HADDAM NECK STATION

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

ANNUAL ENVIRONMENTAL OPERATING REPORT

PART B

PERIOD JANUARY 1, 1984 - DECEMBER 31, 1984

DOCKET NO. 50-213
LICENSE NO. DPR-61

PREPARED FOR THE

CONNECTICUT YANKEE ATOMIC POWER COMPANY
HADDAM, CONNECTICUT

BY THE

NORTHEAST UTILITIES SERVICE COMPANY
BERLIN, CONNECTICUT

IE25
1/1

HADDAM NECK STATION

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

ANNUAL ENVIRONMENTAL OPERATING REPORT

PART B

PERIOD JANUARY 1, 1984 - DECEMBER 31, 1984

DOCKET NO. 50-213
LICENSE NO. DPR-61

PREPARED FOR THE

CONNECTICUT YANKEE ATOMIC POWER COMPANY
HADDAM, CONNECTICUT

BY THE

NORTHEAST UTILITIES SERVICE COMPANY
BERLIN, CONNECTICUT

TABLE OF CONTENTS

mental media. The maximum whole body dose (station boundary) that could occur to a member of the general public as a result of the plant's discharges was 1.6 millirem and the average dose to a member of the public residing within 50 miles of the plant is 0.0023 millirem. These doses are 10.4 percent and 0.0092 percent of the standards as set by the Environmental Protection Agency on the maximum allowable dose to an individual of the general public. These standards are a small fraction (20 percent) of the 125 mrem per year normal background radiation and are designed to be inconsequential in regard to public health and safety. Plant related doses are even a smaller fraction of the natural background; they are less than 10 percent of the variation in natural background in Connecticut. Therefore, for the above stated reasons the plant related doses have insignificant public health consequences.

1.0 SUMMARY

The radiological environmental monitoring program for the Haddam Neck Plant was continued for the period January through December 1984, in compliance with the Environmental Technical Specifications, Section 3.2. This annual report was prepared for the Connecticut Yankee Atomic Power Company (CYAPCO) by the Radiological Assessment Branch of the Northeast Utilities Service Company (NUSCO). Gamma exposure measurements were performed by NUSCO and tritium analyses were performed by Teledyne Isotopes, Inc. All the remaining analyses were performed by Chemical Waste Management of Massachusetts, Inc. Yankee Atomic Electric Company was used to independently check on the primary contractors' laboratories as part of the overall quality assurance program.

Radiological analyses were performed with gamma exposure measuring devices and on samples of air particulates and iodine, soil, milk, pasture grass, well water, fruits, vegetables, river water, bottom sediment, shellfish, and fish. In evaluating the results of these analyses it is necessary to consider the variability of radionuclide uptake in environmental media. This variability is dependent on many factors, including plant release rates, meteorology, number and size of nuclear weapon tests, seasonal variability of fallout, locational variability of fallout, soil characteristics, farming practices, and feed type. Significant variations in measured levels of radioactivity could be caused by any one of these factors. Therefore, these factors need to be considered in order to properly explain any variations.

The predominant radioactivity, indicated by the results, was that from nonplant sources, such as fallout from nuclear weapons tests and from naturally occurring radionuclides. Plant related radioactivity was observed at some of the onsite gamma monitoring locations and in several other environmental samples. These include tritium in well water at the onsite location, tritium in river water collected in the vicinity of the mouth of the discharge canal and near the East Haddam Bridge, and cesium-137 and cesium-134 in bottom sediment collected from the vicinity of the mouth of the discharge canal.

As usual, cesium-137 and strontium-90 were measured in both cow and goat milk. These levels are a result of nuclear weapons testing in the 1960's and not the result of plant operation. This can be concluded based on the facts that: insufficient quantities (at least 2000 times less) of these isotopes have been released by the plant to account for the measured concentrations, chemically similar cesium-134 and (plant related) strontium-89 which are released in about equal or larger quantities from the plant can not be detected and comparable levels of cesium-137 and strontium-90 were detected prior to initial plant operation.

The radiation dose to the general public from the plant's discharges has been evaluated by two methods. One method utilizes the measured station's discharges and conservative transport models and the other utilizes the measured concentrations of radioactivity in the environ-

2.0 PROGRAM DESCRIPTION

2.1 Sampling Schedule and Locations

The sample locations and the sample types and frequency of analysis are given in Table 2-1 and 2-2 and Figures 2.1, 2.2 and 2.3. The program as described here is that which is required by Environmental Technical Specification 3.2.

Table 2-1

CONNECTICUT YANKEE RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Location	Distance &Direction(a)	Sample Type, Frequency(b) and Analysis(c)					
		Gamma Dose	Air Particulate(f)	Soil	Vegetation	Water	Milk(d)
Terrestrial Stations							
1. On site fence near boron waste storage tanks	0.1 miles,NW	M	- -	- -	- -	- -	- -
2. On site fence near waste gas surge sphere	0.1 miles,E	M	- -	- -	- -	- -	- -
3. On site fence near discharge canal	0.2 miles,SE	M	- -	- -	- -	- -	- -
4. On site fence near guard house	0.1 miles,WNW	M	- -	- -	- -	- -	- -
5. On site-Injun Hollow Road	0.4 miles,NW	M	W1-M2-Q5(e)	A2,5	- -	- -	- -
6. On site-Substation	0.5 miles,NE	M	W1-M2-Q5(e)	A2,5	- -	- -	- -
7. Haddam	1.8 miles,SE	M	W1-M2-Q5(e)	A2,5	- -	- -	- -
8. East Haddam	3.1 miles,ESE	M	W1-M2-Q5	A2,5	- -	- -	- -
9. Higganum	3.2 miles,WNW	M	W1-M2-Q5	A2,5	- -	- -	- -
10. Hurd Park Road--East Hampton	2.8 miles,NNW	M	W1-M2-Q5	A2,5	- -	- -	- -
11. Middletown	*10.0 miles,NW	M	W1-M2-Q5	A2,5	- -	- -	- -
12. Deep River	*8.0 miles,SSE	M	W1-M2-Q5	A2,5	- -	- -	- -
13. North Madison	*12.0 miles,SW	M	W1-M2-Q5(e)	A2,5	- -	- -	- -
14. Colchester	*10.0 miles,NE	M	W1-M2-Q5	A2,5	- -	- -	- -
15. On Site-Wells	0.8 miles,SE	- -	- -	- -	- -	M1,2,4,5	- -
16. Well-State Highway Dept. East Haddam	*3.0 mile,S	- -	- -	- -	- -	Q1,2,4,5	- -
17. Well-Injun Hollow Road	1.0 mile,NW	- -	- -	- -	- -	Q1,2,4,5	- -
18. Well-Haddam	1.0 mile,S	- -	- -	- -	- -	Q1,2,4,5	- -
19. Cow Location #1	1.5 miles,NNW	- -	- -	- -	- -	- -	M3
20. Cow Location #2	2.2 miles,ESE	- -	- -	- -	- -	- -	M3
21. Cow Location #3	4.5 miles,NE	- -	- -	- -	- -	- -	M3
22. Cow Location #4	*11.0 miles,ENE	- -	- -	- -	- -	- -	M3
23. Goat Location #1	*16.0 miles, NE	- -	- -	- -	M3(g)	- -	- -
24. Goat Location #2	1.5 miles,NW	- -	- -	- -	M3(g)	- -	- -
25. Fruits & Vegetables	- -	- -	- -	- -	A2(h)	- -	- -

Table 2-1 (continued)

Location	Distance & Direction(a)	Sample Type, Frequency(b) and Analysis(c)			
		Bottom Sediment	Water	Fish(i)	Shellfish
Aquatic Stations					
26. Conn. River - Vicinity of intake	1.0 miles,WNW	- -	- -	Q2,5	- -
27. Conn. River - Higganum Light	*4 miles,WNW	Q2,5	- -	- -	Q2,5
28. Conn. River - E. Haddam Bridge	*1.8 miles,SE	Q2,5	- -	- -	- -
29. Plant Discharge Canal	- - - - - -	Q2,5	Q1,2,4,5	Q2,5(i)	- -
30. Conn. River - Middletown	*7.6 miles,NW	- -	Q1,2,4,5	Q2,5(i)	- -
31. Mouth of the Salmon River	0.8 miles,ESE	- -	- -	- -	Q2,5

* Control Stations

(a) Distance to nearest half mile

(b) W-Weekly, M-Monthly, Q-Quarterly, SA-Semi-Annual, A-Annual

(c) 1-Gross Beta, 2-Gamma Spectrum, 3-I-131, Sr-89, Sr-90, 4-H-3; 5-Sr-89, Sr-90

(d) During the period April through October and once in February

(e) Includes a charcoal filter that is to be analyzed weekly for I-131

(f) Analyses are done on the monthly and quarterly composites

(g) A similar analysis will be done on milk instead of grass if the former is available

(h) During the harvest season, when available from commercial farms

(i) Bullheads and when available perch

TABLE 2-2

MINIMUM DETECTABLE LEVELS IN ENVIRONMENTAL SAMPLES AND RESULTING DOSES

Sample Type	Analysis	Sample Size	Minimum Detectable Levels[4] (MDL)	Annual Dose Associated with MDL[5] (mrem)	Critical Organ	Annual Intake
Well and River Water	Gross beta	1 liter	1 pCi/l	---	---	---
	Gamma spectrum	3 liter	20 pCi/l[2]	---	---	---
	Sr-89	2 liter	2.0 pCi/l	0.2[6]	bone	440 l
	Sr-90	2 liter	1.0 pCi/l	1.0[6]	bone	440 l
	Cs-137	2 liter	6.0 pCi/l	0.078[6]	whole body	440 l
	H-3	2 liter	60 pCi/l	0.005[6]	body tissue	440 l
Bottom Sediment and Soil	Gamma spectrum	1 kg	0.05 pCi/g[2] [10]	---	---	---
	Sr-89	1 kg	0.072 pCi/g	---	---	---
	Sr-90	1 kg	0.036 pCi/g	---	---	---
	Cs-137	1 kg	0.064 pCi/g		---	---
Fish and Shellfish	Gamma spectrum	1 kg	0.05 pCi/g[2]	---	---	---
	Sr-89	100 g	0.018 pCi/g	0.08	bone	18.3 kg
	Sr-90	100 g	0.009 pCi/g	0.4	bone	18.3 kg
	Cs-137	100 g	0.056 pCi/g	0.031	whole body	18.3 kg
Gamma Dose	TLD	1 month exposure	1 mrem	---	whole body	12 month exposure
Milk	I-131	4 liter	0.5 pCi/l	1.6	Child's thyroid	183 l
	Sr-89	1 liter	2.0 pCi/l	0.08	bone	183 l
	Sr-90	1 liter	1.0 pCi/l	0.40	bone	183 l
	Cs-137	1 liter	6.0 pCi/l	0.036	whole body	183 l

TABLE 2-2 (Cont'd)

Sample Type	Analysis	Sample Size	Minimum Detectable Levels[4] (MDL)	Annual Dose Associated with MDL[5] (mrem)	Critical Organ	Annual Intake
Filtered Air	I-131	270m^3	0.04 pCi/m^3	0.5 [9]	Child's thyroid	1100 m^3
	Gross Beta	270m^3	0.01 pCi/m^3 [3]	---	---	---
	Gross Gamma	270m^3	0.045 pCi/m^3 [1]	---	---	---
	Gamma Spectrum	1,080m^3	0.02 pCi/m^3 [2]	---	---	---
Vegetation	Gamma Spectrum	1 kg	0.05 pCi/g[2]	---	---	---
	I-131	1 kg	0.05 pCi/g	7.5[7] [8]	Child's thyroid	---
	Sr-89	1 kg	0.018 pCi/g			
	Sr-90	1 kg	0.009 pCi/g			
	Cs-137	1 kg	0.034 pCi/g			

[1] Based on a calibration with Cs-137 of 1.5 pCi=1 count per minute
[2] For Cs-137 assuming no interference from other nuclides
[3] Cs-137 used as a reference source
[4] These are minimum practical detectable levels (MDL) as opposed to theoretical detection limits. They apply to the activity at the time of sample collection. MDL = 2 σ background.
[5] Based on the Federal Radiation Council reports on Radiation Protection Guides and associated dose.
[6] Applies to drinking water only
[7] Dose to a child's thyroid through the air-grass-cow-milk-man food chain for an annual milk intake of 183 l.
[8] From WASH-1258 (July 1973)
[9] From WASH-1258 Table 6B-4
[10] pCi/g per gram - wet weight

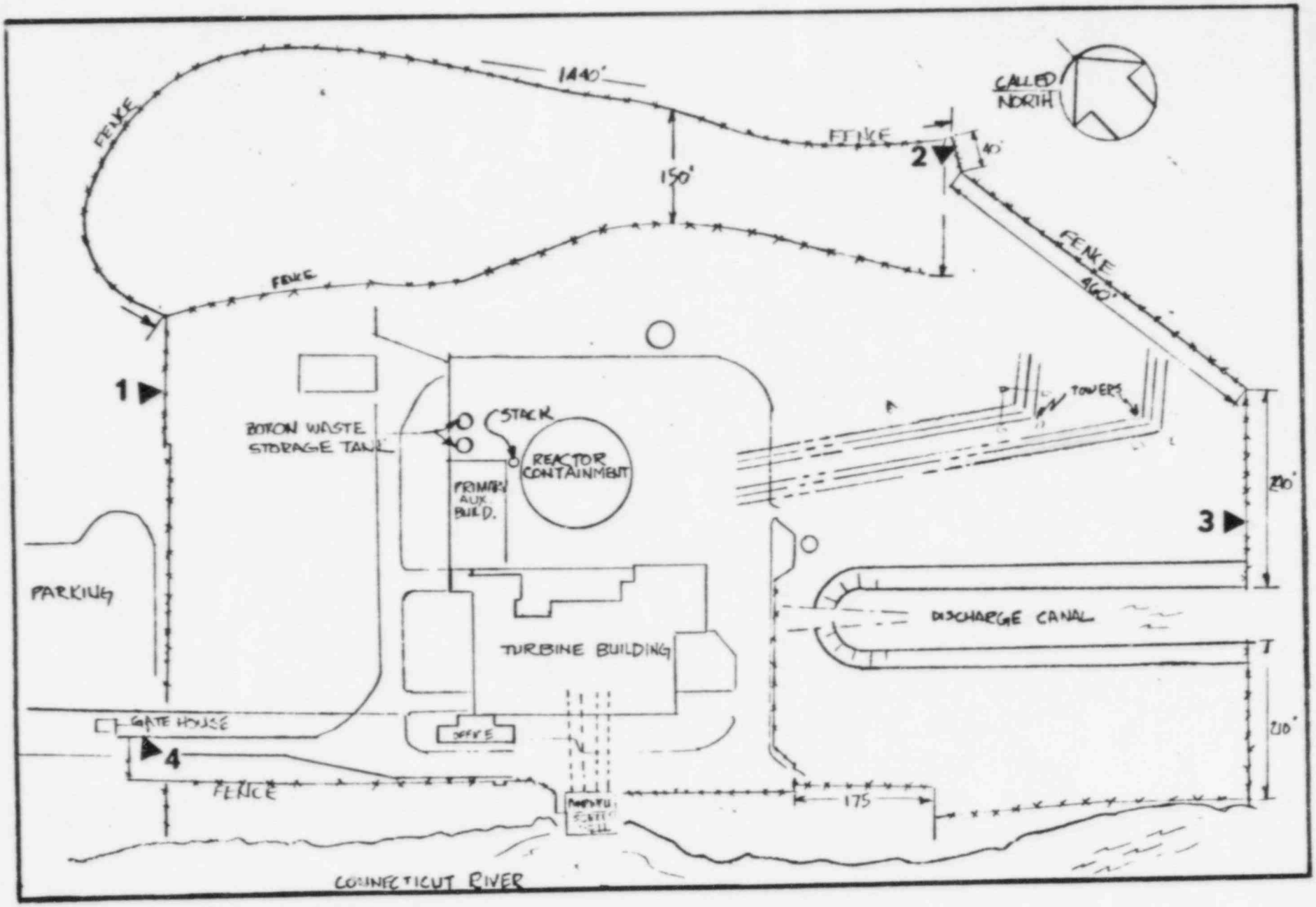


FIGURE 2.1
On Site Monitoring Stations
Haddam Neck Plant

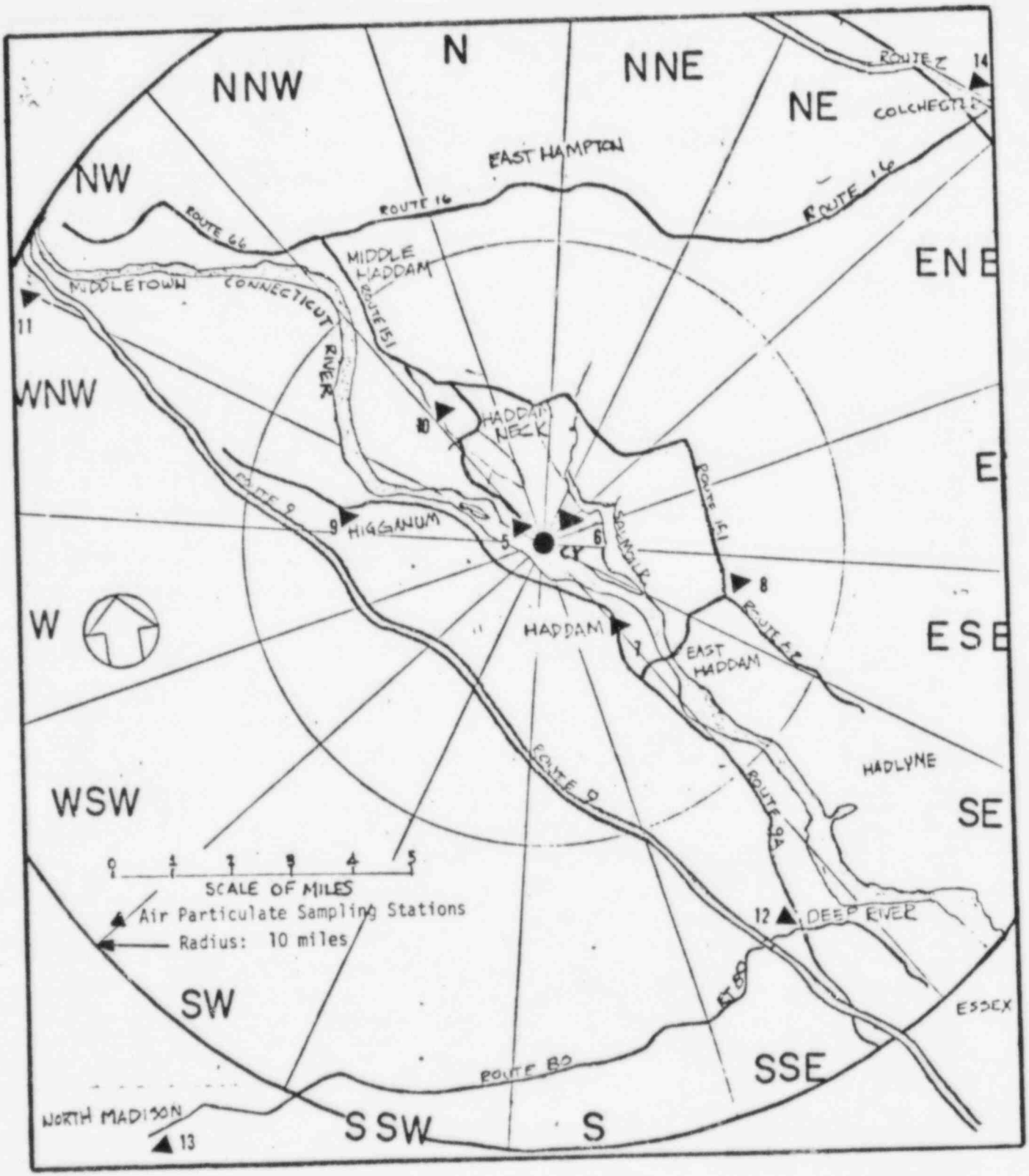


FIGURE 2.2
Inner and Outer Terrestrial Monitoring Stations
Haddam Neck Plant

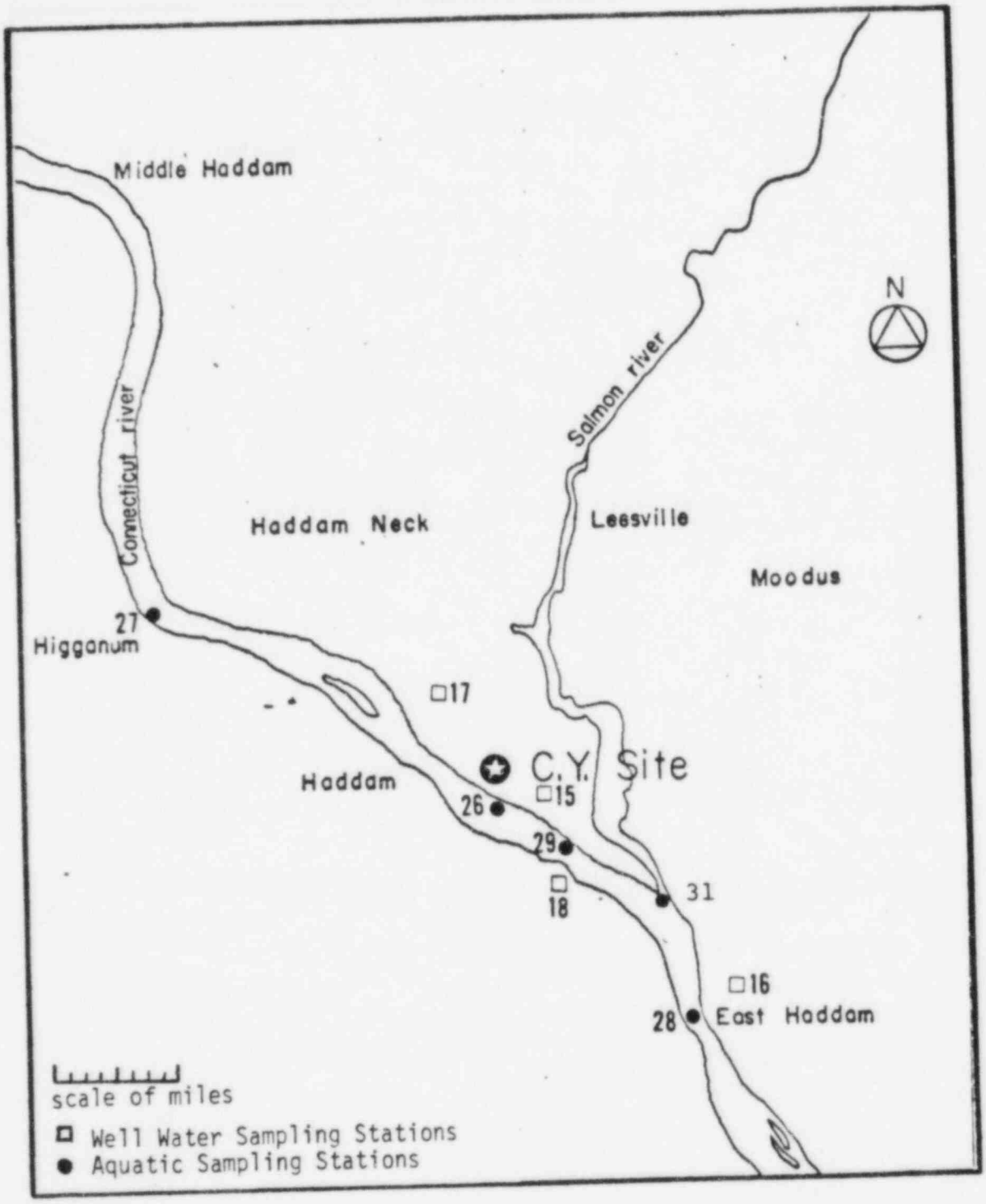


FIGURE 2.3
Aquatic and Well Water Sampling Stations
Haddam Neck Plant

2.2 Samples Collected During Report Period

The following table summarizes the number of required samples of each type collected during the present reporting period:

Sample Type	Number of Samples
Gamma Exposure (TLD)	167
Air Particulates	529
Air Iodine	212
Soil	10
Dairy Milk	32
Goat Milk	16
Pasture Grass	0
Well Water	24
Fruit and Vegetables	8
River Water	8
Bottom Sediment	12
Fish	23
Shellfish	8
Total All Types	1,049

3.0 RADIOCHEMICAL RESULTS

3.1 Summary Table

In accordance with Environmental Technical Specification 5.6.1a., Table 5.6-1, a summary table of the radiochemical results has been prepared and is presented in Table 3-1.

In the determination of the mean the data was handled as recommended by Health and Safety Laboratory, Idaho: all valid data, including negative values and zeroes were used in the determination of the mean (see part 3.2).

A more detailed analysis of the data is given in section 4.0 where a discussion of the variations in the data brings to light many aspects that are not evident in the summary table because of the basic limitation of such an approach.

TABLE 3-1
ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM SUMMARY
CONNECTICUT YANKEE ATOMIC POWER COMPANY, HADDAM NECK PLANT
DOCKET 50-213
JANUARY - DECEMBER 1984

MEDIUM OR PATHWAY SAMPLED	ANALYSIS AND TOTAL NUMBER OF ANALYSES PERFORMED	MINIMUM DETECTABLE LEVELS (MDL's)(a)	ALL INDICATOR LOCATIONS		LOCATION WITH HIGHEST ANNUAL MEAN			CONTROL LOCATIONS		# OF NRMs (c)
			Mean	(b) (Range)	NAME, DISTANCE AND DIRECTION	Mean	(b) (Range)	Mean	(b) (Range)	
	Cs-134	0.05	0.00		N/A		N/A	0.00		0
	Mn-54	0.05	0.002	(0.00 - 0.02)	Plant Discharge Canal	0.004	(0.00 - 0.02)	0.00		0
	Co-58	0.05	0.00		N/A		N/A	0.00		0
	Co-60	0.05	0.00		N/A		N/A	0.00		0
	Zr-95	--	0.00		N/A		N/A	0.00		0
	Nb-95	--	0.00		N/A		N/A	0.00		0
	K-40	--	2.5	(1.2 - 3.6)	Plant Discharge Canal	2.7	(1.2 - 3.3)	2.3	(1.6 - 4.1)	0

FOOTNOTES

a. For Ge(Li) measurements the MDL's $\simeq 2 \times \sqrt{2B}$ where B = background. For all others, MDL = 2 x σ background. These MDL's are based on the absence of large amounts of interfering activity (excluding naturally occurring radionuclides). Deviations by about factors of 3 to 4 can occur, excluding Technical Specification Items.

b. Analytical results are handled as recommended by HASL ("Reporting of Analytical Results from HASL," letter by Leo B. Higginbotham). Negative values were used in the determination of the mean.

c. Nonroutine reported measurements (# of NRMs) are defined in Section 5.6.2b of the Technical Specifications.

d. First number is the number of indicator measurements, the second is the number of control measurements.

e. Assuming 270 m^3/paper.

f. Assuming 1080 m^3.

g. Quarterly composites.

h. N/A--Not Applicable.

3.2 Data Tables

The data reported in this section are strictly counting statistics. The reported error is two times the standard deviation of the net activity. Unless otherwise noted, the overall error is estimated to be 2 to 5 times that listed.

Because of counting statistics, negative values, zeroes and numbers below the Minimum Detectable Level (MDL) are statistically valid pieces of data. For the purposes of this report, in order to indicate any background biases, all the valid data are presented. In instances where zeroes are listed after significant digits, this is an artifact of the computer data handling program.

Data are given according to sample type as indicated below.

1. Gamma Exposure Rate
2. Air Particulates, Gross Beta Radioactivity
3. Air Particulates, Weekly I-131
4. Air Particulates, Monthly Quantitative Gamma Spectra
5. Air Particulates, Quarterly Strontium and Cesium
6. Soil**
7. Milk - Dairy Farms
8. Milk - Goat Farms
9. Pasture Grass*
10. Well Water
11. Reservoir Water
12. Fruits & Vegetables*
13. Meat, Poultry and Eggs*
14. River Water
15. Bottom Sediment**
16. Shellfish*
17. Fish*

There was no commercially available meat, poultry, or eggs for which the feed was grown within 10 miles of the site.

