispersion factors. The meteorological model was also executed for each calendar quarter to determine the location of the predicted maximum ground level air concentration from elevated releases from the plant's primary vent stack. These locations were included in the assessment of effluent doses along with identified points of interest from the annual land use census.

3.0 DOSE ASSESSMENT

3.1 Doses From Liquid Effluents

ODCM 3/4.2.2 limits total body doses (1.5 mrem per quarter, and 3 mrem per year) and organ doses (5 mrem per quarter, and 10 mrem per year) from liquid effluents to a member of the public to those specified in 10 CFR Part 50, Appendix I. By implementing the requirements of 10 CFR Part 50, Appendix I, ODCM 3/4.2.2 assures that the release of radioactive material in liquid effluents will be kept "as low as is reasonably achievable."

There were no recorded routine liquid radioactive waste discharges during the report period. However, an abnormal release to the Connecticut River is postulated due to a past leak in an underground pipe tunnel that runs between the Advanced Offgas (AOG) system building and other plant buildings which allowed accumulated piping system leakage to enter the subsurface groundwater adjacent to the plant structures. The existence of the leak was first recognized in January 2010, when a river shoreline Protected Area Boundary monitoring well sample was reported to have detectable tritium. The addition of other monitoring wells and subsequent analysis defined the extent of the affected groundwater plume moving toward the river and helped locate the source of the leak, which was stopped in February 2010.

Estimates of tritium-contaminated ground water released from the site are based on Protected Area Boundary monitoring well data collected throughout 2013, and hydrological modeling of ground water movement in the affected zone impacted by the pipe tunnel leak. Using a conservative estimate of groundwater flow through the affected area toward the river on a quarterly basis, an estimate of the total potential tritium released from the site during each quarter of 2013 was generated and reported in Table 2A.

For the projected ground water flow into the Connecticut River in 2013, the dose impact to the maximum exposed individual (MEI) assumed the following exposure pathways: (1) ingestion of fish (taken from Vernon Pond), (2) ingestion of vegetables and fresh leafy produce irrigated by water taken from the river below Vernon Dam, (3) ingestion of milk and meat from animals that were fed irrigated crops and drinking water taken from the river below Vernon Dam, and (4) potable water for a hypothetical individual drawing drinking water fed by the river below Vernon Dam. For Vernon Pond (river area adjacent to the plant property), the near shore mixing zone associated with the fish ingestion pathway is conservatively taken as 1% of the minimum recorded monthly river flow (4,291 cfs in October 2013) for dilution. All irrigation exposure pathways for the consumption of food products grown with irrigated water occur below Vernon Dam and assume the lowest 2013 quarterly average growing season river flow value (9,428 cfs in the third quarter) for environmental mixing. For the drinking water pathway, river flow mixing is assumed to occur below Vernon Dam and uses the lowest annual quarterly average river flow (7,164 cfs in the fourth quarter) as a conservative estimate of river dilution for all four quarters of the year. The dose models are taken from Regulatory Guide 1.109 (Reference 2) and use environmental parameters for exposure pathways listed in Tables 4D and 4F.

The maximum estimated quarterly and annual whole body and organ doses to the limiting age group from liquid releases are reported in Table 4A. These estimated doses are well below the 10 CFR Part 50, Appendix I dose criteria of ODCM 3/4.2.2. Table 4B provides an estimate of the total annual dose impact (including contribution from liquids) associated with the highest exposed member of the public for demonstration of compliance to the dose standard contained in 40 CFR Part 190 for the uranium fuel cycle.

3.2 Doses From Noble Gases

ODCM 3/4.3.2 limits the gamma air dose (5 mrad per quarter, and 10 mrad per year) and beta air (10 mrad per quarter, and 20 mrad per year) dose from noble gases released in gaseous effluents from the site to areas at and beyond the site boundary to those specified in 10 CFR Part 50, Appendix I. By implementing these, ODCM 3/4.3.2 assures that the releases of radioactive noble gases in gaseous effluents will be kept "as low as is reasonably achievable."

Dose estimates due to the release of noble gases to the atmosphere are typically calculated at the site boundary, at the nearest resident in each of the sixteen principal compass directions, at the point of highest off-site ground level air concentration of radioactive materials, and at each of the milk animal locations located within five miles of the plant. For 2013, there were no noble gases detected in effluents released from the plant stack.

3.3 Doses From Iodine-131, Iodine-133, Tritium, Carbon-14, and Radionuclides in Particulate Form with Half-Lives Greater Than 8 Days

ODCM 3/4.3.3 limits the organ dose to a member of the public from Iodine-131, Iodine-133, Tritium, Carbon-14, and radionuclides in particulate form with half-lives greater than 8 days (hereafter called "iodines and particulates") in gaseous effluents released from the site to areas at and beyond the site boundary to those specified in 10 CFR Part 50, Appendix I (7.5 mrem per quarter and 15 mrem per year). By implementing the requirements of 10 CFR Part 50, Appendix I, ODCM 3/4.3.3 assures that the releases of iodines and particulates in gaseous effluents will be kept "as low as is reasonably achievable."

During 2013, a single frac tank was used on the Vermont Yankee site to temporarily store (outdoors) tritium-contaminated water extracted from onsite groundwater wells. The quantity of tritium released to the atmosphere through the evaporation of water from this frac tank was estimated, and the dose consequence to the maximally exposed individual was calculated.

On March 18, 2013, a brief Reactor Building over-pressurization condition resulted in the blow out panel in the west wall of the Reactor Building to release (by design). Within two minutes of the release, a negative pressure differential with the outside environment was re-established in the Reactor Building, stopping the release directly to the environment. Investigation into this unplanned, non-routine release indicated that only a small airborne discharge occurred which is quantified on Table 1D. The dose evaluation into the impact of the release utilized site meteorological data recorded during the release period. The atmospheric dispersion at the time of the release indicated that the maximum site boundary location is to the ENE (451 meters). Since the release occurred before the growing season for food products, the principal exposure pathway to a member of the public was through inhalation. Following the dose models and maximum individual inhalation factors for all four age groups (adult, teen, child & infant), the critical organ dose commitments show that the teen is the highest impacted of all the ages ($5.27E-05$ mrem), and that the lung is the critical organ with almost 98% of the dose coming from Co-60. The maximum total body dose commitment is to the Child ($3.39E-05$ mrem) with Co-60 contributing over 44% of the total. These dose impacts are well below the 10CFR50, Appendix I dose objectives and contribute only a small fraction of the dose commitment from all other plant effluent and direct dose commitments.

Exposure pathways that could exist as a result of the planned (routine) release of iodines and particulates to the atmosphere include external irradiation from activity deposited onto the ground surface, inhalation, and ingestion of vegetables, meat and milk. Dose estimates were made at the site boundary and nearest resident in each of the sixteen principal compass directions, as well as all milk animal locations within five miles of the plant. The nearest resident and milk animals in each sector were identified by the most recent annual land use census as required by ODCM 3/4.5.2 (see Table 4C). Conservatively, a vegetable garden was assumed to exist at each milk animal and nearest resident location. Furthermore, the meat pathway was assumed to exist at each milk cow location since this data category is not part of the annual land use census. Doses were also calculated at the point of maximum ground level air concentration of radioactive materials in gaseous effluents and included the assumption that the inhalation, vegetable garden, and ground plane exposure pathways exist for an individual with a 100 percent occupancy factor.

It is assumed that milk and meat animals are free to graze on open pasture during the second and third quarters with no supplemental feeding. This assumption is conservative since most of the milk animals inventoried in the site vicinity are fed stored feed throughout the entire year with only limited grazing allowed during the growing season. It has also been assumed that only 50 percent of the iodine deposited from gaseous effluent is in elemental form (I_2) and is available for uptake (see p. 6, Reference 2). During the non-growing season (first and fourth quarters), the milk animals are assumed to receive only stored feed. During the growing season (second and third quarters), all animal feed is assumed to be derived from fresh pasture. Usage factors for gaseous effluents are listed by age group and pathway in Table 4D. Table 4E provides other dose model parameter assumptions used in the dose assessments.

In June 2009, the NRC issued Revision 2 of Regulatory Guide 1.21 (Reference 6) which introduced the term “principal radionuclide” in a risk-informed or dose context. A radionuclide can be considered a principal radionuclide if it contributes either (1) greater than 1 percent of the 10 CFR Part 50, Appendix I design objective dose for all radionuclides in the type of effluent being considered, or (2) greater than 1 percent of the activity of all radionuclides in the type of effluent being considered. In addition to natural production in the environment, Carbon-14 is also produced in nuclear reactors as a function of power output, but at amounts much less than those generated naturally or from past weapons testing. Since the time of the earlier publication of Regulatory Guide 1.21 (Revision 1) in 1974, commercial nuclear power plants have decreased total radioactive effluents (other than Carbon-14) through improved fuel performance and waste management practices to the point today that Carbon-14 could be considered a principal radionuclide under today’s definition, and therefore has been included in the assessment of dose to the public from gaseous effluent releases for 2013.

The primary exposure pathways associated with Carbon-14 include inhalation and ingestion of food products that have incorporated Carbon-14 (in the form of CO_2) via photosynthesis. A full year’s consumption of food products are assumed to be grown from the highest impacted garden during the growing season (2nd and 3rd quarters). It is also assumed that the garden grows sufficient mass to support ingestion throughout the year (i.e., the annual dose to the individual is from consumption during all four quarters).

The resultant organ doses were determined after adding the contributions from all pathways at each location. Doses were calculated for the whole body, GI-tract, bone, liver, kidney, thyroid, lung, and skin for adults, teenagers, children, and infants. The maximum estimated quarterly and annual organ doses to any age group due to iodines and particulates at any of the off-site receptor locations are reported in Table 4A. These estimated organ doses are well below the 10 CFR Part 50, Appendix I dose criteria of ODCM 3/4.3.3. Table 4B provides an estimation of the total annual dose impact (including contributions from iodines and

particulates) associated with the highest exposed member of the public for demonstration of compliance with the dose standard contained in 40 CFR Part 190 for the uranium fuel cycle.

3.4 Whole Body Doses in Unrestricted Areas From Direct Radiation

The major dose in unrestricted areas occurs at the west site boundary, and mainly consists of direct and skyshine radiation from N-16 decay in the Turbine Building steam cycle during power operations. Because of the orientation of the Turbine Building on the site, and the shielding effects of the adjacent Reactor Building, only the seven westerly sectors (SSW to NNW) are exposed to any significant direct radiation.

A correlation method was derived, based on site boundary exposure rate and in-plant Main Steam Line Radiation Monitor measurements, that allows changes in the N-16 carryover in the main steam flow to be directly related to changes in the site boundary dose. This correlation is documented in section 6.11.1 (Equation 6-27a) of the ODCM. This method was used to calculate direct dose within the area of the maximum site boundary location from radiation sources in the steam cycle.

The other fixed sources of direct and scatter radiation to the site boundary are the Independent Spent Fuel Storage Installation (ISFSI), the low level radioactive materials stored in the North Warehouse, the Low Level Waste Storage Pad Facility, and old turbine rotors and casings in the Turbine Storage Facility. The annual dose is based on dose rate measurements in these storage facilities and is projected to impact the same most restrictive site boundary dose location as that for N-16 shine from the Turbine Building.

The estimated direct radiation dose from all major sources combined for the most limiting site boundary location is listed in Table 4A. These site boundary doses assume a 100 percent occupancy factor, and take no credit for the shielding effect of any residential structure.

Table 4B lists the combination of direct radiation doses at the limiting site boundary location and the maximum offsite dose from gaseous and liquid effluents for the purpose of demonstrating compliance with the dose standards contained in 40 CFR Part 190. For 2013, this annual dose was below the 25 mrem total body and organ limit, as well as the 75 mrem thyroid limit, of 40 CFR Part 190.

3.5 Doses From On-Site Disposal of Septic Waste, Cooling Tower Silt and Soil

ODCM Appendices B, F, and I require that all septic waste, cooling tower silt, and sand/soil applied within the approved designated disposal areas be controlled to ensure the dose to a maximally exposed individual during the period of Vermont Yankee site control is limited to less than 1 mrem/year to the whole body and any organ. After the period associated with Vermont Yankee operational control, the dose to the inadvertent intruder is to be limited to 5 mrem/year. The projected dose from on-site disposals of septic waste, cooling tower silt, and sand/soil mixes is given in Appendix J of this report.

The dose limits applicable to the on-site spreading of materials were met for the single spreading of septic waste in 2013 (in which 0.357 microcuries of Co-60 were spread on the south disposal field), based on the combined dose from this spreading and all past spreadings.

3.6 On-Site Recreational Activities

During 2013, no access to the on-site boat launching ramp located north of the intake structure was permitted for employees, their families, and guests. As such, there was no associated dose impact to members of the public.

REFERENCES

1. Off-site Dose Calculation Manual (ODCM), Revision 34, Entergy Nuclear Vermont Yankee, LLC , dated July 8, 2011.
2. Regulatory Guide 1.109, "Calculation of Annual Doses to Man From Routine Release of Reactor Effluents for the Purpose of Evaluating Compliance with 10 CFR Part 50, Appendix I," U. S. Nuclear Regulatory Commission, Office of Standards Development, Revision 1, October 1977.
3. Safety Guide 1.23, "Onsite Meteorological Programs," U.S. Atomic Energy Commission, February 17, 1972.
4. Regulatory Guide 1.111, "Methods for Estimating Atmospheric Transport and Dispersion of Gaseous Effluents in Routine Releases from Light-Water-Cooled Reactors," U.S. Nuclear Regulatory Commission, Office of Standards Development, March 1976.
5. Meteorology and Atomic Energy, 1968, Section 5-3.2.2, "Cloud Depletion," page 204, U. S. Atomic Energy Commission, July 1968.
6. Regulatory guide 1.21, "Measuring, Evaluating, and Reporting Radioactive Material in Liquid and Gaseous Effluents and Solid Waste," U.S. Nuclear Regulatory Commission, Office of Nuclear Regulatory Research, Revision 2, June 2009.

