

SUPPLEMENTAL
EFFLUENT AND WASTE DISPOSAL
ANNUAL REPORT
FOR 1996
INCLUDING ANNUAL RADIOLOGICAL
IMPACT ON MAN FOR 1996

Vermont Yankee Nuclear Power Station

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ERRATA

In the Vermont Yankee Effluent and Waste Disposal Annual Report for 1996, the following corrections should be made:

None.

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VERMONT YANKEE NUCLEAR POWER STATION
ANNUAL EFFLUENT RELEASE REPORT
JANUARY - DECEMBER 1996

1.0 INTRODUCTION

Tables 1 through 3 list the recorded radioactive liquid and gaseous effluents and solid waste for the year, with data summarized on a quarterly basis for both liquids and gases. Table 4 summarizes the estimated radiological dose commitments from all radioactive liquid and gaseous effluents released during the year 1996, including direct dose from fixed station sources. 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 1996. Radioactive effluents reported in the Annual Effluent Report covering the year were used to determine the resulting doses for 1996.

As required by Technical Specification 6.7.C.1 dose commitments resulting from the release of radioactive materials in liquids and gases were estimated in accordance with the "Vermont Yankee Nuclear Power Station Off-Site Dose Calculation Manual" (ODCM). These dose estimates were made using a "Method II" analysis as described in the ODCM. A "Method II" analysis incorporates the methodology of Regulatory Guide 1.109 (Reference 3) and actual measured meteorological data recorded during the reporting period.

As required by Technical Specification 6.7.C.1.b, 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. However, for this reporting period no recreational activities inside the site boundary were permitted, and, as a result, no dose assessments are required.

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 40CFR190, "Environmental Radiation Protection Standards for Nuclear Power Operations," are also required to be included in this report if the conditions indicated in Technical Specification 3.8.M.1, "Total Dose," have been exceeded during the year. Since the conditions indicated in the action statement under Technical Specification 3.8.M.2 were not entered into during the year, no additional radiation dose assessments are required.

All calculated dose estimates for this reporting period are well below the dose criteria of 10CFR Part 50, Appendix I.

Appendices B through H indicate the status of reportable items per the requirements of Technical Specifications 6.7.C.1 and 6.14.A.

2.0 METEOROLOGICAL DATA

Meteorological data was collected during this reporting period from the site's 300-foot met 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 (94 meters) and is designed to meet the requirements of Regulatory Guide 1.23 for meteorological monitoring.

X/Q and D/Q values 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 1). A source depletion model as described in "Meteorology and Atomic Energy - 1968" (Reference 2) 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.

3.0 DOSE ASSESSMENT

3.1 Doses From Liquid Effluents

Technical Specification 3.8.B.1 limits total body (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 10CFR Part 50, Appendix I. By implementing the requirements of 10CFR Part 50, Appendix I, Technical Specification 3.8.B.1 assures that the release of radioactive material in liquid effluents will be kept "as low as is reasonably achievable."

For periods in which liquid waste discharges actually occur, the exposure pathways that could exist are fish, direct exposure from river shoreline sedimentation, milk and meat via animal ingestion of the Connecticut River water, and meat, milk and vegetable pathways via crop irrigation with water withdrawn from the Connecticut River. The drinking water and aquatic invertebrate pathways do not exist downriver of the Vermont plant at Vernon.

There were no recorded liquid radwaste discharges during the report period, and therefore, no dose impact.

3.2 Doses From Noble Gases

Technical Specification 3.8.F.1 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 10CFR Part 50, Appendix I. By implementing the requirements of 10CFR Part 50, Appendix I, Technical Specification 3.8.F.1 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, nearest resident in each of the sixteen principal compass directions, the point of highest off-site ground level air concentration of radioactive materials, and for each of the milk animal locations located within five miles of the plant.

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

Technical Specification 3.8.G.1 limits the organ dose to a member of the public from iodine-131, iodine-133, tritium 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 10CFR Part 50, Appendix I (7.5 mrem per quarter, and 15 mrem per year). By implementing the requirements of 10CFR Part 50, Appendix I, Technical Specification 3.8.G.1 assures that the releases of iodines and particulates in gaseous effluents will be kept "as low as is reasonably achievable."

Exposure pathways that could exist as a result of the 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 Technical Specification 3.9.D.1. 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 animal location. 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. 26, Reference 3). During the first and fourth quarters, the milk animals are assumed to receive only stored feed.

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 4. These estimated organ doses are well below the 10CFR Part 50, Appendix I dose criteria of Technical Specification 3.8.G.1.

3.4 Whole-Body Doses in Unrestricted Areas From Direct Radiation

The major source of dose, consisting of direct radiation and skyshine, from the station is due to N-16 decay in the turbine building. 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) see any significant direct radiation.

High Pressure Ionization Chamber (HPIC) measurements have been made in the plant area in order to estimate the direct radiation from the station. The chamber was located at a point along the west site boundary which has been determined to receive the maximum direct radiation from the plant. Using measurements of dose rate made while the plant operated at different power levels, from shutdown to 100 percent, the total integrated dose from direct radiation over each three month period was determined by considering the quarterly gross megawatts generated. Field measurements of exposure, in units of Roentgen, were modified by multiplying by 0.6 to obtain whole-body dose equivalents, in units of rem, in accordance with recommendations of HASL Report 305 (Reference 4) for radiation fields resulting from N-16 photons.

The other sources of dose, including direct radiation and skyshine, to the site boundary are from low level radioactive waste 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 three storage facilities and determined at 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 on Table 4. These site boundary doses assume a 100 percent occupancy factor, and take no credit for the shielding effect of any residential structure.

3.5 Doses From On-Site Disposal of Septic Waste

Off-Site Dose Calculational Manual, Appendix B, requires that all applications of septage within the approved designated disposal areas be limited to ensure the dose to a maximally-exposed individual be maintained at less than 1 mrem/year to the whole body and any organ, and the dose to the inadvertent intruder be maintained at less than 5 mrem/year. The projected dose from on-site disposals of septic waste is given in Appendix J.

REFERENCES

1. 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.
2. Meteorology and Atomic Energy, 1968, Section 5-3.2.2, "Cloud Depletion", pg. 204. U. S. Atomic Energy Commission, July 1968.
3. Regulatory Guide 1.109, "Calculation of Annual Doses to Man From Routine Release of Reactor Effluents for the Purpose of Evaluating Compliance with 10CFR Part 50, Appendix I", U. S. Nuclear Regulatory Commission, Office of Standards Development, Revision 1, October 1977.
4. W. M. Lowder, P. D. Raft, and G. dePlanque Burke, "Determination of N-16 Gamma Radiation Fields at BWR Nuclear Power Stations", Health and Safety Laboratory, Energy Research and Development Administration, Report No. 305, May 1976.

TABLE 1A
Vermont Yankee
Effluent and Waste Disposal Annual Report
First and Second Quarters, 1996
Gaseous Effluents - Summation of All Releases

	Unit	Quarter 1	Quarter 2	Est. Total Error, %
A. Fission and Activation Gases				
1. Total release	Ci	5.18E-01	1.89E+00	±2.30E+01
2. Average release rate for period	µCi/sec	6.59E-02	2.40E-01	
3. Percent of Tech. Spec. limit (1)	%	4.30E-04	2.32E-03	
B. Iodines				
1. Total Iodine-131	Ci	2.11E-04	2.76E-04	±1.80E+01
2. Average release rate for period	µCi/sec	2.68E-05	3.51E-05	
3. Percent of Tech. Spec. limit (2)	%	1.76E-02	2.49E-01	
C. Particulates				
1. Particulates with T-1/2 > 8 days	Ci	4.45E-05	4.44E-05	±1.80E+01
2. Average release rate for period	µCi/sec	5.66E-06	5.65E-06	
3. Percent of Tech. Spec. limit	%	(3)	(3)	
4. Gross alpha radioactivity	Ci	4.25E-06	2.09E-06	
D. Tritium				
1. Total release	Ci	7.07E+00	7.90E+00	±1.50E+01
2. Average release rate for period	µCi/sec	8.99E-01	1.00E+00	
3. Percent of Tech. Spec. limit	%	(3)	(3)	

- (1) Technical Specification 3.8.F.1.a for gamma air dose.
- (2) Technical Specification 3.8.G.1 for dose from I-131, I-133, Tritium, and radionuclides in particulate form.
- (3) Per Technical Specification 3.8.G.1 dose contribution from Tritium and particulates are included with I-131 above in Part B.