*For these sample types, the results are reported as pCi/g wet weight.

**For these, the results are reported as pCi/g dry weight.

LOCATION KEY FOR DATA TABLES

CONNECTICUT YANKEE

1	Boron Waste Storage Tanks Fence - NW, 0.1 miles
2	Waste Gas Surge Sphere Fence - E, 0.1 miles
3	Discharge Canal Fence - SE, 0.2 miles
4	Guard House Fence - WNW, 0.1 miles
5	Injun Hollow Road - NW, 0.4 miles
6	Substation - NE, 0.5 miles
7	Haddam - SE, 1.8 miles
8	East Haddam - ESE, 3.1 miles
9	Higganum - WNW, 3.2 miles
10	Hurd Park Road - NNW, 2.8 miles
11A	Middletown - NW, 10 miles
12A	Deep River - SSE, 8 miles
13A	North Madison - SW, 12 miles
14A	Colchester - NE, 10 miles
15A	On Site Wells 1 & 2 - SE, 0.8 miles
16A	State Highway Dept. - E. Haddam - S, 3 miles
17	Well - Injun Hollow Road - NW, 1 mile
18	Well - Haddam - S, 1 mile
19	Cow Location #1 - NNW, 1.5 miles
20	Cow Location #2 - ESE, 2.2 miles
21	Cow Location #3 - NE, 4.5 miles
22	Cow Location #4 - ENE, 11 miles
23A	Goat Location #1 - NE, 16 miles
24	Goat Location #2 - NW, 1.5 miles
25	Within 10 miles of plant
35A	Beyond 10 miles of plant
26	Conn. River - Intake Vicinity - WNW, 1.0 miles
27A	Conn. River - Higganum Light - WNW, 4 miles
28A	Conn. River - E. Haddam Bridge - SE, 1.8 miles
29	Vicinity of Discharge
30A	Conn. River - Middletown - NW, 7.6 miles
31	Mouth of Salmon River - ESE, 0.8 miles
40B	Near Intake Structure - SSW, 0.1 miles
41B	Picnic Area - NW, .5 miles
42B	Mouth of Discharge Canal - ESE, 1.1 miles
43B	Moodus - ENE, 2.5 miles
44B	Shailerville (Horton Road) - SE 1.0 miles
45B	Haddam Jail (Jail House Road) - WSW, 1.0 miles
46B	Ranger Headquarters (on Ranger Road) - SW, 1.8 miles
51B	Conn. Valley Hospital - NW, 7.5 miles
52B	Mt. Higby - WNW, 12.5 miles

A - Control Stations
B - Site not required by ETS

CONNECTICUT YANKEE

TABLE 1A
MONTHLY
GAMMA EXPOSURE RATE(UR/HR)

PERIOD ENDING	LOCATIONS 01	02	03	04	05	06	07	08	09	10	11A
1/31/84(a)	9.9(b)	9.1	6.8	6.7	7.0	6.7	6.0	7.2	6.7	7.3	9.0
2/28/84	10.8	10.3	7.8	7.7	8.0	7.5	6.3	8.0	6.9	8.4	9.4
3/31/84	10.7	10.3	7.8	7.3	7.7	7.8	6.7	8.1	7.5	8.0	9.9
4/30/84	11.2	10.8	8.2	7.8	8.6	7.9	6.5	8.8	7.3	8.7	9.7
5/31/84	10.5	9.7	6.9	6.6	7.1	7.4	7.3	7.3	7.1	7.1	9.4
6/30/84	12.2	10.9	8.0	7.9	8.5	8.0	6.8	8.6	7.6	8.6	10.1
7/31/84	13.6	10.5	7.8	7.8	7.9	8.0	6.4	7.9	7.1	7.6	9.3
8/31/84	23.9(c)	11.9	8.5	9.6	8.2	7.4	6.8	8.1	7.4	8.0	9.8
9/30/84	17.3	11.6	8.7	8.5	8.4	8.1	6.8	8.2	7.4	7.6	9.7
10/31/84	17.1	13.2	10.2	9.0	9.1	8.1	7.2	8.8	8.0	8.6	10.4
11/30/84	13.6	12.7	9.4	7.9	8.1	8.3	6.8	8.2	7.8	0.0	10.5
12/31/84	13.6	12.3	9.6	8.1	8.5	7.7	6.9	8.6	7.2	9.0	10.0

PERIOD ENDING	12A	13A	14A	40B	41B	42B	43B	44B	45B	46B
1/31/84	5.9	5.9	7.7	6.3	5.4	5.7	7.0	6.3	6.1	5.9
2/28/84	6.3	6.3	8.2	7.3	6.4	6.5	7.9	7.1	7.0	6.6
3/31/84	6.5	6.5	8.5	7.1	5.9	6.6	8.0	7.3	7.1	6.4
4/30/84	6.7	6.7	8.9	7.8	6.1	6.8	8.5	7.5	7.3	6.8
5/31/84	6.3	5.9	7.9	6.4	5.2	6.2	7.4	7.1	6.8	6.2
6/30/84	7.0	6.6	8.9	7.7	6.1	6.8	8.5	7.9	7.6	7.0
7/31/84	6.3	6.4	8.4	7.5	5.9	6.4	8.1	7.1	6.8	6.1
8/31/84	6.7	6.3	8.4	8.5	7.0	6.6	8.1	7.9	7.5	6.9
9/30/84	6.5	6.6	8.7	8.5	6.1	6.8	8.5	7.5	7.2	6.4
10/31/84	7.4	7.1	8.9	9.1	6.6	6.9	8.6	8.6	8.0	7.4
11/30/84	6.8	6.7	8.9	8.8	6.2	6.6	8.3	7.8	7.6	6.9
12/31/84	7.1	7.2	8.6	8.8	6.5	6.7	8.3	8.0	7.6	7.1

TABLE 1B
SEMIANNUAL
GAMMA EXPOSURE RATE(UR/HR)

PERIOD ENDING	LOCATIONS 01	02	03	04	05	06	07	08	09	10	11A
6/30/84	10.9	10.2	7.6	7.3	7.8	7.5	6.6	8.0	7.2	8.0	9.6
12/31/84	16.5	12.0	9.0	8.5	8.4	7.9	6.8	8.3	7.5	6.8	9.9

	12A	13A	14A	40B	41B	42B	43B	44B	45B	46B
6/30/84	6.4	6.3	8.3	7.1	5.8	6.4	7.9	7.2	7.0	6.5
12/31/84	6.8	6.7	8.6	8.5	6.4	6.7	8.[illegible]	7.8	7.4	6.8

(a) Not actual dates. TLD's are changed near the end of the month.
(b) Results are +/- 10%.
(c) High result caused by temporary storage of radioactive waste in area.

TABLE 2
AIR PARTICULATES
GROSS BETA RADIOACTIVITY
(PCI/M3)

CY

PERIOD ENDING	LOCATIONS 05	06	07	08	09	10	11A	12A	13A	14A	46B
1/ 4/84(a)	0.030(b)	0.032	0.029	0.035	0.036	0.027	0.034	0.030	0.028	0.028	0.033
1/10/84	0.033	0.032	0.028	0.031	0.031	0.028	0.029	0.030	0.025	0.029	0.029
1/17/84	0.027	0.026	0.031	0.026	0.031	0.026	0.031	0.029	0.029	0.024	0.028
1/24/84	0.037	0.032	0.038	0.035	0.037	0.035	0.034	0.044	0.037	0.022	0.038
1/31/84	0.029	0.021	0.022	0.024	0.021	0.024	0.022	0.021	0.021	0.025	0.018
2/ 7/84	0.023	0.020	0.043	0.017	0.019	0.019	0.018	0.019	0.018	0.015	0.021
2/14/84	0.025	0.024	0.024	0.023	0.025	0.022	0.023	0.022	0.025	0.024	0.024
2/22/84	0.015	0.011	0.017	0.013	0.011	0.013	0.013	0.014	0.013	0.013	0.013
2/28/84	0.026	0.025	0.025	0.023	0.026	0.023	0.024	0.023	0.026	0.025	0.025
3/ 6/84	0.013	0.012	0.016	0.015	0.012	0.012	0.013	0.013	0.013	0.011	0.013
3/13/84	0.027	0.024	0.027	0.023	0.027	0.023	0.027	0.024	0.025	0.021	0.022
3/20/84	0.019	0.014	0.015	0.013	0.012	0.013	0.026	0.008	0.011	0.012	0.007
3/27/84	0.013	0.013	0.018	0.012	0.013	0.015	0.015	0.014	0.016	0.010	0.018
4/ 3/84	0.010	0.009	0.012	0.008	0.010	0.009	0.010	0.009	0.011	0.010	0.010
4/10/84	0.013	0.019	0.016	0.013	0.011	0.011	0.013	0.012	0.012	0.011	0.011
4/17/84	0.013	0.010	0.013	0.011	0.010	0.010	0.011	0.010	0.013	0.011	0.012
4/24/84	0.014	0.014	0.017	0.014	0.013	0.012	0.013	0.016	0.016	0.011	0.015
5/ 1/84	0.016	0.012	0.013	0.011	0.014	0.012	0.012	0.013	0.014	0.011	0.015
5/ 8/84	0.018	0.020	0.019	0.017	0.017	0.016	0.016	0.019	0.022	0.015	0.020
5/15/84	0.018	0.018	0.015	0.015	0.015	0.015	0.015	0.015	0.016	0.014	0.018
5/22/84	0.017	0.018	0.015	0.014	0.016	0.017	0.017	0.017	0.023	0.012	0.017
5/30/84	0.011	0.012	0.011	0.014	0.014	0.014	0.012	0.015	0.016	0.013	0.008
6/ 5/84	0.012	0.013	0.012	0.011	0.012	0.010	0.011	0.013	0.013	0.010	0.011
6/12/84	0.033	0.032	0.032	0.025	0.030	0.032	0.032	0.035	0.037	0.028	0.030
6/19/84	0.019	0.023	0.017	0.014	0.015	0.016	0.014	0.017	0.019	0.017	0.012
6/26/84	0.018	0.019	0.019	0.028	0.018	0.016	0.017	0.017	0.022	0.014	0.017

(a) Sample dates may vary by a day.
(b) Errors are approximately 0.004 or 10%, whichever is greater.

TABLE 2
AIR PARTICULATES
GROSS BETA RADIOACTIVITY
(PCI/M3)

CY

PERIOD ENDING	LOCATIONS 05	06	07	08	09	10	11A	12A	13A	14A	468
7/ 3/84	0.018	0.017	0.020	0.015	0.015	0.015	0.017	0.016	0.021	0.015	0.018
7/10/84	0.016	0.017	0.010	0.013	0.015	0.014	0.018	0.015	0.016	0.012	0.014
7/17/84	0.020	0.023	0.025	0.020	0.023	0.021	0.023	0.023	0.023	0.020	0.024
7/24/84	0.014	0.015	0.016	0.012	0.013	0.011	0.012	0.012	0.014	0.012	0.013
7/30/84	0.016	0.014	0.016	0.012	0.014	0.012	0.014	0.013	0.017	0.011	0.015
8/ 7/84	0.029	0.028	0.034	0.023	0.030	0.028	0.031	0.031	0.032	0.025	0.033
8/14/84	0.027	0.027	0.018	0.021	0.019	0.021	0.019	0.018	0.026	0.023	0.023
8/21/84	0.016	0.017	0.020	0.016	0.018	0.016	0.017	0.020	0.017	0.013	0.018
8/28/84	0.013	0.012	0.018	0.014	0.016	0.015	0.015	0.017	0.012	0.013	0.017
9/ 5/84	0.022	0.021	0.021	0.017	0.021	0.020	0.019	0.018	0.024	0.020	0.023
9/11/84	0.014	0.021	0.015	0.014	0.018	0.015	0.017	0.019	0.020	0.015	0.023
9/18/84	0.022	0.017	0.017	0.014	0.017	0.019	0.017	0.017	0.020	0.016	0.018
9/25/84	0.024	0.026	0.030	0.024	0.027	0.022	0.028	0.030	0.030	0.023	0.029
10/ 2/84	0.028	0.029	0.026	0.025	0.024	0.024	0.024	0.025	0.028	0.025	0.026
10/10/84	0.022	0.021	0.028	0.018	0.023	0.019	0.021	0.022	0.021	0.020	0.025
10/17/84	0.032	0.033	0.033	0.026	0.027	0.027	0.029	0.027	0.031	0.027	0.031
10/23/84	0.029	0.027	0.029	0.029	0.029	0.028	0.029	0.030	0.032	0.027	0.033
10/30/84	0.029	0.023	0.028	0.021	0.025	0.022	0.024	0.024	0.025	0.022	0.026
11/ 6/84	0.021	0.021	0.020	0.017	0.0 (a)	0.019	0.019	0.019	0.021	0.018	0.021
11/14/84	0.017	0.020	0.018	0.017	0.017	0.017	0.015	0.017	0.022	0.015	0.021
11/20/84	0.025	0.021	0.025(a)	0.021	0.025	0.021	0.022	0.023	0.024	0.021	0.029
11/27/84	0.024	0.023	0.031	0.020	0.027	0.019	0.025	0.028	0.024	0.021	0.028
12/ 4/84	0.035	0.036	0.029	0.031	0.028	0.032	0.028	0.027	0.033	0.030	0.030
12/11/84	0.023	0.025	0.031	0.021	0.026	0.022	0.028	0.035	0.023	0.023	0.029
12/18/84	0.029	0.032	0.031	0.028	0.030	0.030	0.030	0.030	0.034	0.028	0.031
12/24/84	0.030	0.030	0.029	0.028	0.028	0.028	0.026	0.026	0.029	0.026	0.029
12/31/84	0.028	0.028	0.024	0.024	0.025	0.025	0.024	0.025	0.025	0.023	0.024

(a) Low volume, pump mechanical problems.

TABLE 3
AIR PARTICULATES
I-131(PCI/M3)

PERIOD ENDING	LOCATIONS 05	(+/-)	06	(+/-)	07	(+/-)	13A	(+/-)	46B	(+/-)
1/ 4/84(a)	0.02	0.02	0.01	0.03	0.03	0.02	0.0	0.02	0.03	0.02
1/10/84	0.02	0.02	0.02	0.03	0.02	0.02	0.03	0.02	0.0	0.03
1/17/84	0.03	0.02	0.02	0.03	0.05	0.02	0.01	0.02	-0.01	0.03
1/24/84	0.03	0.02	0.03	0.03	0.04	0.02	0.02	0.02	0.02	0.02
1/31/84	0.03	0.02	0.01	0.03	0.02	0.02	0.01	0.02	0.01	0.03
2/ 7/84	0.0	0.02	0.0	0.02	0.0	0.02	0.0	0.02	0.0	0.02
2/14/84	0.02	0.02	0.03	0.03	0.03	0.02	0.01	0.02	0.02	0.03
2/22/84	-0.03	0.02	0.01	0.02	0.01	0.02	0.0	0.02	-0.01	0.02
2/28/84	0.04	0.02	0.0	0.03	0.03	0.02	0.0	0.02	-0.03	0.03
3/ 6/84	0.01	0.02	-0.01	0.02	0.01	0.02	0.01	0.02	0.01	0.02
3/13/84	0.04	0.03	0.01	0.04	0.03	0.02	-0.03	0.03	-0.01	0.04
3/20/84	0.0	0.02	-0.01	0.03	0.01	0.02	0.01	0.02	0.01	0.03
3/27/84	0.0	0.02	-0.01	0.02	0.02	0.02	0.01	0.02	0.01	0.03
4/ 3/84	0.02	0.03	-0.03	0.03	0.01	0.02	0.0	0.02	0.0	0.03
4/10/84	0.04	0.02	0.01	0.03	0.01	0.02	0.03	0.02	0.0	0.03
4/17/84	0.02	0.02	0.03	0.03	0.03	0.02	0.02	0.02	0.0	0.03
4/24/84	0.02	0.02	0.0	0.03	-0.01	0.02	0.0	0.02	0.02	0.03
5/ 1/84	0.0	0.02	-0.02	0.03	0.03	0.02	0.03	0.02	0.0	0.03
5/ 8/84	0.02	0.02	0.02	0.03	0.0	0.02	0.0	0.02	-0.02	0.03
5/15/84	0.03	0.02	0.01	0.03	0.02	0.02	0.03	0.02	0.0	0.03
5/22/84	-0.01	0.02	-0.01	0.03	-0.01	0.03	0.02	0.02	0.0	0.02
5/30/84	0.0	0.02	-0.02	0.02	-0.02	0.02	0.01	0.03	0.02	0.02
6/ 5/84	0.03	0.02	0.0	0.03	0.01	0.02	0.04	0.02	-0.01	0.03
6/12/84	0.01	0.02	0.0	0.03	-0.02	0.02	0.03	0.03	0.02	0.03
6/19/84	0.02	0.02	0.0	0.03	0.01	0.02	0.01	0.02	0.0	0.03
6/26/84	0.02	0.02	0.01	0.03	0.01	0.02	0.02	0.02	0.02	0.03

(a) Sample dates may vary by a day.

TABLE 3
AIR PARTICULATES
I-131(PCI/M3)

PERIOD ENDING	LOCATIONS 05	(+/-)	06	(+/-)	07	(+/-)	13A	(+/-)	46B	(+/-)
7/ 3/84	0.02	0.02	0.0	0.03	0.03	0.02	0.04	0.02	0.01	0.03
7/10/84	0.02	0.02	-0.01	0.02	0.01	0.02	0.01	0.02	-0.01	0.03
7/17/84	-0.01	0.02	0.02	0.02	0.02	0.02	0.04	0.02	0.02	0.03
7/24/84	0.02	0.02	0.02	0.03	0.01	0.02	0.01	0.02	0.02	0.03
7/30/84	0.02	0.02	0.0	0.02	0.02	0.02	0.03	0.02	0.01	0.02
8/ 7/84	0.04	0.02	0.01	0.02	0.02	0.02	0.04	0.02	0.02	0.02
8/14/84	0.03	0.02	0.0	0.03	0.02	0.02	0.03	0.03	0.01	0.03
8/21/84	0.02	0.02	0.01	0.03	0.01	0.02	0.04	0.02	0.0	0.03
8/28/84	0.02	0.02	0.02	0.02	0.04	0.02	0.03	0.02	0.0	0.03
9/ 5/84	0.02	0.02	0.0	0.02	0.01	0.02	0.03	0.02	0.02	0.03
9/11/84	0.02	0.03	0.02	0.02	0.03	0.02	0.04	0.03	-0.02	0.03
9/18/84	0.03	0.02	0.0	0.03	0.04	0.02	0.05	0.02	0.01	0.03
9/25/84	0.01	0.02	0.01	0.03	0.03	0.02	0.03	0.03	0.0	0.03
10/ 2/84	0.02	0.02	0.02	0.02	0.01	0.02	0.02	0.02	0.04	0.03
10/10/84	0.03	0.02	0.05	0.03	0.03	0.02	0.04	0.02	0.04	0.03
10/16/84	0.05	0.02	0.03	0.03	0.0	0.02	0.06	0.02	0.06	0.03
10/23/84	0.03	0.02	0.0	0.03	0.02	0.02	0.04	0.02	0.01	0.03
10/30/84	0.04	0.02	0.0	0.03	0.02	0.02	0.03	0.02	0.02	0.03
11/ 6/84	0.01	0.02	0.01	0.02	0.0	0.02	0.05	0.02	0.0	0.03
11/14/84	0.02	0.02	-0.04	0.03	0.04	0.02	0.02	0.02	-0.02	0.03
11/20/84	0.02	0.02	0.03	0.03	0.03	0.02(a)	0.03	0.02	0.02	0.03
11/27/84	0.02	0.02	0.05	0.02	0.03	0.02	0.05	0.02	0.01	0.03
12/ 4/84	0.04	0.02	0.01	0.03	0.03	0.02	0.02	0.02	0.04	0.03
12/11/84	0.02	0.02	-0.01	0.03	0.03	0.02	0.04	0.02	0.01	0.03
12/18/84	0.03	0.02	0.04	0.03	0.02	0.02	0.04	0.02	0.0	0.03
12/24/84	0.03	0.02	0.02	0.03	0.04	0.02	0.04	0.02	0.03	0.03
12/31/84	0.03	0.03	0.05	0.04	0.02	0.02	0.06	0.03	0.01	0.02

(a) Low volume, pump mechanical problems.

CY

TABLE 4A
AIR PARTICULATES
GAMMA SPECTRA - JAN
(PCI/M3)

ANALYSES

LOCATION	CS-137	(+/-)	CS-134	(+/-)	RU-103	(+/-)	ZR-95	(+/-)	RU(RH)-106	(+/-)	K-40	(+/-)	TH-228	(+/-)	BE-7	(+/-)	NB-95	(+/-)
5	0.0	0.002	0.0	0.003	0.0	0.005	0.0	0.005	0.0	0.020	0.0	0.030	0.0	0.006	0.080	0.040	0.0	0.004
6	0.0	0.002	0.0	0.003	0.0	0.004	0.0	0.006	0.0	0.030	0.0	0.040	0.0	0.007	0.120	0.040	0.0	0.004
7	0.0	0.003	0.0	0.003	0.0	0.004	0.0	0.005	0.0	0.030	0.0	0.020	0.0	0.008	0.080	0.030	0.0	0.004
8	0.001	0.001	0.0	0.002	0.0	0.003	0.0	0.004	0.0	0.014	0.0	0.013	0.0	0.004	0.100	0.020	0.003	0.003
9	0.0	0.002	0.0	0.002	0.0	0.003	0.0	0.004	0.0	0.020	0.0	0.020	0.0	0.005	0.090	0.030	0.0	0.003
10	0.0	0.002	0.0	0.002	0.0	0.003	0.0	0.004	0.0	0.020	0.0	0.020	0.004	0.004	0.070	0.030	0.0	0.003
11A	0.0	0.002	0.0	0.002	0.0	0.003	0.0	0.004	0.0	0.020	0.0	0.030	0.0	0.005	0.090	0.030	0.0	0.003
12A	0.0	0.002	0.0	0.002	0.0	0.004	0.0	0.005	0.0	0.020	0.0	0.020	0.0	0.005	0.110	0.030	0.0	0.005
13A	0.0	0.003	0.0	0.003	0.0	0.005	0.0	0.007	0.0	0.020	0.0	0.030	0.0	0.007	0.080	0.030	0.0	0.006
14A	0.0	0.002	0.0	0.002	0.0	0.003	0.0	0.004	0.0	0.020	0.050	0.030	0.0	0.004	0.080	0.020	0.0	0.003
46B	0.0	0.003	0.0	0.004	0.0	0.007	0.0	0.009	0.0	0.030	0.0	0.040	0.0	0.007	0.090	0.040	0.0	0.006

TABLE 4B
AIR PARTICULATES
GAMMA SPECTRA - FEB
(PCI/M3)

ANALYSES

LOCATION	CS-137	(+/-)	CS-134	(+/-)	RU-103	(+/-)	ZR-95	(+/-)	RU(RH)-106	(+/-)	K-40	(+/-)	TH-228	(+/-)	BE-7	(+/-)	NB-95	(+/-)
5	0.0	0.003	0.0	0.004	0.0	0.005	0.0	0.008	0.0	0.030	0.0	0.030	0.0	0.008	0.090	0.040	0.0	0.005
6	0.0	0.003	0.0	0.003	0.0	0.006	0.0	0.007	0.0	0.030	0.0	0.030	0.0	0.008	0.040	0.030	0.0	0.006
7	0.0	0.003	0.0	0.004	0.0	0.006	0.0	0.008	0.0	0.030	0.0	0.040	0.0	0.008	0.070	0.040	0.0	0.006
8	0.0	0.002	0.0	0.002	0.0	0.003	0.0	0.004	0.0	0.020	0.0	0.020	0.0	0.005	0.050	0.020	0.0	0.003
9	0.0	0.002	0.0	0.002	0.0	0.003	0.0	0.004	0.0	0.020	0.0	0.020	0.005	0.005	0.100	0.030	0.0	0.002
10	0.0	0.002	0.0	0.003	0.0	0.003	0.0	0.004	0.0	0.020	0.0	0.020	0.0	0.005	0.090	0.030	0.0	0.003
11A	0.0	0.002	0.0	0.002	0.0	0.003	0.0	0.004	0.0	0.020	0.0	0.020	0.0	0.004	0.060	0.020	0.0	0.003
12A	0.0	0.003	0.0	0.003	0.0	0.004	0.0	0.005	0.0	0.020	0.0	0.030	0.0	0.005	0.080	0.030	0.0	0.004
13A	0.0	0.003	0.0	0.004	0.0	0.006	0.0	0.006	0.0	0.030	0.0	0.040	0.0	0.008	0.090	0.040	0.0	0.005
14A	0.0	0.002	0.0	0.002	0.0	0.003	0.0	0.004	0.0	0.020	0.050	0.040	0.0	0.004	0.090	0.020	0.0	0.003
46B	0.0	0.004	0.0	0.004	0.0	0.006	0.0	0.008	0.0	0.030	0.0	0.040	0.0	0.009	0.100	0.040	0.0	0.005

TABLE 4C
AIR PARTICULATES
GAMMA SPECTRA - MAR
(PCI/M3)

CY

ANALYSES

LOCATION	CS-137	(+/-)	CS-134	(+/-)	RU-103	(+/-)	ZR-95	(+/-)	RU(RH)-106	(+/-)	K-40	(+/-)	TH-228	(+/-)	BE-7	(+/-)	NB-95	(+/-)
5	0.0	0.003	0.0	0.003	0.0	0.005	0.0	0.008	0.0	0.030	0.0	0.040	0.0	0.007	0.080	0.040	0.0	0.005
6	0.0	0.003	0.0	0.003	0.0	0.006	0.0	0.007	0.0	0.030	0.0	0.020	0.0	0.008	0.050	0.040	0.0	0.006
7	0.0	0.003	0.0	0.004	0.0	0.006	0.0	0.008	0.0	0.030	0.0	0.040	0.0	0.009	0.100	0.050	0.0	0.007
8	0.0	0.002	0.0	0.002	0.0	0.004	0.0	0.004	0.0	0.020	0.0	0.020	0.0	0.006	0.090	0.030	0.0	0.003
9	0.0	0.002	0.0	0.002	0.0	0.003	0.0	0.004	0.0	0.020	0.0	0.030	0.0	0.005	0.070	0.030	0.0	0.003
10	0.0	0.002	0.0	0.002	0.0	0.004	0.0	0.005	0.0	0.020	0.0	0.020	0.0	0.005	0.090	0.030	0.0	0.004
11A	0.0	0.002	0.0	0.002	0.0	0.004	0.0	0.005	0.0	0.020	0.0	0.020	0.0	0.004	0.110	0.030	0.0	0.004
12A	0.0	0.002	0.0	0.002	0.0	0.003	0.0	0.004	0.0	0.020	0.0	0.020	0.0	0.005	0.090	0.030	0.0	0.004
13A	0.003	0.003	0.0	0.003	0.0	0.006	0.0	0.007	0.0	0.020	0.0	0.040	0.0	0.007	0.100	0.040	0.0	0.005
14A	0.0	0.002	0.0	0.002	0.0	0.004	0.0	0.005	0.0	0.020	0.0	0.020	0.0	0.005	0.090	0.030	0.0	0.003
46B	0.0	0.003	0.0	0.003	0.0	0.006	0.0	0.009	0.0	0.030	0.0	0.030	0.0	0.009	0.110	0.040	0.0	0.006

TABLE 4D
AIR PARTICULATES
GAMMA SPECTRA - APR
(PCI/M3)