TABLE IA

**Entergy Nuclear Vermont Yankee
Effluent and Waste Disposal Annual Report for 2013
Gaseous Effluents - Summation of All Releases**

	Unit	Quarter 1	Quarter 2	Est. Total Error, %
A. Fission and Activation Gases				
1. Total release	Ci	ND	ND	±2.30E+01
2. Average release rate for period	µCi/sec	ND	ND	N/A
3. Percent of ODCM limit (1)	%	ND	ND	N/A
B. Iodines				
1. Total Iodine	Ci	9.03E-05	ND	±1.80E+01
2. Average release rate for period	µCi/sec	1.14E-05	ND	N/A
3. Percent of ODCM limit (3)	%	(3)	(3)	N/A
C. Particulates				
1. Particulates with T-1/2>8 days	Ci	6.99E-07	ND	±1.80E+01
2. Average release rate for period	µCi/sec	8.79E-08	ND	N/A
3. Percent of ODCM limit (3)	%	(3)	(3)	N/A
4. Gross alpha radioactivity	Ci	ND	ND	N/A
D. Tritium (4)				
1. Total release	Ci	1.52E-01	3.60E-01	±1.80E+01
2. Average release rate for period	µCi/sec	1.91E-02	4.53E-02	N/A
3. Percent of ODCM limit (3)	%	(3)	(3)	N/A
E. Carbon-14				
1. Total release	Ci	1.41E+00	1.81E+00	(5)
2. Percent of ODCM limit (2)	%	5.46E+00	7.01E+00	N/A

ND = Not Detected

- (1) ODCM Control 3.3.2. for the most limiting of beta air or gamma air dose. Percentage of ODCM limit calculated using Method I dose results.
- (2) ODCM Control 3.3.3. for dose from 1-131, 1-133, Tritium, Carbon-14 and radionuclides in particulate form. Percentage of ODCM limit calculated using Method I dose results.
- (3) Per ODCM Control 3.3.3, the dose contribution from Tritium, Iodines, and particulates are included with Carbon-14 in Part E.
- (4) Tritium released through evaporation from the onsite frac tank is included in these totals.
- (5) The total Carbon-14 release is calculated, based on EPRI Technical Report 1021106, "Estimation of Carbon-14 in Nuclear Power Plant Gaseous Effluents." The "Estimated Total Error" is therefore not applicable.

TABLE 1A
(Continued)

Entergy Nuclear Vermont Yankee
Effluent and Waste Disposal Annual Report for 2013
Gaseous Effluents - Summation of All Releases

	Unit	Quarter 3	Quarter 4	Est. Total Error, %
A. Fission and Activation Gases				
1. Total release	Ci	ND	ND	±2.30E+01
2. Average release rate for period	µCi/sec	ND	ND	N/A
3. Percent of ODCM limit (1)	%	ND	ND	N/A
B. Iodines				
1. Total Iodine	Ci	6.20E-05	ND	±1.80E+01
2. Average release rate for period	µCi/sec	7.80E-06	ND	N/A
3. Percent of ODCM limit (3)	%	(3)	(3)	N/A
C. Particulates				
1. Particulates with T-1/2>8 days	Ci	ND	2.30E-06	±1.80E+01
2. Average release rate for period	µCi/sec	ND	2.89E-07	N/A
3. Percent of ODCM limit (3)	%	(3)	(3)	N/A
4. Gross alpha radioactivity	Ci	ND	ND	N/A
D. Tritium (4)				
1. Total release	Ci	1.05E+00	3.49E+00	±1.80E+01
2. Average release rate for period	µCi/sec	1.32E-01	4.39E-01	N/A
3. Percent of ODCM limit (3)	%	(3)	(3)	N/A
E. Carbon-14				
1. Total release	Ci	1.90E+00	1.97E+00	(5)
2. Percent of ODCM limit (2)	%	7.37E+00	7.65E+00	N/A

ND = Not Detected

- (1) ODCM Control 3.3.2. for the most limiting of beta air or gamma air dose. Percentage of ODCM limit calculated using Method I dose results.
- (2) ODCM Control 3.3.3. for dose from 1-131, 1-133, Tritium, Carbon-14 and radionuclides in particulate form. Percentage of ODCM limit calculated using Method I dose results.
- (3) Per ODCM Control 3.3.3, the dose contribution from Tritium, Iodines, and particulates are included with Carbon-14 in Part E.
- (4) Tritium released through evaporation from the onsite frac tank is included in these totals.
- (5) The total Carbon-14 release is calculated, based on EPRI Technical Report 1021106, "Estimation of Carbon-14 in Nuclear Power Plant Gaseous Effluents." The "Estimated Total Error" is therefore not applicable.

TABLE 1B

**Entergy Nuclear Vermont Yankee
Effluent and Waste Disposal Annual Report for 2013
Gaseous Effluents - Elevated Releases**

		Continuous Mode		Batch Mode	
		Quarter		Quarter	
Nuclides Released	Units	1	2	1	2
1. Fission Gases					
Argon-41	Ci	ND	ND		
Krypton-85	Ci	ND	ND		
Krypton-85m	Ci	ND	ND		
Krypton-87	Ci	ND	ND		
Krypton-88	Ci	ND	ND		
Xenon-133	Ci	ND	ND		
Xenon-133m	Ci	ND	ND		
Xenon-135	Ci	ND	ND		
Xenon-135m	Ci	ND	ND		
Xenon-138	Ci	ND	ND		
Unidentified	Ci	ND	ND		
Total for Period	Ci	ND	ND	(1)	(1)
2. Iodines					
Iodine-131	Ci	1.33E-05	ND		
Iodine-133	Ci	7.70E-05	ND		
Iodine-135	Ci	ND	ND		
Total for Period	Ci	9.03E-05	ND	(1)	(1)
3. Particulates					
Strontium-89	Ci	ND	ND		
Strontium-90	Ci	ND	ND		
Cesium-134	Ci	ND	ND		
Cesium-137	Ci	ND	ND		
Barium-Lanthanum-140	Ci	ND	ND		
Manganese-54	Ci	ND	ND		
Chromium-51	Ci	ND	ND		
Cobalt-57	Ci	ND	ND		
Cobalt-60	Ci	ND	ND		
Cerium-141	Ci	ND	ND		
Zinc-65	Ci	ND	ND		
Total for Period	Ci	ND	ND	(1)	(1)

ND Not Detected at the plant stack

(1) There were no batch mode gaseous releases for this reporting period.

TABLE 1B
(Continued)

Entergy Nuclear Vermont Yankee
Effluent and Waste Disposal Annual Report for 2013
Gaseous Effluents - Elevated Releases

Nuclides Released	Units	Continuous Mode		Batch Mode	
		Quarter		Quarter	
		3	4	3	4
1. Fission Gases					
Krypton-85	Ci	ND	ND		
Krypton-85m	Ci	ND	ND		
Krypton-87	Ci	ND	ND		
Krypton-88	Ci	ND	ND		
Xenon-133	Ci	ND	ND		
Xenon-133m	Ci	ND	ND		
Xenon-135	Ci	ND	ND		
Xenon-135m	Ci	ND	ND		
Xenon-138	Ci	ND	ND		
Unidentified	Ci	ND	ND		
Total for Period	Ci	ND	ND	(1)	(1)
2. Iodines					
Iodine-131	Ci	ND	ND		
Iodine-133	Ci	6.20E-05	ND		
Iodine-135	Ci	ND	ND		
Total for Period	Ci	6.20E-05	ND	(1)	(1)
3. Particulates					
Strontium-89	Ci	ND	ND		
Strontium-90	Ci	ND	ND		
Cesium-134	Ci	ND	ND		
Cesium-137	Ci	ND	ND		
Barium-Lanthanum-140	Ci	ND	ND		
Manganese-54	Ci	ND	ND		
Chromium-51	Ci	ND	ND		
Cobalt-58	Ci	ND	ND		
Cobalt-60	Ci	ND	2.30E-06		
Cerium-141	Ci	ND	ND		
Cerium-144	Ci	ND	ND		
Zinc-65	Ci	ND	ND		
Total for Period	Ci	ND	2.30E-06	(1)	(1)

ND Not Detected at the Plant Stack

(1) There were no batch mode gaseous releases for this reporting period.

TABLE 1C

**Entergy Nuclear Vermont Yankee
Effluent and Waste Disposal Annual Report for 2013
Gaseous Effluents – (Routine) Ground Level Releases ⁽²⁾**

Nuclides Released	Units	Continuous Mode		Batch Mode	
		Quarter		Quarter	
		1	2	1	2
1. Fission Gases					
Krypton-85	Ci				
Krypton-85m	Ci				
Krypton-87	Ci				
Krypton-88	Ci				
Xenon-133	Ci				
Xenon-135	Ci				
Xenon-135m	Ci				
Xenon-138	Ci				
Unidentified	Ci				
Total for Period	Ci	(1)	(1)	(1)	(1)
2. Iodines					
Iodine-131	Ci				
Iodine-133	Ci				
Iodine-I 35	Ci				
Total for Period	Ci	(1)	(1)	(1)	(1)
3. Particulates					
Strontium-89	Ci				
Strontium-90	Ci				
Cesium-134	Ci				
Cesium-137	Ci				
Barium-Lanthanum-140	Ci				
Manganese-54	Ci				
Chromium-51	Ci				
Cobalt-58	Ci				
Cobalt-60	Ci				
Cerium-141	Ci				
Zinc-65	Ci				
Iron-55	Ci				
Total for Period	Ci	(1)	(1)	(1)	(1)

(1) There were no routine ground level gaseous releases for this reporting period.

(2) No radioactively contaminated used oil was burned during 2013.

TABLE IC
(Continued)

Entergy Nuclear Vermont Yankee
Effluent and Waste Disposal Annual Report for 2013
Gaseous Effluents - (Routine) Ground Level Releases⁽²⁾

Nuclides Released	Units	Continuous Mode		Batch Mode	
		Quarter		Quarter	
		3	4	3	4
1. Fission Gases					
Krypton-85	Ci				
Krypton-85m	Ci				
Krypton-87	Ci				
Krypton-88	Ci				
Xenon-133	Ci				
Xenon-135	Ci				
Xenon-135m	Ci				
Xenon-138	Ci				
Unidentified	Ci				
Total for Period	Ci	(1)	(1)	(1)	(1)
2. Iodines					
Iodine-131	Ci				
Iodine-133	Ci				
Iodine-135	Ci				
Total for Period	Ci	(1)	(1)	(1)	(1)
3. Particulates					
Strontium-89	Ci				
Strontium-90	Ci				
Cesium-134	Ci				
Cesium-137	Ci				
Barium-Lanthanum-140	Ci				
Manganese-54	Ci				
Chromium-51	Ci				
Cobalt-58	Ci				
Cobalt-60	Ci				
Cerium-141	Ci				
Zinc-65	Ci				
Iron-55	Ci				
Total for Period	Ci	(1)	(1)	(1)	(1)

- (1) There were no ground level gaseous releases for this reporting period.
(2) No radioactively contaminated used oil was burned during 2013.

TABLE 1D

Entergy Nuclear Vermont Yankee
Effluent and Waste Disposal Annual Report for 2013
Gaseous Effluents – Non-routine Releases

Nuclides Released	Units	Quarter		Quarter	
		1(1)	2(2)	3(2)	4(2)
1. Fission Gases					
Krypton-85	Ci	ND			
Krypton-85m	Ci	ND			
Krypton-87	Ci	ND			
Krypton-88	Ci	ND			
Xenon-133	Ci	ND			
Xenon-135	Ci	ND			
Xenon-135m	Ci	ND			
Xenon-138	Ci	ND			
Unidentified	Ci	ND			
Total for Period	Ci	ND			
2. Iodines					
Iodine-131	Ci	ND			
Iodine-133	Ci	ND			
Iodine-135	Ci	ND			
Total for Period	Ci	ND			
3. Particulates					
Strontium-89	Ci	ND			
Strontium-90	Ci	1.60 E-10			
Cesium-134	Ci	ND			
Cesium-137	Ci	ND			
Barium-Lanthanum-140	Ci	ND			
Manganese-54	Ci	ND			
Chromium-51	Ci	ND			
Cobalt-58	Ci	ND			
Cobalt-60	Ci	3.59 E-07			
Cerium-141	Ci	ND			
Zinc-65	Ci	ND			
Iron-55	Ci	3.40 E-07			
Total for Period	Ci	6.99 E-07			

(1) Reactor Building Ground Level Release on 3-18-2013 including an estimated contribution of C-14 of 8.57E-11 Ci and H-3 of 5.71E-06 Ci.

(2) There were no non-routine ground level gaseous releases for this reporting period.