TABLE 1A
(Continued)

Vermont Yankee

Effluent and Waste Disposal Annual Report

Third and Fourth Quarters, 1996

Gaseous Effluents - Summation of All Releases

	Unit	Quarter 3	Quarter 4	Est. Total Error, %
A. Fission and Activation Gases				
1. Total release	Ci	1.04E+00	2.72E+00	±2.30E+01
2. Average release rate for period	µCi/sec	1.32E-01	3.46E-01	
3. Percent of Tech. Spec. limit	%	1.51E-03 (1)	3.63E-03 (2)	
B. Iodines				
1. Total Iodine-131	Ci	4.22E-04	4.83E-05	±1.80E+01
2. Average release rate for period	µCi/sec	5.37E-05	6.14E-06	
3. Percent of Tech. Spec. limit (3)	%	3.87E-01	6.81E-03	
C. Particulates				
1. Particulates with T-1/2 > 8 days	Ci	7.81E-05	1.80E-05	±1.80E+01
2. Average release rate for period	µCi/sec	9.93E-06	2.29E-06	
3. Percent of Tech. Spec. limit	%	(4)	(4)	
4. Gross alpha radioactivity	Ci	3.29E-06	3.25E-06	
D. Tritium				
1. Total release	Ci	7.56E+00	1.86E+00	±1.50E+01
2. Average release rate for period	µCi/sec	9.62E-01	2.37E-01	
3. Percent of Tech. Spec. limit	%	(4)	(4)	

(1) Technical Specification 3.8.F.1.a for gamma air dose.

(2) Technical Specification 3.8.F.1.a for beta air dose.

(3) Technical Specification 3.8.G.1 for dose from I-131, I-133, Tritium, and radionuclides in particulate form.

(4) Per Technical Specification 3.8.G.1 dose contribution from Tritium and particulates are included with I-131 above in Part B.

TABLE 1B

Vermont Yankee

Effluent and Waste Disposal Annual Report

First and Second Quarters, 1996

Gaseous Effluents - Elevated Releases

Nuclides Released	Unit	Continuous Mode		Batch Mode ⁽¹⁾	
		Quarter 1	Quarter 2	Quarter 1	Quarter 2
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-135	Ci	5.18E-01	ND		
Xenon-135m	Ci	ND	1.89E+00		
Xenon-138	Ci	ND	ND		
Unidentified	Ci	ND	ND		
Total for period	Ci	5.18E-01	1.89E+00		
2. Iodines					
Iodine-131	Ci	2.11E-04	2.76E-04		
Iodine-133	Ci	1.71E-03	2.18E-03		
Iodine-135	Ci	ND	ND		
Total for period	Ci	1.92E-03	2.45E-03		
3. Particulates					
Strontium-89	Ci	4.45E-05	4.44E-05		
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	ND		
Cerium-141	Ci	ND	ND		
Zinc-65	Ci	ND	ND		
Total for period	Ci	4.45E-05	4.44E-05		

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

ND - Not detected at the plant stack.

TABLE 1B
(Continued)

Vermont Yankee

Effluent and Waste Disposal Annual Report

Third and Fourth Quarters, 1996

Gaseous Effluents - Elevated Releases

Nuclides Released	Unit	Continuous Mode		Batch Mode ⁽¹⁾	
		Quarter 3	Quarter 4	Quarter 3	Quarter 4
1. Fission Gases					
Krypton-85	Ci	ND	ND		
Krypton-85m	Ci	ND	ND		
Krypton-87	Ci	ND	5.52E-01		
Krypton-88	Ci	ND	ND		
Xenon-133	Ci	ND	ND		
Xenon-135	Ci	ND	2.17E+00		
Xenon-135m	Ci	1.04E+00	ND		
Xenon-138	Ci	ND	ND		
Unidentified	Ci	ND	ND		
Total for period	Ci	1.04E+00	2.72E+00		
2. Iodines					
Iodine-131	Ci	4.22E-04	4.83E-05		
Iodine-133	Ci	3.40E-03	2.27E-04		
Iodine-135	Ci	ND	ND		
Total for period	Ci	3.82E-03	2.76E-04		
3. Particulates					
Strontium-89	Ci	3.60E-05	1.32E-05		
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	4.21E-05	4.78E-06		
Cerium-141	Ci	ND	ND		
Zinc-65	Ci	ND	ND		
Total for period	Ci	7.81E-05	1.80E-05		

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

ND - Not detected at the plant stack.

TABLE 1C

Vermont Yankee

Effluent and Waste Disposal Annual Report

First and Second Quarters 1996

Gaseous Effluents - Ground Level Releases^{(1), (2)}

Nuclides Released	Unit	Continuous Mode		Batch Mode	
		Quarter 1	Quarter 2	Quarter 1	Quarter 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				
Xenon-131m	Ci				
Total for period	Ci	0.00E+00	0.00E+00		
2. Iodines					
Iodine-131	Ci				
Iodine-133	Ci				
Iodine-135	Ci				
Total for period	Ci	0.00E+00	0.00E+00		
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	0.00E+00	0.00E+00		

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

(2) Use of the North Warehouse stack as a ground level release point was initiated at the beginning of the fourth quarter of 1994.

ND - Not detected in the waste oil sample.

TABLE 1C
(Continued)

Vermont Yankee

Effluent and Waste Disposal Annual Report

Third and Fourth Quarters 1996

Gaseous Effluents - Ground Level Releases^{(1), (2)}

Nuclides Released	Unit	Continuous Mode		Batch Mode	
		Quarter 3	Quarter 4	Quarter 3	Quarter 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				
Xenon-131m	Ci				
Total for period	Ci	0.00E+00	0.00E+00		
2. Iodines					
Iodine-131	Ci				
Iodine-133	Ci				
Iodine-135	Ci				
Total for period	Ci	0.00E+00	0.00E+00		
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	0.00E+00	0.00E+00		

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

(2) Use of the North Warehouse stack as a ground level release point was initiated at the beginning of the fourth quarter of 1994.

ND - Not detected in the waste oil sample.

TABLE 10
Vermont Yankee
Effluent and Waste Disposal Annual Report
for 1996
Gaseous Effluents - Nonroutine Releases

There were no nonroutine or accidental gaseous releases during this reporting period.

TABLE 2A

Vermont Yankee

Effluent and Waste Disposal Annual Report

for 1996

Liquid Effluents - Summation of All Releases

There were no liquid releases during this reporting period.

TABLE 2B

Vermont Yankee

Effluent and Waste Disposal Annual Report

for 1996

Liquid Effluents - Nonroutine Releases

There were no liquid releases during this reporting period.

TABLE 3

Vermont YankeeEffluent and Waste Disposal Annual ReportFirst and Second Quarters, 1996Solid Waste and Irradiated Fuel Shipments

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

1. Type of Waste	Unit	6-Month Period	Est. Total Error, %
a. Spent resins, filter sludges, evaporator bottoms, etc.	m ³ Ci		±7.50E+01
b. Dry compressible waste, contaminated equipment, etc.	m ³ Ci		±7.50E+01
c. Irradiated components, control rods, etc.	m ³ Ci		±7.50E+01

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

a. Zinc-65	%	b. Iron-55	%
Cesium-137	%	Zinc-65	%
Cobalt-60	%	Cobalt-60	%
Cesium-134	%	Manganese-54	%
Manganese-54	%	Cesium-137	%

3. Solid Waste Disposition:

<u>Number of Shipments</u>	<u>Mode of Transportation</u>	<u>Destination</u>
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"No solid waste was disposed during this period."

B. Irradiated Fuel Shipments (Disposition): None

C. Supplemental information

- 1) Class of solid waste containers shipped:
- 2) Types of containers used:
- 3) Solidification agent or absorbent: None

TABLE 3
(Continued)

Vermont Yankee

Effluent and Waste Disposal Annual Report

Third and Fourth Quarters, 1996

Solid Waste and Irradiated Fuel Shipments

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

1. Type of Waste	Unit	6-Month Period	Est. Total Error, %
a. Spent resins, filter sludges, evaporator bottoms, etc.	m ³ Ci	0.00E+00 0.00E+00	±7.50E+01
b. Dry compressible waste, contaminated equipment, etc.	m ³ Ci	1.45E+01 4.89E-01	±7.50E+01
c. Irradiated components, control rods, etc.	m ³ Ci	0.00E+00 0.00E+00	±7.50E+01

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

a. Zinc-65	%	b. Iron-55	%	8.31E+01
Cesium-137	%	Zinc-65	%	9.00E-02
Cobalt-60	%	Cobalt-60	%	8.30E+00
Manganese-54	%	Manganese-54	%	4.00E+00
Nickel-63	%	Chromium-51	%	1.40E+00
Iron-55	%	Cesium-137	%	1.20E+00

3. Solid Waste Disposition:

<u>Number of Shipments</u>	<u>Mode of Transportation</u>	<u>Destination</u>
11	Truck	Barnwell, SC

B. Irradiated Fuel Shipments (Disposition): None

C. Supplemental information

- 1) Class of solid waste containers shipped: 18A
- 2) Types of containers used: 18 Strong Tight
- 3) Solidification agent or absorbent: None

TABLE 4

Vermont Yankee

Effluent and Waste Disposal Annual Report

for 1996

Maximum* Off-Site Doses and Dose Commitments to Members of the Public

Source		Dose (mrem)***				Year**
		1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	
Liquid Effluents (a)		-	-	-	-	-
Airborne Effluents						
Iodines and Particulates		1.32E-03 (1)	1.87E-02 (2)	2.90E-02 (2)	5.11E-04 (1)	4.95E-02
Noble Gases	Beta Air (mrad)	2.83E-05 (3)	4.76E-05 (4)	3.03E-05 (4)	3.63E-04 (3)	4.69E-04
	Gamma Air (mrad)	2.15E-05 (5)	1.16E-04 (4)	7.53E-05 (4)	1.63E-04 (5)	3.76E-04
Whole Body Dose from Facility Direct Radiation (mrem)****		-	-	-	-	1.41E+01
Hypothetical Dose from On-Site Septic Waste Disposal		-	-	-	-	-

*"Maximum" means the largest fraction of corresponding 10CFR50, Appendix I, dose design objective.