ANALYSES

LOCATION	CS-137	(+/-)	CS-134	(+/-)	RU-103	(+/-)	ZR-95	(+/-)	RU(RH)-106	(+/-)	K-40	(+/-)	TH-228	(+/-)	BE-7	(+/-)	NB-95	(+/-)
5	0.0	0.003	0.0	0.003	0.0	0.003	0.0	0.005	0.0	0.020	0.0	0.030	0.0	0.007	0.030	0.030	0.0	0.003
6	0.0	0.002	0.0	0.003	0.0	0.004	0.0	0.006	0.0	0.030	0.0	0.030	0.0	0.007	0.030	0.030	0.0	0.004
7	0.0	0.003	0.0	0.003	0.0	0.005	0.0	0.007	0.0	0.030	0.0	0.030	0.0	0.007	0.050	0.030	0.0	0.005
8	0.0	0.001	0.0	0.001	0.0	0.002	0.0	0.003	0.0	0.013	0.0	0.012	0.0	0.003	0.040	0.020	0.0	0.002
9	0.0	0.002	0.0	0.002	0.0	0.002	0.0	0.003	0.0	0.015	0.0	0.020	0.0	0.005	0.060	0.020	0.0	0.003
10	0.0	0.001	0.0	0.001	0.0	0.002	0.0	0.003	0.0	0.012	0.0	0.020	0.0	0.003	0.060	0.020	0.0	0.002
11A	0.0	0.001	0.0	0.001	0.0	0.002	0.0	0.003	0.0	0.012	0.0	0.020	0.0	0.003	0.050	0.020	0.0	0.002
12A	0.0	0.001	0.0	0.002	0.0	0.002	0.0	0.003	0.0	0.015	0.0	0.014	0.0	0.004	0.060	0.020	0.0	0.002
13A	0.0	0.003	0.0	0.003	0.0	0.005	0.006	0.006	0.0	0.030	0.0	0.030	0.0	0.007	0.050	0.030	0.0	0.004
14A	0.0	0.002	0.0	0.002	0.0	0.002	0.0	0.003	0.0	0.015	0.0	0.014	0.0	0.003	0.050	0.020	0.0	0.002
46B	0.0	0.003	0.0	0.003	0.0	0.005	0.0	0.006	0.0	0.030	0.0	0.030	0.0	0.008	0.060	0.030	0.0	0.004

CY

TABLE 4E
AIR PARTICULATES
GAMMA SPECTRA - MAY
(PCI/M3)

ANALYSES

LOCATION	CS-137	(+/-)	CS-134	(+/-)	RU-103	(+/-)	ZR-95	(+/-)	RU(RH)-106	(+/-)	K-40	(+/-)	TH-228	(+/-)	BE-7	(+/-)	NB-95	(+/-)
5	0.0	0.003	0.0	0.004	0.0	0.004	0.0	0.006	0.0	0.020	0.0	0.020	0.0	0.009	0.100	0.030	0.0	0.005
6	0.0	0.003	0.0	0.003	0.0	0.004	0.0	0.005	0.0	0.030	0.0	0.040	0.0	0.008	0.120	0.040	0.0	0.004
7	0.0	0.004	0.0	0.004	0.0	0.005	0.0	0.006	0.0	0.030	0.0	0.040	0.0	0.008	0.110	0.040	0.0	0.005
8	0.0	0.002	0.0	0.002	0.0	0.003	0.0	0.003	0.0	0.020	0.0	0.020	0.0	0.005	0.070	0.020	0.0	0.002
9	0.0	0.002	0.0	0.002	0.0	0.003	0.0	0.004	0.0	0.020	0.0	0.020	0.0	0.005	0.080	0.020	0.0	0.003
10	0.0	0.002	0.0	0.002	0.0	0.003	0.0	0.003	0.0	0.020	0.0	0.014	0.0	0.005	0.080	0.020	0.0	0.002
11A	0.0	0.002	0.0	0.002	0.0	0.003	0.0	0.004	0.0	0.020	0.0	0.020	0.0	0.004	0.090	0.020	0.0	0.002
12A	0.0	0.002	0.0	0.002	0.0	0.003	0.0	0.004	0.0	0.020	0.0	0.020	0.0	0.004	0.120	0.030	0.0	0.003
13A	0.0	0.003	0.0	0.003	0.0	0.005	0.0	0.007	0.0	0.020	0.0	0.030	0.0	0.008	0.090	0.040	0.0	0.005
14A	0.0	0.002	0.0	0.002	0.0	0.002	0.0	0.004	0.0	0.015	0.0	0.013	0.0	0.004	0.080	0.020	0.0	0.003
46B	0.0	0.003	0.0	0.004	0.0	0.006	0.0	0.006	0.0	0.040	0.0	0.030	0.0	0.011	0.100	0.040	0.0	0.005

TABLE 4F
AIR PARTICULATES
GAMMA SPECTRA - JUN
(PCI/M3)

ANALYSES

LOCATION	CS-137	(+/-)	CS-134	(+/-)	RU-103	(+/-)	ZR-95	(+/-)	RU(RH)-106	(+/-)	K-40	(+/-)	TH-228	(+/-)	BE-7	(+/-)	NB-95	(+/-)
5	0.0	0.003	0.0	0.004	0.0	0.006	0.0	0.008	0.0	0.030	0.0	0.030	0.0	0.006	0.150	0.050	0.0	0.006
6	0.0	0.004	0.0	0.003	0.0	0.006	0.0	0.008	0.0	0.030	0.0	0.030	0.0	0.008	0.130	0.040	0.0	0.005
7	0.0	0.004	0.0	0.004	0.0	0.006	0.0	0.009	0.0	0.040	0.070	0.070	0.0	0.009	0.130	0.050	0.0	0.007
8	0.0	0.002	0.0	0.002	0.0	0.004	0.0	0.005	0.0	0.020	0.0	0.030	0.0	0.005	0.160	0.030	0.0	0.004
9	0.0	0.002	0.0	0.002	0.0	0.003	0.0	0.005	0.0	0.020	0.0	0.020	0.0	0.005	0.140	0.040	0.0	0.003
10	0.0	0.002	0.0	0.002	0.0	0.003	0.0	0.005	0.0	0.020	0.0	0.020	0.0	0.005	0.140	0.030	0.0	0.004
11A	0.0	0.002	0.0	0.002	0.0	0.004	0.0	0.004	0.0	0.020	0.0	0.020	0.0	0.005	0.160	0.030	0.0	0.004
12A	0.0	0.002	0.0	0.002	0.0	0.004	0.0	0.006	0.0	0.020	0.0	0.020	0.0	0.005	0.140	0.030	0.0	0.004
13A	0.0	0.004	0.0	0.004	0.0	0.007	0.0	0.009	0.0	0.040	0.0	0.040	0.0	0.010	0.140	0.050	0.0	0.007
14A	0.0	0.002	0.0	0.002	0.0	0.004	0.0	0.004	0.0	0.020	0.0	0.030	0.0	0.005	0.130	0.030	0.0	0.003
46B	0.0	0.004	0.0	0.004	0.0	0.006	0.0	0.010	0.0	0.040	0.0	0.050	0.0	0.011	0.150	0.050	0.0	0.008

TABLE 4G
AIR PARTICULATES
GAMMA SPECTRA - JUL
(PCI/M3)

CY

ANALYSES

LOCATION	CS-137	(+/-)	CS-134	(+/-)	RU-103	(+/-)	ZR-95	(+/-)	RU(RH)-106	(+/-)	K-40	(+/-)	TH-228	(+/-)	BE-7	(+/-)	NB-95	(+/-)
5	0.0	0.003	0.0	0.003	0.0	0.004	0.0	0.006	0.0	0.020	0.0	0.030	0.0	0.006	0.060	0.030	0.0	0.005
6	0.0	0.002	0.0	0.003	0.0	0.005	0.0	0.007	0.0	0.020	0.0	0.030	0.0	0.006	0.040	0.030	0.0	0.004
7	0.0	0.003	0.0	0.003	0.0	0.005	0.0	0.007	0.0	0.020	0.0	0.030	0.0	0.007	0.040	0.030	0.0	0.005
8	0.0	0.001	0.0	0.001	0.0	0.002	0.003	0.003	0.0	0.020	0.0	0.014	0.0	0.003	0.060	0.020	0.0	0.003
9	0.0	0.002	0.0	0.002	0.0	0.003	0.0	0.004	0.0	0.020	0.0	0.020	0.0	0.004	0.060	0.020	0.0	0.003
10	0.0	0.001	0.0	0.011	0.003	0.003	0.0	0.004	0.0	0.011	0.0	0.020	0.0	0.004	0.060	0.020	0.0	0.003
11A	0.002	0.002	0.0	0.002	0.0	0.003	0.0	0.004	0.0	0.014	0.040	0.030	0.0	0.004	0.060	0.030	0.0	0.003
12A	0.0	0.002	0.0	0.002	0.0	0.003	0.0	0.004	0.0	0.014	0.0	0.020	0.0	0.004	0.080	0.030	0.0	0.003
13A	0.0	0.003	0.0	0.003	0.0	0.006	0.0	0.007	0.0	0.030	0.0	0.030	0.0	0.007	0.080	0.040	0.0	0.005
14A	0.0	0.001	0.0	0.002	0.0	0.003	0.0	0.004	0.0	0.010	0.0	0.020	0.0	0.004	0.060	0.020	0.0	0.003
46B	0.0	0.003	0.0	0.004	0.0	0.006	0.0	0.007	0.0	0.030	0.0	0.040	0.0	0.008	0.080	0.040	0.0	0.006

TABLE 4H
AIR PARTICULATES
GAMMA SPECTRA - AUG
(PCI/M3)

ANALYSES

LOCATION	CS-137	(+/-)	CS-134	(+/-)	RU-103	(+/-)	ZR-95	(+/-)	RU(RH)-106	(+/-)	K-40	(+/-)	TH-228	(+/-)	BE-7	(+/-)	NB-95	(+/-)
5	0.0	0.003	0.0	0.003	0.0	0.005	0.0	0.006	0.0	0.030	0.0	0.030	0.0	0.007	0.080	0.040	0.0	0.005
6	0.0	0.003	0.0	0.003	0.0	0.005	0.0	0.007	0.0	0.030	0.0	0.030	0.0	0.006	0.110	0.040	0.0	0.005
7	0.0	0.003	0.0	0.004	0.0	0.005	0.0	0.007	0.0	0.030	0.0	0.050	0.0	0.008	0.110	0.040	0.0	0.006
8	0.0	0.002	0.0	0.002	0.0	0.003	0.0	0.004	0.0	0.020	0.0	0.020	0.0	0.005	0.070	0.020	0.0	0.003
9	0.0	0.002	0.0	0.002	0.0	0.003	0.0	0.005	0.0	0.020	0.0	0.020	0.0	0.006	0.110	0.030	0.0	0.004
10	0.0	0.002	0.0	0.002	0.0	0.003	0.0	0.004	0.0	0.020	0.0	0.020	0.0	0.004	0.080	0.030	0.0	0.003
11A	0.0	0.002	0.0	0.002	0.0	0.003	0.0	0.004	0.0	0.020	0.0	0.015	0.0	0.005	0.090	0.020	0.0	0.003
12A	0.0	0.002	0.0	0.003	0.0	0.004	0.0	0.006	0.0	0.020	0.0	0.030	0.0	0.007	0.130	0.040	0.0	0.004
13A	0.0	0.004	0.0	0.004	0.0	0.006	0.0	0.008	0.0	0.020	0.0	0.030	0.0	0.011	0.110	0.050	0.0	0.005
14A	0.0	0.002	0.0	0.002	0.0	0.003	0.0	0.005	0.0	0.020	0.0	0.014	0.0	0.005	0.090	0.030	0.0	0.003
46B	0.0	0.005	0.0	0.004	0.0	0.006	0.0	0.009	0.0	0.040	0.0	0.030	0.0	0.011	0.110	0.040	0.0	0.006

TABLE 4I
AIR PARTICULATES
GAMMA SPECTRA - SEP
(PCI/M3)

CY

ANALYSES

LOCATION	CS-137	(+/-)	CS-134	(+/-)	RU-103	(+/-)	ZR-95	(+/-)	RU(RH)-106	(+/-)	K-40	(+/-)	TH-228	(+/-)	BE-7	(+/-)	NB-95	(+/-)
5	0.0	0.003	0.0	0.003	0.0	0.004	0.0	0.007	0.0	0.030	0.0	0.030	0.0	0.007	0.070	0.040	0.0	0.005
6	0.0	0.003	0.0	0.004	0.0	0.005	0.0	0.007	0.0	0.030	0.060	0.060	0.0	0.008	0.100	0.040	0.0	0.004
7	0.0	0.004	0.0	0.003	0.0	0.006	0.0	0.007	0.0	0.030	0.0	0.040	0.0	0.009	0.120	0.040	0.0	0.005
8	0.0	0.002	0.0	0.002	0.0	0.003	0.0	0.004	0.0	0.020	0.040	0.040	0.0	0.005	0.080	0.020	0.0	0.003
9	0.0	0.002	0.0	0.002	0.0	0.003	0.0	0.004	0.0	0.020	0.0	0.020	0.0	0.005	0.130	0.030	0.0	0.003
10	0.0	0.002	0.0	0.002	0.0	0.003	0.0	0.003	0.0	0.014	0.0	0.014	0.0	0.004	0.080	0.020	0.0	0.003
11A	0.0	0.002	0.0	0.002	0.0	0.003	0.0	0.003	0.0	0.020	0.0	0.020	0.0	0.005	0.100	0.030	0.0	0.003
12A	0.0	0.002	0.0	0.002	0.0	0.003	0.0	0.004	0.0	0.014	0.0	0.020	0.0	0.005	0.140	0.030	0.0	0.003
13A	0.0	0.004	0.0	0.004	0.0	0.006	0.0	0.009	0.0	0.030	0.0	0.030	0.0	0.010	0.130	0.050	0.0	0.005
14A	0.0	0.002	0.0	0.002	0.0	0.003	0.0	0.005	0.0	0.020	0.0	0.013	0.0	0.005	0.120	0.030	0.0	0.003
46B	0.0	0.004	0.0	0.005	0.0	0.006	0.0	0.009	0.0	0.030	0.0	0.050	0.0	0.008	0.100	0.050	0.0	0.007

TABLE 4J
AIR PARTICULATES
GAMMA SPECTRA - OCT
(PCI/M3)

ANALYSES

LOCATION	CS-137	(+/-)	CS-134	(+/-)	RU-103	(+/-)	ZR-95	(+/-)	RU(RH)-106	(+/-)	K-40	(+/-)	TH-228	(+/-)	BE-7	(+/-)	NB-95	(+/-)
5	0.0	0.003	0.0	0.003	0.0	0.004	0.0	0.006	0.0	0.020	0.0	0.030	0.0	0.007	0.060	0.030	0.0	0.004
6	0.0	0.003	0.0	0.003	0.0	0.004	0.0	0.006	0.0	0.030	0.0	0.030	0.0	0.007	0.040	0.030	0.0	0.004
7	0.0	0.003	0.0	0.003	0.0	0.004	0.0	0.006	0.0	0.030	0.0	0.030	0.0	0.008	0.060	0.030	0.0	0.004
8	0.0	0.002	0.0	0.002	0.0	0.003	0.0	0.004	0.0	0.020	0.0	0.020	0.0	0.004	0.060	0.020	0.0	0.003
9	0.0	0.002	0.0	0.002	0.0	0.003	0.0	0.003	0.0	0.020	0.0	0.020	0.0	0.005	0.060	0.020	0.0	0.002
10	0.0	0.002	0.0	0.001	0.0	0.002	0.0	0.003	0.0	0.012	0.0	0.020	0.0	0.003	0.070	0.020	0.0	0.002
11A	0.0	0.002	0.0	0.002	0.0	0.002	0.0	0.004	0.0	0.015	0.0	0.020	0.0	0.004	0.050	0.020	0.0	0.002
12A	0.0	0.002	0.0	0.001	0.0	0.002	0.0	0.004	0.0	0.014	0.0	0.020	0.0	0.004	0.060	0.020	0.0	0.002
13A	0.0	0.003	0.0	0.003	0.0	0.005	0.0	0.006	0.0	0.030	0.0	0.030	0.0	0.007	0.060	0.030	0.0	0.005
14A	0.0	0.002	0.0	0.002	0.0	0.002	0.0	0.004	0.0	0.020	0.0	0.020	0.0	0.004	0.070	0.020	0.0	0.002
46B	0.0	0.004	0.0	0.003	0.0	0.004	0.0	0.006	0.0	0.020	0.0	0.030	0.0	0.007	0.060	0.030	0.0	0.004

TABLE 4K
AIR PARTICULATES
GAMMA SPECTRA - NOV
(PCI/M3)

CY

ANALYSES

LOCATION	CS-137	(+/-)	CS-134	(+/-)	RU-103	(+/-)	ZR-95	(+/-)	RU(RH)-106	(+/-)	K-40	(+/-)	TH-228	(+/-)	BE-7	(+/-)	NB-95	(+/-)
5	0.0	0.003	0.0	0.003	0.0	0.004	0.0	0.006	0.0	0.020	0.0	0.030	0.0	0.006	0.100	0.040	0.0	0.004
6	0.0	0.003	0.0	0.003	0.0	0.005	0.0	0.007	0.0	0.030	0.070	0.060	0.0	0.006	0.080	0.030	0.0	0.005
7	0.0	0.003	0.0	0.003	0.0	0.006	0.0	0.007	0.0	0.030	0.0	0.040	0.0	0.007	0.070	0.040	0.0	0.006
8	0.0	0.002	0.0	0.002	0.0	0.003	0.0	0.004	0.0	0.014	0.0	0.020	0.0	0.004	0.100	0.030	0.0	0.003
9	0.0	0.002	0.0	0.002	0.0	0.004	0.0	0.005	0.0	0.020	0.0	0.020	0.0	0.005	0.050	0.030	0.0	0.004
10	0.0	0.002	0.0	0.002	0.0	0.003	0.0	0.004	0.0	0.015	0.0	0.020	0.0	0.004	0.110	0.030	0.0	0.003
11A	0.0	0.002	0.0	0.002	0.0	0.003	0.0	0.005	0.0	0.020	0.0	0.013	0.0	0.004	0.070	0.020	0.0	0.004
12A	0.0	0.002	0.0	0.002	0.0	0.003	0.0	0.004	0.0	0.013	0.0	0.020	0.0	0.004	0.060	0.020	0.0	0.003
13A	0.0	0.003	0.0	0.003	0.0	0.005	0.0	0.007	0.0	0.030	0.0	0.030	0.0	0.006	0.090	0.030	0.0	0.006
14A	0.0	0.002	0.0	0.002	0.0	0.003	0.0	0.004	0.0	0.014	0.0	0.020	0.0	0.004	0.080	0.020	0.0	0.003
46B	0.0	0.003	0.0	0.003	0.0	0.006	0.0	0.007	0.0	0.030	0.0	0.040	0.0	0.008	0.050	0.040	0.0	0.006

TABLE 4L
AIR PARTICULATES
GAMMA SPECTRA - DEC
(PCI/M3)

ANALYSES

LOCATION	CS-137	(+/-)	CS-134	(+/-)	RU-103	(+/-)	ZR-95	(+/-)	RU(RH)-106	(+/-)	K-40	(+/-)	TH-228	(+/-)	BE-7	(+/-)	NB-95	(+/-)
5	0.0	0.003	0.0	0.003	0.0	0.005	0.0	0.006	0.0	0.030	0.0	0.030	0.0	0.009	0.090	0.040	0.0	0.004
6	0.0	0.003	0.0	0.004	0.0	0.005	0.0	0.008	0.0	0.030	0.0	0.040	0.0	0.009	0.100	0.040	0.0	0.006
7	0.0	0.004	0.0	0.004	0.0	0.006	0.0	0.008	0.0	0.030	0.0	0.040	0.0	0.010	0.100	0.040	0.0	0.006
8	0.0	0.002	0.0	0.002	0.0	0.004	0.0	0.005	0.0	0.020	0.0	0.030	0.0	0.005	0.110	0.030	0.0	0.003
9	0.0	0.002	0.0	0.002	0.0	0.004	0.004	0.004	0.0	0.020	0.0	0.030	0.0	0.004	0.100	0.030	0.0	0.003
10	0.0	0.002	0.0	0.002	0.003	0.002	0.0	0.004	0.0	0.015	0.0	0.020	0.0	0.004	0.110	0.030	0.0	0.003
11A	0.0	0.002	0.0	0.002	0.0	0.004	0.0	0.005	0.0	0.020	0.0	0.020	0.0	0.005	0.090	0.030	0.0	0.004
12A	0.0	0.002	0.0	0.002	0.004	0.003	0.0	0.005	0.0	0.020	0.0	0.020	0.0	0.005	0.100	0.030	0.0	0.003
13A	0.0	0.003	0.0	0.003	0.0	0.005	0.0	0.007	0.0	0.030	0.0	0.030	0.0	0.009	0.080	0.040	0.0	0.004
14A	0.0	0.002	0.0	0.002	0.0	0.003	0.0	0.004	0.0	0.020	0.0	0.020	0.0	0.005	0.080	0.030	0.0	0.003
46B	0.0	0.004	0.0	0.004	0.0	0.006	0.0	0.007	0.0	0.030	0.0	0.050	0.0	0.009	0.100	0.040	0.0	0.005

TABLE 5
AIR PARTICULATES
QUARTERLY SR & CS
(PCI/M3)*10E+2) (a)

CY

LOCATION	STRONTIUM-89								STRONTIUM-90							
	1ST QTR		2ND QTR		3RD QTR		4TH QTR		1ST QTR		2ND QTR		3RD QTR		4TH QTR	
		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)
5	0.0	0.070	0.0	0.040	0.060	0.090	-0.020	0.060	0.018	0.012	0.017	0.013	0.020	0.020	0.035	0.010
6	-0.030	0.070	-0.030	0.050	-0.020	0.100	0.050	0.080	0.023	0.012	0.010	0.020	0.030	0.020	0.047	0.012
7	0.0	0.070	0.010	0.080	-0.020	0.090	0.050	0.060	0.013	0.011	0.020	0.020	0.030	0.020	0.047	0.008
8	-0.020	0.040	0.0	0.030	-0.010	0.050	0.040	0.050	0.013	0.007	0.006	0.008	0.017	0.009	0.083	0.007
9	0.0	0.040	0.020	0.040	0.020	0.060	0.010	0.070	0.007	0.007	0.004	0.008	0.023	0.009	0.009	0.005
10	0.0	0.040	0.020	0.040	0.020	0.050	0.0	0.030	0.011	0.007	-0.002	0.011	0.001	0.009	0.005	0.004
11A	-0.030	0.030	-0.020	0.040	-0.030	0.070	0.010	0.030	0.009	0.007	0.013	0.013	0.014	0.013	0.006	0.005
12A	0.030	0.040	-0.030	0.040	0.010	0.130	-0.020	0.030	0.008	0.008	0.007	0.011	0.020	0.020	0.011	0.004
13A	0.020	0.060	-0.140	0.090	-0.040	0.110	0.0	0.050	0.010	0.010	0.040	0.030	-0.020	0.020	0.015	0.007
14A	0.040	0.050	-0.020	0.050	0.0	0.080	0.020	0.030	0.008	0.008	0.010	0.013	0.013	0.014	0.018	0.005
46B	0.0	0.060	0.030	0.080	0.0	0.020	0.030	0.050	0.010	0.011	0.010	0.020	0.040	0.030	0.008	0.006

LOCATION	CESIUM-137							
	1ST QTR		2ND QTR		3RD QTR		4TH QTR	
		(+/-)		(+/-)		(+/-)		(+/-)
5	0.018	0.008	0.024	0.007	0.016	0.007	-0.003	0.011
6	0.004	0.010	0.016	0.009	0.012	0.009	0.002	0.013
7	0.013	0.011	0.016	0.008	0.022	0.011	0.007	0.014
8	0.007	0.006	0.003	0.005	0.021	0.007	0.009	0.008
9	0.006	0.005	0.011	0.004	0.021	0.007	0.007	0.010
10	0.031	0.013	0.001	0.005	0.009	0.005	0.004	0.004
11A	0.020	0.012	0.010	0.005	0.008	0.005	0.005	0.007
12A	0.005	0.007	0.001	0.005	0.005	0.003	0.005	0.008
13A	0.010	0.020	0.020	0.020	0.020	0.009	0.006	0.011
14A	0.004	0.007	0.004	0.006	0.014	0.006	0.003	0.007
46B	0.030	0.020	0.012	0.008	0.033	0.010	0.015	0.012

(a) *10E+2 indicates that all results in this table have been multiplied by 100.