TABLE 2A
Entergy Nuclear Vermont Yankee
Effluent and Waste Disposal Annual Report for 2013
Liquid Effluents - Summation of All Releases

	Units	Quarter 1	Quarter 2	Est. Total Error, %
A. Fission and Activation Products				
1. Total Release (not including tritium, gases, alpha)	Ci	ND	ND	N/A
2. Average Diluted Concentration During Period	μCi/ml	ND	ND	
3. Percent of Applicable Limit (1)	%	ND	ND	
B. Tritium				
1. Total Release	Ci	1.87E-02	1.66E-02	±2.00E+01
2. Average Diluted Concentration During Period	μCi/ml	4.10E-06	3.31E-06	
3. Percent of Applicable Limit (1)	%	9.60E-05	8.53E-05	
C. Dissolved and Entrained Gases				
1. Total Release	Ci	ND	ND	N/A
2. Average Diluted Concentration During Period	μCi/ml	ND	ND	
3. Percent of Applicable Limit	%	ND	ND	
D. Gross Alpha Radioactivity				
1. Total Release	Ci	ND	ND	N/A
E. Volume of Waste Release (prior to dilution)				
	Liters	(2)	(2)	N/A
F. Volume of Dilution Water Used During Period				
	Liters	3.89E+06	3.89E+06	(3)

ND Not detected in liquid effluents.

- (1) The percent of limit is based on the ODCM Control 3.2.2 limiting dose (1.5 mrem/quarter to the total body) from liquid effluents and is related to the abnormal leakage of tritiated plant water into the underground environment.
The percent of the concentration limits specified in Appendix B to 10CFR20.1001 – 20.2402, Table 2, Column 2 (ODCM Control 3. 2.1) were estimated to be 0.41%, 0.33%, 0.26%, and 0.27% for the first, second, third, and fourth quarters, respectively.
- (2) Leakage of contaminated plant water to subsurface areas was stopped in February 2010. The release of contaminated ground water to the Connecticut River is based on site boundary monitoring well data collected during 2013.
- (3) Dilution due to groundwater flow through the affected subsurface plume area toward the Connecticut River was estimated to be 7.83 gpm (or 3.89E+06 liters per quarter) during 2013. An Estimated Total Error is not applicable.

TABLE 2A
(Continued)

Entergy Nuclear Vermont Yankee
Effluent and Waste Disposal Annual Report for 2013
Liquid Effluents - Summation of All Releases

	Units	Quarter 3	Quarter 4	Est. Total Error, %
A. Fission and Activation Products				
1. Total Release (not including tritium, gases, alpha)	Ci	ND	ND	N/A
2. Average Diluted Concentration During Period	μCi/ml	ND	ND	
3. Percent of Applicable Limit (1)	%	ND	ND	
B. Tritium				
1. Total Release	Ci	1.43E-02	1.42E-02	±2.00E+01
2. Average Diluted Concentration During Period	μCi/ml	2.57E-06	2.68E-06	
3. Percent of Applicable Limit (1)	%	7.33E-05	7.33E-05	
C. Dissolved and Entrained Gases				
1. Total Release	Ci	ND	ND	N/A
2. Average Diluted Concentration During Period	μCi/ml	ND	ND	
3. Percent of Applicable Limit	%	ND	ND	
D. Gross Alpha Radioactivity				
1. Total Release	Ci	ND	ND	N/A
E. Volume of Waste Release (prior to dilution)				
	Liters	(2)	(2)	N/A
F. Volume of Dilution Water Used During Period				
	Liters	3.89E+06	3.89E+06	(3)

ND Not detected in liquid effluents.

- (1) The percent of limit is based on the ODCM Control 3.2.2 limiting dose (1.5 mrem/quarter to the total body) from liquid effluents and is related to the abnormal leakage of tritiated plant water into the underground environment.
The percent of the concentration limits specified in Appendix B to 10CFR20.1001 – 20.2402, Table 2, Column 2 (ODCM Control 3. 2.1) were estimated to be 0.41%, 0.33%, 0.26%, and 0.27% for the first, second, third, and fourth quarters, respectively.
- (2) Leakage of contaminated plant water to subsurface areas was stopped in February 2010. The release of contaminated ground water to the Connecticut River is based on site boundary monitoring well data collected during 2013.
- (3) Dilution due to groundwater flow through the affected subsurface plume area toward the Connecticut River was estimated to be 7.83 gpm (or 3.89E+06 liters per quarter) during 2013. An Estimated Total Error is not applicable.

TABLE 2B

Entergy Nuclear Vermont Yankee
Effluent and Waste Disposal Annual Report for 2013
Liquid Effluents - Routine Releases

Nuclides Released	Units	Continuous Mode		Batch Mode	
		Quarter 1	Quarter 2	Quarter 1	Quarter 2
Strontium-89	Ci	-	-	-	-
Strontium-90	Ci	-	-	-	-
Cesium-134	Ci	-	-	-	-
Cesium-137	Ci	-	-	-	-
Iodine-131	Ci	-	-	-	-
Cobalt-58	Ci	-	-	-	-
Cobalt-60	Ci	-	-	-	-
Iron-59	Ci	-	-	-	-
Zinc-65	Ci	-	-	-	-
Manganese-54	Ci	-	-	-	-
Zirconium-Niobium-95	Ci	-	-	-	-
Molybdenum-99	Ci	-	-	-	-
Technetium-99	Ci	-	-	-	-
Barium-Lanthanum-140	Ci	-	-	-	-
Cerium-141					
Other (specify)	Ci	-	-	-	-
	Ci	-	-	-	-
	Ci	-	-	-	-
Unidentified	Ci	-	-	-	-
Total for Period (above)	Ci	-	-	-	-
Xe-133	Ci	-	-	-	-
Xe-135	Ci	-	-	-	-

ND Not detected in liquid effluents.
 - Dash indicates no release of this type.

TABLE 2B
(Continued)

Entergy Nuclear Vermont Yankee
Effluent and Waste Disposal Annual Report for 2013
Liquid Effluents - Routine Releases

Nuclides Released	Units	Continuous Mode		Batch Mode	
		Quarter 3	Quarter 4	Quarter 3	Quarter 4
Strontium-89	Ci	-	-	-	-
Strontium-90	Ci	-	-	-	-
Cesium-134	Ci	-	-	-	-
Cesium-137	Ci	-	-	-	-
Iodine-131	Ci	-	-	-	-
Cobalt-58	Ci	-	-	-	-
Cobalt-60	Ci	-	-	-	-
Iron-59	Ci	-	-	-	-
Zinc-65	Ci	-	-	-	-
Manganese-54	Ci	-	-	-	-
Zirconium-Niobium-95	Ci	-	-	-	-
Molybdenum-99	Ci	-	-	-	-
Technetium-99	Ci	-	-	-	-
Barium-Lanthanum-140	Ci	-	-	-	-
Cerium-141					
Other (specify)	Ci	-	-	-	-
	Ci	-	-	-	-
	Ci	-	-	-	-
Unidentified	Ci	-	-	-	-
Total for Period (above)	Ci	-	-	-	-
Xe-133	Ci	-	-	-	-
Xe-135	Ci	-	-	-	-

ND Not detected in liquid effluents.
- Dash indicates no release of this type.

TABLE 3

**Entergy Nuclear Vermont Yankee
Effluent and Waste Disposal Annual Report for 2013
Solid Waste and Irradiated Fuel Shipments**

A. Solid Waste Shipped Off-Site for Burial or Disposal (Not Irradiated Fuel)

1. Type of Waste

Shipped from VY for Burial	Unit	1 st and 2 nd Quarters	Est. Total Error %
a. Spent resins, filter sludges, etc.	m ³	1.53E+01	±25%
	Ci	4.09E+01	±25%
b. Dry Compressible Waste, equipment, etc.	m ³	4.96E+00	±25%
	Ci	3.70E+00	±25%
c. Irradiated components, control rods, etc.	m ³	None	N/A
	Ci	None	N/A

Shipped from Processor(s) for Burial	Unit	1 st and 2 nd Quarters	Est. Total Error %
a. Spent resins, filter sludges, etc.	m ³	None	N/A
	Ci	None	N/A
b. Dry Compressible Waste, equipment, etc.	m ³	1.32E+02	±25%
	Ci	1.80E+00	±25%
c. Irradiated components, control rods, etc.	m ³	0.00E+00	±25%
	Ci	0.00E+00	±25%

2. Estimate of Major Nuclide Composition (By Type of Waste)

a. Spent resins filter sludges		b. Dry Compressible waste, equip., etc.		c. Irradiated components, control rods, etc.	
Nuclide	Percent (1)	Nuclide	Percent (1)	Nuclide	Percent (1)
Carbon-14	0.290%	Chromium-51	8.44%	None	
Chromium-51	1.535%	Manganese-54	3.92%		
Manganese-54	4.168%	Iron-55	32.48%		
Iron-55	19.990%	Iron-59	3.99%		
Iron-59	9.850%	Cobalt-58	0.93%		
Cobalt-58	2.238%	Cobalt-60	30.62%		
Cobalt-60	31.890%	Nickel-63	0.90%		
Nickel-63	6.338%	Zinc-65	13.53%		
Zinc-65	29.727%	Zirconium-95	1.78%		
Antimony-124	0.225%	Niobium-95	0.98%		
Cesium-137	6.933%	Silver-110m	0.10%		
		Tin-113	0.24%		
		Antimony-124	0.88%		
		Antimony-125	1.36%		
		Cesium-137	0.10%		

(1) Includes only those nuclides that are greater than 0.1% of the total activity

3. Disposition of Solid Waste Shipments (1st and 2nd Quarters)

No. of Shipments	From VY	From Processor	Mode	To Processor	To Burial
8	X		Truck	ES-GR/ES BCO, TN	
5	X		Truck		WCS
8		X	Truck		ES Clive

B. Irradiated Fuel Shipments (Disposition): None

C. Additional Data (1st & 2nd Quarters)

Supplemental Information	VY to Processor	VY to Burial	Processors to Burial
Class of Solid Waste Shipped	AU	none	AU
Type of Containers Used	GDC, Type A	none	GDC, Type A
Solidification Agent or Absorbent Used	none	none	none

GR = Gallaher Road

BCO = Bear Creek Operations

WCS = Waste Control Specialists

ES = Energy Solutions

GDC = General Design Container

TABLE 3 (continued)

**Entergy Nuclear Vermont Yankee
Effluent and Waste Disposal Annual Report for 2013
Solid Waste and Irradiated Fuel Shipments**

A. Solid Waste Shipped Off-Site for Burial or Disposal (Not Irradiated Fuel)

1. Type of Waste

Shipped from VY for Burial	Unit	3 rd and 4 th Quarters	Est. Total Error %
a. Spent resins, filter sludges, etc.	m ³	2.37E+01	±25%
	Ci	7.43E+01	±25%
b. Dry Compressible Waste, equipment, etc.	m ³	9.37E+00	±25%
	Ci	2.14E+00	±25%
c. Irradiated components, control rods, etc.	m ³	None	N/A
	Ci	None	N/A

Shipped from Processor(s) for Burial	Unit	3 rd and 4 th Quarters	Est. Total Error %
a. Spent resins, filter sludges, etc.	m ³	None	N/A
	Ci	None	N/A
b. Dry Compressible Waste, equipment, etc.	m ³	1.55E+01	±25%
	Ci	3.88E-02	±25%
c. Irradiated components, control rods, etc.	m ³	0.00E+00	±25%
	Ci	0.00E+00	±25%

2. Estimate of Major Nuclide Composition (By Type of Waste)

a. Spent resins filter sludges		b. Dry Compressible waste, equip., etc.		c. Irradiated components, control rods, etc.	
Nuclide	Percent (1)	Nuclide	Percent (1)	Nuclide	Percent (1)
Tritium H-3	0.18%	Chromium-51	7.66%	None	N/A
Carbon-14	0.54%	Manganese-54	3.89%		
Manganese-54	3.34%	Iron-55	30.30%		
Iron-55	27.96%	Iron-59	3.99%		
Cobalt-58	22.17%	Cobalt-58	1.04%		
Cobalt-60	33.70%	Cobalt-60	37.18%		
Nickel-63	9.68%	Nickel-63	1.92%		
Zinc-65	19.64%	Zinc-65	12.59%		
Strontium-90	0.27%	Strontium-90	0.30%		
Niobium-95	0.19%	Zirconium-95	2.14%		
Antimony-124	0.18%	Niobium-95	0.99%		
Cesium-134	0.19%	Tin-113	0.23%		
Cesium-137	12.48%	Antimony-124	1.01%		
		Antimony-125	1.35%		
		Cesium-134	0.20%		
		Cesium-137	3.36%		
		Cerium-144	0.52%		

(1) Includes only those nuclides that are greater than 0.1% of the total activity

3. Disposition of Solid Waste Shipments (3rd and 4th Quarters)

No. of Shipments	From VY	From Processor	Mode	To Processor	To Burial
1	X		Truck	ES BCO, TN	
9	X		Truck		WCS
7		X	Truck		ES Clive

B. Irradiated Fuel Shipments (Disposition): None

C. Additional Data (3rd and 4th Quarters)

Supplemental Information	VY to Processor	VY to Burial	Processors to Burial
Class of Solid Waste Shipped	AU	AU,B	AU
Type of Containers Used	GDC, Type A	GDC, Type A, Type B	GDC, Type A
Solidification Agent or Absorbent Used	none	none	none

GR = Gallaher Road
BCO = Bear Creek Operations
WCS = Waste Control Specialists
ES = Energy Solutions
GDC = General Design Container

TABLE 4A

Entergy Nuclear Vermont Yankee
 Maximum* Quarterly and Annual Off-Site Doses from Direct Radiation
 and Liquid and Gaseous Effluents for 2013
 (10CFR50, Appendix I)

Source	Dose (mrem) ^(a)				
	1 st Quarter	2 nd Quarter	3 rd Quarter	4 th Quarter	Year ^(b)
Liquid Effluents					
Total Body Dose	1.44E-06	1.28E-06	1.10E-06	1.10E-06	4.92E-06
Footnotes	(c)	(c)	(c)	(c)	(c)
Organ Dose	1.44E-06	1.28E-06	1.10E-06	1.10E-06	4.92E-06
Footnotes	(c)	(c)	(c)	(c)	(c)
Airborne Effluents					
Iodines, H-3, C-14, and Particulates	2.40E-01	2.41E-01	2.42E-01	2.41E-01	9.64E-01
Footnotes	(f)	(f)	(f)	(f)	
Noble Gases					
Beta Air (mrad)	--	--	--	--	--
Footnotes	(d)	(d)	(d)	(d)	
Gamma Air (mrad)	--	--	--	--	--
Footnotes	(d)	(d)	(d)	(d)	
Direct Radiation					
	3.61	3.90	4.20	4.34	16.06 (e)

- * "Maximum" means the largest fraction of the corresponding 10CFR50, Appendix I dose design objective.
- (a) The lettered footnotes indicate the age group, organ, and location of the dose receptor, where appropriate.
- (b) The yearly dose is the sum of the doses for each quarter, or a full annual assessment.
- (c) The critical age group/organ for the Maximum Exposed Individual (MEI) is the Adult/Total Body from the release of H-3 to groundwater.
- (d) There were no noble gas releases in this quarter.
- (e) Maximum direct dose point located on the old west site boundary, approximately 208 meters from the Turbine Building (per ODCM, Rev. 34, Sect. 6.11.1).
- (f) The critical age group/organ for the MEI is the Child/Bone, at a location WNW, 2400 meters from the stack.