***"Maximum" dose for the year is the sum of the maximum doses for each quarter. This results in a conservative yearly dose estimate, but still well within the limits of 10CFR50.

***The numbered footnotes indicate the location of the dose receptor, age group, and organ, where appropriate.

****Maximum receptor point, west site boundary, no resident present.

TABLE 4
(Continued)

Vermont Yankee

Effluent and Waste Disposal Annual Report

for 1996

Maximum* Off-Site Doses and Dose Commitments to Members of the Public

- (1) Child/Thyroid, NW-2900 meters.
- (2) Infant/Thyroid, NW-4400 meters.
- (3) NW-2900 meters.
- (4) WNW-2400 meters.
- (5) SSE-850 meters.
- (a) There were no liquid releases during this reporting period.

TABLE 5A

VERMONT YANKEE JAN 96 - DEC 96 METEOROLOGICAL DATA JOINT FREQUENCY DISTRIBUTION

297.0 FT WIND DATA

STABILITY CLASS A

CLASS FREQUENCY (PERCENT) = .24

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	1	1	0	0	1	1	0	0	0	0	1	0	0	0	0	6
(1)	4.76	.00	4.76	4.76	.00	.00	4.76	4.76	.00	.00	.00	.00	4.76	.00	.00	.00	.00	28.57
(2)	.01	.00	.01	.01	.00	.00	.01	.01	.00	.00	.00	.00	.01	.00	.00	.00	.00	.07
4-7	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0	3
(1)	.00	.00	.00	.00	.00	.00	.00	4.76	.00	.00	.00	.00	.00	.00	.00	9.52	.00	14.29
(2)	.00	.00	.00	.00	.00	.00	.00	.01	.00	.00	.00	.00	.00	.00	.00	.02	.00	.03
8-12	2	2	0	0	0	0	0	1	0	0	0	0	0	1	0	2	0	8
(1)	9.52	9.52	.00	.00	.00	.00	.00	4.76	.00	.00	.00	.00	.00	4.76	.00	9.52	.00	38.10
(2)	.02	.02	.00	.00	.00	.00	.00	.01	.00	.00	.00	.00	.00	.01	.00	.02	.00	.09
13-18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	3
(1)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	4.76	9.52	.00	14.29
(2)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01	.02	.00	.03
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	1	0	1
(1)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	4.76	.00	4.76
(2)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01	.00	.01
ALL SPEEDS	3	2	1	1	0	0	1	3	0	0	0	0	1	1	1	7	0	21
(1)	14.29	9.52	4.76	4.76	.00	.00	4.76	14.29	.00	.00	.00	.00	4.76	4.76	4.76	33.33	.00	100.00
(2)	.03	.02	.01	.01	.00	.00	.01	.03	.00	.00	.00	.00	.01	.01	.01	.08	.00	.24

(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 .95 MPH)

TABLE 5B

VERMONT YANKEE JAN 96 - DEC 96 METEOROLOGICAL DATA JOINT FREQUENCY DISTRIBUTION

297.0 FT WIND DATA

STABILITY CLASS B

CLASS FREQUENCY (PERCENT) = .63

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	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
4-7	0	0	0	0	0	0	1	0	0	2	0	0	0	0	1	3	0	7
(1)	.00	.00	.00	.00	.00	.00	1.85	.00	.00	3.70	.00	.00	.00	.00	1.85	5.56	.00	14.96
(2)	.00	.00	.00	.00	.00	.00	.01	.00	.00	.02	.00	.00	.00	.00	.01	.03	.00	.08
8-12	1	0	0	0	0	0	0	9	1	0	0	0	2	3	4	8	0	28
(1)	1.85	.00	.00	.00	.00	.00	.00	16.67	1.85	.00	.00	.00	3.70	5.56	7.41	14.81	.00	51.85
(2)	.01	.00	.00	.00	.00	.00	.00	.10	.01	.00	.00	.00	.02	.03	.05	.09	.00	.33
13-18	0	0	2	0	0	0	1	2	0	0	0	0	0	0	2	8	0	15
(1)	.00	.00	3.70	.00	.00	.00	1.85	3.70	.00	.00	.00	.00	.00	.00	3.70	14.81	.00	27.78
(2)	.00	.00	.02	.00	.00	.00	.01	.02	.00	.00	.00	.00	.00	.00	.02	.09	.00	.17
19-24	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	3
(1)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.85	1.85	.00	1.85	.00	5.56
(2)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01	.01	.00	.01	.00	.03
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	1.85	.00	1.85
(2)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01	.00	.01
ALL SPEEDS	1	0	2	0	0	0	2	11	1	2	0	0	3	4	7	21	0	54
(1)	1.85	.00	3.70	.00	.00	.00	3.70	20.37	1.85	3.70	.00	.00	5.56	7.41	12.96	38.89	.00	100.00
(2)	.01	.00	.02	.00	.00	.00	.02	.13	.01	.02	.00	.00	.03	.05	.08	.24	.00	.63

(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 .95 MPH)

TABLE 5C

VERMONT YANKEE JAN 96 - DEC 96 METEOROLOGICAL DATA JOINT FREQUENCY DISTRIBUTION

297.0 FT WIND DATA

STABILITY CLASS C

CLASS FREQUENCY (PERCENT) = 1.87

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	0	1	0	0	0	0	0	0	0	0	0	1
(1)	.00	.00	.00	.00	.00	.00	.00	.62	.00	.00	.00	.00	.00	.00	.00	.00	.00	.62
(2)	.00	.00	.00	.00	.00	.00	.00	.01	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01
4-7	1	0	0	0	0	7	5	5	2	2	0	1	0	0	0	6	0	29
(1)	.62	.00	.00	.00	.00	4.35	3.11	3.11	1.24	1.24	.00	.62	.00	.00	.00	3.73	.00	18.01
(2)	.01	.00	.00	.00	.00	.08	.06	.06	.02	.02	.00	.01	.00	.00	.00	.07	.00	.34
8-12	3	0	0	0	0	3	5	20	10	0	1	1	3	0	1	17	0	64
(1)	1.86	.00	.00	.00	.00	1.86	3.11	12.42	6.21	.00	.62	.62	1.86	.00	.62	10.56	.00	39.75
(2)	.03	.00	.00	.00	.00	.03	.06	.23	.12	.00	.01	.01	.03	.00	.01	.20	.00	.75
13-18	5	1	1	0	0	0	1	2	4	1	0	0	0	5	4	24	0	48
(1)	3.11	.62	.62	.00	.00	.00	.62	1.24	2.48	.62	.00	.00	.00	3.11	2.48	14.91	.00	29.81
(2)	.06	.01	.01	.00	.00	.00	.01	.02	.05	.01	.00	.00	.00	.06	.05	.28	.00	.56
19-24	1	0	0	0	1	0	0	0	0	0	0	0	0	3	1	7	0	13
(1)	.62	.00	.00	.00	.62	.00	.00	.00	.00	.00	.00	.00	.00	1.86	.62	4.35	.00	8.07
(2)	.01	.00	.00	.00	.01	.00	.00	.00	.00	.00	.00	.00	.00	.03	.01	.08	.00	.15
GT 24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	4	0	6
(1)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.24	2.48	.00	3.73
(2)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02	.05	.00	.07
ALL SPEEDS	10	1	1	0	1	10	11	28	16	3	1	2	3	8	8	58	0	161
(1)	6.21	.62	.62	.00	.62	6.21	6.83	17.39	9.94	1.86	.62	1.24	1.86	4.97	4.97	36.02	.00	100.00
(2)	.12	.01	.01	.00	.01	.12	.13	.33	.19	.03	.01	.02	.03	.09	.09	.68	.00	1.87