TABLE 6
SOIL
(PCI/G)

CY

LOCATION	COLLECTION DATE	SR-89	(+/-)	SR-90	(+/-)	CS-137	(+/-)	I-131	(+/-)	CS-134	(+/-)	MN-54	(+/-)	CO-58	(+/-)
5	5/ 9/84	-0.003	0.011	0.050	0.005	0.37	0.04	0.0	0.08	0.0	0.03	0.0	0.02	0.0	0.03
6	5/ 9/84	-0.007	0.008	0.046	0.003	0.12	0.02	0.0	0.05	0.0	0.02	0.0	0.02	0.0	0.02
7	5/ 9/84	0.013	0.011	0.033	0.004	0.22	0.05	0.0	0.06	0.0	0.02	0.0	0.02	0.0	0.02
8	5/ 9/84	-0.008	0.010	0.046	0.004	0.22	0.03	0.0	0.06	0.0	0.02	0.0	0.02	0.0	0.02
9	5/ 9/84	0.002	0.010	0.083	0.005	0.35	0.03	0.0	0.06	0.0	0.02	0.0	0.02	0.0	0.02
10	5/ 9/84	0.007	0.011	0.089	0.004	0.47	0.05	0.0	0.09	0.0	0.03	0.0	0.03	0.0	0.03
11A	5/ 9/84	0.0	0.006	0.008	0.002	0.0	0.02	0.0	0.05	0.0	0.02	0.0	0.02	0.0	0.02
12A	5/ 9/84	0.006	0.012	0.096	0.005	0.27	0.04	0.0	0.08	0.0	0.03	0.0	0.03	0.0	0.02
13A	5/ 9/84	-0.020	0.040	0.100	0.005	0.93	0.07	0.0	0.09	0.0	0.03	0.0	0.03	0.0	0.03
14A	5/ 9/84	0.003	0.012	0.110	0.005	0.65	0.05	0.0	0.09	0.0	0.03	0.0	0.03	0.0	0.03

LOCATION	COLLECTION DATE	CO-60	(+/-)	FE-59	(+/-)	ZN-65	(+/-)	ZR-95	(+/-)	RU(RH)-106	(+/-)	CR-51	(+/-)	K-40	(+/-)
5	5/ 9/84	0.0	0.03	0.0	0.07	0.0	0.08	0.0	0.05	0.0	0.20	0.0	0.30	7.00	0.50
6	5/ 9/84	0.0	0.02	0.0	0.05	0.0	0.04	0.0	0.03	0.0	0.15	0.0	0.20	5.90	0.40
7	5/ 9/84	0.0	0.02	0.0	0.05	0.0	0.05	0.0	0.03	0.0	0.20	0.0	0.20	6.10	0.40
8	5/ 9/84	0.0	0.02	0.0	0.05	0.0	0.06	0.0	0.04	0.0	0.20	0.0	0.20	5.80	0.50
9	5/ 9/84	0.0	0.02	0.0	0.05	0.0	0.06	0.0	0.03	0.0	0.20	0.0	0.20	5.50	0.40
10	5/ 9/84	0.0	0.03	0.0	0.07	0.0	0.08	0.0	0.05	0.0	0.30	0.0	0.30	5.60	0.60
11A	5/ 9/84	0.0	0.02	0.0	0.05	0.0	0.06	0.04	0.03	0.0	0.20	0.0	0.20	6.70	0.40
12A	5/ 9/84	0.0	0.03	0.0	0.07	0.0	0.07	0.0	0.04	0.0	0.20	0.0	0.20	4.00	0.50
13A	5/ 9/84	0.0	0.03	0.0	0.07	0.0	0.08	0.0	0.05	0.0	0.30	0.0	0.30	6.50	0.60
14A	5/ 9/84	0.0	0.03	0.0	0.08	0.0	0.08	0.0	0.05	0.0	0.30	0.0	0.30	8.50	0.60

LOCATION	COLLECTION DATE	RA-226	(+/-)	TH-228	(+/-)	BE-7	(+/-)	NB-95	(+/-)
5	5/ 9/84	0.79	0.08	0.87	0.11	0.0	0.20	0.0	0.03
6	5/ 9/84	0.36	0.04	0.46	0.06	0.23	0.15	0.03	0.02
7	5/ 9/84	0.35	0.05	0.38	0.07	0.20	0.20	0.02	0.02
8	5/ 9/84	0.33	0.05	0.35	0.07	0.20	0.20	0.0	0.02
9	5/ 9/84	0.59	0.06	0.30	0.07	0.0	0.20	0.03	0.02
10	5/ 9/84	0.72	0.08	0.54	0.10	0.0	0.30	0.06	0.03
11A	5/ 9/84	0.44	0.05	0.56	0.07	0.20	0.20	0.03	0.02
12A	5/ 9/84	0.44	0.06	0.46	0.09	0.0	0.20	0.0	0.03
13A	5/ 9/84	0.59	0.08	0.70	0.10	0.0	0.30	0.04	0.03
14A	5/ 9/84	0.86	0.08	0.92	0.11	0.0	0.30	0.0	0.03

TABLE 7
DAIRY MILK
(PCI/L)

CY

LOCATION	COLLECTION DATE	SR-89	(+/-)	SR-90	(+/-)	CS-137	(+/-)	I-131	(+/-)	CS-134	(+/-)	BA-140	(+/-)	LA-140	(+/-)
19	1/ 9/84	-0.1	0.9	8.4	0.4	12.0	4.0	0.2	0.2	0.0	4.0	0.0	12.0	0.0	3.00
19	2/ 6/84	0.0	0.9	7.3	0.3	11.0	4.0	0.0	0.2	0.0	4.0	0.0	20.0	0.0	5.00
19	3/ 5/84	0.5	1.0	5.3	0.4	9.0	4.0	0.1	0.2	0.0	4.0	0.0	20.0	0.0	5.00
19	4/ 2/84	-1.0	0.7	6.4	0.3	11.0	4.0	0.1	0.1	0.0	4.0	0.0	20.0	0.0	4.00
19	5/ 8/84	0.0	0.9	7.4	0.3	5.0	3.0	0.1	0.2	0.0	4.0	0.0	20.0	0.0	5.00
19	6/ 5/84	0.5	0.9	6.1	0.4	9.0	3.0	0.2	0.2	0.0	4.0	0.0	20.0	0.0	5.00
19	7/11/84	1.0	1.0	5.5	0.3	11.0	4.0	0.0	0.2	0.0	4.0	0.0	20.0	0.0	4.00
19	8/ 6/84	0.6	0.9	5.5	0.4	9.0	4.0	0.1	0.2	0.0	4.0	0.0	30.0	0.0	8.00
19	9/11/84	1.0	1.3	8.4	0.3	11.0	4.0	0.3	0.2	0.0	4.0	0.0	20.0	0.0	4.00
19	10/ 9/84	0.0	2.0	7.9	0.5	8.0	3.0	0.1	0.2	0.0	3.0	0.0	14.0	0.0	4.00
19	11/ 6/84	0.1	1.4	10.3	0.4	9.0	3.0	0.2	0.1	0.0	2.0	0.0	40.0	0.0	10.00
19	12/10/84	0.0	2.0	5.2	0.5	5.0	3.0	0.1	0.1	0.0	2.0	0.0	20.0	0.0	6.00
20	1/ 9/84	-0.5	0.9	6.2	0.3	0.0	3.0	0.2	0.2	0.0	4.0	0.0	13.0	0.0	4.00
20	2/ 6/84	0.6	0.8	4.3	0.3	4.0	4.0	0.1	0.2	0.0	4.0	0.0	12.0	0.0	4.00
20	3/ 5/84	0.5	0.9	4.7	0.3	6.0	3.0	0.1	0.2	0.0	4.0	0.0	20.0	0.0	5.00
20	4/ 2/84	0.3	1.1	4.0	0.4	5.0	3.0	0.1	0.1	0.0	4.0	0.0	13.0	0.0	4.00
20	5/ 8/84	0.6	0.8	4.4	0.3	4.0	3.0	0.2	0.2	0.0	4.0	0.0	20.0	0.0	5.00
20	6/ 5/84	-0.1	0.7	5.2	0.3	3.0	3.0	0.2	0.2	0.0	4.0	0.0	20.0	0.0	5.00
20	7/11/84	0.4	1.2	4.5	0.3	6.0	4.0	0.0	0.2	0.0	4.0	0.0	12.0	0.0	3.00
20	8/ 6/84	0.2	1.1	4.2	0.3	6.0	3.0	0.1	0.2	0.0	4.0	0.0	20.0	0.0	6.00
20	9/11/84	0.2	1.5	4.1	0.3	6.0	3.0	0.2	0.2	0.0	4.0	0.0	14.0	0.0	5.00
20	10/ 9/84	0.4	1.2	4.4	0.3	2.0	3.0	0.1	0.2	0.0	3.0	0.0	14.0	0.0	4.00
20	11/ 6/84	1.3	1.2	6.1	0.4	1.0	3.0	0.2	0.2	0.0	2.0	0.0	30.0	0.0	10.00
20	12/10/84	0.5	1.5	4.8	0.4	6.0	3.0	0.0	0.1	0.0	2.0	0.0	20.0	0.0	6.00
21	1/ 9/84	-0.9	0.8	6.6	0.3	3.0	3.0	0.3	0.2	0.0	4.0	0.0	13.0	0.0	4.00
21	2/ 6/84	0.4	0.7	3.2	0.3	1.0	3.0	0.0	0.2	0.0	4.0	0.0	12.0	0.0	4.00
21	3/ 5/84	0.9	0.7	3.5	0.3	-1.0	3.0	0.1	0.2	0.0	4.0	0.0	20.0	0.0	4.00
21	4/ 2/84	0.0	2.0	3.5	0.6	2.0	3.0	0.1	0.1	0.0	4.0	0.0	20.0	0.0	4.00
21	5/ 8/84	-0.3	0.9	5.7	0.3	3.0	3.0	0.2	0.2	0.0	4.0	0.0	20.0	0.0	5.00
21	6/ 5/84	0.6	0.9	5.7	0.3	3.0	3.0	0.2	0.2	0.0	4.0	0.0	20.0	0.0	5.00
21	7/11/84	0.4	1.2	5.9	0.3	15.0	4.0	0.2	0.2	0.0	4.0	0.0	12.0	0.0	3.00
21	8/ 6/84	0.0	2.0	5.2	0.4	6.0	3.0	0.2	0.2	0.0	4.0	0.0	20.0	0.0	5.00
21	9/11/84	1.0	2.0	6.0	0.4	7.0	3.0	0.1	0.2	0.0	4.0	0.0	13.0	0.0	4.00
21	10/ 9/84	1.6	1.3	5.6	0.4	6.0	3.0	0.1	0.1	0.0	3.0	0.0	20.0	0.0	5.00
21	11/ 6/84	0.5	1.0	4.2	0.3	4.0	3.0	0.1	0.1	0.0	2.0	0.0	30.0	0.0	10.00
21	12/10/84	-0.6	1.2	4.0	0.4	2.0	3.0	0.1	0.1	0.0	2.0	0.0	20.0	0.0	7.00
22A	1/ 9/84	0.3	1.1	5.2	0.3	3.0	3.0	0.4	0.2 (a)	0.0	4.0	0.0	11.0	0.0	3.00
22A	2/ 6/84	1.0	1.2	4.3	0.4	3.0	3.0	0.1	0.2 (a)	0.0	4.0	0.0	11.0	0.0	3.00
22A	3/ 5/84	0.0	0.7	3.5	0.3	2.0	3.0	0.0	0.2	0.0	4.0	0.0	20.0	0.0	4.00
22A	4/ 2/84	0.4	0.8	6.7	0.3	2.0	3.0	0.2	0.2	0.0	3.0	0.0	13.0	0.0	4.00
22A	5/ 8/84	1.0	1.3	4.2	0.3	4.0	3.0	0.2	0.2	0.0	4.0	0.0	20.0	0.0	5.00
22A	6/ 6/84	0.1	0.7	4.2	0.3	7.0	3.0	0.2	0.1	0.0	4.0	0.0	20.0	0.0	5.00
22A	7/10/84	-0.2	1.2	4.1	0.3	6.0	3.0	0.2	0.2	0.0	4.0	0.0	12.0	0.0	3.00
22A	8/ 6/84	1.0	0.9	2.9	0.3	6.0	3.0	0.1	0.2 (a)	0.0	4.0	0.0	20.0	0.0	7.00
22A	9/11/84	1.2	1.3	3.4	0.3	3.0	4.0	0.2	0.2	0.0	4.0	0.0	13.0	0.0	4.00
22A	10/ 9/84	0.2	1.2	3.6	0.4	1.0	3.0	0.1	0.1	0.0	3.0	0.0	13.0	0.0	4.00
22A	11/ 6/84	-0.1	0.9	3.6	0.3	2.0	3.0	0.3	0.2	0.0	3.0	0.0	13.0	0.0	4.00
22A	12/10/84	-0.7	1.2	4.0	0.3	1.0	3.0	0.1	0.1	0.0	2.0	0.0	20.0	0.0	4.00

(a) Longer count time was necessary to meet required sensitivity; time between sample collection and sample analysis was greater than the E.T.S. requirement of 8 days.

TABLE 3-1
ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM SUMMARY
CONNECTICUT YANKEE ATOMIC POWER COMPANY, HADDAM NECK PLANT
DOCKET 50-213
JANUARY - DECEMBER 1984

MEDIUM OR PATHWAY SAMPLED	ANALYSIS AND TOTAL NUMBER OF ANALYSES PERFORMED	MINIMUM DETECTABLE LEVELS (MDL's)(a)	ALL INDICATOR LOCATIONS Mean	(b) (Range)	LOCATION WITH HIGHEST ANNUAL MEAN NAME, DISTANCE AND DIRECTION	Mean	(b) (Range)	CONTROL LOCATIONS Mean	(b) (Range)	# OF NRMs (c)
	Zr-95	25	0		N/A		N/A	0		0
	Tritium 4,4 H-3	60	1400	(160 - 3300)	Vicinity of Plant Discharge	1400	(160 - 3300)	230	(140 - 400)	0
	Beta 4,4 B	1	2.2	(1.9 - 2.8)	Middletown 7.6 Miles NW	3.9	(1.6 - 7.9)	3.9	(1.6 - 7.9)	0
Bottom Sediment (pCi/g)	Sr 4,8 Sr-89	0.072	-0.002	(-0.012 - 0.011)	E. Haddam Bridge 1.8 Miles SE	0.001	(-0.008 - 0.012)	-0.004	(-0.017 - 0.012)	0
	Sr-90	0.036	0.010	(0.008 - 0.015)	E. Haddam Bridge 1.8 Miles SE	0.013	(0.009 - 0.019)	0.013	(0.009 - 0.019)	0
	Ge(Li) 4,8 Cs-137	0.064	0.12	(0.06 - 0.20)	E. Haddam Bridge 1.8 Miles SE	0.15	(0.10 - 0.25)	0.11	(0.00 - 0.25)	0
	I-131	0.2	0.0		N/A		N/A	0.0		0
	Cs-134	0.06	0.04	(0.0 - 0.08)	Vicinity of Plant Discharge	0.04	(0.0 - 0.08)	0.00	(0.00 - 0.02)	0
	Mn-54	--	0.00		N/A		N/A	0.00		0
	Co-58	--	0.00		N/A		N/A	0.00		0

TABLE B
GOAT MILK
(PCI/L)

CY

LOCATION	COLLECTION DATE	SR-89	(+/-)	SR-90	(+/-)	CS-137	(+/-)	I-131	(+/-)	CS-134	(+/-)	BA-140	(+/-)	LA-140	(+/-)
23A	1/ 9/84 (a)														
23A	2/ 7/84														
23A	3/27/84	0.1	1.0	8.9	0.4	13.0	4.0	0.1	0.2	0.0	4.0	0.0	11.0	0.0	3.00
23A	4/ 2/84	0.0	2.0	6.4	0.6	14.0	4.0	0.1	0.2	0.0	4.0	0.0	40.0	0.0	10.00
23A	5/ 8/84	0.4	0.9	5.9	0.3	17.0	4.0	0.2	0.2	0.0	4.0	0.0	12.0	0.0	3.00
23A	6/ 5/84	1.0	2.0	3.2	0.3	35.0	4.0	0.2	0.2	0.0	4.0	0.0	12.0	0.0	3.00
23A	7/10/84	1.0	1.0	3.4	0.2	16.0	4.0	0.2	0.2	0.0	4.0	0.0	40.0	0.0	13.00
23A	8/ 6/84	-0.4	0.8	3.3	0.3	11.0	4.0	0.0	0.2	0.0	4.0	0.0	12.0	0.0	4.00
23A	9/11/84	-3.0	1.1	6.8	0.3	28.0	4.0	0.1	0.2	0.0	4.0	0.0	12.0	0.0	3.00
23A	10/ 9/84	3.0	3.0	(b) 14.0	0.7	24.0	4.0	0.2	0.2	0.0	4.0	0.0	12.0	0.0	3.00
23A	11/ 6/84	0.0	4.0	13.2	0.5	24.0	4.0	0.4	0.2	0.0	3.0	0.0	10.0	0.0	3.00
24	1/ 9/84 (c)														
24	2/ 7/84	-0.1	1.1	5.7	0.4	5.0	4.0	0.1	0.1	0.0	4.0	0.0	12.0	0.0	3.00
24	3/ 5/84	0.9	1.0	11.6	0.3	19.0	4.0	0.1	0.2	0.0	4.0	0.0	12.0	0.0	3.00
24	4/ 2/84	0.6	0.7	2.5	0.3	5.0	4.0	0.0	0.1	0.0	4.0	0.0	13.0	0.0	4.00
24	5/ 8/84	0.5	0.9	7.0	0.2	10.0	4.0	0.1	0.2	0.0	4.0	0.0	13.0	0.0	3.00
24	6/ 5/84	2.2	1.2	9.6	0.4	10.0	4.0	0.3	0.2	0.0	4.0	0.0	20.0	0.0	6.00
24	7/10/84	0.9	1.2	5.3	0.4	6.0	4.0	0.4	0.3	0.0	4.0	0.0	13.0	0.0	4.00
24	8/ 6/84	-0.7	1.0	4.4	0.3	8.0	4.0	0.1	0.2	0.0	4.0	0.0	40.0	0.0	12.00
24	9/12/84	0.0	1.0	3.3	0.3	2.0	3.0	0.1	0.2	0.0	4.0	0.0	20.0	0.0	5.00
24	10/ 9/84	1.0	2.0	3.8	0.5	3.0	3.0	0.2	0.3	0.0	4.0	0.0	11.0	0.0	3.00
24	11/ 6/84	-0.8	1.3	5.6	0.4	4.0	3.0	0.4	0.2	0.0	3.0	0.0	11.0	0.0	3.00
24	12/10/84	2.0	2.0	4.7	0.4	5.0	3.0	0.2	0.1	0.0	3.0	0.0	10.0	0.0	3.00
		0.2	1.8	3.2	0.3	7.0	3.0	0.1	0.1	0.0	2.0	0.0	20.0	0.0	6.00

(a) Goat milk was unavailable at this location during January and February.
(b) Due to high Sr-90 activity, E.T.S. MDL requirement of 2.0 was not met.
(c) Goat milk was unavailable at this location during December.

TABLE 3-1
ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM SUMMARY
CONNECTICUT YANKEE ATOMIC POWER COMPANY, HADDAM NECK PLANT
DOCKET 50-213
JANUARY - DECEMBER 1984

MEDIUM OR PATHWAY SAMPLED	ANALYSIS AND TOTAL NUMBER OF ANALYSES PERFORMED	MINIMUM DETECTABLE LEVELS (MDL's)(a)	ALL INDICATOR LOCATIONS Mean	(b) (Range)	LOCATION WITH HIGHEST ANNUAL MEAN NAME, DISTANCE AND DIRECTION	Mean	(b) (Range)	CONTROL LOCATIONS Mean	(b) (Range)	# OF NRMs (c)
	Co-60	--	0.00		N/A		N/A	0.00		0
	Zn-65	--	0.00		N/A		N/A	0.00		0
	Nb-95	--	0.01	(0.00 - 0.03)	Higganum Light 4 Miles WNW	0.01	(0.00 - 0.04)	0.00	(0.00 - 0.04)	0
	K-40	--	6.6	(5.8 - 7.8)	Higganum Light 4 Miles WNW	8.8	(7.7 - 9.9)	8.0	(6.9 - 9.9)	0
Shellfish (pCi/g)	Sr 4,4 Sr-89	0.018	0.020	(0.018 - 0.02)	Higganum Light 4 Miles WNW	0.022	(0.00 - 0.07)	0.022	(0.00 - 0.07)	0
	Sr-90	0.009	0.28	(0.19 - 0.36)	Mouth of Salmon River 1.8 Miles SE	0.28	(0.19 - 0.36)	0.20	(0.13 - 0.24)	0
	Ge(Li) 4,4 Cs-137	0.056	0.00		N/A		N/A	0.00		0
	I-131	--	0.00		N/A		N/A	0.00		0
	Cs-134	0.05	0.00		N/A		N/A	0.00		0
	Mn-54	0.05	0.00		N/A		N/A	0.00		0
	Co-58	0.05	0.00		N/A		N/A	0.00		0

TABLE 3-1
ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM SUMMARY
CONNECTICUT YANKEE ATOMIC POWER COMPANY, HADDAM NECK PLANT
DOCKET 50-213
JANUARY - DECEMBER 1984

MEDIUM OR PATHWAY SAMPLED	ANALYSIS AND TOTAL NUMBER OF ANALYSES PERFORMED	MINIMUM DETECTABLE LEVELS (MDL's)(a)	ALL INDICATOR LOCATIONS		LOCATION WITH HIGHEST ANNUAL MEAN			CONTROL LOCATIONS		# OF NRMs (c)
			Mean	(b) (Range)	NAME, DISTANCE AND DIRECTION	Mean	(b) (Range)	Mean	(b) (Range)	
Gamma Dose (uR/hr)	112,408(d)	1.5	8.7	(6.0 - 23.9)	Onsite Fence - Boron Waste Storage Tanks 0.1 miles NW	13.7	(9.9 - 23.9)	7.9	(5.9 - 10.5)	0
Air Particulate and Iodine (pCi/m^3)	Beta 317,212	0.01(e)	0.021	(0.008 - 0.043)	Injun Hollow Road, Haddam, and North Madison - 0.4 Miles NW, 1.8 Miles SE, and 12 Miles SW	0.022 0.022 0.022	(0.010 - 0.037) (0.010 - 0.043) (0.011 - 0.037)	0.021	(0.008 - 0.044)	0
	NaI 159,53 / I-131	0.04	0.016	(-0.04 - 0.05)	North Madison 12.0 Miles SW	0.024	(-0.03 - 0.06)	0.024	(-0.03 - 0.06)	0
	Ge(Li) 72,48 / Cs-137	0.025(f)	0.0000	(0.00 - 0.001)	North Madison 12.0 Miles SW	0.0003	(0.00 - 0.003)	0.0001	(0.000 - 0.003)	0
	Cs-134	0.02(f)	0.000		N/A(h)		N/A	0.000		0
	Ru-103	--	0.0001	(0.000 - 0.003)	Hurd Park Road 2.8 Miles NNW	0.0005	(0.000 - 0.003)	0.0001	(0.000 - 0.004)	0
	Zr-95	--	0.0001	(0.000 - 0.004)	North Madison 12 Miles SW	0.0005	(0.000 - 0.006)	0.0001	(0.000 - 0.006)	0
	Nb-95	--	0.0000	(0.000 - 0.003)	East Haddam 3.1 Miles ESE	0.0002	(0.000 - 0.003)	0.000		0
	Cs 24,16 / Cs	0.001(g)	0.00012	(0.0000 - 0.0003)	Haddam 1.8 Miles SE	0.00015	(0.0001 - 0.0002)	0.00009	(0.0000 - 0.0002)	0

TABLE 3-1
ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM SUMMARY
CONNECTICUT YANKEE ATOMIC POWER COMPANY, HADDAM NECK PLANT
DOCKET 50-213
JANUARY - DECEMBER 1984

MEDIUM OR PATHWAY SAMPLED	ANALYSIS AND TOTAL NUMBER OF ANALYSES PERFORMED	MINIMUM DETECTABLE LEVELS (MDL's)(a)	ALL INDICATOR LOCATIONS		LOCATION WITH HIGHEST ANNUAL MEAN			CONTROL LOCATIONS		
			Mean	(b) (Range)	NAME, DISTANCE AND DIRECTION	Mean	(b) (Range)	Mean	(b) (Range)	# OF NRMs (c)
	Sr 24,16 / Sr-89	0.002(g)	0.00006	(-0.0003 - 0.0006)	Higganum 3.2 Miles WNW	0.00013	(0.000 - 0.0002)	-0.00013	(-0.0014 - 0.0004)	0
	Sr-90	0.001(g)	0.00020	(-0.000 - 0.0008)	East Haddam 3.1 Miles ESE	0.00030	(0.0001 - 0.0008)	0.00011	(-0.002 - 0.0004)	0
Soil (pCi/g)	Sr 6,4 / Sr-89	0.072	0.001	(-0.008 - 0.013)	Haddam 1.8 Miles SE	0.013	N/A	-0.003	(-0.03 - 0.006)	0
	Sr-90	0.036	0.058	(0.033 - 0.089)	Colchester 10 Miles NE	0.110	N/A	0.078	(0.008 - 0.110)	0
	Ge(Li) 6,4 / Cs-137	0.064	0.29	(0.12 - 0.47)	North Madison 12 Miles SW	0.93	N/A	0.46	(0.00 - 0.93)	0
	Cs-134	0.06	0.00		N/A		N/A	0.00		0
	Mn-54	--	0.00		N/A		N/A	0.00		0
	Co-58	--	0.00		N/A		N/A	0.00		0
	Co-60	--	0.00		N/A		N/A	0.00		0
	Nb-95	--	0.023	(0.00 - 0.06)	Hurd Park Road 2.8 Miles NNW	0.06	N/A	0.017	(0.00 - 0.04)	0

TABLE 3-1
ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM SUMMARY
CONNECTICUT YANKEE ATOMIC POWER COMPANY, HADDAM NECK PLANT
DOCKET 50-213
JANUARY - DECEMBER 1984

MEDIUM OR PATHWAY SAMPLED	ANALYSIS AND TOTAL NUMBER OF ANALYSES PERFORMED	MINIMUM DETECTABLE LEVELS (MDL's)(a)	ALL INDICATOR LOCATIONS		LOCATION WITH HIGHEST ANNUAL MEAN			CONTROL LOCATIONS		# OF NRMs (c)
			Mean	(b) (Range)	NAME, DISTANCE AND DIRECTION	Mean	(b) (Range)	Mean	(b) (Range)	
	Th-228	--	0.48	(0.30 - 0.87)	Colchester 10 Miles NE	0.92	N/A	0.66	(0.46 - 0.92)	0
	K-40	--	6.0	(5.5 - 7.0)	Colchester 10 Miles NE	8.5	N/A	6.4	(4.0 - 8.5)	0
	Ra-226	--	0.52	(0.33 - 0.79)	Colchester 10 Miles NE	0.86	N/A	0.58	(0.44 - 0.86)	0
Milk (Dairy) (pCi/l)	Iodine 36,12 I-131	0.5	0.13	(0.0 - 0.3)	Dairy Farm #4 11 Miles ENE	0.17	(0.0 - 0.4)	0.17	(0.0 - 0.4)	0
	Sr 36,12 Sr-89	2	0.30	(-1.0 - 1.6)	Dairy Farm #2 2.2 Miles ESE	0.37	(-0.5 - 1.3)	0.35	(-0.7 - 1.2)	0
	Sr-90	1	5.6	(3.2 - 10.3)	Dairy Farm #1 1.5 Miles NNW	7.1	(5.3 - 10.3)	4.1	(2.9 - 6.7)	0
	Ge(Li) 36,12 Cs-137	6	5.8	(-1 - 15)	Dairy Farm #1 1.5 Miles NNW	9.2	(5 - 12)	3.3	(1 - 7)	0
Goat Milk (pCi/l)	Iodine 12,9 I-131	0.5	0.17	(0.0 - 0.4)	Goat Location #2 1.5 Miles NW	0.17	(0.0 - 0.4)	0.17	(0.0 - 0.4)	0
	Sr 12,9 Sr-89	2	0.56	(-0.8 - 2.2)	Goat Location #2 1.5 Miles NW	0.56	(-0.8 - 2.2)	0.23	(-3.0 - 3.0)	0

TABLE 3-1
ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM SUMMARY
CONNECTICUT YANKEE ATOMIC POWER COMPANY, HADDAM NECK PLANT
DOCKET 50-213
JANUARY - DECEMBER 1984

MEDIUM OR PATHWAY SAMPLED	ANALYSIS AND TOTAL NUMBER OF ANALYSES PERFORMED	MINIMUM DETECTABLE LEVELS (MDL's)(a)	ALL INDICATOR LOCATIONS Mean	(b) (Range)	LOCATION WITH HIGHEST ANNUAL MEAN NAME, DISTANCE AND DIRECTION	Mean	(b) (Range)	CONTROL LOCATIONS Mean	(b) (Range)	# OF NRMs (c)
	Sr-90	1	5.6	(2.5 - 11.6)	Goat Location #1 16 Miles NE	7.2	(3.2 - 14.0)	7.2	(3.2 - 14.0)	0
	Ge(Li) 12,9 Cs-137	6	7	(2 - 19)	Goat Location #1 16 Miles NE	20.2	(11 - 35)	20.2	(11 - 35)	0
Groundwater (pCi/l)	Beta 20,4	1	1.7	(0.8 - 4.2)	State Highway Dept. East Haddam 3 Miles S	6.7	(3.8 - 9.0)	6.7	(3.8 - 9.0)	0
	Sr 20,4 Sr-89	2	0.0	(-0.6 - 0.4)	Onsite Wells 0.8 Miles SE	0.0	(-0.6 - 0.4)	-0.3	(-0.8 - 0.5)	0
	Sr-90	1	0.4	(0.1 - 0.7)	Onsite Wells 0.8 Miles SE	0.4	(0.2 - 0.7)	0.4	(0.2 - 0.5)	0
	Ge(Li) 20,4 Cs-137	6	0		N/A		N/A	0		0
	I-131	30**	0		N/A		N/A	0		0
	Cs-134	6	0		N/A		N/A	0		0
	Co-58	6	0		N/A		N/A	0		0

**at time of counting

TABLE 3-1
ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM SUMMARY
CONNECTICUT YANKEE ATOMIC POWER COMPANY, HADDAM NECK PLANT
DOCKET 50-213
JANUARY - DECEMBER 1984

MEDIUM OR PATHWAY SAMPLED	ANALYSIS AND TOTAL NUMBER OF ANALYSES PERFORMED	MINIMUM DETECTABLE LEVELS (MDL's)(a)	ALL INDICATOR LOCATIONS		LOCATION WITH HIGHEST ANNUAL MEAN			CONTROL LOCATIONS		# OF NRMs (c)
			Mean	(b) (Range)	NAME, DISTANCE AND DIRECTION	Mean	(b) (Range)	Mean	(b) (Range)	
	Co-60	6	0.2	(0.0 - 3.0)	Onsite Wells 0.8 Miles SE	0.3	(0.0 - 3.0)	0		0
	Mn-54	6	0		N/A		N/A	0		0
	Tritium 20,4 H-3	60	3900	(150 - 9900)	Onsite Wells 0.8 miles SE	6350	(4680 - 9900)	190	(0 - 430)	0
Fruits and Vegetables (pCi/g)	Sr 4,4 Sr-89	0.018	0.04	(-0.002 - 0.14)	Within 10 Miles	0.04	(-0.002 - 0.14)	0.002	(0.000 - 0.004)	0
	Sr-90	0.009	0.052	(0.006 - 0.15)	Within 10 Miles	0.052	(0.006 - 0.15)	0.016	(0.005 - 0.030)	0
	Ge(Li) 4,4 Cs-137	0.034	0.002	(0.000 - 0.006)	Beyond 10 Miles	0.005	(0.00 - 0.02)	0.005	(0.000 - 0.020)	0
	I-131	0.05	0.00		N/A		N/A	0.00		0
	Cs-134	0.025	0.00		N/A		N/A	0.00		0
	Mn-54	--	0.00		N/A		N/A	0.00		0
	Co-58	--	0.00		N/A		N/A	0.00		0
	Co-60	--	0.00		N/A		N/A	0.00		0