TABLE 4B

Entergy Nuclear Vermont Yankee
 Maximum* Annual Off-Site Doses from Direct Radiation
 and Liquid and Gaseous Effluents for 2013
 (40CFR190)

Pathway	Total Body (mrem)	Maximum Organ (mrem)	Thyroid (mrem)
Direct External (a) (b)	16.06	16.06	16.06
Liquids (c)	4.92E-06	4.92E-06	4.92E-06
Gases (c)	1.94E-01	9.64E-01	1.94E-01
Annual Total (d)	16.3	17.02	16.3

* The location of the projected maximum individual doses from combined direct radiation plus liquid and gaseous effluents correspond to residences at the southwest boundary relative to the Turbine Hall.

- (a) No residential shielding credit or occupancy time fraction (i.e., occupancy is assumed to be 100%) is used. Expected direct external radiation doses would be reduced by approximately 54% with a realistic residential shielding credit and occupancy time (i.e., by using a 0.7 shielding factor from Regulatory Guide 1.109 (Reference 2) and an annual occupancy time of 6760 hours).
- (b) The direct dose reported here was calculated using the current ODCM methodology and represents the dose to the former nearest residence, which was located in the South sector at 385 meters from the stack prior to the vacancy of this residence in 2008 and the purchase of land by Vermont Yankee.
- (c) Maximum dose to any organ over all age groups for each release.
- (d) Annual dose limits contained in 40 CFR Part 190 are 25 mrem to the total body and any organ, and 75 mrem to the thyroid for any real member of the public.

TABLE 4C

Receptor Locations
Entergy Nuclear Vermont Yankee

Sector	Site Boundary ⁽¹⁾ (meters)	Nearest Resident ⁽²⁾ (meters)	Nearest Milk Animal ⁽²⁾ Within 10 km (meters)
N	400	1400	--
NNE	350	1384	5520 (cows)
NE	350	1255	--
ENE	400	966	--
E	500	933	--
ESE	700	1915	--
SE	750	1963	3600 (cows)
SSE	850	2044	--
S	385	644	2220 (cows)
SSW	300	451	--
SW	250	418	8200 (cows)
WSW	250	451	9730 (cows)
W	300	628	820 (cows)
WNW	400	1062	--
NW	550	2253	--
NNW	550	1738	--

(1) Vermont Yankee UFSAR Figure 2.2-5.

(2) The location(s) given are based on information from the Vermont Yankee 2013 Land Use Census and are relative to the plant stack. Gardens are assumed to be present at all resident locations.

TABLE 4D

Usage Factors for Environmental Pathways
Entergy Nuclear Vermont Yankee*

Age Group	Fish (kg/yr)	Potable Water (l/yr)	Veg. (kg/yr)	Leafy Veg. (kg/yr)	Milk (l/yr)	Meat (kg/yr)	Inhalation (m ³ /yr)
Adult	21	730	520	64	310	110	8,000
Teen	16	510	630	42	400	65	8,000
Child	6.9	510	520	26	330	41	3,700
Infant	0	330	0	0	330	0	1,400

* Regulatory Guide 1.109, Table E-5 (Reference 2).

TABLE 4E

Environmental Parameters for Gaseous Effluents *
Entergy Nuclear Vermont Yankee

Variable		Vegetables		Cow Milk		Goat Milk		Meat	
		Stored	Leafy	Pasture	Stored	Pasture	Stored	Pasture	Stored
YV	Agricultural Productivity (kg/m ²)	2	2	0.70	2	0.70	2	0.70	2
P	Soil Surface Density (kg/m ²)	240	240	240	240	240	240	240	240
T	Transport Time to User (hrs)	--	--	48	48	48	48	480	480
TB	Soil Exposure Time ^(a) (hrs)	131,400	131,400	131,400	131,400	131,400	131,400	131,400	131,400
TE	Crop Exposure Time to Plume (hrs)	1,440	1,440	720	1,440	720	1,440	720	1,440
TH	Holdup After Harvest (hrs)	1,440	24	0	2,160	0	2,160	0	2,160
QF	Animals Daily Feed (kg/day)	--	--	50	50	6	6	50	50
FP	Fraction of Year on Pasture	--	--	(b)	--	(b)	--	(b)	--
FS	Fraction Pasture Feed When on Pasture ^(c)	--	--	1	--	1	--	1	--

Note: Footnotes on following page.

TABLE 4E (Continued)

Environmental Parameters for Gaseous Effluents
Entergy Nuclear Vermont Yankee

Variable		Vegetables		Cow Milk		Goat Milk		Meat	
		Stored	Leafy	Pasture	Stored	Pasture	Stored	Pasture	Stored
FG	Fraction of Stored Vegetables Grown in Garden	0.76	--	--	--	--	--	--	--
FL	Fraction of Leafy Vegetables Grown in Garden	--	1.0	--	--	--	--	--	--
FI	Fraction Elemental Iodine = 0.5	--	--	--	--	--	--	--	--
H	Absolute Humidity = 5.6 ^(d)	--	--	--	--	--	--	--	--

* From VY ODCM, Table 6.9.1 (Reference 1).

- (a) For Method II dose/dose rate analyses of identified radioactivity releases of less than one year, the soil exposure time for that release may be set at 8,760 hours (one year) for all pathways.
- (b) For Method II dose/dose rate analyses performed for releases occurring during the first or fourth calendar quarters, the fraction of time animals are assumed to be on pasture is zero (non-growing season). For the second and third calendar quarters, the fraction of time on pasture (FP) will be set at 1.0. FP may also be adjusted for specific farm locations if this information is so identified and reported as part of the land use census.
- (c) For Method II analyses, the fraction of pasture feed while on pasture may be set to less than 1.0 for specific farm locations if this information is so identified and reported as part of the land use census.
- (d) For all Method II analyses, an absolute humidity value equal to 5.6 (gm/m³) shall be used to reflect conditions in the Northeast (Reference: Health Physics Journal, Volume 39 (August), 1980; Pages 318-320, Pergamon Press).

TABLE 4F

Environmental Parameters for Liquid Releases (Tritium) Via Groundwater
Entergy Nuclear Vermont Yankee

Variable Name (Units)	Potable Water	Aquatic Food	Stored Veg.	Leafy Veg.	Meat	Cow Milk
Mixing Ratio	2.44E-06	4.07E-04	1.85E-06	1.85E-06	1.85E-06	1.85E-06
Transit Time (hrs)*	12	24	0	0	0	0
Water Uptake** (animal) (L/day)	--	--	--	--	50.0	60.0
Feed Uptake** (animal) (kg/day)	--	--	--	--	50.0	50.0

* Values are from Regulatory Guide 1.109, Table E-15 (Reference 2)

** Values are from Regulatory Guide 1.109, Table E-3 (Reference 2)

TABLE 5A

VERMONT YANKEE JAN 13 - DEC 13 METEOROLOGICAL DATA JOINT FREQUENCY DISTRIBUTION

35.0 FT WIND DATA STABILITY CLASS A CLASS FREQUENCY (PERCENT) = 1.22

WIND DIRECTION FROM

SPEED MPH	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	VRBL	TOTAL
CALM	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
(1)	1.87	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.87
(2)	.02	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02
C-3	1	0	0	2	0	0	0	0	0	0	0	0	1	0	0	0	0	4
(1)	.93	.00	.00	1.87	.00	.00	.00	.00	.00	.00	.00	.00	.93	.00	.00	.00	.00	3.74
(2)	.01	.00	.00	.02	.00	.00	.00	.00	.00	.00	.00	.00	.01	.00	.00	.00	.00	.05
4-7	7	0	0	2	1	1	0	0	0	0	0	0	0	0	1	11	0	23
(1)	6.54	.00	.00	1.87	.93	.93	.00	.00	.00	.00	.00	.00	.00	.00	.93	10.28	.00	21.50
(2)	.08	.00	.00	.02	.01	.01	.00	.00	.00	.00	.00	.00	.00	.00	.01	.13	.00	.26
8-12	13	0	0	1	3	3	0	2	0	1	3	1	0	0	3	21	0	51
(1)	12.15	.00	.00	.93	2.80	2.80	.00	1.87	.00	.93	2.80	.93	.00	.00	2.80	19.63	.00	47.66
(2)	.15	.00	.00	.01	.03	.03	.00	.02	.00	.01	.03	.01	.00	.00	.03	.24	.00	.58
13-18	2	0	0	0	0	0	0	2	0	0	0	0	5	5	2	10	0	26
(1)	1.87	.00	.00	.00	.00	.00	.00	1.87	.00	.00	.00	.00	4.67	4.67	1.87	9.35	.00	24.30
(2)	.02	.00	.00	.00	.00	.00	.00	.02	.00	.00	.00	.00	.06	.06	.02	.11	.00	.30
19-24	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
(1)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.93	.00	.00	.00	.93
(2)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01	.00	.00	.00	.01
GT 24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(1)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
(2)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
ALL SPEEDS	25	0	0	5	4	4	0	4	0	1	3	1	6	6	6	42	0	107
(1)	23.36	.00	.00	4.67	3.74	3.74	.00	3.74	.00	.93	2.80	.93	5.61	5.61	5.61	39.25	.00	100.00
(2)	.29	.00	.00	.06	.05	.05	.00	.05	.00	.01	.03	.01	.07	.07	.07	.48	.00	1.22

(1)=PERCENT OF ALL GOOD OBSERVATIONS FOR THIS PAGE
 (2)=PERCENT OF ALL GOOD OBSERVATIONS FOR THIS PERIOD
 C= CALM (WIND SPEED LESS THAN OR EQUAL TO 0.95 MPH)

TABLE 5B

VERMONT YANKEE JAN 13 - DEC 13 METEOROLOGICAL DATA JOINT FREQUENCY DISTRIBUTION

35.0 FT WIND DATA STABILITY CLASS B CLASS FREQUENCY (PERCENT) = 2.30

WIND DIRECTION FROM

SPEED MPH	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	VRBL	TOTAL
CALM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(1)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
(2)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
C-3	2	2	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	5
(1)	1.00	1.00	.00	.00	.50	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	2.49
(2)	.02	.02	.00	.00	.01	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.06
4-7	10	3	2	3	7	9	3	2	0	1	0	1	0	1	4	15	0	61
(1)	4.98	1.49	1.00	1.49	3.48	4.48	1.49	1.00	.00	.50	.00	.50	.00	.50	1.99	7.46	.00	30.35
(2)	.11	.03	.02	.03	.08	.10	.03	.02	.00	.01	.00	.01	.00	.01	.05	.17	.00	.70
8-12	9	0	0	0	1	8	1	11	6	2	2	0	10	6	8	24	0	88
(1)	4.48	.00	.00	.00	.50	3.98	.50	5.47	2.99	1.00	1.00	.00	4.98	2.99	3.98	11.94	.00	43.78
(2)	.10	.00	.00	.00	.01	.09	.01	.13	.07	.02	.02	.00	.11	.07	.09	.27	.00	1.01
13-18	0	0	0	0	0	0	0	5	5	0	0	0	10	7	6	6	0	39
(1)	.00	.00	.00	.00	.00	.00	.00	2.49	2.49	.00	.00	.00	4.98	3.48	2.99	2.99	.00	19.40
(2)	.00	.00	.00	.00	.00	.00	.00	.06	.06	.00	.00	.00	.11	.08	.07	.07	.00	.45
19-24	0	0	0	0	0	0	0	1	1	0	0	0	3	0	3	0	0	8
(1)	.00	.00	.00	.00	.00	.00	.00	.50	.50	.00	.00	.00	1.49	.00	1.49	.00	.00	3.98
(2)	.00	.00	.00	.00	.00	.00	.00	.01	.01	.00	.00	.00	.03	.00	.03	.00	.00	.09
GT 24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(1)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
(2)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
ALL SPEEDS	21	5	2	3	9	17	4	19	12	3	2	1	23	14	21	45	0	201
(1)	10.45	2.49	1.00	1.49	4.48	8.46	1.99	9.45	5.97	1.49	1.00	.50	11.44	6.97	10.45	22.39	.00	100.00
(2)	.24	.06	.02	.03	.10	.19	.05	.22	.14	.03	.02	.01	.26	.16	.24	.51	.00	2.30