(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 .95 MPH)

TABLE 5D

VERMONT YANKEE JAN 96 - DEC 96 METEOROLOGICAL DATA JOINT FREQUENCY DISTRIBUTION

297.0 FT WIND DATA

STABILITY CLASS: D

CLASS FREQUENCY (PERCENT) = 50.45

WIND DIRECTION FROM

SPEED MPH	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	VRBL	TOTAL
CALM	1	2	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	6
(1)	.02	.05	.00	.02	.00	.00	.00	.02	.02	.00	.00	.00	.00	.00	.00	.00	.00	.14
(2)	.01	.02	.00	.01	.00	.00	.00	.01	.01	.00	.00	.00	.00	.00	.00	.00	.00	.07
C-3	77	40	32	30	60	45	71	49	39	16	17	13	14	20	36	62	0	621
(1)	1.78	.92	.74	.69	1.38	1.04	1.64	1.13	.90	.37	.39	.30	.32	.46	.83	1.43	.00	14.33
(2)	.90	.47	.37	.35	.70	.52	.83	.57	.45	.19	.20	.15	.16	.23	.42	.72	.00	7.23
4-7	82	36	27	21	45	72	154	139	114	28	16	12	20	26	51	169	0	1012
(1)	1.89	.83	.62	.48	1.04	1.66	3.55	3.21	2.63	.65	.37	.28	.46	.60	1.18	3.90	.00	23.36
(2)	.95	.42	.31	.24	.52	.84	1.79	1.62	1.33	.33	.19	.14	.23	.30	.59	1.97	.00	11.78
8-12	143	45	18	13	25	34	35	129	252	39	29	31	53	95	64	210	0	1215
(1)	3.30	1.04	.42	.30	.58	.78	.81	2.96	5.82	.90	.67	.72	1.22	2.19	1.48	4.85	.00	28.04
(2)	1.67	.52	.21	.15	.29	.40	.41	1.50	2.93	.45	.34	.36	.62	1.11	.75	2.45	.00	14.15
13-18	148	15	16	12	11	4	6	19	115	17	15	16	64	156	113	214	0	941
(1)	3.42	.35	.37	.28	.25	.09	.14	.44	2.65	.39	.35	.37	1.48	3.60	2.61	4.94	.00	21.72
(2)	1.72	.17	.19	.14	.13	.05	.07	.22	1.34	.20	.17	.19	.75	1.82	1.32	2.49	.00	10.96
19-24	46	0	2	1	0	1	1	6	61	0	1	5	17	83	82	129	0	435
(1)	1.06	.00	.05	.02	.00	.02	.02	.14	1.41	.00	.02	.12	.39	1.92	1.89	2.98	.00	10.04
(2)	.54	.00	.02	.01	.00	.01	.01	.07	.71	.00	.01	.06	.20	.97	.95	1.50	.00	5.07
GT 24	6	0	0	0	0	0	0	4	20	0	0	0	3	22	10	38	0	103
(1)	.14	.00	.00	.00	.00	.00	.00	.09	.46	.00	.00	.00	.07	.51	.23	.88	.00	2.38
(2)	.07	.00	.00	.00	.00	.00	.00	.05	.23	.00	.00	.00	.03	.26	.12	.44	.00	1.20
ALL SPEEDS	503	138	95	78	141	156	267	347	602	100	78	77	171	402	356	822	0	4333
(1)	11.61	3.18	2.19	1.80	3.25	3.60	6.16	8.01	13.89	2.31	1.80	1.78	3.95	9.28	8.22	18.97	.00	100.00
(2)	5.86	1.61	1.11	.91	1.64	1.82	3.11	4.04	7.01	1.16	.91	.90	1.99	4.68	4.15	9.57	.00	50.45

(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 .95 MPH)

TABLE 5E

VERMONT YANKEE JAN 96 - DEC 96 METEOROLOGICAL DATA JOINT FREQUENCY DISTRIBUTION

297.0 FT WIND DATA

STABILITY CLASS E

CLASS FREQUENCY (PERCENT) = 33.99

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	1	2	0	1	2	0	1	2	0	2	0	0	0	0	0	13
(1)	.07	.00	.03	.07	.00	.03	.07	.00	.03	.07	.00	.07	.00	.00	.00	.00	.00	.45
(2)	.02	.00	.01	.02	.00	.01	.02	.00	.01	.02	.00	.02	.00	.00	.00	.00	.00	.15
C-3	113	77	60	54	53	101	113	67	42	22	15	17	10	22	34	84	0	684
(1)	5.87	2.64	2.06	1.85	1.82	3.46	3.87	2.30	1.44	.75	.51	.58	.34	.75	1.16	2.88	.00	30.28
(2)	1.32	.90	.70	.63	.62	1.18	1.32	.78	.49	.26	.17	.20	.12	.26	.40	.98	.00	10.29
4-7	133	25	11	13	10	34	132	157	87	27	19	22	23	30	38	257	0	1018
(1)	4.56	.80	.38	.45	.34	1.16	4.52	5.38	2.98	.92	.65	.75	.79	1.03	1.30	8.80	.00	34.87
(2)	1.55	.29	.13	.15	.12	.40	1.54	1.83	1.01	.31	.22	.26	.27	.35	.44	2.99	.00	11.85
8-12	67	6	0	1	3	2	24	73	87	22	12	22	43	46	45	219	0	672
(1)	2.30	.21	.00	.03	.10	.07	.82	2.50	2.98	.75	.41	.75	1.47	1.58	1.54	7.50	.00	23.02
(2)	.78	.07	.00	.01	.03	.02	.28	.85	1.01	.26	.14	.26	.50	.54	.52	2.55	.00	7.82
13-18	26	0	0	0	1	0	0	7	34	8	3	5	20	44	16	88	0	252
(1)	.89	.00	.00	.00	.03	.00	.00	.24	1.16	.27	.10	.17	.69	1.51	.55	3.01	.00	8.63
(2)	.30	.00	.00	.00	.01	.00	.00	.08	.40	.09	.03	.06	.23	.51	.19	1.02	.00	2.93
19-24	4	0	0	0	0	0	0	10	11	1	0	0	0	3	10	24	0	63
(1)	.14	.00	.00	.00	.00	.00	.00	.34	.38	.03	.00	.00	.00	.10	.34	.82	.00	2.16
(2)	.05	.00	.00	.00	.00	.00	.00	.12	.13	.01	.00	.00	.00	.03	.12	.28	.00	.73
GT 24	0	0	0	0	0	0	0	7	5	0	0	0	0	0	1	4	0	17
(1)	.00	.00	.00	.00	.00	.00	.00	.24	.17	.00	.00	.00	.00	.00	.03	.14	.00	.58
(2)	.00	.00	.00	.00	.00	.00	.00	.08	.06	.00	.00	.00	.00	.00	.01	.05	.00	.20
ALL SPEEDS	345	108	72	70	67	138	271	321	267	82	49	68	96	145	144	676	0	2919
(1)	11.82	3.70	2.47	2.40	2.30	4.73	9.28	11.00	9.15	2.81	1.68	2.33	3.29	4.97	4.93	23.16	.00	100.00
(2)	4.02	1.26	.84	.82	.78	1.61	3.16	3.74	3.11	.95	.57	.79	1.12	1.69	1.68	7.87	.00	33.99

(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 .95 MPH)