TABLE 3-1
ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM SUMMARY
CONNECTICUT YANKEE ATOMIC POWER COMPANY, HADDAM NECK PLANT
DOCKET 50-213
JANUARY - DECEMBER 1984

MEDIUM OR PATHWAY SAMPLED	ANALYSIS AND TOTAL NUMBER OF ANALYSES PERFORMED	MINIMUM DETECTABLE LEVELS (MDL's)(a)	ALL INDICATOR LOCATIONS		LOCATION WITH HIGHEST ANNUAL MEAN			CONTROL LOCATIONS		# OF NRMs (c)
			Mean	(b) (Range)	NAME, DISTANCE AND DIRECTION	Mean	(b) (Range)	Mean	(b) (Range)	
	K-40	--	1.8	(1.0 - 3.3)	Beyond 10 Miles	2.3	(0.8 - 3.9)	2.3	(0.8 - 3.9)	0
	Ra-226	--	0.003	(0.00 - 0.013)	Within 10 Miles	0.003	(0.00 - 0.013)	0.00		0
	Th-228	--	0.00		N/A		N/A	0.00		0
River Water (pCi/l)	Sr 4,4 Sr-89	2	0.0	(-0.4 - 0.4)	Vicinity of Plant Discharge	0.0	(-0.4 - 0.4)	-0.1	(-0.2 - 0.2)	0
	Sr-90	1	0.7	(0.5 - 1.2)	Vicinity of Plant Discharge	0.7	(0.5 - 1.2)	0.5	(0.4 - 0.9)	0
	Ge(Li) 4,4 Cs-137	6	0		N/A		N/A	0		0
	I-131	--	0		N/A		N/A	0		0
	Cs-134	13	0		N/A		N/A	0		0
	Mn-54	13	0		N/A		N/A	0		0
	Co-58	13	0		N/A		N/A	0		0
	Co-60	13	0		N/A		N/A	0		0

TABLE 3-1
ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM SUMMARY
CONNECTICUT YANKEE ATOMIC POWER COMPANY, HADDAM NECK PLANT
DOCKET 50-213
JANUARY - DECEMBER 1984

MEDIUM OR PATHWAY SAMPLED	ANALYSIS AND TOTAL NUMBER OF ANALYSES PERFORMED	MINIMUM DETECTABLE LEVELS (MDL's)(a)	ALL INDICATOR LOCATIONS		LOCATION WITH HIGHEST ANNUAL MEAN			CONTROL LOCATIONS		# OF NRMs (c)
			Mean	(b) (Range)	NAME, DISTANCE AND DIRECTION	Mean	(b) (Range)	Mean	(b) (Range)	
	Co-60	0.05	0.00		N/A		N/A	0.00		0
	Zr-95	--	0.00		N/A		N/A	0.00		0
	Nb-95	--	0.00		N/A		N/A	0.00		0
	K-40	--	0.18	(0.0 - 0.4)	Mouth of Salmon River 1.8 Miles SE	0.18	(0.0 - 0.4)	0.08	(0.0 - 0.3)	0
Fish - Bullheads (pCi/g)	Sr 7,4 Sr-89	0.018	0.007	(0.000 - 0.013)	Intake Vicinity 1 Mile WNW	0.009	(0.005 - 0.013)	0.000	(-0.002 - 0.003)	0
	Sr-90	0.009	0.038	(0.009 - 0.059)	Intake Vicinity 1 Mile WNW	0.044	(0.031 - 0.055)	0.042	(0.023 - 0.085)	0
	Ge(Li) 7,4 Cs-137	0.056	0.013	(0.00 - 0.04)	Plant Discharge Canal	0.015	(0.00 - 0.04)	0.008	(0.00 - 0.03)	0
	I-131	--	0.00		N/A		N/A	0.00		0
	Cs-134	0.05	0.00		N/A		N/A	0.00		0
	Mn-54	0.05	0.00		N/A		N/A	0.00		0

TABLE 3-1
ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM SUMMARY
CONNECTICUT YANKEE ATOMIC POWER COMPANY, HADDAM NECK PLANT
DOCKET 50-213
JANUARY - DECEMBER 1984

MEDIUM OR PATHWAY SAMPLED	ANALYSIS AND TOTAL NUMBER OF ANALYSES PERFORMED	MINIMUM DETECTABLE LEVELS (MDL's)(a)	ALL INDICATOR LOCATIONS		LOCATION WITH HIGHEST ANNUAL MEAN			CONTROL LOCATIONS		# OF NRMs (c)
			Mean	(b) (Range)	NAME, DISTANCE AND DIRECTION	Mean	(b) (Range)	Mean	(b) (Range)	
	Co-58	0.05	0.00		N/A		N/A	0.00		0
	Co-60	0.05	0.00		N/A		N/A	0.00		0
	Zr-95	--	0.007	(0.00 - 0.05)	Intake Vicinity 1 Mile WNW	0.017	(0.00 - 0.05)	0.00		0
	Nb-95	--	0.007	(0.00 - 0.05)	Plant Discharge Canal	0.012	(0.00 - 0.05)	0.00		0
	K-40	--	2.2	(1.3 - 2.8)	Middletown 7.6 Miles NW	2.5	(1.9 - 2.9)	2.5	(1.9 - 2.9)	0
Fish - Other (pCi/g)	Sr 8,4 Sr-89	0.018	-0.002	(-0.016 - 0.009)	Middletown 7.6 Miles NW	0.001	(-0.005 - 0.008)	0.001	(-0.005 - 0.008)	0
	Sr-90	0.009	0.078	(0.040 - 0.108)	Intake Vicinity 1 Mile WNW	0.082	(0.065 - 0.108)	0.051	(0.032 - 0.098)	0
	Ge(Li) 8,4 Cs-137	0.056	0.028	(0.00 - 0.05)	Plant Discharge Canal	0.03	(0.00 - 0.05)	0.008	(0.00 - 0.03)	0
	I-131	--	0.01	(0.00 - 0.07)	Plant Discharge Canal	0.01	(0.00 - 0.07)	0.00		0

TABLE 9
PASTURE GRASS(a)
(PCI/G)

CY

LOCATION	COLLECTION DATE	SR-89	(+/-)	SR-90	(+/-)	CS-137	(+/-)	I-131	(+/-)	CS-134	(+/-)	MN-54	(+/-)	CO-58	(+/-)
5 (b)	6/12/84	0.030	0.020	0.169	0.005	0.0	0.012	0.0	0.02	0.0	0.01	0.0	0.01	0.0	0.01
5	9/18/84	0.0	0.050	0.212	0.005	0.017	0.011	0.0	0.03	0.0	0.01	0.0	0.01	0.0	0.02

LOCATION	COLLECTION DATE	CO-60	(+/-)	FE-59	(+/-)	ZN-65	(+/-)	ZR-95	(+/-)	RU(RH)-106	(+/-)	CR-51	(+/-)	K-40	(+/-)
5	6/12/84	0.0	0.01	0.0	0.04	0.0	0.03	0.0	0.02	0.0	0.12	0.0	0.10	8.30	0.40
5	9/18/84	0.02	0.01	0.0	0.05	0.0	0.03	0.0	0.03	0.0	0.11	0.0	0.30	3.10	0.30

LOCATION	COLLECTION DATE	RA-226	(+/-)	TH-228	(+/-)	BE-7	(+/-)	NB-95	(+/-)
5	6/12/84	0.0	0.02	0.0	0.03	1.68	0.15	0.0	0.01
5	9/18/84	0.0	0.02	0.0	0.03	0.50	0.20	0.0	0.03

(a) Pasture grass was not available during February at location (23a).
(b) Broad leaf vegetation samples.

TABLE 10
WELL WATER
(PCI/L)

CY

LOCATION	COLLECTION DATE	SR-89	(+/-)	SR-90	(+/-)	CS-137	(+/-)	I-131	(+/-)	CS-134	(+/-)	MN-54	(+/-)	CO-58	(+/-)
15	1/ 6/84	0.4	0.7	0.3	0.2	0.0	3.0	0.	8.	0.	3.	0.	3.	0.	3.
15	2/13/84	0.3	0.5	0.5	0.3	0.0	3.0	0.	6.	0.	4.	0.	3.	0.	3.
15	3/13/84	0.2	0.6	0.5	0.3	0.0	3.0	0.	5.	0.	3.	0.	3.	0.	3.
15	4/ 2/84	0.0	0.3	0.4	0.1	0.0	3.0	0.	9.	0.	3.	0.	3.	0.	3.
15	5/ 7/84	0.3	0.6	0.3	0.3	0.0	3.0	0.	11.	0.	3.	0.	3.	0.	3.
15	6/12/84	0.2	0.4	0.2	0.2	0.0	3.0	0.	6.	0.	3.	0.	3.	0.	3.
15	7/16/84	-0.1	0.8	0.7	0.5	0.0	3.0	0.	20.	0.	3.	0.	3.	0.	3.
15	8/16/84	-0.3	0.4	0.5	0.3	0.0	3.0	0.	20.	0.	4.	0.	3.	0.	3.
15	9/10/84	0.1	0.7	0.5	0.3	0.0	3.0	0.	20.	0.	4.	0.	3.	0.	3.
15	10/ 9/84	0.3	0.7	0.2	0.3	0.0	3.0	0.	7.	0.	3.	0.	3.	0.	3.
15	11/13/84	-0.5	0.7	0.4	0.3	0.0	3.0	0.	15.	0.	2.	0.	3.	0.	3.
15	12/17/84	-0.6	0.7	0.4	0.2	0.0	3.0	0.	7.	0.	2.	0.	3.	0.	3.
16A	3/13/84	-0.8	0.4	0.5	0.2	0.0	4.0	0.	6.	0.	4.	0.	4.	0.	4.
16A	6/12/84	-0.4	0.4	0.4	0.2	0.0	4.0	0.	6.	0.	4.	0.	4.	0.	3.
16A	9/10/84	0.5	0.6	0.2	0.2	0.0	3.0	0.	20.	0.	3.	0.	3.	0.	3.
16A	12/17/84	-0.3	0.7	0.4	0.2	0.0	3.0	0.	9.	0.	2.	0.	3.	0.	3.
17	3/13/84	0.1	0.6	0.2	0.3	0.0	4.0	0.	6.	0.	4.	0.	4.	0.	4.
17	6/12/84	-0.1	0.4	0.1	0.2	0.0	4.0	0.	6.	0.	4.	0.	4.	0.	4.
17	9/10/84	-0.1	0.6	0.3	0.3	0.0	3.0	0.	20.	0.	3.	0.	3.	0.	3.
17	12/17/84	-0.3	0.7	0.4	0.2	0.0	3.0	0.	8.	0.	2.	0.	3.	0.	3.
18	3/13/84	0.0	0.7	0.3	0.3	0.0	3.0	0.	5.	0.	4.	0.	3.	0.	3.
18	6/12/84	0.1	0.4	0.1	0.2	0.0	3.0	0.	5.	0.	4.	0.	3.	0.	3.
18	9/10/84	0.0	0.6	0.2	0.2	0.0	3.0	0.	20.	0.	3.	0.	3.	0.	3.
18	12/17/84	-0.5	0.7	0.5	0.2	0.0	3.0	0.	9.	0.	2.	0.	3.	0.	3.

TABLE 10
WELL WATER
(PCI/L)

CY

LOCATION	COLLECTION DATE	CO-60	(+/-)	FE-59	(+/-)	ZN-65	(+/-)	ZR-95	(+/-)	RU(RH)-106	(+/-)	CR-51	(+/-)	K-40	(+/-)
15	1/ 6/84	0.	3.	0.	8.	0.	7.	0.	6.	0.	30.	0.	30.	0.	40.
15	2/13/84	0.	3.	0.	8.	0.	8.	0.	6.	0.	30.	0.	30.	0.	40.
15	3/13/84	0.	3.	0.	7.	0.	8.	0.	5.	0.	30.	0.	30.	0.	30.
15	4/ 2/84	0.	3.	0.	8.	0.	7.	0.	6.	0.	30.	0.	30.	0.	30.
15	5/ 7/84	0.	3.	0.	8.	0.	7.	0.	6.	0.	30.	0.	30.	0.	30.
15	6/12/84	0.	3.	0.	8.	0.	8.	0.	5.	0.	30.	0.	30.	0.	30.
15	7/16/84	0.	3.	0.	9.	0.	7.	0.	6.	0.	30.	0.	40.	0.	30.
15	8/16/84	0.	3.	0.	9.	0.	7.	0.	6.	0.	30.	0.	40.	0.	30.
15	9/10/84	0.	3.	0.	9.	0.	7.	0.	6.	0.	30.	0.	40.	0.	30.
15	10/ 9/84	0.	3.	0.	6.	0.	6.	0.	5.	0.	20.	0.	30.	0.	30.
15	11/13/84	3.	3.	0.	7.	0.	6.	0.	5.	0.	30.	0.	30.	0.	30.
15	12/17/84	0.	3.	0.	7.	0.	6.	0.	5.	0.	25.	0.	25.	0.	26.
16A	3/13/84	0.	4.	0.	8.	0.	12.	0.	6.	0.	40.	0.	30.	0.	40.
16A	6/12/84	0.	4.	0.	8.	0.	12.	0.	6.	0.	30.	0.	30.	0.	40.
16A	9/10/84	0.	3.	0.	9.	0.	8.	0.	6.	0.	30.	0.	40.	0.	30.
16A	12/17/84	0.	3.	0.	7.	0.	7.	0.	5.	0.	26.	0.	28.	0.	28.
17	3/13/84	0.	4.	0.	9.	0.	8.	0.	6.	0.	40.	0.	40.	0.	40.
17	6/12/84	0.	4.	0.	8.	0.	11.	0.	7.	0.	30.	0.	30.	0.	40.
17	9/10/84	0.	3.	0.	9.	0.	8.	0.	6.	0.	30.	0.	40.	0.	30.
17	12/17/84	0.	3.	0.	7.	0.	7.	0.	5.	0.	25.	0.	28.	0.	26.
18	3/13/84	0.	3.	0.	7.	0.	9.	0.	5.	0.	30.	0.	30.	0.	30.
18	6/12/84	0.	3.	0.	7.	0.	9.	0.	6.	0.	30.	0.	30.	0.	30.
18	9/10/84	0.	3.	0.	9.	0.	7.	0.	6.	0.	30.	0.	40.	0.	30.
18	12/17/84	0.	3.	0.	7.	0.	7.	0.	5.	0.	25.	0.	27.	100.	50.

TABLE 10
WELL WATER
(PCI/L)

CY

LOCATION	COLLECTION DATE	RA-226	(+/-)	TH-228	(+/-)	BE-7	(+/-)	MN-95	(+/-)	H-3	(+/-)	GROSS BETA	(+/-)
15	1/ 6/84	12.	6.	0.	8.	0.	0.	0.	3.	7000.	440.	1.7	0.6
15	2/13/84	58.	7.	0.	8.	0.	0.	0.	3.	7450.	470.	1.4	0.4
15	3/13/84	53.	7.	0.	8.	0.	0.	0.	3.	6220.	380.	1.5	0.5
15	4/ 2/84	8.	6.	0.	8.	0.	0.	0.	4.	5130.	310.	1.3	0.3
15	5/ 7/84	0.	6.	0.	9.	0.	0.	0.	4.	4680.	280.	1.1	0.5
15	6/12/84	57.	8.	9.	9.	0.	0.	4.	3.	8930.	540.	1.0	0.4
15	7/16/84	0.	6.	0.	8.	0.	0.	0.	4.	6160.	370.	1.3	0.5
15	8/16/84	0.	6.	0.	8.	0.	0.	4.	4.	4700.	100.	1.4	0.5
15	9/10/84	0.	6.	9.	9.	0.	0.	0.	4.	5250.	320.	2.1	0.5
15	10/ 9/84	13.	5.	0.	7.	0.	0.	0.	3.	5150.	310.	0.8	0.4
15	11/13/84	0.	5.	0.	7.	0.	0.	0.	3.	9900.	1000.	1.3	0.6
15	12/17/84	16.	5.	0.	7.	0.	0.	0.	6.	5700.	200.	0.9	0.3
16A	3/13/84	342.	13.	0.	10.	0.	0.	0.	4.	0.	60.	7.8	0.9
16A	6/12/84	299.	13.	11.	10.	0.	0.	14.	4.	430.	70.	6.0	0.7
16A	9/10/84	0.	6.	0.	8.	0.	0.	0.	4.	230.	80.	9.0	0.8
16A	12/17/84	50.	7.	0.	8.	0.	0.	0.	6.	110.	60.	3.8	0.2
17	3/13/84	443.	15.	12.	11.	0.	0.	0.	4.	200.	70.	3.0	0.6
17	6/12/84	339.	13.	0.	10.	0.	0.	14.	4.	200.	70.	0.9	0.4
17	9/10/84	13.	6.	0.	8.	0.	0.	6.	4.	150.	80.	4.2	0.5
17	12/17/84	48.	7.	0.	7.	0.	0.	0.	6.	220.	90.	1.7	0.2
18	3/13/84	119.	9.	0.	9.	0.	0.	5.	3.	190.	80.	2.3	0.6
18	6/12/84	178.	10.	0.	9.	0.	0.	7.	4.	300.	70.	0.8	0.4
18	9/10/84	0.	6.	0.	8.	0.	0.	0.	4.	250.	70.	2.9	0.5
18	12/17/84	19.	5.	0.	7.	0.	0.	0.	6.	240.	80.	1.4	0.1

TABLE 11
RESERVOIR WATER
(PCI/L)

CY

LOCATION	COLLECTION DATE	SR-89	(+/-)	SR-90	(+/-)	CS-137	(+/-)	I-131	(+/-)	CS-134	(+/-)	MN-54	(+/-)	CO-58	(+/-)

CO-60	(+/-)	FE-59	(+/-)	ZN-65	(+/-)	ZR-95	(+/-)	RU(RH)-106	(+/-)	CR-51	(+/-)	K-40	(+/-)

RA-226	(+/-)	TH-228	(+/-)	BE-7	(+/-)	NB-95	(+/-)	H-3	(+/-)	GROSS BETA	(+/-)

These samples are not required.

TABLE 12
FRUITS & VEGETABLES
(PCI/G)

CY

LOCATION	COLLECTION DATE	TYPE	SR-89	(+/-)	SR-90	(+/-)	CS-137	(+/-)	I-131	(+/-)	CS-134	(+/-)	MN-54	(+/-)
25	6/20/84	STRAWBERRIES	0.002	0.004	0.022	0.002	0.0	0.010	0.0	0.013	0.0	0.012	0.0	0.011
25	7/11/84	LETTUCE	0.020	0.020(a)	0.030	0.007	0.006	0.005	0.0	0.006	0.0	0.005	0.0	0.005
25	9/18/84	CABBAGE	0.140	0.060(b)	0.150	0.007	0.0	0.007	0.0	0.009	0.0	0.007	0.0	0.007
25	9/19/84	APPLES	-0.002	0.004	0.006	0.001	0.0	0.006	0.0	0.010	0.0	0.007	0.0	0.006
35A	6/20/84	STRAWBERRIES	0.0	0.005	0.014	0.002	0.0	0.009	0.0	0.020	0.0	0.011	0.0	0.009
35A	6/21/84	LETTUCE	0.002	0.006	0.014	0.001	0.020	0.020	0.0	0.020	0.0	0.020	0.0	0.020
35A	9/18/84	LETTUCE	0.004	0.006	0.030	0.001	0.0	0.007	0.0	0.011	0.0	0.007	0.0	0.007
35A	9/19/84	APPLES	0.003	0.006	0.005	0.002	0.0	0.005	0.0	0.013	0.0	0.006	0.0	0.006

LOCATION	COLLECTION DATE	TYPE	CO-58	(+/-)	CO-60	(+/-)	FE-59	(+/-)	ZN-65	(+/-)	ZR-95	(+/-)	RU(RH)-106	(+/-)
25	6/20/84	STRAWBERRIES	0.0	0.011	0.0	0.013	0.0	0.030	0.0	0.030	0.0	0.020	0.0	0.090
25	7/11/84	LETTUCE	0.0	0.004	0.0	0.006	0.0	0.011	0.0	0.011	0.0	0.008	0.0	0.040
25	9/18/84	CABBAGE	0.0	0.006	0.0	0.007	0.0	0.020	0.0	0.015	0.0	0.011	0.0	0.060
25	9/19/84	APPLES	0.0	0.006	0.0	0.006	0.0	0.013	0.0	0.013	0.0	0.010	0.0	0.050
35A	6/20/84	STRAWBERRIES	0.0	0.009	0.0	0.011	0.0	0.020	0.0	0.020	0.0	0.013	0.0	0.020
35A	6/21/84	LETTUCE	0.0	0.015	0.0	0.020	0.0	0.040	0.0	0.040	0.0	0.030	0.0	0.200
35A	9/18/84	LETTUCE	0.0	0.007	0.0	0.008	0.0	0.020	0.0	0.020	0.0	0.012	0.0	0.060
35A	9/19/84	APPLES	0.0	0.005	0.0	0.006	0.0	0.014	0.0	0.012	0.0	0.010	0.0	0.050

LOCATION	COLLECTION DATE	TYPE	CR-51	(+/-)	K-40	(+/-)	RA-226	(+/-)	TH-228	(+/-)	BE-7	(+/-)	NB-95	(+/-)
25	6/20/84	STRAWBERRIES	0.0	0.080	1.000	0.200	0.0	0.020	0.0	0.030	0.0	0.080	0.0	0.010
25	7/11/84	LETTUCE	0.0	0.040	1.950	0.100	0.0	0.009	0.0	0.012	0.170	0.040	0.0	0.004
25	9/18/84	CABBAGE	0.0	0.050	3.300	0.200	0.0	0.012	0.0	0.020	0.060	0.050	0.0	0.006
25	9/19/84	APPLES	0.0	0.050	1.120	0.140	0.013	0.011	0.0	0.020	0.0	0.050	0.0	0.006
35A	6/20/84	STRAWBERRIES	0.0	0.070	0.800	0.200	0.0	0.020	0.0	0.030	0.0	0.080	0.0	0.010
35A	6/21/84	LETTUCE	0.0	0.120	3.500	0.500	0.0	0.030	0.0	0.040	0.0	0.140	0.0	0.020
35A	9/18/84	LETTUCE	0.0	0.050	3.900	0.200	0.0	0.013	0.0	0.020	0.090	0.060	0.0	0.007
35A	9/19/84	APPLES	0.0	0.050	1.060	0.130	0.0	0.010	0.0	0.014	0.0	0.050	0.0	0.006

(a) E.T.S. MDL requirement of 0.018 was not met due to Sr-90 presence in sample.
(b) Low yield caused by chemistry problems resulted in high Sr-89 error. E.T.S. MDL was exceeded for this reason.

TABLE 13
MEAT, POULTRY & EGGS(a)
(PCI/G)

CY

LOCATION	COLLECTION DATE	TYPE	SR-89 (+/-)	SR-90 (+/-)	CS-137 (+/-)	I-131 (+/-)	CS-134 (+/-)	MN-54 (+/-)
			CO-58 (+/-)	CO-60 (+/-)	FE-59 (+/-)	ZN-65 (+/-)	ZR-95 (+/-)	RU(RH)-106 (+/-)
			CR-51 (+/-)	K-40 (+/-)	RA-226 (+/-)	TH-228 (+/-)	BE-7 (+/-)	NB-95 (+/-)

(a) Commercial samples for which feed was grown within 10 miles of the station were not available in 1984.

TABLE 14
RIVER WATER
(PCI/L)

CY

LOCATION	COLLECTION DATE	SR-89	(+/-)	SR-90	(+/-)	CS-137	(+/-)	I-131	(+/-)	CS-134	(+/-)	MN-54	(+/-)	CO-58	(+/-)
28B	2/13/84 (a)	-0.9	1.0	0.4	0.3	0.0	3.0	0.	200.	0.	4.	0.	3.	0.	4.
28B	5/14/84	-0.6	0.7	0.6	0.2	0.0	3.0	0.	200.	0.	4.	0.	3.	0.	4.
28B	8/14/84	0.9	2.0	0.2	0.5	0.0	3.0	0.	200.	0.	2.	0.	3.	0.	4.
28B	11/12/84	-0.1	0.4	0.8	0.2	0.0	2.0	0.	300.	0.	2.	0.	3.	0.	4.
29	2/13/84 (a)	-0.4	0.8	0.5	0.2	0.0	3.0	0.	100.	0.	4.	0.	3.	0.	4.
29	5/14/84	0.4	0.8	0.5	0.2	0.0	3.0	0.	200.	0.	3.	0.	3.	0.	4.
29	8/14/84	0.0	2.0	1.2	0.6	0.0	3.0	0.	200.	0.	2.	0.	3.	0.	4.
29	11/12/84	0.1	0.4	0.8	0.2	0.0	3.0	0.	300.	0.	2.	0.	3.	0.	4.
30A	1/17/84 (b)	-0.1	0.4	0.9	0.3	0.0	3.0	0.	60.	0.	3.	0.	3.	0.	4.
30A	4/28/84	0.2	0.5	0.4	0.2	0.0	3.0	0.	30.	0.	3.	0.	3.	0.	4.
30A	7/27/84	-0.1	0.4	0.5	0.3	0.0	3.0	0.	100.	0.	3.	0.	3.	0.	4.
30A	10/28/84	-0.2	0.8	0.4	0.2	0.0	3.0	0.	60.	0.	2.	0.	3.	0.	3.

LOCATION	COLLECTION DATE	CO-60	(+/-)	FE-59	(+/-)	ZN-65	(+/-)	ZR-95	(+/-)	RU(RH)-106	(+/-)	CR-51	(+/-)	K-40	(+/-)
28B	2/13/84	0.	3.	0.	13.	0.	8.	0.	8.	0.	30.	0.	60.	0.	30.
28B	5/14/84	0.	3.	0.	13.	0.	7.	0.	8.	0.	30.	0.	70.	70.	60.
28B	8/14/84	0.	2.	0.	11.	0.	6.	0.	7.	0.	20.	0.	60.	0.	20.
28B	11/12/84	0.	3.	0.	13.	0.	7.	0.	8.	0.	30.	0.	70.	0.	30.
29	2/13/84	0.	3.	0.	12.	0.	8.	0.	8.	0.	30.	0.	70.	0.	30.
29	5/14/84	0.	3.	0.	13.	0.	7.	0.	8.	0.	30.	0.	70.	0.	30.
29	8/14/84	0.	2.	0.	12.	0.	7.	0.	7.	0.	30.	0.	70.	0.	30.
29	11/12/84	0.	3.	0.	12.	0.	7.	0.	7.	0.	30.	0.	70.	80.	50.
30A	1/17/84	0.	3.	0.	10.	0.	7.	0.	7.	0.	30.	0.	50.	0.	30.
30A	4/28/84	0.	3.	0.	9.	0.	7.	0.	6.	0.	30.	0.	40.	0.	30.
30A	7/27/84	0.	3.	0.	12.	0.	7.	0.	8.	0.	30.	0.	60.	0.	30.
30A	10/28/84	0.	3.	0.	10.	0.	6.	0.	6.	0.	30.	0.	50.	0.	30.

(a) Midpoint dates of continuous quarterly composites.
(b) Midpoint dates of the six weekly grab samples.