(1)=PERCENT OF ALL GOOD OBSERVATIONS FOR THIS PAGE
 (2)=PERCENT OF ALL GOOD OBSERVATIONS FOR THIS PERIOD
 C= CALM (WIND SPEED LESS THAN OR EQUAL TO 0.95 MPH)

TABLE 5C

VERMONT YANKEE JAN 13 - DEC 13 METEOROLOGICAL DATA JOINT FREQUENCY DISTRIBUTION

35.0 FT WIND DATA STABILITY CLASS C CLASS FREQUENCY (PERCENT) = 4.65
WIND DIRECTION FROM

SPEED MPH	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	VRBL	TOTAL
CALM	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
(1)	.49	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.49
(2)	.02	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02
C-3	6	7	4	4	3	1	1	0	0	1	1	0	0	2	3	0	0	33
(1)	1.47	1.72	.98	.98	.74	.25	.25	.00	.00	.25	.25	.00	.00	.49	.74	.00	.00	8.11
(2)	.07	.08	.05	.05	.03	.01	.01	.00	.00	.01	.01	.00	.00	.02	.03	.00	.00	.38
4-7	20	5	4	13	29	22	17	7	5	1	1	1	2	2	19	29	0	177
(1)	4.91	1.23	.98	3.19	7.13	5.41	4.18	1.72	1.23	.25	.25	.25	.49	.49	4.67	7.13	.00	43.49
(2)	.23	.06	.05	.15	.33	.25	.19	.08	.06	.01	.01	.01	.02	.02	.22	.33	.00	2.02
8-12	13	0	0	0	1	3	6	26	12	0	2	4	21	11	16	19	0	134
(1)	3.19	.00	.00	.00	.25	.74	1.47	6.39	2.95	.00	.49	.98	5.16	2.70	3.93	4.67	.00	32.92
(2)	.15	.00	.00	.00	.01	.03	.07	.30	.14	.00	.02	.05	.24	.13	.18	.22	.00	1.53
13-18	0	0	0	0	0	0	0	4	2	0	0	0	13	19	13	6	0	57
(1)	.00	.00	.00	.00	.00	.00	.00	.98	.49	.00	.00	.00	3.19	4.67	3.19	1.47	.00	14.00
(2)	.00	.00	.00	.00	.00	.00	.00	.05	.02	.00	.00	.00	.15	.22	.15	.07	.00	.65
19-24	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	0	0	4
(1)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.25	.25	.49	.00	.00	.98
(2)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01	.01	.02	.00	.00	.05
GT 24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(1)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
(2)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
ALL SPEEDS	41	12	8	17	33	26	24	37	19	2	4	5	37	35	53	54	0	407
(1)	10.07	2.95	1.97	4.18	8.11	6.39	5.90	9.09	4.67	.49	.98	1.23	9.09	8.60	13.02	13.27	.00	100.00
(2)	.47	.14	.09	.19	.38	.30	.27	.42	.22	.02	.05	.06	.42	.40	.61	.62	.00	4.65

(1)=PERCENT OF ALL GOOD OBSERVATIONS FOR THIS PAGE
(2)=PERCENT OF ALL GOOD OBSERVATIONS FOR THIS PERIOD
C= CALM (WIND SPEED LESS THAN OR EQUAL TO 0.95 MPH)

TABLE 5D

VERMONT YANKEE JAN 13 - DEC 13 METEOROLOGICAL DATA JOINT FREQUENCY DISTRIBUTION

35.0 FT WIND DATA STABILITY CLASS D CLASS FREQUENCY (PERCENT) = 45.96

WIND DIRECTION FROM

SPEED MPH	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	VRBL	TOTAL
CALM	0	0	0	0	0	0	0	0	0	0	21	0	0	0	0	0	0	21
(1)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.52	.00	.00	.00	.00	.00	.00	.52
(2)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.24	.00	.00	.00	.00	.00	.00	.24
C-3	82	49	42	56	59	56	64	69	57	33	33	21	29	45	100	110	0	905
(1)	2.04	1.22	1.04	1.39	1.47	1.39	1.59	1.71	1.42	.82	.82	.52	.72	1.12	2.49	2.73	.00	22.49
(2)	.94	.56	.48	.64	.67	.64	.73	.79	.65	.38	.38	.24	.33	.51	1.14	1.26	.00	10.34
4-7	97	34	23	32	53	124	196	231	91	39	31	40	93	71	156	303	0	1614
(1)	2.41	.84	.57	.80	1.32	3.08	4.87	5.74	2.26	.97	.77	.99	2.31	1.76	3.88	7.53	.00	40.11
(2)	1.11	.39	.26	.37	.61	1.42	2.24	2.64	1.04	.45	.35	.46	1.06	.81	1.78	3.46	.00	18.44
8-12	63	12	8	0	8	14	19	116	66	20	28	31	178	191	143	223	0	1120
(1)	1.57	.30	.20	.00	.20	.35	.47	2.88	1.64	.50	.70	.77	4.42	4.75	3.55	5.54	.00	27.83
(2)	.72	.14	.09	.00	.09	.16	.22	1.32	.75	.23	.32	.35	2.03	2.18	1.63	2.55	.00	12.79
13-18	8	0	0	0	0	1	1	13	18	1	0	0	57	104	75	63	0	341
(1)	.20	.00	.00	.00	.00	.02	.02	.32	.45	.02	.00	.00	1.42	2.58	1.86	1.57	.00	8.47
(2)	.09	.00	.00	.00	.00	.01	.01	.15	.21	.01	.00	.00	.65	1.19	.86	.72	.00	3.89
19-24	0	0	0	0	0	0	0	0	0	0	0	0	4	1	9	8	0	22
(1)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.10	.02	.22	.20	.00	.55
(2)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.05	.01	.10	.09	.00	.25
GT 24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(1)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
(2)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
ALL SPEEDS	250	95	73	88	120	195	280	429	232	93	113	92	361	412	483	707	0	4023
(1)	6.21	2.36	1.81	2.19	2.98	4.85	6.96	10.66	5.77	2.31	2.81	2.29	8.97	10.24	12.00	17.57	.00	99.98
(2)	2.86	1.09	.83	1.01	1.37	2.23	3.20	4.90	2.65	1.06	1.29	1.05	4.12	4.71	5.52	8.08	.00	45.95

(1)=PERCENT OF ALL GOOD OBSERVATIONS FOR THIS PAGE
 (2)=PERCENT OF ALL GOOD OBSERVATIONS FOR THIS PERIOD
 C= CALM (WIND SPEED LESS THAN OR EQUAL TO 0.95 MPH)

TABLE 5E

VERMONT YANKEE JAN 13 - DEC 13 METEOROLOGICAL DATA JOINT FREQUENCY DISTRIBUTION

35.0 FT WIND DATA STABILITY CLASS E CLASS FREQUENCY (PERCENT) = 30.76

WIND DIRECTION FROM

SPEED MPH	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	VRBL	TOTAL
CALM	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	2
(1)	.00	.00	.00	.00	.00	.04	.00	.00	.04	.00	.00	.00	.00	.00	.00	.00	.00	.07
(2)	.00	.00	.00	.00	.00	.01	.00	.00	.01	.00	.00	.00	.00	.00	.00	.00	.00	.02
C-3	24	21	13	11	19	35	47	68	138	172	202	187	184	160	131	86	0	1498
(1)	.89	.78	.48	.41	.71	1.30	1.75	2.53	5.12	6.39	7.50	6.94	6.83	5.94	4.86	3.19	.00	55.63
(2)	.27	.24	.15	.13	.22	.40	.54	.78	1.58	1.96	2.31	2.14	2.10	1.83	1.50	.98	.00	17.11
4-7	18	3	5	5	8	22	79	105	61	23	26	55	79	157	145	138	0	929
(1)	.67	.11	.19	.19	.30	.82	2.93	3.90	2.27	.85	.97	2.04	2.93	5.83	5.38	5.12	.00	34.50
(2)	.21	.03	.06	.06	.09	.25	.90	1.20	.70	.26	.30	.63	.90	1.79	1.66	1.58	.00	10.61
8-12	3	1	0	0	1	2	2	29	19	3	1	3	32	30	46	57	0	229
(1)	.11	.04	.00	.00	.04	.07	.07	1.08	.71	.11	.04	.11	1.19	1.11	1.71	2.12	.00	8.50
(2)	.03	.01	.00	.00	.01	.02	.02	.33	.22	.03	.03	.37	.34	.53	.65	.00	.00	2.62
13-18	0	0	0	0	0	0	0	4	6	0	0	0	2	2	8	8	0	30
(1)	.00	.00	.00	.00	.00	.00	.00	.15	.22	.00	.00	.00	.07	.07	.30	.30	.00	1.11
(2)	.00	.00	.00	.00	.00	.00	.00	.05	.07	.00	.00	.00	.02	.02	.09	.09	.00	.34
19-24	0	0	0	0	0	0	0	1	2	0	0	1	0	0	0	0	0	4
(1)	.00	.00	.00	.00	.00	.00	.00	.04	.07	.00	.00	.04	.00	.00	.00	.00	.00	.15
(2)	.00	.00	.00	.00	.00	.00	.00	.01	.02	.00	.00	.01	.00	.00	.00	.00	.00	.05
GT 24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
(1)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.04	.00	.04
(2)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01	.00	.01
ALL SPEEDS	45	25	18	16	28	60	128	207	227	198	229	246	297	349	330	290	0	2693
(1)	1.67	.93	.67	.59	1.04	2.23	4.75	7.69	8.43	7.35	8.50	9.13	11.03	12.96	12.25	10.77	.00	100.00
(2)	.51	.29	.21	.18	.32	.69	1.46	2.36	2.59	2.26	2.62	2.81	3.39	3.99	3.77	3.31	.00	30.76

(1)=PERCENT OF ALL GOOD OBSERVATIONS FOR THIS PAGE
 (2)=PERCENT OF ALL GOOD OBSERVATIONS FOR THIS PERIOD
 C= CALM (WIND SPEED LESS THAN OR EQUAL TO 0.95 MPH)

TABLE 5F

VERMONT YANKEE JAN 13 - DEC 13 METEOROLOGICAL DATA JOINT FREQUENCY DISTRIBUTION

35.0 FT WIND DATA STABILITY CLASS F CLASS FREQUENCY (PERCENT) = 12.61

WIND DIRECTION FROM

SPEED MPH	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	VRBL	TOTAL
CALM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	2
(1)	.00	.00	.00	.00	.00	.09	.00	.09	.00	.00	.00	.00	.00	.00	.00	.00	.00	.18
(2)	.00	.00	.00	.00	.00	.01	.00	.01	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02
C-3	1	1	2	0	2	6	11	31	118	99	211	250	134	71	39	11	0	987
(1)	.09	.09	.18	.00	.18	.54	1.00	2.81	10.69	8.97	19.11	22.64	12.14	6.43	3.53	1.00	.00	89.40
(2)	.01	.01	.02	.00	.02	.07	.13	.35	1.35	1.13	2.41	2.86	1.53	.81	.45	.13	.00	11.27
4-7	0	0	0	0	1	1	2	6	8	11	10	15	21	12	16	6	0	109
(1)	.00	.00	.00	.00	.09	.09	.18	.54	.72	1.00	.91	1.36	1.90	1.09	1.45	.54	.00	9.87
(2)	.00	.00	.00	.00	.01	.01	.02	.07	.09	.13	.11	.17	.24	.14	.18	.07	.00	1.25
8-12	0	0	0	0	0	0	0	1	0	0	0	1	1	1	1	0	0	5
(1)	.00	.00	.00	.00	.00	.00	.00	.09	.00	.00	.00	.09	.09	.09	.09	.00	.00	.45
(2)	.00	.00	.00	.00	.00	.00	.00	.01	.00	.00	.00	.01	.01	.01	.01	.00	.00	.06
13-18	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
(1)	.00	.00	.00	.00	.00	.00	.00	.09	.00	.00	.00	.00	.00	.00	.00	.00	.00	.09
(2)	.00	.00	.00	.00	.00	.00	.00	.01	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01
19-24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(1)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
(2)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
GT 24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(1)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
(2)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
ALL SPEEDS	1	1	2	0	3	8	13	40	126	110	221	266	156	84	56	17	0	1104
(1)	.09	.09	.18	.00	.27	.72	1.18	3.62	11.41	9.96	20.02	24.09	14.13	7.61	5.07	1.54	.00	100.00
(2)	.01	.01	.02	.00	.03	.09	.15	.46	1.44	1.26	2.52	3.04	1.78	.96	.64	.19	.00	12.61

(1)=PERCENT OF ALL GOOD OBSERVATIONS FOR THIS PAGE
 (2)=PERCENT OF ALL GOOD OBSERVATIONS FOR THIS PERIOD
 C= CALM (WIND SPEED LESS THAN OR EQUAL TO 0.95 MPH)

