HADDAM NECK STATION

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

ANNUAL ENVIRONMENTAL OPERATING REPORT

PART B

PERIOD JANUARY 1, 1980 - DECEMBER 31, 1980

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

PREPARED FOR THE

CONNECTICUT YANKEE POWER COMPANY
HADDAM, CONNECTICUT

BY THE

NORTHEAST UTILITIES SERVICE COMPANY
BERLIN, CONNECTICUT

TABLE OF CONTENTS

1.0 SUMMARY

The radiological environmental monitoring program around the Haddam Neck Plant was continued for the period January through December 1980, in compliance with the Environmental Technical Specifications, Section 3.2. This report for 1980 was prepared for the Connecticut Yankee Atomic Power Company (CYAPCO) by the Radiological Assessment Branch of the Northeast Utilities Service Company (NUSCO). Interex Corporation of Natick, Massachusetts performed all the radiochemical analyses except for tritium in water and the gamma exposure measurements which were performed by Teledyne Isotopes, Inc. and NUSCO, respectively. Interex Corporation also assisted in the qualitative interpretation of the laboratory data. Radiation Management Corporation was used as an independent 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, reservoir water, fruits, vegetables, river water, bottom sediment, shellfish, and fish. 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, above the minimum detectable levels was observed in the first half of 1980 as tritium (H-3) in river water collected from the vicinity of the mouth of the discharge canal; throughout the year as cesium-137 and cesium-134 (and cobalt-60 in the second quarter) in bottom sediment collected from the vicinity of the mouth of the discharge canal; throughout the year as cesium-137 collected in fish from within the onsite discharge canal; and throughout the year as tritium in the onsite wells.

The variability of levels of radioactive material in environmental media depends on many factors. These factors include plant release rates, meteorology, number and size of nuclear weapons tests, seasonal variability of fallout, soil conditions, pasturing habits, local terrain, and locational variability of fallout. Significant variations in measured radioactivity could be caused by any one of these factors. Therefore, all of these factors need be considered in order to explain such variations.

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, that chemically similar cesium-134 and strontium-89 which are released in about equal or larger quantities from the plant can not be detected and that similar 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 environmental 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 1.3 millirem and the average dose to a member of the public residing within 50 miles of the plant is 0.0016 millirem. These doses are 5.2 percent and 0.006 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.

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	0.5 miles, N	M	- -	- -	- -	- -	- -
2. On site fence near waste gas surge sphere	0.5 miles, N	M	- -	- -	- -	- -	- -
3. On site fence near discharge canal	0.5 miles, SSE	M	- -	- -	- -	- -	- -
4. On site fence near guard house	0.5 miles, WNW	M	- -	- -	- -	- -	- -
5. On site - Injun Hollow Road	0.5 miles, NW	M	W1-M2-Q5[e]	A2,5	- -	- -	- -
6. On site - Substation	1.0 mile, ENE	M	W1-M2-Q5[e]	A2,5	- -	- -	- -
7. Haddam	2.0 miles SE	M	W1-M2-Q5[e]	A2,5	- -	- -	- -
8. East Haddam	3.0 miles ESE	M	W1-M2-Q5	A2,5	- -	- -	- -
9. Higganum	3.5 miles WNW	M	W1-M2-Q5	A2,5	- -	- -	- -
10. Hurd Park Road--East Hampton	3.0 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 ENE	M	W1-M2-Q5	A2,5	- -	- -	- -
15. On Site - Wells	0.5 miles SE	- -	- -	- -	- -	M1,2,4,5	- -
16. Well - State Highway Dept. East Haddam	*3.0 miles 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	2.8 miles E	- -	- -	- -	- -	- -	M3
22. Cow Location #4	*11.0 miles ENE	- -	- -	- -	- -	- -	M3
23. Goat Location #1	*11.0 miles ENE	- -	- -	- -	M3[g]	- -	- -
24. Goat Location #2	1.3 miles NW	- -	- -	- -	M3[g]	- -	- -
25. Fruits & Vegetables		- -	- -	- -	A2,3[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	0.5 mile, SSW	--	--	Q2,3	--
27. Conn. River - Higganum Light	*3 mile, NW	Q2,5	--	--	Q2,3
28. Conn. River - E. Haddam Bridge	*2 mile, SE	Q2,5	--	--	--
29. Connecticut River, Vicinity of the Plant Discharge Canal	0.75 mile, ESE	Q2,5	Q1,2,4,5	Q2,3[i]	--
30. Conn. River - Middletown	*9 mile, NW	--	Q1,2,4,5,	Q2,3[i]	--
31. Mouth of the Salmon River	1.5 mile, SE	--	--	--	Q2,3