TABLE 14
RIVER WATER
(PCI/L)

CY

LOCATION	COLLECTION DATE	RA-226	(+/-)	TH-228	(+/-)	BE-7	(+/-)	NB-95	(+/-)	H-3	(+/-)	GROSS BETA	(+/-)
28B	2/13/84	0.	6.	0.	9.	0.	0.	0.	7.	600.	100.	2.6	0.5
28B	5/14/84	0.	6.	0.	8.	0.	0.	0.	7.	430.	90.	0.9	0.6
28B	8/14/84	0.	5.	0.	7.	0.	0.	0.	6.	930.	70.	2.5	0.5
28B	11/12/84	0.	5.	9.	8.	0.	0.	0.	7.	710.	90.	2.5	0.3
29	2/13/84	0.	6.	0.	8.	0.	0.	0.	7.	1060.	100.	2.2	0.6
29	5/14/84	0.	6.	0.	8.	0.	0.	0.	7.	160.	70.	1.9	0.4
29	8/14/84	0.	5.	0.	7.	0.	0.	0.	6.	3300.	100.	1.9	0.5
29	11/12/84	0.	5.	0.	7.	0.	0.	0.	7.	1100.	100.	2.8	0.3
30A	1/17/84	0.	6.	0.	9.	0.	0.	0.	6.	140.	70.	2.9	0.5
30A	4/28/84	0.	6.	0.	8.	0.	0.	0.	4.	140.	80.	1.6	0.5
30A	7/27/84	0.	6.	0.	8.	0.	0.	0.	6.	400.	90.	3.1	0.6
30A	10/28/84	0.	5.	0.	7.	0.	0.	0.	5.	250.	50.	7.9	1.5

TABLE 15
BOTTOM SEDIMENT
(PCI/G)

CY

LOCATION	COLLECTION DATE	SR-89	(+/-)	SR-90	(+/-)	CS-137	(+/-)	I-131	(+/-)	CS-134	(+/-)	MN-54	(+/-)	CO-58	(+/-)
27A	3/20/84	-0.017	0.012	0.014	0.003	0.060	0.030	0.0	0.080	0.0	0.030	0.0	0.030	0.0	0.030
27A	6/20/84	-0.005	0.006	0.011	0.002	0.120	0.030	0.0	0.130	0.0	0.030	0.0	0.030	0.0	0.030
27A	9/10/84	-0.005	0.027	0.015	0.012	0.060	0.030	0.0	0.200	0.0	0.030	0.0	0.030	0.0	0.030
27A	12/17/84	-0.004	0.010	0.010	0.003	0.0	0.030	0.0	0.140	0.0	0.020	0.0	0.030	0.0	0.030
28A	3/20/84	-0.002	0.007	0.019	0.003	0.140	0.050	0.0	0.110	0.0	0.040	0.0	0.040	0.0	0.040
28A	6/20/84	0.0	0.006	0.011	0.003	0.250	0.040	0.0	0.140	0.0	0.030	0.0	0.030	0.0	0.030
28A	9/10/84	-0.008	0.009	0.009	0.004	0.100	0.040	0.0	0.200	0.0	0.040	0.0	0.030	0.0	0.040
28A	12/17/84	0.012	0.013	0.012	0.003	0.110	0.030	0.0	0.150	0.020	0.020	0.0	0.030	0.0	0.030
29	3/20/84	-0.006	0.012	0.009	0.003	0.060	0.030	0.0	0.080	0.0	0.030	0.0	0.030	0.0	0.030
29	6/20/84	-0.002	0.005	0.010	0.003	0.060	0.030	0.0	0.120	0.0	0.030	0.0	0.030	0.0	0.030
29	9/10/84	-0.012	0.013	0.015	0.006	0.200	0.050	0.0	0.200	0.080	0.040	0.0	0.030	0.0	0.040
29	12/17/84	0.011	0.012	0.008	0.003	0.140	0.030	0.0	0.150	0.060	0.020	0.0	0.030	0.0	0.030

LOCATION	COLLECTION DATE	CO-60	(+/-)	FE-59	(+/-)	ZN-65	(+/-)	ZR-95	(+/-)	RU(RH)-106	(+/-)	CR-51	(+/-)	K-40	(+/-)
27A	3/20/84	0.0	0.030	0.0	0.080	0.0	0.080	0.0	0.050	0.0	0.200	0.0	0.200	8.100	0.700
27A	6/20/84	0.0	0.030	0.0	0.090	0.0	0.090	0.0	0.060	0.0	0.300	0.0	0.300	7.700	0.700
27A	9/10/84	0.0	0.040	0.0	0.100	0.0	0.090	0.0	0.060	0.0	0.300	0.0	0.300	9.400	0.800
27A	12/17/84	0.0	0.030	0.0	0.080	0.0	0.070	0.0	0.050	0.0	0.200	0.0	0.300	9.900	0.700
28A	3/20/84	0.0	0.040	0.0	0.110	0.0	0.110	0.0	0.070	0.0	0.300	0.0	0.300	7.800	0.800
28A	6/20/84	0.0	0.030	0.0	0.080	0.0	0.090	0.0	0.050	0.0	0.300	0.400	0.300	6.900	0.600
28A	9/10/84	0.0	0.030	0.0	0.100	0.0	0.100	0.0	0.060	0.0	0.300	0.0	0.400	7.500	0.700
28A	12/17/84	0.0	0.030	0.0	0.070	0.0	0.080	0.0	0.050	0.0	0.200	0.0	0.300	7.000	0.600
29	3/20/84	0.0	0.030	0.0	0.080	0.0	0.080	0.0	0.050	0.0	0.300	0.0	0.300	6.200	0.600
29	6/20/84	0.0	0.030	0.0	0.080	0.0	0.080	0.0	0.050	0.0	0.200	0.0	0.300	5.800	0.600
29	9/10/84	0.0	0.040	0.0	0.100	0.0	0.090	0.0	0.070	0.0	0.300	0.0	0.400	7.800	0.700
29	12/17/84	0.0	0.030	0.0	0.080	0.0	0.090	0.0	0.050	0.0	0.300	0.0	0.300	6.700	0.600

TABLE 15
BOTTOM SEDIMENT
(PCI/G)

CY

LOCATION	COLLECTION DATE	RA-226	(+/-)	TH-228	(+/-)	BE-7	(+/-)	MB-95	(+/-)
27A	3/20/84	0.340	0.060	0.300	0.090	0.0	0.300	0.0	0.03
27A	6/20/84	0.540	0.080	0.430	0.100	0.0	0.300	0.04	0.04
27A	9/10/84	0.330	0.070	0.250	0.090	0.0	0.300	0.0	0.04
27A	12/17/84	0.290	0.060	0.340	0.080	0.0	0.200	0.0	0.04
28A	3/20/84	0.620	0.090	0.620	0.130	0.700	0.300	0.0	0.04
28A	6/20/84	0.590	0.080	0.670	0.110	0.0	0.300	0.0	0.04
28A	9/10/84	0.450	0.080	0.450	0.110	0.0	0.300	0.0	0.04
28A	12/17/84	0.300	0.060	0.350	0.090	0.0	0.300	0.0	0.03
29	3/20/84	0.380	0.070	0.350	0.090	0.0	0.300	0.0	0.03
29	6/20/84	0.380	0.070	0.400	0.100	0.0	0.300	0.03	0.03
29	9/10/84	0.390	0.080	0.470	0.110	0.400	0.300	0.0	0.05
29	12/17/84	0.560	0.050	0.530	0.070	0.0	0.300	0.0	0.04

TABLE 16
SHELL FISH
(PCI/G)

CY

LOCATION	COLLECTION DATE	SR-89	(+/-)	SR-90	(+/-)	CS-137	(+/-)	I-131	(+/-)	CS-134	(+/-)	MN-54	(+/-)	CO-58	(+/-)
27A	2/10/84	0.0700	.0500(a)	0.2060	.0140(b)	0.0	0.020	0.0	0.030	0.0	0.020	0.0	0.020	0.0	0.020
27A	5/14/84	0.0070	.0110	0.2190	.0040	0.0	0.014	0.0	0.020	0.0	0.015	0.0	0.020	0.0	0.013
27A	8/ 6/84	0.0	.0300(a)	0.2440	.0040	0.0	0.020	0.0	0.040	0.0	0.020	0.0	0.020	0.0	0.020
27A	11/ 5/84	0.0100	.0200(a)	0.1280	.0030	0.0	0.015	0.0	0.050	0.0	0.020	0.0	0.015	0.0	0.020
28B	2/10/84	0.1100	.0400(a)	0.1870	.0040	0.0	0.020	0.0	0.030	0.0	0.020	0.0	0.020	0.0	0.020
28B	5/14/84	0.0300	.0200(a)	0.3400	.0060	0.030	0.020	0.0	0.050	0.0	0.020	0.0	0.015	0.0	0.014
28B	8/ 6/84	0.0010	.0050	0.0650	.0020	0.0	0.014	0.0	0.020	0.0	0.015	0.0	0.014	0.0	0.014
28B	11/ 5/84	0.0	.0190(a)	0.2160	.0050	0.0	0.020	0.0	0.050	0.0	0.020	0.0	0.020	0.0	0.020
31	2/10/84	0.0200	.0300(a)	0.3610	.0060	0.0	0.020	0.0	0.020	0.0	0.020	0.0	0.020	0.0	0.015
31	5/14/84	0.0200	.0300(a)	0.2930	.0060	0.0	0.020	0.0	0.050	0.0	0.020	0.0	0.020	0.0	0.014
31	8/ 6/84	0.0180	.0120	0.2800	.0040	0.0	0.030	0.0	0.040	0.0	0.030	0.0	0.030	0.0	0.020
31	11/ 5/84	0.0200	.0400(a)	0.1910	.0060	0.0	0.020	0.0	0.060	0.0	0.020	0.0	0.020	0.0	0.020

LOCATION	COLLECTION DATE	CO-60	(+/-)	FE-59	(+/-)	ZN-65	(+/-)	ZR-95	(+/-)	RU(RH)-106	(+/-)	CR-51	(+/-)	K-40	(+/-)
27A	2/10/84	0.0	0.020	0.0	0.040	0.0	0.040	0.0	0.030	0.0	0.200	0.0	0.200	0.0	0.130
27A	5/14/84	0.0	0.013	0.0	0.030	0.0	0.030	0.0	0.020	0.0	0.140	0.0	0.100	0.0	0.100
27A	8/ 6/84	0.0	0.020	0.0	0.050	0.0	0.050	0.0	0.030	0.0	0.200	0.0	0.200	0.0	0.120
27A	11/ 5/84	0.0	0.014	0.0	0.030	0.0	0.040	0.0	0.030	0.0	0.140	0.0	0.200	0.300	0.200
28B	2/10/84	0.0	0.020	0.0	0.040	0.0	0.040	0.0	0.030	0.0	0.200	0.0	0.140	0.300	0.200
28B	5/14/84	0.0	0.014	0.0	0.040	0.0	0.040	0.0	0.020	0.0	0.140	0.0	0.200	0.0	0.100
28B	8/ 6/84	0.0	0.013	0.0	0.040	0.0	0.030	0.0	0.020	0.0	0.140	0.0	0.110	0.300	0.200
28B	11/ 5/84	0.0	0.020	0.0	0.050	0.0	0.050	0.0	0.030	0.0	0.200	0.0	0.200	0.0	0.130
31	2/10/84	0.0	0.020	0.0	0.040	0.0	0.050	0.0	0.030	0.0	0.140	0.0	0.150	0.0	0.120
31	5/14/84	0.0	0.014	0.0	0.040	0.0	0.040	0.0	0.030	0.0	0.130	0.0	0.200	0.0	0.100
31	8/ 6/84	0.0	0.030	0.0	0.060	0.0	0.070	0.0	0.040	0.0	0.200	0.0	0.200	0.300	0.300
31	11/ 5/84	0.0	0.020	0.0	0.050	0.0	0.050	0.0	0.040	0.0	0.200	0.0	0.200	0.400	0.300

(a) Due to Sr-90 presence, the E.T.S. MDL requirement of 0.018 could not be met.
(b) E.T.S. MDL requirement of 0.009 was not met due to high calcium concentrations in the sample resulting in low chemistry yields.

TABLE 16
SHELL FISH
(PCI/G)

LOCATION	COLLECTION DATE	RA-226	(+/-)	TH-228	(+/-)	BE-7	(+/-)	NB-95	(+/-)
27A	2/10/84	0.100	0.040	0.060	0.050	0.0	0.140	0.0	0.020
27A	5/14/84	0.090	0.030	0.100	0.040	0.0	0.100	0.0	0.014
27A	8/ 6/84	0.130	0.050	0.140	0.070	0.0	0.200	0.0	0.020
27A	11/ 5/84	0.140	0.030	0.100	0.050	0.0	0.130	0.0	0.020
28B	2/10/84	0.090	0.040	0.060	0.050	0.0	0.140	0.0	0.020
28B	5/14/84	0.130	0.030	0.190	0.050	0.0	0.140	0.020	0.020
28B	8/ 6/84	0.060	0.030	0.060	0.040	0.0	0.110	0.0	0.015
28B	11/ 5/84	0.120	0.040	0.150	0.060	0.0	0.200	0.0	0.020
31	2/10/84	0.170	0.040	0.200	0.060	0.0	0.140	0.0	0.020
31	5/14/84	0.210	0.040	0.170	0.050	0.130	0.130	0.0	0.020
31	8/ 6/84	0.340	0.060	0.260	0.080	0.0	0.200	0.0	0.030
31	11/ 5/84	0.140	0.050	0.110	0.070	0.0	0.200	0.0	0.030

TABLE 17A
FISH-BULLHEADS
(PCI/G)

CY

LOCATION	COLLECTION DATE	SR-89	(+/-)	SR-90	(+/-)	CS-137	(+/-)	I-131	(+/-)	CS-134	(+/-)	MN-54	(+/-)	CO-58	(+/-)
26[a]	4/29/84	0.0090	.0060	0.0470	.0020	0.030	0.030	0.0	0.030	0.0	0.030	0.0	0.030	0.0	0.020
26	7/23/84	0.0130	.0090	0.0550	.0020	0.0	0.030	0.0	0.040	0.0	0.040	0.0	0.030	0.0	0.030
26	10/16/84	0.0050	.0080	0.0310	.0020	0.0	0.030	0.0	0.040	0.0	0.030	0.0	0.030	0.0	0.030
28B[a]	4/10/84	0.0030	.0040	0.0240	.0020	0.030	0.020	0.0	0.150	0.0	0.030	0.0	0.020	0.0	0.030
28B	7/17/84	0.0040	.0090	0.0290	.0030	0.0	0.030	0.0	0.050	0.0	0.030	0.0	0.020	0.0	0.020
28B	10/16/84	0.0010	.0130	0.0670	.0040	0.0	0.020	0.0	0.040	0.0	0.030	0.0	0.030	0.0	0.020
29	1/ 4/84	0.0	.0040	0.0180	.0020	0.040	0.030	0.0	0.030	0.0	0.030	0.0	0.020	0.0	0.020
29	4/ 9/84	0.0040	.0060	0.0490	.0020	0.0	0.030	0.0	0.200	0.0	0.030	0.0	0.030	0.0	0.040
29	7/18/84	0.0100	.0080	0.0590	.0020	0.020	0.020	0.0	0.030	0.0	0.020	0.0	0.020	0.0	0.020
29	10/17/84	0.0100	.0200	0.0090	.0080	0.0	0.020	0.0	0.020	0.0	0.020	0.0	0.015	0.0	0.020
30A	2/ 9/84	-0.0020	.0060	0.0360	.0020	0.030	0.020	0.0	0.040	0.0	0.030	0.0	0.030	0.0	0.020
30A	4/10/84	0.0010	.0060	0.0230	.0020	0.0	0.030	0.0	0.200	0.0	0.030	0.0	0.030	0.0	0.030
30A	7/15/84	0.0030	.0070	0.0230	.0020	0.0	0.030	0.0	0.050	0.0	0.030	0.0	0.030	0.0	0.040
30A	10/13/84	0.0	.0090	0.0850	.0020	0.0	0.020	0.0	0.030	0.0	0.030	0.0	0.020	0.0	0.020

(a) Samples were unavailable during the first quarter.

TABLE 17A
FISH-BULLHEADS
(PCI/G)

CY

LOCATION	COLLECTION DATE	CO-60	(+/-)	FE-59	(+/-)	ZN-65	(+/-)	ZR-95	(+/-)	RU(RH)-106	(+/-)	CR-51	(+/-)	K-40	(+/-)
26	4/29/84	0.0	0.020	0.0	0.060	0.0	0.060	0.0	0.040	0.0	0.200	0.0	0.200	1.300	0.400
26	7/23/84	0.0	0.030	0.0	0.070	0.0	0.070	0.0	0.050	0.0	0.300	0.0	0.200	2.800	0.800
26	10/16/84	0.0	0.030	0.0	0.060	0.0	0.060	0.050	0.040	0.0	0.200	0.0	0.200	2.400	0.700
28B	4/10/84	0.0	0.020	0.0	0.060	0.0	0.050	0.0	0.050	0.0	0.200	0.0	0.300	2.500	0.600
28B	7/17/84	0.0	0.020	0.0	0.070	0.0	0.050	0.0	0.050	0.0	0.300	0.0	0.200	3.400	0.700
28B	10/16/84	0.0	0.020	0.0	0.060	0.0	0.050	0.0	0.030	0.0	0.200	0.0	0.200	2.300	0.600
29	1/ 4/84	0.0	0.020	0.0	0.050	0.0	0.060	0.0	0.040	0.0	0.200	0.0	0.200	2.400	0.700
29	4/ 9/84	0.0	0.030	0.0	0.090	0.0	0.080	0.0	0.060	0.0	0.300	0.0	0.300	2.200	0.700
29	7/18/84	0.0	0.020	0.0	0.050	0.0	0.040	0.0	0.030	0.0	0.200	0.0	0.200	2.800	0.500
29	10/17/84	0.0	0.020	0.0	0.040	0.0	0.030	0.0	0.030	0.0	0.150	0.0	0.120	1.500	0.400
30A	2/ 9/84	0.0	0.030	0.0	0.060	0.0	0.060	0.0	0.040	0.0	0.200	0.0	0.200	2.600	0.600
30A	4/10/84	0.0	0.030	0.0	0.070	0.0	0.060	0.0	0.050	0.0	0.300	0.0	0.300	2.700	0.700
30A	7/16/84	0.0	0.030	0.0	0.080	0.0	0.090	0.0	0.060	0.0	0.300	0.0	0.200	2.900	0.800
30A	10/13/84	0.0	0.020	0.0	0.050	0.0	0.050	0.0	0.040	0.0	0.200	0.0	0.200	1.900	0.500

TABLE 17A
FISH-BULLHEADS
(PCI/G)

LOCATION	COLLECTION DATE	RA-226	(+/-)	TH-228	(+/-)	BE-7	(+/-)	MN-95	(+/-)
26	4/29/84	0.0	0.050	0.0	0.060	0.0	0.200	0.0	0.030
26	7/23/84	0.060	0.050	0.0	0.070	0.0	0.200	0.0	0.030
26	10/16/84	0.0	0.050	0.0	0.070	0.0	0.200	0.0	0.020
28B	4/10/84	0.0	0.040	0.0	0.070	0.0	0.200	0.0	0.030
28B	7/17/84	0.0	0.050	0.0	0.070	0.0	0.200	0.0	0.030
28B	10/16/84	0.0	0.040	0.0	0.050	0.0	0.200	0.0	0.020
29	1/ 4/84	0.0	0.040	0.0	0.060	0.0	0.200	0.0	0.020
29	4/ 9/84	0.0	0.050	0.0	0.070	0.0	0.300	0.050	0.040
29	7/18/84	0.0	0.030	0.0	0.050	0.200	0.200	0.0	0.020
29	10/17/84	0.0	0.030	0.0	0.040	0.0	0.200	0.0	0.020
30A	2/ 9/84	0.0	0.040	0.0	0.060	0.0	0.200	0.0	0.020
30A	4/10/84	0.0	0.050	0.0	0.070	0.0	0.300	0.0	0.030
30A	7/16/84	0.0	0.050	0.0	0.070	0.0	0.300	0.0	0.030
30A	10/13/84	0.0	0.040	0.0	0.060	0.0	0.200	0.0	0.020

TABLE 17B
FISH-OTHER
(PCI/G)

CY

LOCATION	COLLECTION DATE	TYPE	SR-89	(+/-)	SR-90	(+/-)	CS-137	(+/-)	I-131	(+/-)	CS-134	(+/-)	MN-54	(+/-)
26	4/30/84 (a)	PERCH	0.0060	0.0090	0.0740	0.0030	0.030	0.020	0.0	0.020	0.0	0.020	0.0	0.020
26	7/26/84	OTHER (c)	-0.0160	0.0180	0.1080	0.0050	0.040	0.030	0.0	0.030	0.0	0.030	0.0	0.020
26	10/10/84	PERCH	0.0	0.0090	0.0650	0.0020	0.0	0.020	0.0	0.030	0.0	0.020	0.0	0.020
28B	7/16/84 (b)	OTHER (d)	0.0080	0.0140	0.1530	0.0040	0.070	0.040	0.0	0.060	0.0	0.040	0.0	0.030
28B	10/19/84	PERCH (e)	-0.0030	0.0100	0.0570	0.0030	0.0	0.030	0.0	0.300	0.0	0.030	0.0	0.030
29	1/ 5/84	PERCH	-0.0090	0.0110	0.1040	0.0030	0.050	0.030	0.0	0.040	0.0	0.030	0.0	0.030
29	4/10/84	PERCH	0.0090	0.0050	0.0400	0.0020	0.0	0.020	0.0	0.200	0.0	0.030	0.0	0.030
29	7/17/84	OTHER (f)	-0.0030	0.0090	0.0750	0.0020	0.030	0.020	0.070	0.040	0.0	0.020	0.020	0.020
29	10/ 9/84	PERCH (d)	-0.0030	0.0090	0.0750	0.0020	0.030	0.020	0.0	0.040	0.0	0.020	0.0	0.020
29	10/16/84*	PERCH	0.0	0.0090	0.0840	0.0020	0.040	0.020	0.0	0.030	0.0	0.020	0.0	0.020
30A	2/ 7/84	PERCH	0.0020	0.0070	0.0400	0.0020	0.0	0.020	0.0	0.040	0.0	0.020	0.0	0.020
30A	4/25/84	PERCH	-0.0050	0.0040	0.0316	0.0015	0.0	0.020	0.0	0.030	0.0	0.020	0.0	0.020
30A	7/17/84	PERCH (g)	0.0080	0.0070	0.0340	0.0020	0.0	0.030	0.0	0.050	0.0	0.030	0.0	0.030
30A	10/12/84	PERCH (g)	0.0	0.0100	0.0980	0.0030	0.030	0.020	0.0	0.030	0.0	0.020	0.0	0.020

(a) Samples were unavailable during the first quarter.
(b) Samples were unavailable during the first and second quarter.
(c) Northern pike.
(d) Sunfish.
(e) Perch and bluegill.
(f) Catfish.
(g) Perch and bass.

* Extra sample was taken.

LOCATION	COLLECTION DATE	TYPE	CO-58	(+/-)	CO-60	(+/-)	FE-59	(+/-)	ZN-65	(+/-)	ZR-95	(+/-)	RU(RH)-106	(+/-)
26	4/30/84	PERCH	0.0	0.020	0.0	0.020	0.0	0.040	0.0	0.040	0.0	0.030	0.0	0.200
26	7/26/84	OTHER	0.0	0.020	0.0	0.030	0.0	0.070	0.0	0.060	0.0	0.050	0.0	0.200
26	10/10/84	PERCH	0.0	0.020	0.0	0.020	0.0	0.050	0.0	0.060	0.0	0.040	0.0	0.200
28B	7/16/84	OTHER	0.0	0.030	0.0	0.040	0.0	0.070	0.0	0.080	0.0	0.060	0.0	0.300
28B	10/19/84	PERCH	0.0	0.030	0.0	0.030	0.0	0.090	0.0	0.080	0.0	0.060	0.0	0.200
29	1/ 5/84	PERCH	0.0	0.030	0.0	0.040	0.0	0.070	0.0	0.050	0.0	0.050	0.0	0.300
29	4/10/84	PERCH	0.0	0.020	0.0	0.030	0.0	0.080	0.0	0.060	0.0	0.040	0.0	0.200
29	7/17/84	OTHER	0.0	0.020	0.0	0.020	0.0	0.050	0.0	0.050	0.0	0.040	0.0	0.200
29	10/ 9/84	PERCH	0.0	0.020	0.0	0.020	0.0	0.050	0.0	0.050	0.0	0.040	0.0	0.200
29	10/16/84	PERCH	0.0	0.020	0.0	0.020	0.0	0.050	0.0	0.050	0.0	0.040	0.0	0.200
30A	2/ 7/84	PERCH	0.0	0.020	0.0	0.020	0.0	0.060	0.0	0.050	0.0	0.040	0.0	0.200
30A	4/25/84	PERCH	0.0	0.020	0.0	0.020	0.0	0.040	0.0	0.040	0.0	0.030	0.0	0.200
30A	7/17/84	PERCH	0.0	0.030	0.0	0.030	0.0	0.070	0.0	0.070	0.0	0.050	0.0	0.300
30A	10/12/84	PERCH	0.0	0.020	0.0	0.020	0.0	0.040	0.0	0.050	0.0	0.030	0.0	0.150

LOCATION	COLLECTION DATE	TYPE	CR-51		K-40		RA-226		TH-228		BE-7		MN-95	
				(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)
26	4/30/84	PERCH	0.0	0.120	1.500	0.300	0.0	0.030	0.060	0.050	0.0	0.150	0.0	0.020
26	7/26/84	OTHER	0.0	0.200	1.800	0.600	0.050	0.050	0.0	0.070	0.0	0.200	0.0	0.030
26	10/10/84	PERCH	0.0	0.200	3.600	0.600	0.0	0.040	0.0	0.060	0.0	0.200	0.0	0.020
28B	7/16/84	OTHER	0.0	0.200	4.200	0.900	0.0	0.060	0.0	0.080	0.0	0.300	0.0	0.030
28B	10/19/84	PERCH	0.0	0.400	1.800	0.400	0.0	0.050	0.0	0.070	0.0	0.300	0.0	0.050
29	1/ 5/84	PERCH	0.0	0.200	2.900	0.800	0.0	0.050	0.0	0.080	0.0	0.200	0.0	0.030
29	4/10/84	PERCH	0.0	0.300	1.200	0.400	0.050	0.040	0.0	0.070	0.0	0.200	0.0	0.030
29	7/17/84	OTHER	0.0	0.200	2.900	0.500	0.0	0.040	0.070	0.060	0.0	0.200	0.0	0.020
29	10/ 9/84	PERCH	0.0	0.200	3.300	0.600	0.0	0.040	0.0	0.060	0.0	0.200	0.0	0.020
29	10/16/84	PERCH	0.0	0.200	3.100	0.600	0.0	0.040	0.0	0.060	0.0	0.200	0.0	0.020
30A	2/ 7/84	PERCH	0.0	0.200	1.600	0.400	0.0	0.040	0.0	0.060	0.0	0.200	0.0	0.020
30A	4/25/84	PERCH	0.0	0.140	1.600	0.300	0.0	0.030	0.0	0.040	0.0	0.150	0.0	0.020
30A	7/17/84	PERCH	0.0	0.200	4.100	0.800	0.0	0.050	0.0	0.080	0.0	0.200	0.0	0.030
30A	10/12/84	PERCH	0.0	0.130	1.800	0.400	0.0	0.030	0.0	0.050	0.0	0.200	0.0	0.020

4.0 DISCUSSION OF RESULTS

Gamma Exposure Rate (Table 1)

Gamma exposure from all sources including cosmic and other natural and artificial radioactivity is measured over periods of approximately one month using CaF_2 (Mn) thermoluminescent dosimeters (TLDs). These dosimeters are strategically placed at a number of on-site locations, as well as at inner and outer off-site locations. Glass bulb type TLDs such as these, are subject to inherent self-irradiation which has been experimentally measured for each dosimeter. The results, shown in Table 1 have been adjusted for this effect. The range of this correction is 0.3 μR/hr to 1.7 μR/hr, with a mean of approximately 1 μR/hr.