TABLE 5G

VERMONT YANKEE JAN 13 - DEC 13 METEOROLOGICAL DATA JOINT FREQUENCY DISTRIBUTION

35.0 FT WIND DATA STABILITY CLASS G CLASS FREQUENCY (PERCENT) = 2.50

WIND DIRECTION FROM

SPEED MPH	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	VRBL	TOTAL
CALM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(1)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
(2)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
C-3	2	0	1	1	2	3	2	7	24	21	49	39	25	18	4	4	0	202
(1)	.91	.00	.46	.46	.91	1.37	.91	3.20	10.96	9.59	22.37	17.81	11.42	8.22	1.83	1.83	.00	92.24
(2)	.02	.00	.01	.01	.02	.03	.02	.08	.27	.24	.56	.45	.29	.21	.05	.05	.00	2.31
4-7	0	0	0	0	0	1	2	0	0	2	2	2	1	2	2	1	0	15
(1)	.00	.00	.00	.00	.00	.46	.91	.00	.00	.91	.91	.91	.46	.91	.91	.46	.00	6.85
(2)	.00	.00	.00	.00	.00	.01	.02	.00	.00	.02	.02	.02	.01	.02	.02	.01	.00	.17
8-12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
(1)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.46	.00	.00	.46
(2)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01	.00	.00	.01
13-18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(1)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
(2)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
19-24	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
(1)	.46	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.46
(2)	.01	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01
GT 24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(1)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
(2)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
ALL SPEEDS	3	0	1	1	2	4	4	7	24	23	51	41	26	20	7	5	0	219
(1)	1.37	.00	.46	.46	.91	1.83	1.83	3.20	10.96	10.50	23.29	18.72	11.87	9.13	3.20	2.28	.00	100.00
(2)	.03	.00	.01	.01	.02	.05	.05	.08	.27	.26	.58	.47	.30	.23	.08	.06	.00	2.50

(1)=PERCENT OF ALL GOOD OBSERVATIONS FOR THIS PAGE
 (2)=PERCENT OF ALL GOOD OBSERVATIONS FOR THIS PERIOD
 C= CALM (WIND SPEED LESS THAN OR EQUAL TO 0.95 MPH)

TABLE 5H

VERMONT YANKEE JAN 13 - DEC 13 METEOROLOGICAL DATA JOINT FREQUENCY DISTRIBUTION

35.0 FT WIND DATA STABILITY CLASS ALL CLASS FREQUENCY (PERCENT) = 100.00

WIND DIRECTION FROM

SPEED MPH	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	VRBL	TOTAL
CALM	4	0	0	0	0	2	0	1	1	0	21	0	0	0	0	0	0	29
(1)	.05	.00	.00	.00	.00	.02	.00	.01	.01	.00	.24	.00	.00	.00	.00	.00	.00	.33
(2)	.05	.00	.00	.00	.00	.02	.00	.01	.01	.00	.24	.00	.00	.00	.00	.00	.00	.33
C-3	118	80	62	74	86	101	125	175	337	326	496	497	373	296	277	211	0	3634
(1)	1.35	.91	.71	.85	.98	1.15	1.43	2.00	3.85	3.72	5.67	5.68	4.26	3.38	3.16	2.41	.00	41.51
(2)	1.35	.91	.71	.85	.98	1.15	1.43	2.00	3.85	3.72	5.67	5.68	4.26	3.38	3.16	2.41	.00	41.51
4-7	152	45	34	55	99	180	299	351	165	77	70	114	196	245	343	503	0	2928
(1)	1.74	.51	.39	.63	1.13	2.06	3.42	4.01	1.88	.88	.80	1.30	2.24	2.80	3.92	5.75	.00	33.44
(2)	1.74	.51	.39	.63	1.13	2.06	3.42	4.01	1.88	.88	.80	1.30	2.24	2.80	3.92	5.75	.00	33.44
8-12	101	13	8	1	14	30	28	185	103	26	36	40	242	239	218	344	0	1628
(1)	1.15	.15	.09	.01	.16	.34	.32	2.11	1.18	.30	.41	.46	2.76	2.73	2.49	3.93	.00	18.60
(2)	1.15	.15	.09	.01	.16	.34	.32	2.11	1.18	.30	.41	.46	2.76	2.73	2.49	3.93	.00	18.60
13-18	10	0	0	0	0	1	1	29	31	1	0	0	87	137	104	93	0	494
(1)	.11	.00	.00	.00	.00	.01	.01	.33	.35	.01	.00	.00	.99	1.56	1.19	1.06	.00	5.64
(2)	.11	.00	.00	.00	.00	.01	.01	.33	.35	.01	.00	.00	.99	1.56	1.19	1.06	.00	5.64
19-24	1	0	0	0	0	0	0	2	3	0	0	1	8	3	14	8	0	40
(1)	.01	.00	.00	.00	.00	.00	.00	.02	.03	.00	.00	.01	.09	.03	.16	.09	.00	.46
(2)	.01	.00	.00	.00	.00	.00	.00	.02	.03	.00	.00	.01	.09	.03	.16	.09	.00	.46
GT 24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
(1)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01	.00	.01
(2)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01	.00	.01
ALL SPEEDS	386	138	104	130	199	314	453	743	640	430	623	652	906	920	956	1160	0	8754
(1)	4.41	1.58	1.19	1.48	2.27	3.59	5.17	8.49	7.31	4.91	7.12	7.45	10.35	10.51	10.92	13.25	.00	99.99
(2)	4.41	1.58	1.19	1.48	2.27	3.59	5.17	8.49	7.31	4.91	7.12	7.45	10.35	10.51	10.92	13.25	.00	99.99

(1)=PERCENT OF ALL GOOD OBSERVATIONS FOR THIS PAGE

(2)=PERCENT OF ALL GOOD OBSERVATIONS FOR THIS PERIOD

C= CALM (WIND SPEED LESS THAN OR EQUAL TO 0.95 MPH)

TABLE 6A

VERMONT YANKEE JAN 13 - DEC 13 METEOROLOGICAL DATA JOINT FREQUENCY DISTRIBUTION

297.0 FT WIND DATA STABILITY CLASS A CLASS FREQUENCY (PERCENT) = .07
 WIND DIRECTION FROM

SPEED MPH	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	VRBL	TOTAL
CALM	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
(1)	33.33	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	33.33
(2)	.02	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02
C-3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	2
(1)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	16.67	.00	.00	16.67	.00	33.33
(2)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01	.00	.00	.01	.00	.02
4-7	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
(1)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	16.67	.00	.00	.00	16.67
(2)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01	.00	.00	.00	.01
8-12	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
(1)	.00	.00	.00	.00	.00	16.67	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	16.67
(2)	.00	.00	.00	.00	.00	.01	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01
13-18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(1)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
(2)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
19-24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(1)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
(2)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
GT 24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(1)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
(2)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
ALL SPEEDS	2	0	0	0	0	1	0	0	0	0	0	0	1	1	0	1	0	6
(1)	33.33	.00	.00	.00	.00	16.67	.00	.00	.00	.00	.00	.00	16.67	16.67	.00	16.67	.00	100.00
(2)	.02	.00	.00	.00	.00	.01	.00	.00	.00	.00	.00	.00	.01	.01	.00	.01	.00	.07

(1)=PERCENT OF ALL GOOD OBSERVATIONS FOR THIS PAGE
 (2)=PERCENT OF ALL GOOD OBSERVATIONS FOR THIS PERIOD
 C= CALM (WIND SPEED LESS THAN OR EQUAL TO 0.95 MPH)

TABLE 6B

VERMONT YANKEE JAN 13 - DEC 13 METEOROLOGICAL DATA JOINT FREQUENCY DISTRIBUTION

297.0 FT WIND DATA STABILITY CLASS B CLASS FREQUENCY (PERCENT) = .25

WIND DIRECTION FROM

SPEED MPH	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	VRBL	TOTAL
CALM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(1)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
(2)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
C-3	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
(1)	.00	.00	.00	.00	.00	.00	4.55	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	4.55
(2)	.00	.00	.00	.00	.00	.00	.01	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01
4-7	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	3
(1)	4.55	.00	.00	.00	.00	4.55	4.55	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	13.64
(2)	.01	.00	.00	.00	.00	.01	.01	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.03
8-12	1	0	0	1	0	4	0	0	0	0	0	0	0	0	0	2	0	8
(1)	4.55	.00	.00	4.55	.00	18.18	.00	.00	.00	.00	.00	.00	.00	.00	.00	9.09	.00	36.36
(2)	.01	.00	.00	.01	.00	.05	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02	.00	.09
13-18	0	0	0	0	1	2	1	0	1	0	0	0	0	0	0	3	0	8
(1)	.00	.00	.00	.00	4.55	9.09	4.55	.00	4.55	.00	.00	.00	.00	.00	.00	13.64	.00	36.36
(2)	.00	.00	.00	.00	.01	.02	.01	.00	.01	.00	.00	.00	.00	.00	.00	.03	.00	.09
19-24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2
(1)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	9.09	.00	9.09
(2)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02	.00	.02
GT 24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(1)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
(2)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
ALL SPEEDS	2	0	0	1	1	7	3	0	1	0	0	0	0	0	0	7	0	22
(1)	9.09	.00	.00	4.55	4.55	31.82	13.64	.00	4.55	.00	.00	.00	.00	.00	.00	31.82	.00	100.00
(2)	.02	.00	.00	.01	.01	.08	.03	.00	.01	.00	.00	.00	.00	.00	.00	.08	.00	.25

(1)=PERCENT OF ALL GOOD OBSERVATIONS FOR THIS PAGE
 (2)=PERCENT OF ALL GOOD OBSERVATIONS FOR THIS PERIOD
 C= CALM (WIND SPEED LESS THAN OR EQUAL TO 0.95 MPH)

TABLE 6C

VERMONT YANKEE JAN 13 - DEC 13 METEOROLOGICAL DATA JOINT FREQUENCY DISTRIBUTION

297.0 FT WIND DATA STABILITY CLASS C CLASS FREQUENCY (PERCENT) = 1.91

WIND DIRECTION FROM

SPEED MPH	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	VRBL	TOTAL
CALM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(1)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
(2)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
C-3	1	0	0	1	0	1	2	2	0	0	0	0	0	0	0	0	0	7
(1)	.60	.00	.00	.60	.00	.60	1.20	1.20	.00	.00	.00	.00	.00	.00	.00	.00	.00	4.19
(2)	.01	.00	.00	.01	.00	.01	.02	.02	.00	.00	.00	.00	.00	.00	.00	.00	.00	.08
4-7	3	3	1	3	4	13	3	1	0	0	0	0	0	0	3	3	0	37
(1)	1.80	1.80	.60	1.80	2.40	7.78	1.80	.60	.00	.00	.00	.00	.00	.00	1.80	1.80	.00	22.16
(2)	.03	.03	.01	.03	.05	.15	.03	.01	.00	.00	.00	.00	.00	.00	.03	.03	.00	.42
8-12	5	1	1	3	2	12	7	5	4	0	3	0	0	0	1	10	0	54
(1)	2.99	.60	.60	1.80	1.20	7.19	4.19	2.99	2.40	.00	1.80	.00	.00	.00	.60	5.99	.00	32.34
(2)	.06	.01	.01	.03	.02	.14	.08	.06	.05	.00	.03	.00	.00	.00	.01	.11	.00	.62
13-18	3	0	0	0	0	0	3	3	6	0	0	0	2	1	0	22	0	40
(1)	1.80	.00	.00	.00	.00	.00	1.80	1.80	3.59	.00	.00	.00	1.20	.60	.00	13.17	.00	23.95
(2)	.03	.00	.00	.00	.00	.00	.03	.03	.07	.00	.00	.00	.02	.01	.00	.25	.00	.46
19-24	1	0	0	0	0	0	0	0	4	0	0	0	7	6	2	6	0	26
(1)	.60	.00	.00	.00	.00	.00	.00	.00	2.40	.00	.00	.00	4.19	3.59	1.20	3.59	.00	15.57
(2)	.01	.00	.00	.00	.00	.00	.00	.00	.05	.00	.00	.00	.08	.07	.02	.07	.00	.30
GT 24	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	0	0	3
(1)	.00	.00	.00	.00	.00	.00	.00	.00	1.20	.00	.00	.00	.60	.00	.00	.00	.00	1.80
(2)	.00	.00	.00	.00	.00	.00	.00	.00	.02	.00	.00	.00	.01	.00	.00	.00	.00	.03
ALL SPEEDS	13	4	2	7	6	26	15	11	16	0	3	0	10	7	6	41	0	167
(1)	7.78	2.40	1.20	4.19	3.59	15.57	8.98	6.59	9.58	.00	1.80	.00	5.99	4.19	3.59	24.55	.00	100.00
(2)	.15	.05	.02	.08	.07	.30	.17	.13	.18	.00	.03	.00	.11	.08	.07	.47	.00	1.91

(1)=PERCENT OF ALL GOOD OBSERVATIONS FOR THIS PAGE
 (2)=PERCENT OF ALL GOOD OBSERVATIONS FOR THIS PERIOD
 C= CALM (WIND SPEED LESS THAN OR EQUAL TO 0.95 MPH)