TABLE 5F

VERMONT YANKEE JAN 96 - DEC 96 METEOROLOGICAL DATA JOINT FREQUENCY DISTRIBUTION

297.0 FT WIND DATA

STABILITY CLASS F

CLASS FREQUENCY (PERCENT) = 11.35

WIND DIRECTION FROM

SPEED MPH	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	VRBL	TOTAL
CALM	1	1	3	1	1	0	0	2	0	0	0	0	0	1	1	0	0	11
(1)	.10	.10	.31	.10	.10	.00	.00	.21	.00	.00	.00	.00	.00	.10	.10	.00	.00	1.13
(2)	.01	.01	.03	.01	.01	.00	.00	.02	.00	.00	.00	.00	.00	.01	.01	.00	.00	.13
C-3	44	37	28	19	24	30	41	27	22	23	10	12	14	12	31	36	0	410
(1)	4.51	3.79	2.87	1.95	2.46	3.08	4.21	2.77	2.26	2.36	1.03	1.23	1.44	1.23	3.18	3.69	.00	42.05
(2)	.51	.43	.37	.22	.28	.35	.48	.31	.26	.27	.12	.14	.16	.14	.36	.42	.00	4.77
4-7	36	9	3	3	9	12	44	46	28	17	14	20	19	17	26	94	0	397
(1)	3.69	.92	.31	.31	.92	1.23	4.51	4.72	2.87	1.74	1.44	2.05	1.95	1.74	2.67	9.64	.00	40.72
(2)	.42	.10	.03	.03	.10	.14	.51	.54	.33	.20	.16	.23	.22	.20	.30	1.09	.00	4.62
8-12	7	0	0	0	0	2	15	11	13	4	6	8	7	10	5	56	0	146
(1)	.72	.00	.00	.00	.00	.21	1.54	1.13	1.33	.41	.82	.82	.72	1.03	.51	5.74	.00	14.97
(2)	.08	.00	.00	.00	.00	.02	.17	.13	.15	.05	.09	.09	.08	.12	.06	.65	.00	1.70
13-18	1	0	0	0	0	0	0	0	2	0	1	0	0	1	1	4	0	10
(1)	.10	.00	.00	.00	.00	.00	.00	.00	.21	.00	.10	.00	.00	.10	.10	.41	.00	1.03
(2)	.01	.00	.00	.00	.00	.00	.00	.00	.02	.00	.01	.00	.00	.01	.01	.05	.00	.12
19-24	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	.10	.00	.00	.00	.00	.00	.00	.00	.00	.10
(2)	.00	.00	.00	.00	.00	.00	.00	.00	.01	.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	89	47	34	23	34	44	100	86	66	44	33	40	40	41	64	190	0	975
(1)	9.13	4.82	3.49	2.36	3.49	4.51	10.26	8.82	6.77	4.51	3.38	4.10	4.10	4.21	6.56	19.49	.00	100.00
(2)	1.04	.55	.40	.27	.40	.51	1.16	1.00	.77	.51	.38	.47	.47	.48	.75	2.21	.00	11.35

(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 .95 MPH)

TABLE 5G

VERMONT YANKEE JAN 96 - DEC 96 METEOROLOGICAL DATA JOINT FREQUENCY DISTRIBUTION

297.0 FT WIND DATA

STABILITY CLASS G

CLASS FREQUENCY (PERCENT) = 1.46

WIND DIRECTION FROM

SPEED MPH	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NNW	VRBL	TOTAL
CALM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(1)	.70	.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
C-3	3	2	2	3	0	1	2	4	3	1	2	3	5	1	1	1	0
(1)	2.00	1.60	1.60	2.40	.00	.80	1.60	3.20	2.40	.80	1.60	2.40	4.00	.80	.80	.80	.00
(2)	.00	.02	.02	.03	.00	.01	.02	.05	.03	.01	.02	.03	.06	.01	.01	.01	.00
4-7	4	1	1	0	0	2	8	10	5	4	3	2	1	5	2	6	0
(1)	3.20	.80	.80	.00	.00	1.60	6.40	8.00	4.00	3.20	2.40	1.60	.80	4.00	1.60	4.80	.00
(2)	.05	.01	.01	.00	.00	.02	.09	.12	.06	.05	.03	.02	.01	.06	.02	.07	.00
8-12	2	0	0	0	0	1	1	3	2	1	1	2	3	2	2	13	0
(1)	1.60	.00	.00	.00	.00	.80	.80	2.40	1.60	.80	.80	1.60	2.40	1.60	1.60	10.40	.00
(2)	.02	.00	.00	.00	.00	.01	.01	.03	.02	.01	.01	.02	.03	.02	.02	.15	.00
13-18	0	0	0	0	0	0	0	1	0	0	0	0	1	1	0	1	0
(1)	.00	.00	.00	.00	.00	.00	.00	.80	.00	.00	.00	.00	.80	.80	.00	.80	.00
(2)	.00	.00	.00	.00	.00	.00	.00	.01	.00	.00	.00	.00	.01	.01	.00	.01	.00
19-24	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
(2)	.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
(1)	.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
ALL SPEEDS	9	3	3	3	0	4	11	18	10	6	6	7	10	9	5	21	0
(1)	7.20	2.40	2.40	2.40	.00	3.20	8.80	14.40	8.00	4.80	4.80	5.60	8.00	7.20	4.00	16.80	.00
(2)	.10	.03	.03	.03	.00	.05	.13	.21	.12	.07	.07	.08	.12	.10	.06	.24	.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 .95 MPH)

TABLE 5H

VERMONT YANKEE JAN 96 - DEC 96 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	3	4	4	1	1	2	3	2	2	0	2	0	1	1	0	0	30
(1)	.05	.03	.05	.05	.01	.01	.02	.03	.02	.02	.00	.02	.00	.01	.01	.00	.00	.35
(2)	.05	.03	.05	.05	.01	.01	.02	.03	.02	.02	.00	.02	.00	.01	.01	.00	.00	.35
C-3	238	156	123	107	137	177	228	149	106	62	44	45	44	55	102	183	0	1956
(1)	2.77	1.82	1.43	1.25	1.60	2.06	2.65	1.73	1.23	.72	.51	.52	.51	.64	1.19	2.13	.00	22.78
(2)	2.77	1.82	1.43	1.25	1.60	2.06	2.65	1.73	1.23	.72	.51	.52	.51	.64	1.19	2.13	.00	22.78
4-7	256	71	42	37	64	127	344	358	236	80	52	57	63	78	118	537	0	2520
(1)	2.98	.83	.49	.43	.75	1.48	4.01	4.17	2.75	.93	.61	.66	.73	.91	1.37	6.25	.00	29.34
(2)	2.98	.83	.49	.43	.75	1.48	4.01	4.17	2.75	.93	.61	.66	.73	.91	1.37	6.25	.00	29.34
8-12	225	53	18	14	28	42	80	246	365	66	51	64	111	157	121	525	0	2166
(1)	2.62	.62	.21	.16	.33	.49	.93	2.86	4.25	.77	.59	.75	1.29	1.83	1.41	6.11	.00	25.22
(2)	2.62	.62	.21	.16	.33	.49	.93	2.86	4.25	.77	.59	.75	1.29	1.83	1.41	6.11	.00	25.22
13-18	180	16	19	12	12	4	8	31	155	26	19	21	85	207	137	341	0	1273
(1)	2.10	.19	.22	.14	.14	.05	.09	.36	1.80	.30	.22	.24	.99	2.41	1.60	3.97	.00	14.82
(2)	2.10	.19	.22	.14	.14	.05	.09	.36	1.80	.30	.22	.24	.99	2.41	1.60	3.97	.00	14.82
19-24	51	0	2	1	1	1	1	16	73	1	1	5	18	90	93	161	0	515
(1)	.59	.00	.02	.01	.01	.01	.01	.19	.85	.01	.01	.06	.21	1.05	1.08	1.87	.00	6.00
(2)	.59	.00	.02	.01	.01	.01	.01	.19	.85	.01	.01	.06	.21	1.05	1.08	1.87	.00	6.00
GT 24	6	0	0	0	0	0	0	11	25	0	0	0	3	22	13	48	0	128
(1)	.07	.00	.00	.00	.00	.00	.00	.13	.29	.00	.00	.00	.03	.26	.15	.56	.00	1.49
(2)	.07	.00	.00	.00	.00	.00	.00	.13	.29	.00	.00	.00	.03	.26	.15	.56	.00	1.49
ALL SPEEDS	960	299	208	175	243	352	663	814	962	237	167	194	324	610	585	1795	0	8588
(1)	11.18	3.48	2.42	2.04	2.83	4.10	7.72	9.48	11.20	2.76	1.94	2.26	3.77	7.10	6.81	20.90	.00	100.00
(2)	11.18	3.48	2.42	2.04	2.83	4.10	7.72	9.48	11.20	2.76	1.94	2.26	3.77	7.10	6.81	20.90	.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 .95 MPH)