The data for 1984 exhibits the same trends as that of previous years; gamma exposure rates did not differ significantly for the off-site inner and outer ring locations. The on-site locations at the boron waste storage tank (location 01), the waste gas surge sphere (location 02), and discharge canal fence (location 03) were the only locations showing any plant effects. Increases from 1 to 14 μR/hr due to direct radiation from the plant are observed. Location 01 during August shows the effect of temporary storage of radioactive material in the area. These locations are within the plant's restricted area and, as such, are away from areas where members of the general public are usually allowed. Dosimeters located at areas which are accessible to the public, such as the picnic area (location 41B) and the mouth of the discharge canal (location 42B), did not indicate any increase in exposure rate due to the plant.

Further evaluation of the monthly data reveals a decrease in background during January of 1984, most likely caused by the extraordinary large snowfall during this month and its resultant shielding effect. Increased exposure rate levels occurred during the 4th quarter of 1984. These increases are caused by the use of a new TLD reader to measure the exposure of the TLD bulbs. Over the last five years, a trend of decreased exposure rates have been observed (see Figure 4-1) due to photomultiplier tube aging. In October, the new TLD reader was placed into service and measured exposure rates have increased to the magnitude of rates of past years.

Air Particulates and Iodine (Table 2, 3, 4A-L and 5)

Air is continuously sampled at seven inner ring and four outer ring locations by passing it through glass fiber particulate filters. These are collected weekly and analyzed for gross beta radioactivity. Results are shown on Figure 4-2 and Table 2. Gross beta activity remained at levels similar to that seen in 1982-1983 samples. As in 1979 and 1980, the data for the last three years has failed to show an increase in the spring and summer such as that seen in 1981 and other previous years. This is due to the absence of recent atmospheric nuclear testing in the northern hemisphere. Inner and outer ring monitoring locations showed no significant variation in measured

activities. This indicates that any plant contribution is not measurable.

Charcoal cartridges are included at five of the air particulate locations for the selective collection of iodine. Analysis of these cartridges (see Table 3) shows that eleven of the samples have I-131 slightly above its minimum detectable level (MDL). The positive values are attributable to statistical fluctuations in counting, rather than actual I-131. This premise is confirmed by the absence of I-131 in any of the milk samples. Milk from cows and goats are much more sensitive indicators of I-131 presence in the environment.

The weekly air particulate filters are composited monthly for gamma spectral analyses. The results, as shown in Tables 4A-4L, indicate the presence of naturally occurring Be-7, which is produced by cosmic processes. All other positive results are attributable to statistical fluctuations in counting. These analyses indicate the lack of any plant effects.

The weekly air particulate filters are also composited quarterly for the measurement of strontium and total cesium. These analyses involve the performance of radiochemical separation and appropriate counting techniques. The results presented in Table 5 are much more sensitive indicators of environmental radioactivity than gamma spectrometry, due to the greater sensitivity caused by compositing for a longer period of time and higher efficiency of beta counting. However this higher sensitivity suffers from the drawback that it does not allow the separation of Cs-137 and Cs-134. Therefore, analytical results presented in Table 5 include total cesium along with Sr-89 and Sr-90. The total cesium results, as usual, followed the same trend as the gross beta results. Indicator (inner ring) and control (outer ring) locations had comparable results, thus indicating that the total cesium is a result of fallout from weapons testing. The Sr-90 results show the same trend as the gross beta and total cesium analyses. Levels continued to remain at the faily constant low values as observed in 1982-83. There was no detectable Sr-89 in any of these samples. Because of the occurrence of comparable results at both indicator and control locations and the lack of Sr-89, it can be concluded that there are no indications of plant effects.

Soil (Table 6)

Soil samples are collected annually at ten of the air particulate monitoring stations. They are analyzed for strortium and gamma emitting radionuclides. The results of these analyses indicate that the only detectable radionuclides at levels above the respective MDL's consisted of Sr-90, Cs-137, the naturally occurring radionuclides, K-40, Ra-226 and Th-228, and cosmic produced Be-7. Due to the absence of Sr-89 and Cs-134, the presence of Sr-90 and Cs-137 is attributable to fallout from previous nuclear weapons testing. It was also noted that the levels of these two radionuclides did not significantly vary between indicator and control locations and these results were similar to those observed for the past nine years.

Cow Milk (Table 7)

Analysis of milk samples is generally the most sensitive indicator of fission product existence in the terrestrial environment. Airborne releases will usually be detected first in this media. This, in combination with the fact that consumption of milk is significant, results in this pathway usually being the most critical from the plant release viewpoint. This pathway also shows significant amounts of nuclear weapons testing fallout. Therefore this media needs to be evaluated very carefully when trying to decipher if there are any plant effects.

Sr-90 was observed in all samples; all results were below 11 pCi/ℓ. Data was similar to previous years. All three indicator locations exhibited higher values than the control location. This trend has usually been the case for these samples. Detailed analysis of previous data has concluded that these levels of Sr-90 are from weapons testing and are not plant related (see Section 6.0 for details to this argument). Sr-89 was not detected in any of the samples above its MDL. This isotope is released in greater quantities from the plant, indicating that the Sr-90 is the result of weapons testing and not from the plant. Sr-89 is only detected in these samples during episodes of fresh fallout from weapons testing.

Cs-137 usually shows the same tendencies as Sr-90, but at higher levels. Results for 1984 are similar to those of the past seven years. All three indicator locations showed Cs-137 activity above the control location. This trend has been observed in past data. However detailed analysis has concluded that these concentrations are most likely the result of fallout from previous weapons testing (see Section 6.0 for details). Cs-134 was not observed above detectable levels in any of the samples, further confirming the absence of plant effects. Prior to 1982, the values for Cs-137 in this table were representative of total cesium as determined by chemistry. For the past few years these values were confirmed by gamma spectrometry to be Cs-137. Cesium chemistry allows a higher degree of sensitivity but suffers the problem of possible interferences from other nuclides, specifically Cs-134. In order to maintain "state of the art" analysis techniques, the gamma spectrometry has been improved and cesium chemistry discontinued. Although not listed on Table 7, the only other nuclide detected by gamma spectometry was naturally occurring K-40.

All samples showed a lack of I-131 detectable above the MDL of 0.5 pCi/l. These results are consistent with previous years' results. The only occasions when this nuclide has been detected are those immediately following atmospheric testing of nuclear weapons.

Goat Milk (Table 8)

Depending on the feeding habits, goat milk can be a more sensitive indicator than cow milk of fission products in the environment. This is due to the metabolism of these animals. Similar to the results of the cow milk samples, these show significant amounts of

nuclear weapons testing fallout. Sr-90 was observed in all samples, with values similar at both locations. In previous years (1977-1983) the control location had significantly higher values than the indicator location or any of the cow locations. This difference in results between locations decreased substantially with a change in farms in 1983 (necessitated by the original control farm going out of business). The pre-1984 results demonstrate the variability in the uptake of fallout levels among various farms. This variability is caused by many factors, including feeding habits (amount of stored feed, etc.), soil characteristics, farming practices (tillage and quality of fertilization and land management), and feed type. For a complete discussion of the problem, see Section 6.0. As typical of periods lacking fresh fallout, no detectable Sr-89 was seen in these samples. The Cs-137 results also show a decrease in the difference between locations, however, the control location still exhibits values higher than the indicator location. This further demonstrates the variability of the uptake of fallout-related nuclides and indicates the lack of plant effects. The absence of Sr-89 and Cs-134 confirm that the levels of Sr-90 and Cs-137 are caused by previous weapons fallout.

There were no detectable levels of I-131 seen in any of the samples. This is also typical of previous years except for periods immediately following fallout from nuclear weapons testing, when I-131 may be detected.

Pasture Grass (Table 9)

Samples of pasture grass are required by the Environmental Technical Specifications when samples of milk are unobtainable. They may also be taken to verify the milk pathway measurements. This sample was not available in February when goat milk was not available at the control location. In June and September, samples of broad leaf vegetation were collected and analyzed as part of a new program and are listed in this table. The presence of Sr-90 and Cs-137 in these samples is consistent with values seen in pasture grass samples of past years and is most probably due to fallout. The absence of Sr-89 and Cs-134 confirms this premise. Co-60 appears in one sample but is believed to be caused by statistical fluctuations.

Well Water (Table 10)

Activity in this media results from either soluble plant effluents permeating through the ground or the leaching of naturally occurring nuclides from the soil and rock (past which the groundwater flows). Bi-214, H-3, and Gross Beta were detected in these samples, at levels similar to previous years. Sr-90 and Nb-95 were also seen in a couple samples, but these were barely above MDLs and were observed in both indicator and control locations and therefore are probably due to counting statistics and are not real.

Bi-214 is a daughter product of naturally occurring Ra-226. In well water supplies it may not necessarily be in equilibrium with its

long lived precursor. Therefore it is not indicative of the Ra-226 concentrations. This effect has been discussed in previous reports.

As usual the on-site wells (location 15) exhibited plant related H-3 significantly above background levels. This plant effect results from the wells being located in the path of ground water flow between the discharge canal and the Connecticut River and H-3 having the ability to readily follow the flow of ground water. These wells are on-site, therefore these tritium levels are not required to be reported as Anomolous Measurements. This pathway results in no dose consequence since the water from these wells is used only in process streams at the station. Offsite concentrations are much lower than these values (see River Water). The other wells exhibit typical background levels of H-3.

Also consistent with previous years, the gross beta values for the control location at the State Highway Department (location 16A) were higher than the values for the indicator locations. This activity is due to the leaching of naturally occurring nuclides. Variations can be caused by different flow patterns of the ground water, variable permeability of the different soil and rock formations, and the usage pattern of the wells. Therefore, the results of this type of analysis are not very indicative of plant effects.

Reservoir Water (Table 11)

These samples are not required by the Environmental Technical Specifications. Previous data has never shown any detectable plant activity in this media. This fact and the extremely unlikely possibility of observing any routine plant effluents has caused the discontinuance of these samples. In the event of widespread plant contamination, these samples would be analyzed.

Fruits and Vegetables (Table 12)

Similar to past years, this media did not show any plant effects. Concentrations of Sr-90 and Cs-137 in these samples existed at levels comparable to past years and is due to fallout. Naturally occurring K-40 was also detected in all samples. Cosmic-produced Be-7 was seen on some of the broad leaf samples. Since there was no fresh fallout, no other nuclides were detected.

Meat, Poultry, and Eggs (Table 13)

If these samples are available and their feed is grown within 10 miles of the station, then the Environmental Technical Specifications require that these samples be obtained. However, no samples were obtained because none were available.

River Water (Table 14)

These samples are collected on a quarterly basis; the sampling procedure is different at the control and indicator locations. Weekly grab samples of the first six weeks of each quarter are

composited at the control station (Middletown - location 30A). Continuous samples are utilized at the indicator station (area of plant discharge - location 29) and at an extra location (non Environmental Technical Specification location - East Haddam Bridge - location 28B).

Both the indicator and extra locations show tritium (H-3) concenrations above the background levels seen at the control location. These elevated levels are attributable to plant operation. They show the effect of plant releases being diluted by the Connecticut River. Because this nuclide only emits low energy beta particles and river water is not a source of drinking water, the dose consequence resulting from these levels is insignificant. Fish consumption is the only media through which the population encounters dose from H-3 in liquid effluents. The dose consequence of the H-3, although not routinely measured in fish, is calculated based upon the measured effluents and appropriate dispersion models (NRC approved computer code - LADTAP). Preliminary results of H-3 analyses in fish samples indicate that the calculations are conservative. The dose consequences, discussed in Section 5.0, are insignificant.

Gross beta and Sr-90 were the only other activities that were consistently seen in these samples. For most of the samples, the gross beta was similar to past data. These results are a gross type measurement and are, therefore, not very indicative of plant effects; they are masked by background activities. Sr-90 was also observed at levels similar to other years, however in most cases at positive levels below the MDL.

Bottom Sediment (Table 15)

The naturally occurring radionuclides, K-40, Ra-226, and Th-228 were present in all samples. Cosmic produced Be-7 was measured in a few samples, at levels near the MDL. The only other nuclides detected were Sr-90, Cs-137, and traces of Cs-134.

The levels of Sr-90 are similar to those observed in the past; indicator and control locations had comparable values. Therefore these levels are indications of fallout concentrations. Cs-137 was measured in all samples, at levels consistent among locations. Levels were similar to those seen in 1981-83 samples. The occurence of trace quantities of Cs-134 at the indicator location may indicate that a small portion of Cs-137 observed is plant related. The majority of the Cs-137 is due to fallout activity. Cs-134 levels are similar to those for the last three years. With the decrease in discharges since 1980, plant releases have become almost undetectable in this media.

Shellfish (Table 16)

The only detectable activity observed in this media consisted of Sr-90 and the naturally occurring radionuclides, Ra-226 and Th-228. Many of the samples also showed traces of K-40. This media has always shown low concentrations of this nuclide. One positive value of Sr-89 was indicated at an extra location (non Environmental

Technical Specification location - East Haddam Bridge - location 28A) located 1.8 miles downriver of the plant. This value, though an isolated occurrence, may be plant related. The dose consequence of this value is insignificant compared to those discussed in Section 5.0.

Sr-90 was detected in all samples, at similar concentrations among locations. Levels are consistent with what has been seen for the past eight years. For these reasons the Sr-90 is most probably due to fallout activity.

Fish-Bullheads (Table 17A)

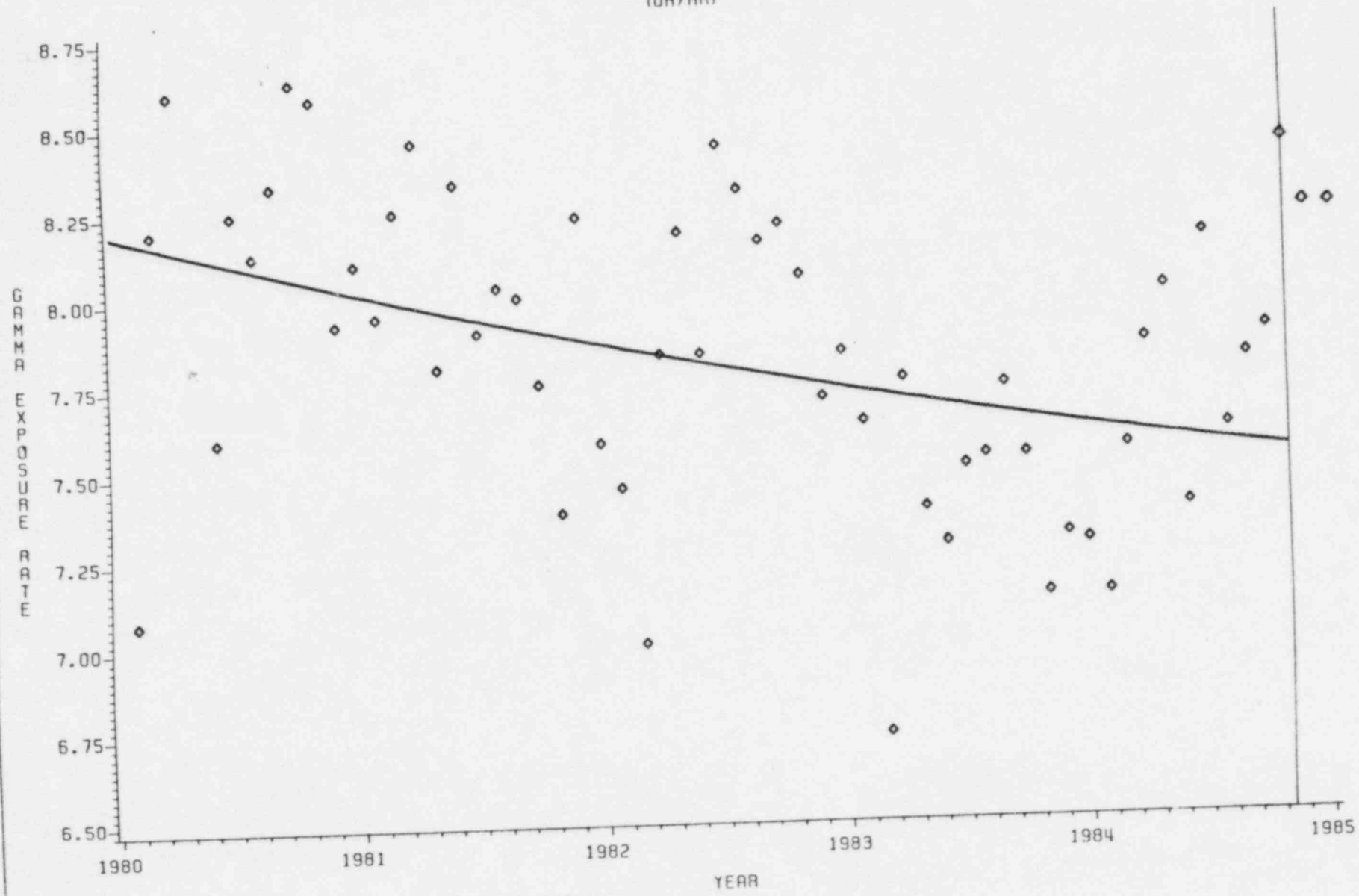
As usual, the majority of the activity in these bottom feeding aquatic samples consisted of naturally occurring K-40. Other nuclides that were observed include Sr-90 and possible traces of Cs-137. Sr-90 showed levels consistent with past data and was similar among locations. This and the absence of Sr-89 indicates that the Sr-90 is generic to fallout. The levels of Cs-137 are somewhat higher in samples taken from the plant discharge canal (location 29). This effect has been more noticeable in past years. Even though Cs-134 was not observed, part of the Cs-137 in these samples could be due to plant operation. To be conservative, dose consequences were calculated assuming these concentrations resulted from plant effluents. The results of the calculations are shown in Section 5.0.

Fish-Perch and other Types (Table 17B)

These fish samples exhibit the same results as the bullhead samples. The predominant activity was naturally occurring K-40. Sr-90 levels were consistent at all sampling locations and Sr-89 was not detectable. Therefore, the Sr-90 observed in these samples is due to fallout. As in the bullhead samples, Cs-137 was again detectable at higher levels in samples from the discharge canal and from the plant intake. This effect is somewhat more noticeable in these fish samples. In addition to this possible plant effect, there was one sample that had traces of I-131 activity, at levels near the MDL. These elevated levels may be plant related and as such, the dose consequence, though very minimal, is discussed in Section 5.0.

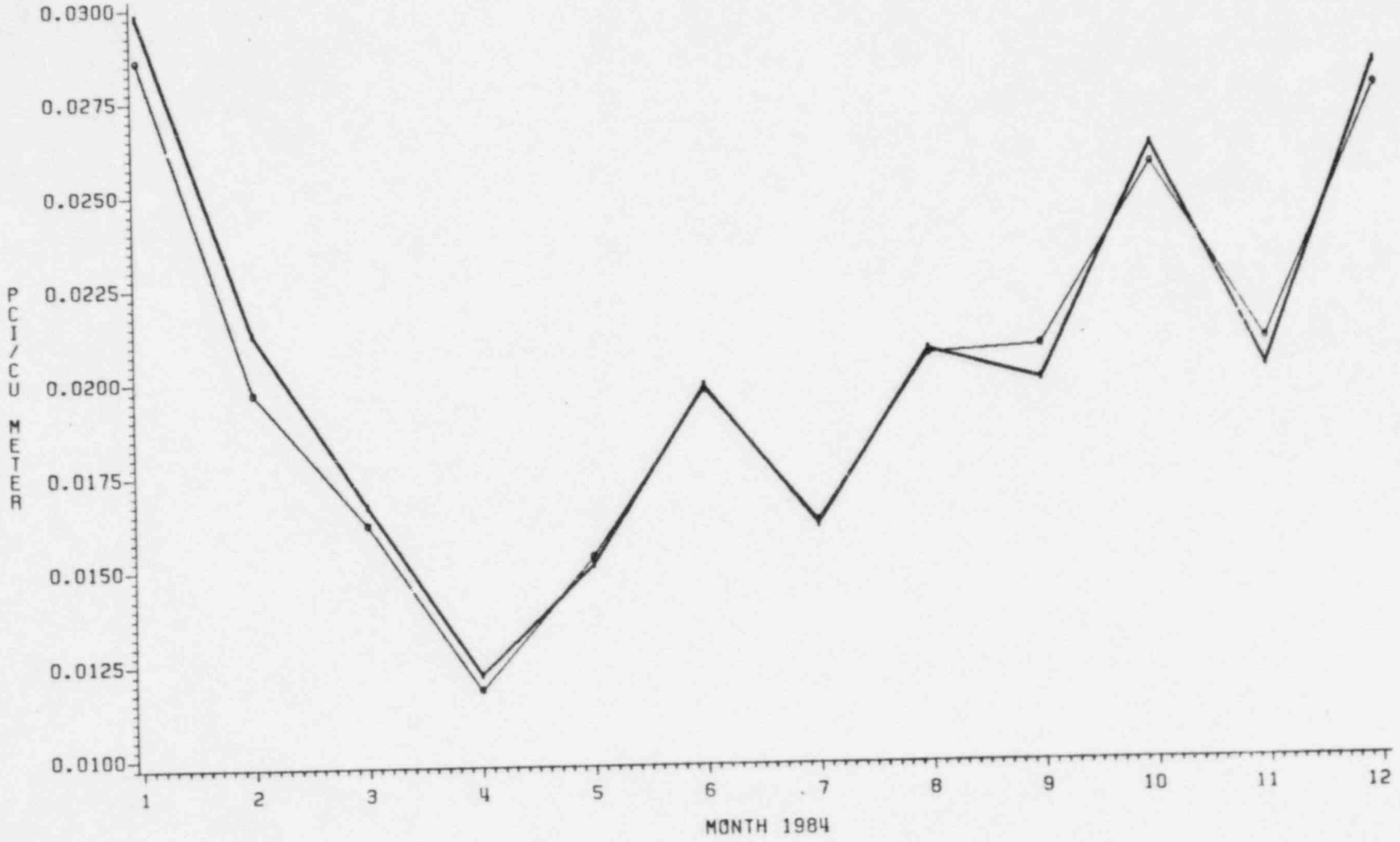
FIGURE 4-1

CONNECTICUT YANKEE
AVERAGE TLD EXPOSURE RATE PER MONTH
(UR/HR)



NEW READER WAS PLACED INTO SERVICE ON OCTOBER 1984
GAMMA EXPOSURE RATES ARE AN AVERAGE OF ALL CONTROL LOCATION EXPOSURES PER MONTH

FIGURE 4-2
COMPARITIVE MONTHLY VALUES OF
AIR PARTICULATE GROSS BETA RADIOACTIVITY
1984



I = INNER STATIONS
O = OUTER STATIONS
THE ERROR IN THESE VALUES IS APPROXIMATELY 0.004

5.0 OFFSITE DOSE CONSEQUENCES

The off-site dose consequences of the station's radioactive liquid and airborne effluents have been evaluated using two methods. The first method utilizes the station's measured radioactive discharges as input parameters to conservative models that simulate the transport mechanism through the environment to man. This results in the computation of the maximum doses to individuals and the 0 to 50 mile population dose. The results of these computations have been submitted to the NRC in the Semiannual Radioactive Effluent Release Reports written in accordance with Environmental Technical Specification 5.6.1b. The second method utilizes the actual results of the concentrations of radioactivity in various environmental media (e.g., milk, fish) and then computes the dose consequences from the consumption of these foods.

The first method, which is usually conservative (i.e., computes higher doses than that which actually occur), has the advantage of approximating an upper limit to the dose consequences. This is important in those cases where the actual dose cannot be measured because they are so small as to be well below the capabilities of conventional monitoring techniques. The results of both methods are compared in Table 5.1. For gaseous releases, no plant related detectable activity was observed in any sampling media. The less than values given for the second method are the doses which would be calculated if the annual average activity was equal to the minimum detectable level. Although the liquid releases are also low, traces of plant related activity were detected in, fish (caught in the discharge canal), bottom sediment, shellfish and river water samples.

The doses presented in Table 5.1 are the maximum doses to an individual for specific pathways to man. That is, the dose is calculated at the location of maximum effect from the plant effluents for that pathway and for the critical age group. For example, the dose via the fish pathway is calculated for fish caught in the discharge canal and the external gamma dose is calculated at the site boundary which has the least meteorological dispersion. The calculations result in maximum total doses to an individual of: 2.6 mrem whole body to an adult, 0.40 mrem to a child's thyroid, and 1.5 mrem to an adult's liver. The calculated doses for all other locations and other age groups will be less than those shown on Table 5.1.

The average dose to an individual within 50 miles from the site cannot be calculated using the second method. However, Method 1 yields the following results for the period January-December 1984 for the average individual:

ANNUAL WHOLE BODY DOSE DUE TO AIRBORNE EFFLUENTS = 0.00073 mrem

ANNUAL WHOLE BODY DOSE DUE TO LIQUID EFFLUENTS = 0.00152 mrem

Thus, it can be seen that the average whole body dose to an individual is much less than the maximum whole body dose to an individual as shown in Table 5.1.

In order to provide perspective on the doses in Table 5.1, the standards for 1984 on the allowable maximum dose to an individual of the general public are given in 40CFR190 as 25 mrem whole body, 75 mrem thyroid, and 25 mrem any other organ. These standards are a fraction of the normal background radiation of 125 mrem per year and are designed to be inconsequential in regard to public health and safety. Since plant related doses are even a smaller fraction of natural background, they have insignificant public health consequences. In fact, the plant related doses to the maximum individual are less than 10% of the variation in natural background in Connecticut.

TABLE 5.1

COMPARISON OF DOSE CALCULATION METHODS
HADDAM NECK STATION

JANUARY-DECEMBER 1984

PATHWAY	ORGAN	ANNUAL DOSE (MILLIREM) METHOD 1[1]	METHOD 2[1]
AIRBORNE EFFLUENTS			
1. External Gamma Dose	Max. Ind.[2]-Whole Body	1.5	ND[3]
2. a. Inhalation	Max. Ind.-Thyroid	0.13	NAD[4], <0.6
b. Vegetables	Max. Ind.-Thyroid	0.28	NAD
c. Goat's Milk	Max. Ind.-Thyroid	0.18	NAD, <2.3
LIQUID EFFLUENTS			
1. Fish	Max. Ind.-Whole Body	1.10	0.023
	Max. Ind.-Liver[5]	1.49	0.035

(1) Method 1 uses measured station discharges and meteorological data as input parameters to conservative transport to man models. Method 2 uses actual measured concentrations in environmental media.

(2) Maximum individual - The maximum individual dose is the dose to the most critical age group (teen for inhalation, infant for milk, and child for vegetables), at the location of maximum concentration of plant related activity. The dose to the average individual is much less than the maximum individual dose. The doses for inhalation and vegetable consumption assume that the individual resides at the point of maximum quarterly dose. Therefore, his residence is subject to variation for conservatism.

(3) The plant effects were so small that they could not be distinguished from fluctuations in natural background.

(4) NAD - No activity detected above the minimum dectable level. The less than value reported is the dose corresponding to the MDL.

(5) For adult.

6.0 DISCUSSION

The evaluation of the effects of station operation on the environment requires the careful consideration of many factors. Those factors depend upon the media being effected. They include station release rates, effluent dispersion, occurrence of nuclear weapons tests, seasonal variability of fallout, local environment, and locational variability of fallout. Additional factors affecting the uptake of radionuclides in milk include soil conditions (mineral content, pH, etc.), quality of fertilization, quality of land management (e.g., irrigation), pasturing habits of animals, and type of pasturage. Any of these factors could cause significant variations in the measured radioactivity. A failure to consider these factors could cause erroneous conclusions.