TABLE 6D

VERMONT YANKEE JAN 13 - DEC 13 METEOROLOGICAL DATA JOINT FREQUENCY DISTRIBUTION

297.0 FT WIND DATA STABILITY CLASS D CLASS FREQUENCY (PERCENT) = 53.52

WIND DIRECTION FROM

SPEED MPH	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	VRBL	TOTAL
CALM	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
(1)	.04	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.04
(2)	.02	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02
C-3	72	29	36	24	59	54	69	34	21	15	6	8	4	17	36	95	0	579
(1)	1.54	.62	.77	.51	1.26	1.15	1.47	.73	.45	.32	.13	.17	.09	.36	.77	2.03	.00	12.36
(2)	.82	.33	.41	.27	.67	.62	.79	.39	.24	.17	.07	.09	.05	.19	.41	1.09	.00	6.61
4-7	74	24	21	33	54	105	172	174	83	26	17	15	16	28	82	250	0	1174
(1)	1.58	.51	.45	.70	1.15	2.24	3.67	3.71	1.77	.55	.36	.32	.34	.60	1.75	5.34	.00	25.05
(2)	.85	.27	.24	.38	.62	1.20	1.96	1.99	.95	.30	.19	.17	.18	.32	.94	2.86	.00	13.41
8-12	96	22	15	7	11	36	78	193	193	53	37	47	143	145	89	319	0	1484
(1)	2.05	.47	.32	.15	.23	.77	1.66	4.12	4.12	1.13	.79	1.00	3.05	3.09	1.90	6.81	.00	31.67
(2)	1.10	.25	.17	.08	.13	.41	.89	2.20	2.20	.61	.42	.54	1.63	1.66	1.02	3.64	.00	16.95
13-18	64	10	8	2	6	8	7	30	143	12	18	23	179	230	130	264	0	1134
(1)	1.37	.21	.17	.04	.13	.17	.15	.64	3.05	.26	.38	.49	3.82	4.91	2.77	5.63	.00	24.20
(2)	.73	.11	.09	.02	.07	.09	.08	.34	1.63	.14	.21	.26	2.04	2.63	1.48	3.02	.00	12.95
19-24	9	0	0	0	1	1	0	4	29	3	0	0	30	62	50	79	0	268
(1)	.19	.00	.00	.00	.02	.02	.00	.09	.62	.06	.00	.00	.64	1.32	1.07	1.69	.00	5.72
(2)	.10	.00	.00	.00	.01	.01	.00	.05	.33	.03	.00	.00	.34	.71	.57	.90	.00	3.06
GT 24	1	0	0	0	0	0	1	0	6	1	0	0	3	0	12	21	0	45
(1)	.02	.00	.00	.00	.00	.00	.02	.00	.13	.02	.00	.00	.06	.00	.26	.45	.00	.96
(2)	.01	.00	.00	.00	.00	.00	.01	.00	.07	.01	.00	.00	.03	.00	.14	.24	.00	.51
ALL SPEEDS	318	85	80	66	131	204	327	435	475	110	78	93	375	482	399	1028	0	4686
(1)	6.79	1.81	1.71	1.41	2.80	4.35	6.98	9.28	10.14	2.35	1.66	1.98	8.00	10.29	8.51	21.94	.00	100.00
(2)	3.63	.97	.91	.75	1.50	2.33	3.74	4.97	5.43	1.26	.89	1.06	4.28	5.51	4.56	11.74	.00	53.52

(1)=PERCENT OF ALL GOOD OBSERVATIONS FOR THIS PAGE
 (2)=PERCENT OF ALL GOOD OBSERVATIONS FOR THIS PERIOD
 C= CALM (WIND SPEED LESS THAN OR EQUAL TO 0.95 MPH)

TABLE 6E

VERMONT YANKEE JAN 13 - DEC 13 METEOROLOGICAL DATA JOINT FREQUENCY DISTRIBUTION

297.0 FT WIND DATA STABILITY CLASS E CLASS FREQUENCY (PERCENT) = 32.66

WIND DIRECTION FROM

SPEED MPH	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	VRBL	TOTAL
CALM	0	0	0	0	0	1	2	0	0	1	0	0	1	0	0	0	0	5
(1)	.00	.00	.00	.00	.00	.03	.07	.00	.00	.03	.00	.00	.03	.00	.00	.00	.00	.17
(2)	.00	.00	.00	.00	.00	.01	.02	.00	.00	.01	.00	.00	.01	.00	.00	.00	.00	.06
C-3	114	77	59	59	77	94	80	60	32	14	11	12	12	14	44	102	0	861
(1)	3.99	2.69	2.06	2.06	2.69	3.29	2.80	2.10	1.12	.49	.38	.42	.42	.49	1.54	3.57	.00	30.12
(2)	1.30	.88	.67	.67	.88	1.07	.91	.69	.37	.16	.13	.14	.14	.16	.50	1.17	.00	9.83
4-7	74	17	10	9	11	40	163	159	77	26	19	21	32	39	81	316	0	1094
(1)	2.59	.59	.35	.31	.38	1.40	5.70	5.56	2.69	.91	.66	.73	1.12	1.36	2.83	11.05	.00	38.27
(2)	.85	.19	.11	.10	.13	.46	1.86	1.82	.88	.30	.22	.24	.37	.45	.93	3.61	.00	12.50
8-12	40	2	2	0	6	2	28	78	51	25	10	30	72	54	69	184	0	653
(1)	1.40	.07	.07	.00	.21	.07	.98	2.73	1.78	.87	.35	1.05	2.52	1.89	2.41	6.44	.00	22.84
(2)	.46	.02	.02	.00	.07	.02	.32	.89	.58	.29	.11	.34	.82	.62	.79	2.10	.00	7.46
13-18	4	1	0	0	0	0	0	7	13	7	2	4	82	18	17	64	0	219
(1)	.14	.03	.00	.00	.00	.00	.00	.24	.45	.24	.07	.14	2.87	.63	.59	2.24	.00	7.66
(2)	.05	.01	.00	.00	.00	.00	.00	.08	.15	.08	.02	.05	.94	.21	.19	.73	.00	2.50
19-24	0	0	0	0	0	0	0	0	4	0	0	0	0	0	1	15	0	20
(1)	.00	.00	.00	.00	.00	.00	.00	.00	.14	.00	.00	.00	.00	.00	.03	.52	.00	.70
(2)	.00	.00	.00	.00	.00	.00	.00	.00	.05	.00	.00	.00	.00	.00	.01	.17	.00	.23
GT 24	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	4	0	7
(1)	.00	.00	.00	.00	.00	.00	.00	.00	.07	.00	.00	.00	.03	.00	.00	.14	.00	.24
(2)	.00	.00	.00	.00	.00	.00	.00	.00	.02	.00	.00	.00	.01	.00	.00	.05	.00	.08
ALL SPEEDS	232	97	71	68	94	137	273	304	179	73	42	67	200	125	212	685	0	2859
(1)	8.11	3.39	2.48	2.38	3.29	4.79	9.55	10.63	6.26	2.55	1.47	2.34	7.00	4.37	7.42	23.96	.00	100.00
(2)	2.65	1.11	.81	.78	1.07	1.56	3.12	3.47	2.04	.83	.48	.77	2.28	1.43	2.42	7.82	.00	32.66

(1)=PERCENT OF ALL GOOD OBSERVATIONS FOR THIS PAGE
 (2)=PERCENT OF ALL GOOD OBSERVATIONS FOR THIS PERIOD
 C= CALM (WIND SPEED LESS THAN OR EQUAL TO 0.95 MPH)

TABLE 6F

VERMONT YANKEE JAN 13 - DEC 13 METEOROLOGICAL DATA JOINT FREQUENCY DISTRIBUTION

297.0 FT WIND DATA STABILITY CLASS F CLASS FREQUENCY (PERCENT) = 10.44
WIND DIRECTION FROM

SPEED MPH	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	VRBL	TOTAL
CALM	0	0	1	1	1	0	0	1	0	0	0	0	0	0	0	1	0	5
(1)	.00	.00	.11	.11	.11	.00	.00	.11	.00	.00	.00	.00	.00	.00	.00	.11	.00	.55
(2)	.00	.00	.01	.01	.01	.00	.00	.01	.00	.00	.00	.00	.00	.00	.00	.01	.00	.06
C-3	33	36	21	17	30	17	23	23	15	15	12	9	5	11	30	30	0	327
(1)	3.61	3.94	2.30	1.86	3.28	1.86	2.52	2.52	1.64	1.64	1.31	.98	.55	1.20	3.28	3.28	.00	35.78
(2)	.38	.41	.24	.19	.34	.19	.26	.26	.17	.17	.14	.10	.06	.13	.34	.34	.00	3.74
4-7	25	4	0	4	5	22	70	56	72	13	16	13	27	22	24	92	0	465
(1)	2.74	.44	.00	.44	.55	2.41	7.66	6.13	7.88	1.42	1.75	1.42	2.95	2.41	2.63	10.07	.00	50.88
(2)	.29	.05	.00	.05	.06	.25	.80	.64	.82	.15	.18	.15	.31	.25	.27	1.05	.00	5.31
8-12	0	2	0	2	0	1	10	14	9	3	5	6	20	14	3	23	0	112
(1)	.00	.22	.00	.22	.00	.11	1.09	1.53	.98	.33	.55	.66	2.19	1.53	.33	2.52	.00	12.25
(2)	.00	.02	.00	.02	.00	.01	.11	.16	.10	.03	.06	.07	.23	.16	.03	.26	.00	1.28
13-18	0	0	0	0	0	0	0	0	4	1	0	0	0	0	0	0	0	5
(1)	.00	.00	.00	.00	.00	.00	.00	.00	.44	.11	.00	.00	.00	.00	.00	.00	.00	.55
(2)	.00	.00	.00	.00	.00	.00	.00	.00	.05	.01	.00	.00	.00	.00	.00	.00	.00	.06
19-24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(1)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
(2)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
GT 24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(1)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
(2)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
ALL SPEEDS	58	42	22	24	36	40	103	94	100	32	33	28	52	47	57	146	0	914
(1)	6.35	4.60	2.41	2.63	3.94	4.38	11.27	10.28	10.94	3.50	3.61	3.06	5.69	5.14	6.24	15.97	.00	100.00
(2)	.66	.48	.25	.27	.41	.46	1.18	1.07	1.14	.37	.38	.32	.59	.54	.65	1.67	.00	10.44

(1)=PERCENT OF ALL GOOD OBSERVATIONS FOR THIS PAGE
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C= CALM (WIND SPEED LESS THAN OR EQUAL TO 0.95 MPH)

TABLE 6G

VERMONT YANKEE JAN 13 - DEC 13 METEOROLOGICAL DATA JOINT FREQUENCY DISTRIBUTION

297.0 FT WIND DATA STABILITY CLASS G CLASS FREQUENCY (PERCENT) = 1.15

WIND DIRECTION FROM

SPEED MPH	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	VRBL	TOTAL
CALM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(1)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
(2)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
C-3	2	1	0	2	2	3	3	1	1	1	2	0	2	0	2	3	0	25
(1)	1.98	.99	.00	1.98	1.98	2.97	2.97	.99	.99	.99	1.98	.00	1.98	.00	1.98	2.97	.00	24.75
(2)	.02	.01	.00	.02	.02	.03	.03	.01	.01	.01	.02	.00	.02	.00	.02	.03	.00	.29
4-7	2	1	1	0	0	2	14	7	6	3	1	1	4	1	5	1	0	49
(1)	1.98	.99	.99	.00	.00	1.98	13.86	6.93	5.94	2.97	.99	.99	3.96	.99	4.95	.99	.00	48.51
(2)	.02	.01	.01	.00	.00	.02	.16	.08	.07	.03	.01	.01	.05	.01	.06	.01	.00	.56
8-12	0	0	0	0	0	2	10	2	2	1	1	1	0	1	4	2	0	26
(1)	.00	.00	.00	.00	.00	1.98	9.90	1.98	1.98	.99	.99	.99	.00	.99	3.96	1.98	.00	25.74
(2)	.00	.00	.00	.00	.00	.02	.11	.02	.02	.01	.01	.01	.00	.01	.05	.02	.00	.30
13-18	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
(1)	.00	.00	.00	.00	.00	.00	.00	.00	.99	.00	.00	.00	.00	.00	.00	.00	.00	.99
(2)	.00	.00	.00	.00	.00	.00	.00	.00	.01	.00	.00	.00	.00	.00	.00	.00	.00	.01
19-24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(1)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
(2)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
GT 24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(1)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
(2)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
ALL SPEEDS	4	2	1	2	2	7	27	10	10	5	4	2	6	2	11	6	0	101
(1)	3.96	1.98	.99	1.98	1.98	6.93	26.73	9.90	9.90	4.95	3.96	1.98	5.94	1.98	10.89	5.94	.00	100.00
(2)	.05	.02	.01	.02	.02	.08	.31	.11	.11	.06	.05	.02	.07	.02	.13	.07	.00	1.15

(1)=PERCENT OF ALL GOOD OBSERVATIONS FOR THIS PAGE
 (2)=PERCENT OF ALL GOOD OBSERVATIONS FOR THIS PERIOD
 C= CALM (WIND SPEED LESS THAN OR EQUAL TO 0.95 MPH)