TABLE 6A

VERMONT YANKEE JAN 96 - DEC 96 METEOROLOGICAL DATA JOINT FREQUENCY DISTRIBUTION

35.0 FT WIND DATA

STABILITY CLASS A

CLASS FREQUENCY (PERCENT) = 1.95

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	3	2	2	4	4	4	2	1	1	1	0	0	1	0	0	0	0	25
(1)	1.81	1.20	1.20	2.41	2.41	2.41	1.20	.60	.60	.60	.00	.00	.60	.00	.00	.00	.00	15.06
(2)	.04	.02	.02	.05	.05	.05	.02	.01	.01	.01	.00	.00	.01	.00	.00	.00	.00	.29
4-7	12	1	1	1	1	7	5	9	1	0	0	0	1	2	13	27	0	81
(1)	7.23	.60	.60	.60	.60	4.22	3.01	5.42	.60	.00	.00	.00	.60	1.20	7.83	16.27	.00	48.80
(2)	.14	.01	.01	.01	.01	.08	.06	.11	.01	.00	.00	.00	.01	.02	.15	.32	.00	.95
8-12	12	0	0	0	0	0	0	5	1	0	0	0	0	5	5	19	0	47
(1)	7.23	.00	.00	.00	.00	.00	.00	3.01	.60	.00	.00	.00	.00	3.01	3.01	11.45	.00	28.31
(2)	.14	.00	.00	.00	.00	.00	.00	.06	.01	.00	.00	.00	.00	.06	.06	.22	.00	.55
13-18	0	0	0	0	0	0	0	0	0	0	0	0	0	3	5	5	0	13
(1)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.81	3.01	3.01	.00	7.83
(2)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.04	.06	.06	.00	.15
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	27	3	3	5	5	11	7	15	3	1	0	0	2	10	23	51	0	166
(1)	16.27	1.81	1.81	3.01	3.01	6.63	4.22	9.04	1.81	.60	.00	.00	1.20	6.02	13.86	30.72	.00	100.00
(2)	.32	.04	.04	.06	.06	.13	.08	.18	.04	.01	.00	.00	.02	.12	.27	.60	.00	1.95

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

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

C= CALM (WIND SPEED LESS THAN OR EQUAL TO .95 MPH)

TABLE 6B

VERMONT YANKEE JAN 96 - DEC 96 METEOROLOGICAL DATA JOINT FREQUENCY DISTRIBUTION

35.0 FT WIND DATA

STABILITY CLASS B

CLASS FREQUENCY (PERCENT) = 1.73

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	1	1	0	1	4	0	1	1	0	0	0	0	0	0	0	9
(1)	.00	.00	.68	.68	.00	.68	2.72	.00	.68	.68	.00	.00	.00	.00	.00	.00	.00	6.12
(2)	.00	.00	.01	.01	.00	.01	.05	.00	.01	.01	.00	.00	.00	.00	.00	.00	.00	.11
4-7	13	0	1	0	1	7	10	12	5	0	0	1	1	1	7	15	0	74
(1)	8.84	.00	.68	.00	.68	4.76	6.80	8.16	3.40	.00	.00	.68	.68	.68	4.76	10.20	.00	50.34
(2)	.15	.00	.01	.00	.01	.08	.12	.14	.06	.00	.00	.01	.01	.01	.08	.18	.00	.87
8-12	18	0	0	0	0	0	1	6	5	1	0	0	1	4	4	11	0	51
(1)	12.24	.00	.00	.00	.00	.00	.68	4.08	3.40	.68	.00	.00	.68	2.72	2.72	7.48	.00	34.69
(2)	.21	.00	.00	.00	.00	.00	.01	.07	.06	.01	.00	.00	.01	.05	.05	.13	.00	.60
13-18	2	0	0	0	0	0	0	1	2	0	1	0	1	4	0	1	0	12
(1)	1.36	.00	.00	.00	.00	.00	.00	.68	1.36	.00	.68	.00	.68	2.72	.00	.68	.00	8.16
(2)	.02	.00	.00	.00	.00	.00	.00	.01	.02	.00	.01	.00	.01	.05	.00	.01	.00	.14
19-24	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	.68	.00	.00	.68
(2)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01	.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	33	0	2	1	1	8	15	19	13	2	1	1	3	9	12	27	0	147
(1)	22.45	.00	1.36	.68	.68	5.44	10.20	12.93	8.84	1.36	.68	.68	2.04	6.12	8.16	18.37	.00	100.00
(2)	.39	.00	.02	.01	.01	.09	.18	.22	.15	.02	.01	.01	.04	.11	.14	.32	.00	1.73

(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 .95 MPH)

TABLE 6C

VERMONT YANKEE JAN 96 - DEC 96 METEOROLOGICAL DATA JOINT FREQUENCY DISTRIBUTION

35.0 FT WIND DATA

STABILITY CLASS C

CLASS FREQUENCY (PERCENT) = 2.81

WIND DIRECTION FROM

SPEED MPH	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	VREL	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	4	3	1	0	0	1	1	2	0	0	0	0	0	0	2	2	0	16
(1)	1.67	1.26	.42	.00	.00	.42	.42	.84	.00	.00	.00	.00	.00	.00	.84	.84	.00	6.69
(2)	.05	.04	.01	.00	.00	.01	.01	.02	.00	.00	.00	.00	.00	.00	.02	.02	.00	.19
4-7	22	3	0	3	3	7	10	10	22	3	0	2	5	6	6	18	0	125
(1)	9.21	1.26	.00	1.26	3.35	2.93	4.18	4.18	9.21	1.26	.00	.84	2.09	2.51	2.51	7.53	.00	52.30
(2)	.26	.04	.00	.04	.09	.08	.12	.12	.26	.04	.00	.02	.06	.07	.07	.21	.00	1.47
8-12	16	2	0	0	0	1	1	4	12	3	6	1	7	8	8	15	0	84
(1)	6.69	.84	.00	.00	.00	.42	.42	1.67	5.02	1.26	2.51	.42	2.93	3.35	3.35	6.28	.00	35.15
(2)	.19	.02	.00	.00	.00	.01	.01	.05	.14	.04	.07	.01	.08	.09	.09	.18	.00	.99
13-18	2	0	0	0	0	0	0	0	3	1	0	2	0	4	0	2	0	14
(1)	.84	.00	.00	.00	.00	.00	.00	.00	1.26	.42	.00	.84	.00	1.67	.00	.84	.00	5.86
(2)	.02	.00	.00	.00	.00	.00	.00	.00	.04	.01	.00	.02	.00	.05	.00	.02	.00	.16
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	44	8	1	3	8	9	12	16	37	7	6	5	12	18	16	37	0	239
(1)	18.41	3.35	.42	1.26	3.35	3.77	5.02	6.69	15.48	2.93	2.51	2.09	5.02	7.53	6.69	15.48	.00	100.00
(2)	.52	.09	.01	.04	.09	.11	.14	.19	.44	.08	.07	.06	.14	.21	.19	.44	.00	2.81

(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 .95 MPH)

TABLE 6D

VERMONT YANKEE JAN 96 - DEC 96 METEOROLOGICAL DATA JOINT FREQUENCY DISTRIBUTION

35.0 FT WIND DATA

STABILITY CLASS D

CLASS FREQUENCY (PERCENT) = 40.82

WIND DIRECTION FROM

SPEED MPH	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	VRBL	TOTAL
CALM	1	0	2	0	1	0	0	1	0	1	0	2	0	1	1	2	0	12
(1)	.03	.00	.06	.00	.03	.00	.00	.03	.00	.03	.00	.06	.00	.03	.03	.06	.00	.35
(2)	.01	.00	.02	.00	.01	.00	.00	.01	.00	.01	.00	.02	.00	.01	.01	.02	.00	.14
C-3	92	68	53	48	73	57	62	79	62	37	33	25	31	32	60	137	0	949
(1)	2.65	1.96	1.53	1.38	2.10	1.64	1.79	2.28	1.79	1.07	.95	.72	.89	.92	1.73	3.95	.00	27.33
(2)	1.08	.80	.62	.56	.86	.67	.73	.93	.73	.44	.39	.29	.36	.38	.71	1.61	.00	11.16
4-7	160	61	40	46	100	90	49	154	210	34	27	25	51	58	68	205	0	1378
(1)	4.61	1.76	1.15	1.32	2.88	2.59	1.41	4.44	6.05	.98	.78	.72	1.47	1.67	1.96	5.90	.00	39.69
(2)	1.88	.72	.47	.54	1.18	1.06	.58	1.81	2.47	.40	.32	.29	.60	.68	.80	2.41	.00	16.20
8-12	171	42	17	8	14	11	2	20	135	14	19	17	61	139	112	111	0	893
(1)	4.93	1.21	.49	.23	.40	.32	.06	.58	3.89	.40	.55	.49	1.76	4.00	3.23	3.20	.00	25.72
(2)	2.01	.49	.20	.09	.16	.13	.02	.24	1.59	.16	.22	.20	.72	1.63	1.32	1.31	.00	10.50
13-18	14	1	1	0	0	0	0	0	49	2	1	2	8	71	58	20	0	227
(1)	.40	.03	.03	.00	.00	.00	.00	.00	1.41	.06	.03	.06	.23	2.04	1.67	.58	.00	6.54
(2)	.16	.01	.01	.00	.00	.00	.00	.00	.58	.02	.01	.02	.09	.83	.68	.24	.00	2.67
19-24	0	0	0	0	0	0	0	0	2	0	0	0	0	4	6	0	0	12
(1)	.00	.00	.00	.00	.00	.00	.00	.00	.06	.00	.00	.00	.00	.12	.17	.00	.00	.35
(2)	.00	.00	.00	.00	.00	.00	.00	.00	.02	.00	.00	.00	.00	.05	.07	.00	.00	.14
GT 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	.03	.00	.00	.00	.03
(2)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01	.00	.00	.00	.01
ALL SPEEDS	438	172	113	102	188	158	113	254	458	88	80	71	151	306	305	475	0	3472
(1)	12.62	4.95	3.25	2.94	5.41	4.55	3.25	7.32	13.19	2.53	2.30	2.04	4.35	8.81	8.78	13.68	.00	100.00
(2)	5.15	2.02	1.33	1.20	2.21	1.86	1.33	2.99	5.39	1.03	.94	.83	1.78	3.60	3.59	5.58	.00	40.82