Consider, for example, the problem of deciphering the effect of station releases on the radioactivity measured in milk samples. This is an important problem because this product is widely consumed and fission products readily concentrate in this media. Some of these fission products, such as I-131 and Sr-89 are relatively short-lived. Therefore they result from either plant effluents or from recent nuclear weapons tests. Sr-89's lifetime is longer than I-131's, therefore it must be remembered that it will remain around for much longer periods of time. Problems are caused by the long-lived fission products, Sr-90 and Cs-137. These isotopes are still remaining from the high weapons testing era of the 1960's. This results in significant amounts of Sr-90 and Cs-137 appearing in milk samples. Distinguishing between this "background" of fallout activity and plant effects is a difficult problem.

In reviewing the Sr-90 and Cs-137 measured in cow and goat milk in the areas around the Millstone and Haddam Neck stations, a casual observer could notice that in some cases the levels of these isotopes are higher at farms closer to the station than at those further away from the stations. The stations effluents might at first appear to be responsible. However, the investigation of the following facts prove this conclusion wrong.

1. The stations accurately measure many fission products, including Sr-90 and Cs-137 in their releases. Based on these measurements and proven models developed by the Nuclear Regulatory Commission, concentrations in the environment can be calculated. These calculations (generally conservative, see Section 5.0) show that insufficient quantities (by more than a factor of 1000) of Sr-90 and Cs-137 have been released from the stations to yield the measured concentrations in milk.

2. Based on the ratio of Sr-89 to Sr-90 in the measured releases from the stations and on the similar chemical properties of the two nuclides, plant-related Sr-90 cannot be detected in milk without also detecting plant related Sr-89. During 1981 (and a few other occassions), Sr-89 has been detected in many of the milk samples. To investigate the source of Sr-89, air particulate data has been evaluated. Evaluation shows that airborne Sr-89

is generally uniform at all the indicator and control locations for both the Millstone and Haddam Neck stations. Therefore it can be concluded that the Sr-89 seen in milk is from recent fallout. Similarly, the levels of airborne Sr-90 (and total Cesium) are also generally uniform at all the air sampling locations. However, with the longer half lives of these isotopes, the same conclusion cannot be made. But, plant related Sr-89 has never been detected in milk, therefore levels of Sr-90 observed must be attributable to nuclear weapon's testing.

3. Similar to Sr-89, Cs-134 can be used as an indication of plant related Cs-137. Although not as conclusive as Sr-89, the lack of any measurable Cs-134 in any of the milk samples suggests that the Cs-137 is not plant related. This is further confirmed by the evaluation of the air particulate data.

4. Since dairy milk sampling began in the 1960's, years prior to plant operation, the immediate station areas have always shown higher levels of weapons fallout related Sr-90 and Cs-137 (see Figures 6-1 and 6-2). The ratio of activity between the locations has not changed with plant operation. All areas show the same significant decrease in radioactivity since the 1964 Nuclear Test Ban Treaty.

5. Local variability of Sr-90 and Cs-137 in milk is common throughout the United States. Due to the variability in soil conditions, pasturing methods, rainfall, etc., it is the rule rather than the exception. Therefore, it is not surprising that certain farms have higher levels of radioactivity than other farms. In fact, there are some cases where the farms further from the station have higher Sr-90 and Cs-137 values than the farms that are closer to the station (e.g., see Haddam Neck Goat Milk data.)

6. The goat farm with the highest levels of Sr-90 and Cs-137 has also experienced the highest levels of short-lived activity from the 1976 and 1977 Chinese Tests. This indicates that for some unknown reason this farm has the ability for higher reconcentration. Special studies performed at this and other farms failed to find any link to the plant.

Based on these facts, the observation that the station effluents are responsible is obviously false. The cause must be one or more of the other variables.

Northeast Utilities has carefully examined the data throughout the year and has presented in this report all cases where plant related radioactivity can be detected. An analysis of the potential exposure to the population from any plant related activity has been performed and shows that in all cases the exposure is insignificant.

As in previous years, this data is being submitted to, and will be reviewed by the appropriate regulatory bodies such as the Nuclear Regulatory Commission, Environmental Protection Agency and Connecticut Department of Environmental Protection.

APPENDIX A

Cow and Goat Census for 1984

DAIRY COWS WITHIN 15 MILES OF CONNECTICUT YANKEE

AS OF APRIL 1984

DIRECTION	DISTANCE	NAME AND ADDRESS	NO. OF COWS
N	15 M.	William Bailey 79 Candlewood Rd. Marlborough, CT 06447	27
N	15 M.	Foot Hills Farm Edward Fotte RFD #2 Hebron, CT 06248	35
N	15 M.	Kristoff Brothers Hyland Farm 183 Bailey St. Glastonbury, CT 06033	138
NNE	8 M.	Rankl Farm-Theo Rankl South Road Marlborough, CT 06447	134
NNE	14 M.	Robert K. Gasper 694 Gilead St. Hebron, CT 06248	54
NNE	14 M.	Hills Farm 527 Gilead St. Hebron, CT 06248	85
NNE	14 M.	Mapleleaf Farm, Inc. 750 Gilead St. Hebron, CT 06248	150
NNE	14.5 M.	Douglas Porter RFD #1 Hebron, CT 06248	160
NNE	14.5 M.	Jonas Valys Hardy Road Hebron, CT 06248	134
NE	4.5 M.	John Dill Waterhold Rd. Colechester, CT 06415 - East Hampton -	24
NE	8.5 M.	John Mohrlein Route 16 Colchester, CT 06145	60
NE	10 M.	Marvin Maynard RFD #2 Colchester, CT 06415	20

DAIRY COWS WITHIN 15 MILES OF CONNECTICUT YANKEE

AS OF APRIL 1984

DIRECTION	DISTANCE	NAME AND ADDRESS	NO. OF COWS
NE	14 M.	Victor Botticello Levita Rd. Lebanon, CT 06249	28
NE	14 M.	Grabber Brothers RFD #1 Lebanon, CT 06249	45
ENE	6 M.	William Dill Beebe Rd. East Haddam, CT 06423	70
ENE	6.5 M.	Grandpa Hill Farm R.S. Cone Box 251 East Haddam, CT 06423	61
ENE	8.1 M.	William Smith Town Road Colchester, CT 06415 - East Haddam -	43
ENE	11 M.	Walter Swider Route 85 Colchester, CT 06415	47
ENE	14 M.	Burton Avery Rathburn Hill Rd. Colchester, CT 06415 - Salem -	50
ENE	14.5 M.	Walter Makarevich Geer Road Lebanon, CT 06249	17
E	11.5 M.	Valley View Farm Eugene Wiczewski Darling Rd. Colchester, CT 06415	24
E	12 M.	Robin & William Houser Salem 4 Corners Salem, CT 06415	24
E	13 M.	Anne B. Henrici Catawampus Darry Round Hill Road Salem, CT 06415	15

DAIRY COWS WITHIN 15 MILES OF CONNECTICUT YANKEE

AS OF APRIL 1984

DIRECTION	DISTANCE	NAME AND ADDRESS	NO. OF COWS
E	13 M.	Garry Vaill Forsythe Rd. Colchester, CT 06415 - Salem -	34
E	14 M.	Stuart Gadbois Route 85 & Route 356 Colchester, CT 06415 - Salem -	225
ESE	2.5 M.	Mortimer Gelston Maple Ridge Farm Maple Avenue East Haddam, CT 06423	45
ESE	14.5 M.	Raymond Muschinsky Grassy Hill Road East Lyme, CT 06333	27
SE	11 M.	John Tiffany Sterling City Rd. Old Lyme, CT 06371 - Lyme -	70
SE	12 M.	J. Ely Harding Ashlawn Farm Old Lyme, CT 06371 - Lyme -	60
SW	13 M.	Thomas Haggarty Hoophole Rd. Guilford, CT 06437	43
WSW	8 M.	Michael Dwyer Route 17 Durham, CT 06492 - Wallingford -	7
WSW	8 M.	Robert Raudat Old Durham Rd. Killingworth, CT 06417	33
WSW	11 M.	Raymond Wimler Guilford Rd. Durham, CT 06422	180
WSW	14 M.	Cella Brothers Whirlwind Hill 2, No. Brandford St. Wallingford, CT 06492	125

DAIRY COWS WITHIN 15 MILES OF CONNECTICUT YANKEE

AS OF APRIL 1984

DIRECTION	DISTANCE	NAME AND ADDRESS	NO. OF COWS
WSW	14 M.	John Kranyak 1349 Whirlwind Rd. Wallingford, CT 06492	48
WSW	15 M.	Alfred Anderson 216 Northford Rd. Wallingford, CT 06492	23
WSW	15 M.	Co Ag Farm, Inc. Walter Augur & George Cooke 180 Northford Rd. Wallingford, CT 06492	187
W	8.5 M.	Richard Rowe Box 4, Higganum Rd. Durham, CT 06422	30
W	11.5 M.	Friendly Acres Dairy Farm Tony Caltabiano Parmalee Hill Rd. Durham, CT 06422	37
W	12.2 M.	Powder Hill Dairy Farm Henry Bugai Powder Hill Rd. Durham, CT 06422	170
W	12.5 M.	Linus Sanstrom, Jr. Strickland Rd. Middlefield, CT 06455	30
W	14 M.	Thomas Wall 963 Northrop Rd. Wallingford, CT 06492	48
W	14 M.	North Farms Alex Werbiski 1069 Farms Rd. Wallingford, CT 06492	22
W	14.5 M.	Charles Greenbacker & Sons, Inc. 743 Murdock Avenue Meriden, CT 06450	131
W	14.5 M.	Robert Self Fieldstone Farm 63 Grieb Rd. Wallingford, CT 06492	91

DAIRY COWS WITHIN 15 MILES OF CONNECTICUT YANKEE

AS OF APRIL 1984

DIRECTION	DISTANCE	NAME AND ADDRESS	NO. OF COWS
W	15 M.	David Cella 899 Old Rock Hill Rd. Wallingford, CT 06492	18
W	15 M.	Fairlawn Dairy Farm Harold Gehrke, Sr. 178 Grieb Rd. Wallingford, CT 06492	68
WNW	7 M.	Wilbur Harris 174 Wilcox Rd. Middletown, CT 06457	31
WNW	7 M.	Willie Harvey Lee Street Middletown, CT 06457	59
WNW	8 M.	E. Leroy Brock 796 Ridge Rd. Middletown, CT 06457	66
WNW	8 M.	George Seifert Kelsey St. Middletown, CT 06457	30
WNW	12 M.	John Kolman Meriden Rd. Middletown, CT 06457	55
WNW	12 M.	Walnut Hill Farm William & Thomas Mintz Jackson Hill Road Middlefield, CT 06455	100
WNW	12.5 M.	Far View Farm Gustave Schmaltz Jackson Hill Road Middlefield, CT 06455	40
WNW	13.5 M.	Richard Westfort 543 Allen Avenue Meriden, CT 06450	62
WNW	15 M.	Bilger Brothers Hickory Grove Farm 705 Westfield Rd. Meriden, CT 06450	32

DAIRY COWS WITHIN 15 MILES OF CONNECTICUT YANKEE

AS OF APRIL 1984

DIRECTION	DISTANCE	NAME AND ADDRESS	NO. OF COWS
WNW	15 M.	John Hanson 506 Spruce Brook Rd. Berlin, CT 06037	17
NW	6 M.	Edward Hills Brooks Rd. Middletown, CT 06457	36
NW	9.5 M.	Daniel Anderson Blague Dairy Farm 56 Strong Avenue Portland, CT 06480	79
NW	13 M.	Higgins Farm, Inc. 837 Ridgewood Rd. Middletown, CT 06457	49
NW	15 M.	Leland Gilbert 730 Elm St. Rocky Hill, CT 06067	28
NNW	1.5 M.	John Kruger Quarry Hill Rd. Haddam, CT 06438	14
NNW	2.5 M.	Halls Pride Farm John Hall Haddam Neck Rd. East Hampton, CT 06424 - Haddam -	25
NNW	13 M.	Charles Matway, Est. Brook St. Rocky Hill, CT 06067	17
NNW	14 M.	Roaring Brook Farm Henry Killam 77 Tryon St. So. Glastonbury, CT 06073 - Glastonbury -	25

DAIRY GOATS WITHIN 20 MILES OF CONNECTICUT YANKEE

AS OF MAY 1984

DIRECTION	DISTANCE	NAME AND ADDRESS	NO. OF GOATS
N	4.5 M.	Philip Bourdon 164 Young St. East Hampton, CT 06424	9
N	6 M.	Jackie Reardon So. Main St. East Hampton, CT 06424	5
N	12.5 M.	Allan Armando New London Tkpe. Glastonbury, CT 06033	1
N	18.5 M.	M. V. Branco School Rd. Bolton, CT 06040	4
NNE	12 M.	Louise Sage 155 Reidy Hill Rd. Hebron, CT 06248	4
NNE	16 M.	Joan Bowers 350 Wall St. Hebron, CT 06248	3
NNE	16 M.	Elaine Phillips Burnt Hill Rd. Hebron, CT 06248	8
NNE	16 M.	Kathy Waters Burnt Hill Rd. Hebron, CT 06248 228-3098	9
NNE	18 M.	Cira Petersons Route 87 Columbia, CT 06237	1
NNE	18.5 M.	Carolyn Bellows Route 87 Columbia, CT 06237	1

DAIRY GOATS WITHIN 20 MILES OF CONNECTICUT YANKEE

AS OF MAY 1984

DIRECTION	DISTANCE	NAME AND ADDRESS	NO. OF GOATS
NNE	20 M.	Ted Beebe Route 6 Columbia, CT 06237	5
NNE	20 M.	Arthur Cobb 128 Lake Rd. Columbia, CT 06237	1
NE	16 M.	Barbara Nadeau Clubhouse Rd. Lebanon, CT 06249	3
NE	17 M.	Lynn Miller Goshen Hill Rd. Lebanon, CT 06249	8
ENE	11 M.	Lawrence Brown West Rd. Colchester, CT 06415	1
ENE	17 M.	Henry Rianhard Scott Hill Rd. Bozrah, CT 06334	1
E	14.5 M.	Joseph Devito 1494 Old Colchester Rd. Oakdale, CT 06370	5
ESE	3.1 M.	MaryAnn Halpin Town St. East Haddam, CT 06423	3
ESE	7.2 M.	Burton Tucker A.P. Gates Rd. East Haddam, CT 06423	2
ESE	15 M.	Tina Korineck 233 Upper Pattagansett Rd. East Lyme, CT 06333	6

DAIRY GOATS WITHIN 20 MILES OF CONNECTICUT YANKEE

AS OF MAY 1984

DIRECTION	DISTANCE	NAME AND ADDRESS	NO. OF GOATS
ESE	16 M.	Ron Birchall 339 Boston Post Rd. East Lyme, CT 06333	6
S	8.5 M.	David Recchia RFD #1 Deep River, CT 06417	1
S	11.5 M.	Victor Trudeau 174 Horse Hill Rd. Westbrook, CT 06498	5
SSW	6.8 M.	Chris Harris 218 Reservoir Rd. Killingworth, CT 06417	2
SSW	8.5 M.	Vicki Fonteneau 312 Old Deep River Tkpe. Killingworth, CT 06417	2
SW	20 M.	Barbara Prisitera 94 Mill Plain Rd. Branford, CT 06405	1
W	4.8 M.	*Pat Mannetho Jacoby Rd. Higganum, CT 06441	4
W	12 M.	Brian Hogan Route 157 Middlefield, CT 06082	1
W	14.5 M.	Robert Pogomore 177 Williams Rd. Wallingford, CT 06492	2
WNW	10.5 M.	Roger Kinderman 721 Wadsworth Rd. Middlefield, CT 06082	3

DAIRY GOATS WITHIN 20 MILES OF CONNECTICUT YANKEE

AS OF MAY 1984

DIRECTION	DISTANCE	NAME AND ADDRESS	NO. OF GOATS
WNW	15 M.	Nancy Hanson 506 Spruce Brook Rd. Berlin, CT 06037	4
WNW	19 M.	Daniel Nitkowski 46 Firch Ave. Meriden, CT 06450	1
NW	1.5 M.	Donald Donofrio Injun Hollow Rd. Haddam, CT 06441	7
NW	13.5 M.	Ronald Marchinkoski 122 Coles Rd. Cromwell, CT 06106	2
NW	13.5 M.	Melvin Granger 140 Coles Rd. Cromwell, CT 06106	3
NNW	3.5 M.	Francis McAuliffe Route 151 Middle Haddam, CT 06456	2
NNW	14 M.	Dorothy Joba 171 Ferry Lane S. Glastonbury, CT 06073	6

APPENDIX B

Quality Control

Introduction

Northeast Utilities Service Company (NUSCO), acting as the agent for both the Northeast Nuclear Energy Company (NNECO) and the Connecticut Yankee Atomic Power Company (CYAPCO), maintains a quality assurance (QA) program of its primary contractor of radiological analyses, Chemical Waste Management of Massachusetts, Inc., (Teledyne for H-3 in water samples). This is accomplished by the use of the three quality control methods that are specified in Radioassay Procedures for Environmental Samples, U.S. Department of Health, Education, and Welfare (January 1967).

These three quality control methods are:

a) Duplicate analyses of actual surveillance samples with one laboratory. This type of quality control allows an evaluation of the contractor's precision or reproducibility of results.

b) Cross-check analyses of actual surveillance samples with more than one laboratory. This intercomparison allows the determination of what agreement the primary contractor has with another laboratory.

c) Analyses of "spiked" samples. This type of quality control allows a check on the contractor's accuracy of results.

Additional QA programs are performed, these include: 1) Chemical Waste Management's internal QA program, 2) Chemical Waste Management's participation in EPA's Environmental Radioactivity Laboratory Intercomparison Studies Program, and 3) Nuclear Regulatory Commission - State of Connecticut Independent Verification Program.

Method

The number and type of QA samples are given in Table 1. In general, the objective was to obtain between 10 and 20 percent of the samples as QA samples. The results of the program are shown in Tables 2, 3, and 4. These three tables correspond to the above methods of quality control.

For I-131 spikes in milk, the acceptance criteria is based on the requirement that the measured value be within 30 percent of the spike. The acceptance criteria for the remaining QA samples is based on the standard deviation in counting statistics (1 sigma, σ) only. The standard deviation is divided into the difference between the two measurements (Δ). The result then should satisfy the acceptance criteria as developed from the above-mentioned U.S. Department of Health, Education, and Welfare document. For all GeLi analyses the acceptance criteria is that Δ/σ be less than or equal to 3. For chemistry and beta counting, where the overall error is expected to be higher than the calculated error based on counting statistics only, the acceptance criteria is that Δ/σ be less than or equal to 4.

Results

For Precision (Table 2), the requirement is that the unacceptable results be less than 10 percent of the number of measurements for that type of

measurement as shown for the totals. General statistics indicate that this value should be approximately 2.5 percent for counting statistics, but other non-counting statistical errors exist such as sample volume, sampling, etc. Hence, 10 percent has been found to be reasonable criteria. From the totals at the bottom of Table 2 this requirement is satisfied for Ge(Li) and H-3 analyses. However, 11.1 percent of the Sr-90 analyses were unacceptable. All four sets of unacceptable measurements were compared with the results of the secondary contractor. Comparison indicated that the primary contractor's first analysis was correct, and three of the four unacceptable measurements were conservative.

For Interlaboratory Comparisons (Table 3) the requirement is less stringent than both Precision and Accuracy, that is the unacceptable results be less than 20 percent of the number of measurements for that type of measurement. As indicated by the totals on the bottom of Table 3, the results are acceptable.

For the case of Accuracy, only the primary contractor need satisfy the acceptance criteria. The secondary contractor receives only a small number of samples thus making the evaluation of the secondary contractor difficult. The requirement that need be satisfied by the primary contractor here is the same as that for Precision, that the unacceptable results be less than 10 percent of the number of measurements for that type of measurement. From the totals at the bottom of Table 4 this requirement is satisfied for H-3 and I-131 (in air) analyses. This requirement is just exceeded for Sr-89 and Ge(Li) analyses (14 and 13 percent, respectively).

Investigations were performed for the other analyses that did not meet the acceptance criteria. For the I-131 in milk analyses, problems of previous years have remained. The switch from CuI to PdI carrier has improved the results. Of the 6 unacceptable results, 5 occurred for low spikes. All five of these yielded conservative results, therefore, it can be concluded that the data presented in this report for this type of analysis, is conservative. The increased spiked I-131 in milk program will continue.

For the Sr-90 and Sr-89 spikes in milk, the only unacceptable results occurred in the same sample. The first Sr-90 result was ~ 55 percent low. Reanalysis indicated a value that was ~ 36 percent low. The first Sr-89 result was high (by ~ 300 percent), indicating interference from Sr-90. Reanalysis for Sr-89 was acceptable. For the three unacceptable Sr-90 and two unacceptable Sr-89 results in water, five samples were involved. Four of these were reanalyzed. The original Sr-90 results were ~ 30 percent low. Reanalyses indicated acceptable results for these three samples. The original Sr-89 results were only ~ 20 percent low. Reanalysis of one of these indicated acceptable results.

Two fish spikes had Sr-90 results that were unacceptable. One sample was reanalyzed; the Sr-90, however, remained unacceptable. This media often presents a problem because of calcium interferences and nonuniformity of spikes. Therefore, no further investigation was deemed necessary. For the two unacceptable Sr-90 results in air particulates, results were

~ 60 percent low. Reanalysis of this media is not possible since the whole sample is destructively analyzed.

Air particulate Cs (chemistry) spikes had only two of eight spikes meeting the acceptance criteria. However, all of these were within ~ 30 percent, except for one which was 80 percent low.

For the GeLi results, the calibration factors were at fault and these have been corrected.

The gross beta results, although only 3 of 13 results were acceptable, has no analysis problem. The problem is related to the geometry of spiking the filter paper. Corrective actions are being taken.

Conclusion

Based on the results discussed above, it is concluded that the results of the routine measurements presented in the report are valid. The results of primary contractor's participation in the EPA QA program confirms this conclusion.

Table 1
Number of Quality Control* Samples

Sample Type	Number of QC Samples	Number of Routine Required Samples[a,b]
Milk	51	112
Well Water[c]	17	28
Sea Water[c]	2	16
River Water[c]	7	8
Soil	3	16
Bottom Sediment	4	26
Aquatic Flora	4	12
Fish	12	40
Shellfish	4	52
Lobster	0	12
Fruits and Vegetables	0	16
Air Particulate - Gross Beta	13	1113
- Iodine	11	424
- Geli	24	252
- Chemistry	8	84

*An additional program is performed by the contractor
a - Total for both Millstone and Connecticut Yankee
b - Depends on availability
c - QC breakdown does not include H-3 analysis; total number of tritium QC samples was 31.

Table 2

Precision

Media	Analysis	Acceptance Criteria	Number of Acceptable	Measurements Unacceptable
Milk	Sr^{90}	$\Delta/\sigma \leq 4$*	25	3
	Sr^{89}	$\Delta/\sigma \leq 4$	27	1
	Cs^{137} (Geli)	$\Delta/\sigma \leq 3$	27	1
Water	H-3	$\Delta/\sigma \leq 4$	8	0
Soil & Bottom Sediment	Geli's	$\Delta/\sigma \leq 3$	3	0
	Sr^{90}	$\Delta/\sigma \leq 4$	2	1
Aquatic Life	Geli's	$\Delta/\sigma \leq 3$	5	0
	Sr^{90}	$\Delta/\sigma \leq 4$	5	0
Total	Sr^{90}	$\Delta/\sigma \leq 4$	32	4
	Geli	$\Delta/\sigma \leq 3$	35	1
	H-3	$\Delta/\sigma \leq 4$	8	0

*Δ = difference between the two values
σ = standard deviation

Table 3

Interlaboratory Comparisons

Media	Analysis	Acceptance Criteria	Number of Acceptable	Measurements Unacceptable
Milk	Sr^{90}	$\Delta/\sigma \leqq 4$*	11	0
	Sr^{89}	$\Delta/\sigma \leqq 4$	11	0
	Cs^{137} (Geli)	$\Delta/\sigma \leqq 3$	11	0
Water	Sr^{90}	$\Delta/\sigma \leqq 4$	7	0
	H-3	$\Delta/\sigma \leqq 4$	11	1
Soil & Bottom Sediment	Geli's	$\Delta/\sigma \leqq 3$	4	0
	Sr^{90}	$\Delta/\sigma \leqq 4$	4	0
Aquatic Life	Geli's	$\Delta/\sigma \leqq 3$	10	0
	Sr^{90}	$\Delta/\sigma \leqq 4$	9	1
Total	Sr^{90}	$\Delta/\sigma \leqq 4$	31	1
	H-3	$\Delta/\sigma \leqq 4$	11	1
	Geli	$\Delta/\sigma \leqq 3$	25	0

*Δ = difference between the two values
σ = standard deviation

Table 4

Accuracy

(Results of Spikes)

Media	Analysis	Acceptance Criteria	Number of Measurements: Acceptable: Primary Contractor	Acceptable: Secondary Contractor	Unacceptable: Primary Contractor	Unacceptable: Secondary Contractor
Milk	I^{131}	$\Delta \leq 30\%$	18	6	6	0
	Sr^{90}	$\Delta/\sigma \leq 4$	7	4	1	0
	Sr^{89}	$\Delta/\sigma \leq 4$	7	4	1	0
	Cs^{137}	$\Delta/\sigma \leq 3$	8	4	0	0
	Cs^{134}	$\Delta/\sigma \leq 3$	7	4	1	0
Water	Geli	$\Delta/\sigma \leq 3$	11	6	1	0
	Sr^{90}	$\Delta/\sigma \leq 4$	9	6	3	0
	Sr^{89}	$\Delta/\sigma \leq 4$	10	6	2	0
	H-3	$\Delta/\sigma \leq 4$	8	4	0	0
Aquatic Food and Flora	Geli	$\Delta/\sigma \leq 3$	0	1	2	1
	Sr^{90}	$\Delta/\sigma \leq 4$	0	2	2	0
	Sr^{89}	$\Delta/\sigma \leq 4$	2	2	0	0
Air Particulate	Gross β	$\Delta/\sigma \leq 4$	3	-	10	-
	Geli	$\Delta/\sigma \leq 3$	21	-	3	-
	Cs^{90} (chemistry)	$\Delta/\sigma \leq 4$	2	-	6	-
	Sr^{131}	$\Delta/\sigma \leq 4$	6	-	2	-
	I	$\Delta/\sigma \leq 4$	11	-	0	-
Total	I^{131} (milk)	$\Delta \leq 30\%$	18	6	6	0
	Sr^{90}	$\Delta/\sigma \leq 4$	22	12	8	0
	Sr^{89}	$\Delta/\sigma \leq 4$	19	12	3	0
	Cs (chemistry)	$\Delta/\sigma \leq 4$	2	-	6	-
	Geli	$\Delta/\sigma \leq 3$	40	11	6	1
	H-3	$\Delta/\sigma \leq 4$	8	4	0	0
	I^{131} (air)	$\Delta/\sigma \leq 4$	11	-	0	-
	Gross β (air)	$\Delta/\sigma \leq 4$	3	-	10	-

* Δ = difference between the two values
  σ = standard deviation

CONNECTICUT YANKEE ATOMIC POWER COMPANY

BERLIN, CONNECTICUT
P.O. BOX 270 HARTFORD, CONNECTICUT 06141-0270

TELEPHONE
203-666-6911

March 27, 1985
Docket No. 50-213
B11502

Dr. T. E. Murley
Regional Administrator
Region I
U.S. Nuclear Regulatory Commission
631 Park Avenue
King of Prussia, PA 19406

Dear Dr. Murley:

HADDAM NECK STATION
ANNUAL ENVIRONMENTAL OPERATING REPORT, PART B: RADIOLOGICAL

In accordance with the requirements of Appendix B to the operating license, Environmental Technical Specifications, 5.6.1.a., two (2) copies of the Annual Environmental Operating Report, Part B: Radiological, are herewith submitted. Copies of this report are being distributed in accordance with Regulatory Guide 10.1.

Very truly yours,

CONNECTICUT YANKEE ATOMIC POWER COMPANY

W. G. Counsil
Senior Vice President

c: J. A. Zwolinski

IE25
1/1