TABLE 6H

VERMONT YANKEE JAN 13 - DEC 13 METEOROLOGICAL DATA JOINT FREQUENCY DISTRIBUTION

297.0 FT WIND DATA STABILITY CLASS ALL CLASS FREQUENCY (PERCENT) = 100.00
WIND DIRECTION FROM

SPEED MPH	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	VRBL	TOTAL
CALM	4	0	1	1	1	1	2	1	0	1	0	0	1	0	0	1	0	14
(1)	.05	.00	.01	.01	.01	.01	.02	.01	.00	.01	.00	.00	.01	.00	.00	.01	.00	.16
(2)	.05	.00	.01	.01	.01	.01	.02	.01	.00	.01	.00	.00	.01	.00	.00	.01	.00	.16
C-3	222	143	116	103	168	169	178	120	69	45	31	29	24	42	112	231	0	1802
(1)	2.54	1.63	1.32	1.18	1.92	1.93	2.03	1.37	.79	.51	.35	.33	.27	.48	1.28	2.64	.00	20.58
(2)	2.54	1.63	1.32	1.18	1.92	1.93	2.03	1.37	.79	.51	.35	.33	.27	.48	1.28	2.64	.00	20.58
4-7	179	49	33	49	74	183	423	397	238	68	53	50	79	91	195	662	0	2823
(1)	2.04	.56	.38	.56	.85	2.09	4.83	4.53	2.72	.78	.61	.57	.90	1.04	2.23	7.56	.00	32.24
(2)	2.04	.56	.38	.56	.85	2.09	4.83	4.53	2.72	.78	.61	.57	.90	1.04	2.23	7.56	.00	32.24
8-12	142	27	18	13	19	58	133	292	259	82	56	84	235	214	166	540	0	2338
(1)	1.62	.31	.21	.15	.22	.66	1.52	3.34	2.96	.94	.64	.96	2.68	2.44	1.90	6.17	.00	26.70
(2)	1.62	.31	.21	.15	.22	.66	1.52	3.34	2.96	.94	.64	.96	2.68	2.44	1.90	6.17	.00	26.70
13-18	71	11	8	2	7	10	11	40	168	20	20	27	263	249	147	353	0	1407
(1)	.81	.13	.09	.02	.08	.11	.13	.46	1.92	.23	.23	.31	3.00	2.84	1.68	4.03	.00	16.07
(2)	.81	.13	.09	.02	.08	.11	.13	.46	1.92	.23	.23	.31	3.00	2.84	1.68	4.03	.00	16.07
19-24	10	0	0	0	1	1	0	4	37	3	0	0	37	68	53	102	0	316
(1)	.11	.00	.00	.00	.01	.01	.00	.05	.42	.03	.00	.00	.42	.78	.61	1.17	.00	3.61
(2)	.11	.00	.00	.00	.01	.01	.00	.05	.42	.03	.00	.00	.42	.78	.61	1.17	.00	3.61
GT 24	1	0	0	0	0	0	1	0	10	1	0	0	5	0	12	25	0	55
(1)	.01	.00	.00	.00	.00	.00	.01	.00	.11	.01	.00	.00	.06	.00	.14	.29	.00	.63
(2)	.01	.00	.00	.00	.00	.00	.01	.00	.11	.01	.00	.00	.06	.00	.14	.29	.00	.63
ALL SPEEDS	629	230	176	168	270	422	748	854	781	220	160	190	644	664	685	1914	0	8755
(1)	7.18	2.63	2.01	1.92	3.08	4.82	8.54	9.75	8.92	2.51	1.83	2.17	7.36	7.58	7.82	21.86	.00	100.00
(2)	7.18	2.63	2.01	1.92	3.08	4.82	8.54	9.75	8.92	2.51	1.83	2.17	7.36	7.58	7.82	21.86	.00	100.00

(1)=PERCENT OF ALL GOOD OBSERVATIONS FOR THIS PAGE
(2)=PERCENT OF ALL GOOD OBSERVATIONS FOR THIS PERIOD
C= CALM (WIND SPEED LESS THAN OR EQUAL TO 0.95 MPH)

APPENDIX A

SUPPLEMENTAL INFORMATION

Facility: Vermont Yankee Nuclear Power Station

Licensee: Entergy Nuclear Vermont Yankee

1A. ODCM DOSE AND DOSE RATE LIMITS -

<u>ODCM Controls</u>	<u>Dose Limit</u>
a. <u>Noble Gases</u>	
3/4.3.1 Total body dose rate	500 mrem/yr
3/4.3.1 Skin dose rate	3000 mrem/yr
3/4.3.2 Gamma air dose	5 mrad in a quarter
3/4.3.2 Gamma air dose	10 mrad in a year
3/4.3.2 Beta air dose	10 mrad in a quarter
3/4.3.2 Beta air dose	20 mrad in a year
b. <u>Iodine-131, Iodine-133, Tritium and Radionuclides in Particulate Form With Half-Lives Greater Than 8 Days</u>	
3/4.3.1 Organ dose rate	1500 mrem/yr
3/4.3.3 Organ dose	7.5 mrem in a quarter
3/4.3.3 Organ dose	15 mrem in a year
c. <u>Liquids</u>	
3/4.2.2 Total body dose	1.5 mrem in a quarter
3/4.2.2 Total body dose	3 mrem in a year
3/4.2.2 Organ dose	5 mrem in a quarter
3/4.2.2 Organ dose	10 mrem in a year

2A. ODCM LIMITS - CONCENTRATION

<u>ODCM Control</u>	<u>Limit</u>
a. <u>Noble Gases</u>	No ECL Limits
b. <u>Iodine-131, Iodine-133, Tritium and Radionuclides in Particulate Form With Half-Lives Greater Than 8 Days</u>	No ECL Limits

c. Liquids

3/4.2.1 Sum of the fractions of ECL
excluding noble gases
(10CFR20, Appendix B,
Table 2, Column 2): $\leq 1.0E+01$

3/4.2.1 Total noble gas concentration: $\leq 2E-04 \mu\text{Ci/cc}$

3. AVERAGE ENERGY

Provided below are the average energy (E) of the radionuclide mixture in releases of fission and activation gases, if applicable.

a. Average gamma energy: Not Applicable

b. Average beta energy: Not Applicable

4. MEASUREMENTS AND APPROXIMATIONS OF TOTAL RADIOACTIVITY

Provided below are the methods used to measure or approximate the total radioactivity in effluents and the methods used to determine radionuclide composition.

a. Fission and Activation Gases

Continuous stack monitors monitor the gross Noble Gas radioactivity released from the plant stack. Because release rates are normally below the detection limit of these monitors, periodic grab samples are taken and analyzed for the gaseous isotopes present. These are used to calculate the individual isotopic releases indicated in Table 1B and the totals of Table 1A. The error involved in these steps may be approximately ± 23 percent.

b. Iodines

Continuous isokinetic samples are drawn from the plant stack through a particulate filter and charcoal cartridge. The filters and cartridges are normally removed weekly and are analyzed for Iodine-131, 132, 133, 134, and 135. The error involved in these steps may be approximately ± 18 percent.

c. Particulates

The particulate filters described in b. above are also counted for particulate radioactivity. The error involved in this sample is also approximately ± 18 percent.

d. Tritium

ODCM Table 4.3.1 requires as a minimum that grab samples from the plant stack be taken monthly and analyzed for tritium. The stack tritium collection has been upgraded with silica gel columns and continuous sampling of stack effluents. The error involved in this sample is approximately ± 10 percent.

e. Waste Oil

Prior to issuing the permit to burn a drum of radioactively contaminated waste oil, one liter of the oil is analyzed by gamma spectroscopy to determine concentrations of radionuclides that meet or exceed the LLD for all of the liquid phase radionuclides listed in ODCM Table 4.2.1.

Monthly, samples from drums that were issued burn permits are sent to the contracted laboratory for compositing and analysis. The lab analyzes for tritium, alpha, Fe-55, Sr-89, and Sr-90 on the composite sample.

The error involved in this sample is approximately ± 15 percent.

f. Liquid Effluents

If radioactive liquid effluents are to be released from the facility, they are continuously monitored. Measurements are also required on a representative sample of each batch of radioactive liquid effluents released. For each batch, station records are retained of the total activity (mCi) released, concentration ($\mu\text{Ci/ml}$) of gross radioactivity, volume (liters), and approximate total quantity of water (liters) used to dilute the liquid effluent prior to release to the Connecticut River.

Each batch of radioactive liquid effluents to be released is analyzed for gross gamma and gamma isotopic radioactivity. A monthly proportional composite sample, comprising an aliquot of each batch released during a month, is analyzed for tritium and gross alpha radioactivity. A quarterly proportional composite sample, comprising an aliquot of each batch released during a quarter, is analyzed for Sr-89, Sr-90, and Fe-55.

5. BATCH RELEASES

a. Liquid

There were no routine liquid batch releases during the reporting period.

b. Gaseous

There were no routine gaseous batch releases during the reporting period.

6. ABNORMAL RELEASES

a. Liquid

1) In 2013 there was a continuous release due to the residual radioactivity in groundwater from a previously undetected leak from a subsurface structure. The leak condition was identified through monitoring well data in January 2010. The leak was stopped in February 2010.

2) For 2013, the total Tritium radioactivity conservatively estimated to be released to the Connecticut River is 0.0638 Curies. No other plant-related radionuclides were detected in ground water.

b. Gaseous

There was one non-routine gaseous release (measured) during the reporting period. On March 18, 2013 at approximately 04:28, there was a brief Reactor Building over-pressurization condition which caused the release of a small amount of radioactivity (6.41E-06 Curies) to the atmosphere (see Table 1D). The duration of the release was approximately 1.88 minutes before a negative pressure was re-established in the building.

APPENDIX B

LIQUID HOLDUP TANKS

Requirement

Technical Specification 3.8.D.1 limits the quantity of radioactive material contained in any outside tank. With the quantity of radioactive material in any outside tank exceeding the limits of Technical Specification 3.8.D.1, a description of the events leading to this condition is required in the next annual Radioactive Effluent Release Report per ODCM Section 10.1.

Response:

The limits of Technical Specification 3.8.D.1 were not exceeded during this reporting period.

APPENDIX C

RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION

Requirement: Radioactive liquid effluent monitoring instrumentation channels are required to be operable in accordance with ODCM Table 3.1.1. If an inoperable radioactive liquid effluent monitoring instrument is not returned to operable status prior to a release pursuant to Note 4 of Table 3.1.1, an explanation in the next annual Radioactive Effluent Release Report of the reason(s) for delay in correcting the inoperability are required per ODCM Section 10.1.

Response: Since the requirements of ODCM Table 3.1.1 governing the operability of radioactive liquid effluent monitoring instrumentation were met for this reporting period, no response is required.

APPENDIX D

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

Requirement: Radioactive gaseous effluent monitoring instrumentation channels are required to be operable in accordance with ODCM Table 3.1.2. If inoperable gaseous effluent monitoring instrumentation is not returned to operable status within 30 days pursuant to Note 5 of Table 3.1.2, an explanation in the next annual Radioactive Effluent Release Report of the reason(s) for the delay in correcting the inoperability is required per ODCM Section 10.1.

Response: Since the requirements of ODCM Table 3.1.2 governing the operability of radioactive gaseous effluent monitoring instrumentation were met for this reporting period, no response is required.

APPENDIX E

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Requirement: The radiological environmental monitoring program is conducted in accordance with ODCM Control 3/4.5.1. With milk samples no longer available from one or more of the sample locations required by ODCM Table 3.5.1, ODCM 10.1 requires the following to be included in the next annual Radioactive Effluent Release Report: (1) identify the cause(s) of the sample(s) no longer being available, (2) identify the new location(s) for obtaining available replacement samples and (3) include revised ODCM figure(s) and table(s) reflecting the new location(s).

Response: No changes were needed in the milk sampling locations as specified in ODCM Table 3.5.1 and implemented in ODCM Table 7.1 during the reporting year.

APPENDIX F

LAND USE CENSUS

Requirement: A land use census is conducted in accordance with ODCM Control 3/4.5.2. With a land use census identifying a location(s) that yields at least a 20 percent greater dose or dose commitment than the values currently being calculated pursuant to ODCM Control 4.3.3, the new location(s) must be identified in the next Annual Radioactive Effluent Release Report.

Response: The Land Use Census was completed during the third quarter of 2013. No locations were identified which yielded a 20 percent greater dose or dose commitment than the values currently being calculated pursuant to ODCM Control 4.3.3.

APPENDIX G

PROCESS CONTROL PROGRAM

Requirement: ODCM Section 10.1 requires that licensee initiated changes to the Process Control Program (PCP) be submitted to the Commission in the annual Radioactive Effluent Release Report for the period in which the change(s) was made.

Response: There were no changes made to the Process Control Program during this reporting period.

APPENDIX H

OFF-SITE DOSE CALCULATION MANUAL

Requirement: Technical Specification 6.7.B.1 requires that licensee initiated changes to the Off-Site Dose Calculation Manual (ODCM) be submitted to the Commission in the annual Radioactive Effluent Release Report for the period in which the change(s) was made effective.

Response: No revisions were made to the ODCM during the reporting period.

APPENDIX I

RADIOACTIVE LIQUID, GASEOUS, AND SOLID WASTE TREATMENT SYSTEMS

Requirement: ODCM Section 10.4 requires that licensee initiated major changes to the radioactive waste systems (liquid, gaseous, and solid) be reported to the Commission in the annual Radioactive Effluent Release Report for the period in which the evaluation was reviewed by the Plant Operation Review Committee.

Response: There were no licensee-initiated major changes to the radioactive waste systems during this reporting period.

APPENDIX J

ON-SITE DISPOSAL OF SEPTIC/SILT/SOIL WASTE

Requirement: Off-Site Dose Calculation Manual, Appendices B, F and I require that the dose impact due to on-site disposal of septic waste, cooling tower silt, and sand/soil type materials during the reporting year and from previous years be reported to the Nuclear Regulatory Commission in the Annual Radioactive Effluent Release Report if disposals occur during the reporting year. Entergy Nuclear Vermont Yankee will report in the Annual Radioactive Effluent Release Report a list of the radionuclides present and the total radioactivity associated with the disposal activities on the Vermont Yankee site.

Response: There was one on-site disposal spreading of 11,000 gallons of septic waste during October of 2013, and no spreading activities for cooling tower silt or sand/soil type materials. There was 3.57E-01 microcuries of Co-60 detected in this septic waste. The total radioactivity spread on the 1.9 acres (southern) on-site disposal field from this and previous years was as follows:

<u>Radionuclide</u>	<u>Activity Spread in 2013 (Ci)</u>	<u>Activity from All Past and Current Disposals Decayed to 10/24/2013 (Ci)</u>
Mn-54	0	5.85E-08
Co-60	3.57E-07	1.26E-05
Zn-65	0	2.77E-08
Cs-134	0	1.30E-09
Cs-137	0	7.85E-05

The maximum organ dose from all past and current spreading operations totaled 1.15E-01 mrem/year. This calculated value is within the 1 mrem/year limit applied during the period of operational control of the site. The projected hypothetical "intruder" dose for the period following the loss of operational control of the site area, due to all spreading operations to-date, is 2.08E-01 mrem/year versus a 5 mrem/year dose limit. The "intruder dose" period begins on the date that the plant operating license expires, March 21, 2032.