(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 .95 MPH)

TABLE 6E

VERMONT YANKEE JAN 96 - DEC 96 METEOROLOGICAL DATA JOINT FREQUENCY DISTRIBUTION

35.0 FT WIND DATA STABILITY CLASS E CLASS FREQUENCY (PERCENT) = 35.91

WIND DIRECTION FROM

SPEED MPH	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	VRBL	TOTAL
CALM	2	1	0	3	2	2	1	2	1	2	1	1	5	4	3	4	0	34
(1)	.07	.03	.00	.10	.07	.07	.03	.07	.03	.07	.03	.03	.16	.13	.10	.13	.00	1.11
(2)	.02	.01	.00	.04	.02	.02	.01	.02	.01	.02	.01	.01	.06	.05	.04	.05	.00	.40
C-3	77	45	37	38	35	45	74	116	143	151	173	143	145	147	148	166	0	1683
(1)	2.52	1.47	1.21	1.24	1.15	1.47	2.42	3.80	4.68	4.94	5.66	4.68	4.75	4.81	4.85	5.44	.00	55.11
(2)	.91	.53	.44	.45	.41	.53	.87	1.36	1.68	1.78	2.03	1.68	1.70	1.73	1.74	1.95	.00	19.79
4-7	79	10	1	6	10	22	28	94	104	44	20	30	62	82	138	234	0	964
(1)	2.59	.33	.03	.20	.33	.72	.92	3.08	3.41	1.44	.65	.98	2.03	2.69	4.52	7.56	.00	31.57
(2)	.93	.12	.01	.07	.12	.26	.33	1.11	1.22	.52	.24	.35	.73	.96	1.62	2.75	.00	11.33
8-12	24	3	2	1	2	2	0	17	56	13	3	3	19	53	52	40	0	290
(1)	.79	.10	.07	.03	.07	.07	.00	.56	1.83	.43	.10	.10	.62	1.74	1.70	1.31	.00	9.50
(2)	.28	.04	.02	.01	.02	.02	.00	.20	.66	.15	.04	.04	.22	.62	.61	.47	.00	3.41
13-18	4	0	0	0	0	0	0	11	26	0	0	0	0	14	17	2	0	74
(1)	.13	.00	.00	.00	.00	.00	.00	.36	.85	.00	.00	.00	.00	.46	.56	.07	.00	2.42
(2)	.05	.00	.00	.00	.00	.00	.00	.13	.31	.00	.00	.00	.00	.16	.20	.02	.00	.87
19-24	0	0	0	0	0	0	0	1	3	0	0	0	0	5	0	0	0	9
(1)	.00	.00	.00	.00	.00	.00	.00	.03	.10	.00	.00	.00	.00	.16	.00	.00	.00	.29
(2)	.00	.00	.00	.00	.00	.00	.00	.01	.04	.00	.00	.00	.00	.06	.00	.00	.00	.11
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	186	59	40	48	49	71	103	241	333	210	197	177	231	305	358	446	0	3054
(1)	6.09	1.93	1.31	1.57	1.60	2.32	3.37	7.89	10.90	6.88	6.45	5.80	7.56	9.99	11.72	14.60	.00	100.00
(2)	2.19	.69	.47	.56	.58	.83	1.21	2.83	3.92	2.47	2.32	2.08	2.72	3.59	4.21	5.24	.00	35.91

(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 .95 MPH)

TABLE 6F

VERMONT YANKEE JAN 96 - DEC 96 METEOROLOGICAL DATA JOINT FREQUENCY DISTRIBUTION

35.0 FT WIND DATA

STABILITY CLASS F

CLASS FREQUENCY (PERCENT) = 13.50

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	1	0	0	0	0	0	0	1	1	0	1	2	2	0	1	0	9
(1)	.00	.09	.00	.00	.00	.00	.00	.00	.09	.09	.00	.09	.17	.17	.00	.09	.00	.78
(2)	.00	.01	.00	.00	.00	.00	.00	.00	.01	.01	.00	.01	.02	.02	.00	.01	.00	.11
C-3	30	25	16	8	14	12	16	24	48	105	252	173	118	94	64	51	0	1050
(1)	2.61	2.18	1.39	.70	1.22	1.05	1.39	2.09	4.18	9.15	21.95	15.07	10.28	8.19	5.57	4.44	.00	91.46
(2)	.35	.29	.19	.09	.16	.14	.19	.28	.56	1.23	2.96	2.03	1.39	1.11	.75	.60	.00	12.35
4-7	0	0	2	0	1	2	1	4	2	4	16	8	3	18	16	9	0	86
(1)	.00	.00	.17	.00	.09	.17	.09	.35	.17	.35	1.39	.70	.26	1.57	1.39	.78	.00	7.49
(2)	.00	.00	.02	.00	.01	.02	.01	.05	.02	.05	.19	.09	.04	.21	.19	.11	.00	1.01
8-12	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	0	0	3
(1)	.00	.00	.00	.00	.00	.00	.00	.00	.09	.00	.00	.00	.00	.09	.09	.00	.00	.26
(2)	.00	.00	.00	.00	.00	.00	.00	.00	.01	.00	.00	.00	.00	.01	.01	.00	.00	.04
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	30	26	18	8	15	14	17	28	52	110	268	182	123	115	81	61	0	1148
(1)	2.61	2.26	1.57	.70	1.31	1.22	1.48	2.44	4.53	9.56	23.34	15.85	10.71	10.02	7.06	5.31	.00	100.00
(2)	.35	.31	.21	.09	.18	.16	.20	.33	.61	1.29	3.15	2.14	1.45	1.35	.95	.72	.00	13.50

(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 .95 MPH)

TABLE 6G

VERMONT YANKEE JAN 96 - DEC 96 METEOROLOGICAL DATA JOINT FREQUENCY DISTRIBUTION

35.0 FT WIND DATA

STABILITY CLASS G

CLASS FREQUENCY (PERCENT) = 3.28

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	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
(1)	.00	.36	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.36
(2)	.00	.01	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01
C-3	6	7	4	3	5	6	5	5	17	28	58	29	23	22	16	13	0	247
(1)	2.15	2.51	1.43	1.08	1.79	2.15	1.79	1.79	6.09	10.04	20.79	10.39	8.24	7.89	5.73	4.66	.00	88.53
(2)	.07	.08	.05	.04	.06	.07	.06	.06	.20	.33	.68	.34	.21	.26	.19	.15	.00	2.90
4-7	0	0	0	0	0	0	1	0	0	6	16	1	2	2	1	2	0	31
(1)	.00	.00	.00	.00	.00	.00	.36	.00	.00	2.15	5.73	.36	.72	.72	.36	.72	.00	11.11
(2)	.00	.00	.00	.00	.00	.00	.01	.00	.00	.07	.19	.01	.02	.02	.01	.02	.00	.36
8-12	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
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	6	8	4	3	5	6	6	5	17	34	74	30	25	24	17	15	0	279
(1)	2.15	2.87	1.43	1.08	1.79	2.15	2.15	1.79	6.09	12.19	26.52	10.75	8.96	8.60	6.09	5.38	.00	100.00
(2)	.07	.09	.05	.04	.06	.07	.07	.06	.20	.40	.87	.35	.29	.28	.20	.18	.00	3.28

(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 .95 MPH)

TABLE 6H

VERMONT YANKEE JAN 96 - DEC 96 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	3	3	2	3	3	2	1	3	2	4	1	4	7	7	4	7	0	56
(1)	.04	.04	.02	.04	.04	.02	.01	.04	.02	.05	.01	.05	.08	.08	.05	.08	.00	.66
(2)	.04	.04	.02	.04	.04	.02	.01	.04	.02	.05	.01	.05	.08	.08	.05	.08	.00	.66
C-3	212	150	114	102	131	126	164	227	272	323	516	370	318	295	290	369	0	3979
(1)	2.49	1.76	1.34	1.20	1.54	1.48	1.93	2.67	3.20	3.80	6.07	4.35	3.74	3.47	3.41	4.34	.00	46.78
(2)	2.49	1.76	1.34	1.20	1.54	1.48	1.93	2.67	3.20	3.80	6.07	4.35	3.74	3.47	3.41	4.34	.00	46.78
4-7	286	75	45	56	121	135	104	283	344	91	79	67	125	169	249	510	0	2739
(1)	3.36	.88	.53	.66	1.42	1.59	1.22	3.33	4.04	1.07	.93	.79	1.47	1.99	2.93	6.00	.00	32.20
(2)	3.36	.88	.53	.66	1.42	1.59	1.22	3.33	4.04	1.07	.93	.79	1.47	1.99	2.93	6.00	.00	32.20
8-12	241	47	19	9	16	14	4	52	210	31	28	21	88	210	182	196	0	1368
(1)	2.83	.55	.22	.11	.19	.16	.05	.61	2.47	.36	.33	.25	1.03	2.47	2.14	2.30	.00	16.08
(2)	2.83	.55	.22	.11	.19	.16	.05	.61	2.47	.36	.33	.25	1.03	2.47	2.14	2.30	.00	16.08
13-18	22	1	1	0	0	0	0	12	80	3	2	4	9	96	80	30	0	340
(1)	.26	.01	.01	.00	.00	.00	.00	.14	.94	.04	.02	.05	.11	1.13	.94	.35	.00	4.00
(2)	.26	.01	.01	.00	.00	.00	.00	.14	.94	.04	.02	.05	.11	1.13	.94	.35	.00	4.00
19-24	0	0	0	0	0	0	0	1	5	0	0	0	0	9	7	0	0	22
(1)	.00	.00	.00	.00	.00	.00	.00	.01	.06	.00	.00	.00	.00	.11	.08	.00	.00	.26
(2)	.00	.00	.00	.00	.00	.00	.00	.01	.06	.00	.00	.00	.00	.11	.08	.00	.00	.26
GT 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	.01	.00	.00	.00	.01
(2)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01	.00	.00	.00	.01
ALL SPEEDS	764	276	181	170	271	277	273	578	913	452	626	466	547	787	812	1112	0	8505
(1)	8.98	3.25	2.13	2.00	3.19	3.26	3.21	6.80	10.73	5.31	7.36	5.48	6.43	9.25	9.55	13.07	.00	100.00
(2)	8.98	3.25	2.13	2.00	3.19	3.26	3.21	6.80	10.73	5.31	7.36	5.48	6.43	9.25	9.55	13.07	.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 .95 MPH)

APPENDIX A

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
Supplemental Information
for 1996

Facility: Vermont Yankee Nuclear Power Station

Licensee: Vermont Yankee Nuclear Power Corporation

1A. TECHNICAL SPECIFICATION LIMITS - DOSE AND DOSE RATE

<u>Technical Specification and Category</u>	<u>Limit</u>
a. <u>Noble Gases</u>	
3.8.E.1 Total body dose rate	500 mrem/yr
3.8.E.1 Skin dose rate	3000 mrem/yr
3.8.F.1 Gamma air dose	5 mrad in a quarter
3.8.F.1 Gamma air dose	10 mrad in a year
3.8.F.1 Beta air dose	10 mrad in a quarter
3.8.F.1 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>	
3.8.E.1 Organ dose rate	1500 mrem/yr
3.8.G.1 Organ dose	7.5 mrem in a quarter
3.8.G.1 Organ dose	15 mrem in a year
c. <u>Liquids</u>	
3.8.B.1 Total body dose	1.5 mrem in a quarter
3.8.B.1 Total body dose	3 mrem in a year
3.8.B.1 Organ dose	5 mrem in a quarter
3.8.B.1 Organ dose	10 mrem in a year

APPENDIX A
(Continued)

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT

2A. TECHNICAL SPECIFICATION LIMITS - CONCENTRATION

<u>Technical Specification and Category</u>	<u>Limit</u>
a. <u>Noble Gases</u>	No MPC Limits (No ECL Limits)
b. <u>Iodine-131, Iodine-133, Tritium and Radionuclides in Particulate Form With Half-Lives</u>	
Greater Than 8 Days	No MPC Limits (No ECL Limits)
c. <u>Liquids</u>	
3.8.A.1 Total fraction of MPC (ECL) excluding noble gases (10CFR20, Appendix B, Table II, Column 2):	≤ 1.0
3.8.A.1 Total noble gas concentration:	$\leq 2E-04 \mu\text{Ci/cc}$

3. AVERAGE ENERGY

Provided below are the average energy (\bar{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

APPENDIX A
(Continued)

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT

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

Grab samples from the plant stack are taken monthly through a cold trap collection device and analyzed for tritium. The error involved in this sample is approximately ± 15 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 Technical Specification Table 4.8.1. Samples that have a visible water layer are not analyzed. The water must first be removed from the drum of oil and resampled.

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

APPENDIX A
(Continued)

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT

The waste oil samples are liquid effluents that end up as a gaseous ground level release.

f. Liquid Effluents

Radioactive liquid effluents released from the facility are continuously monitored. Measurements are also made 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 effluent releases 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 release during the reporting period.

b. Gaseous

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

6. ABNORMAL RELEASES

a. Liquid

There were no nonroutine liquid releases during the reporting period.

APPENDIX A
(Continued)

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT

b. Gaseous

There were no nonroutine gaseous releases during the reporting period.

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 Effluent Release Report per Technical Specification 6.7.C.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 Technical Specification Table 3.9.1. If an inoperable radioactive liquid effluent monitoring instrument is not returned to operable status prior to a release pursuant to Note 4 of Table 3.9.1, an explanation in the next Annual Effluent Release Report of the reason(s) for delay in correcting the inoperability are required per Technical Specification 6.7.C.1.

Response: Since the requirements of Technical Specification Table 3.9.1 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 Technical Specification Table 3.9.2. If inoperable gaseous effluent monitoring instrumentation is not returned to operable status within 30 days pursuant to Note 5 of Table 3.9.2, an explanation in the next Annual Effluent Release Report of the reason(s) for the delay in correcting the inoperability is required per Technical Specification 6.7.C.1.

Response: Since the requirements of Technical Specification Table 3.9.2 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 Technical Specification 3.9.C. With milk samples no longer available from one or more of the sample locations required by Technical Specification Table 3.9.3, Technical Specification 6.7.C.1 requires the following to be included in the next Annual 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: The Back Tracks Farm in Vernon, Vermont went out of business on April 9, 1996. As a consequence, Table 4.1, Parts 3.a and 3.c, as well as Figure 4-2 of the ODCM, have been revised to remove this milk and silage sampling location from the Radiological Environmental Monitoring Program (REMP). No new replacement stations need to be added to the program since the required number of highest-dose-potential farms, as listed in the 1995 Land Use Census, are already part of the REMF. The revised ODCM figure and table are included in the attachment to Appendix H.

APPENDIX F

LAND USE CENSUS

Requirement: A land use census is conducted in accordance with Technical Specification 3.9.D. With a land use census identifying a location(s) which yields at least a 20 percent greater dose or dose commitment than the values currently being calculated in Technical Specification 4.8.G.1, Technical Specification 6.7.C.1 requires the identification of the new location(s) in the next Annual Effluent Release Report.

Response: The Land Use Census was completed in the third quarter of 1996. No locations yielded a 20 percent greater dose or dose commitment than the values currently being calculated in Technical Specification 4.8.G.1.

APPENDIX G

PROCESS CONTROL PROGRAM

Requirement: Technical Specification 6.12.A.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: The following changes were made to the Process Control Program (PCP) and issued as Revision 5 during this reporting period.

Title Page:	Changed approval by Operations Manager to VP/M00 as stated in Tech Specs.
Section 1:	Added reference to TS 4.8.N; added statement to review and approve vendor's PCP program by PORC and VP/M00.
Section 2:	Added statement to air dry filters 24 hours or as determined by RWS. Also added method to dispose of filters above dose limitations per 49 CFR.
Section 3:	Added reference to OP-2153. Remove reference to remote dewatering which is no longer used.
Section 4:	Removed reference concerning the use of a vacuum pump to dewater the liners. This method is no longer used.
Section 5:	Added reference to OP-2512.
Section 6:	None.
Section 7:	Added reference to MSDS via AP-0620.
Section 8:	Same as Section 7.
Section 9:	Same as Section 7.
Section 10:	None.

APPENDIX G
(Continued)

PROCESS CONTROL PROGRAM

Section 11: Added reference to the use of an approved
outside lab.

Section 12: Added this new section - Mixed Waste. .

Page 4 was revised to incorporate procedure title and revision
changes, OP-2511 and OP-2512.

This revision does not affect Technical Specifications and does not affect any
system or processes described in the FSAR.

The revised Process Control Program is attached.