* 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, Cs-137, 4 - H-3; 5 - Sr-89, Sr-90, Cs-137

(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[7]	---	---	---
	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[7,10]	---	---	---
	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[7]	---	---	---
	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 refetence 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 68-4
[10] pCi/g per gram - wet weight

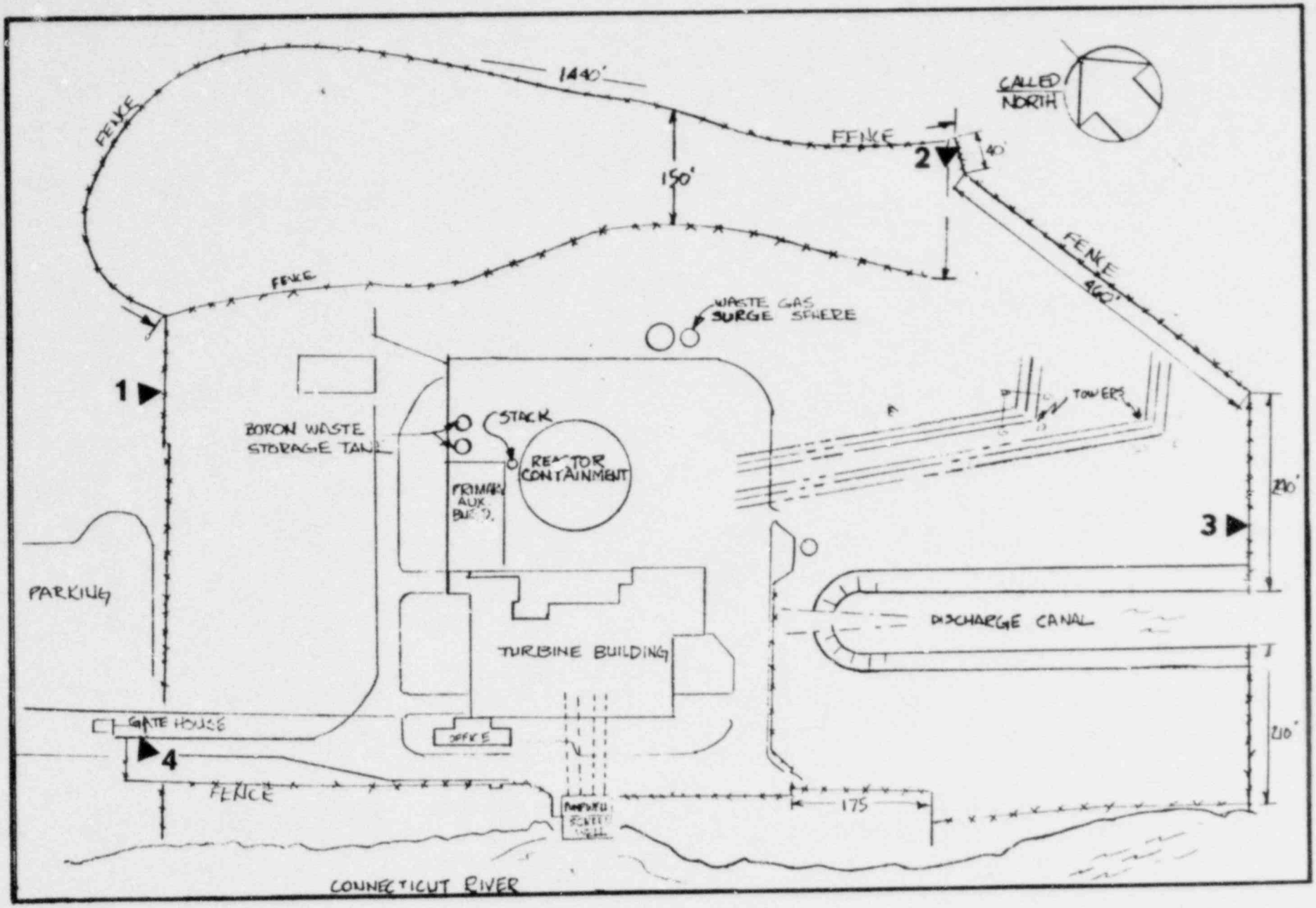


FIGURE 2.1
On Site Monitoring Stations
Haddam Neck Plant

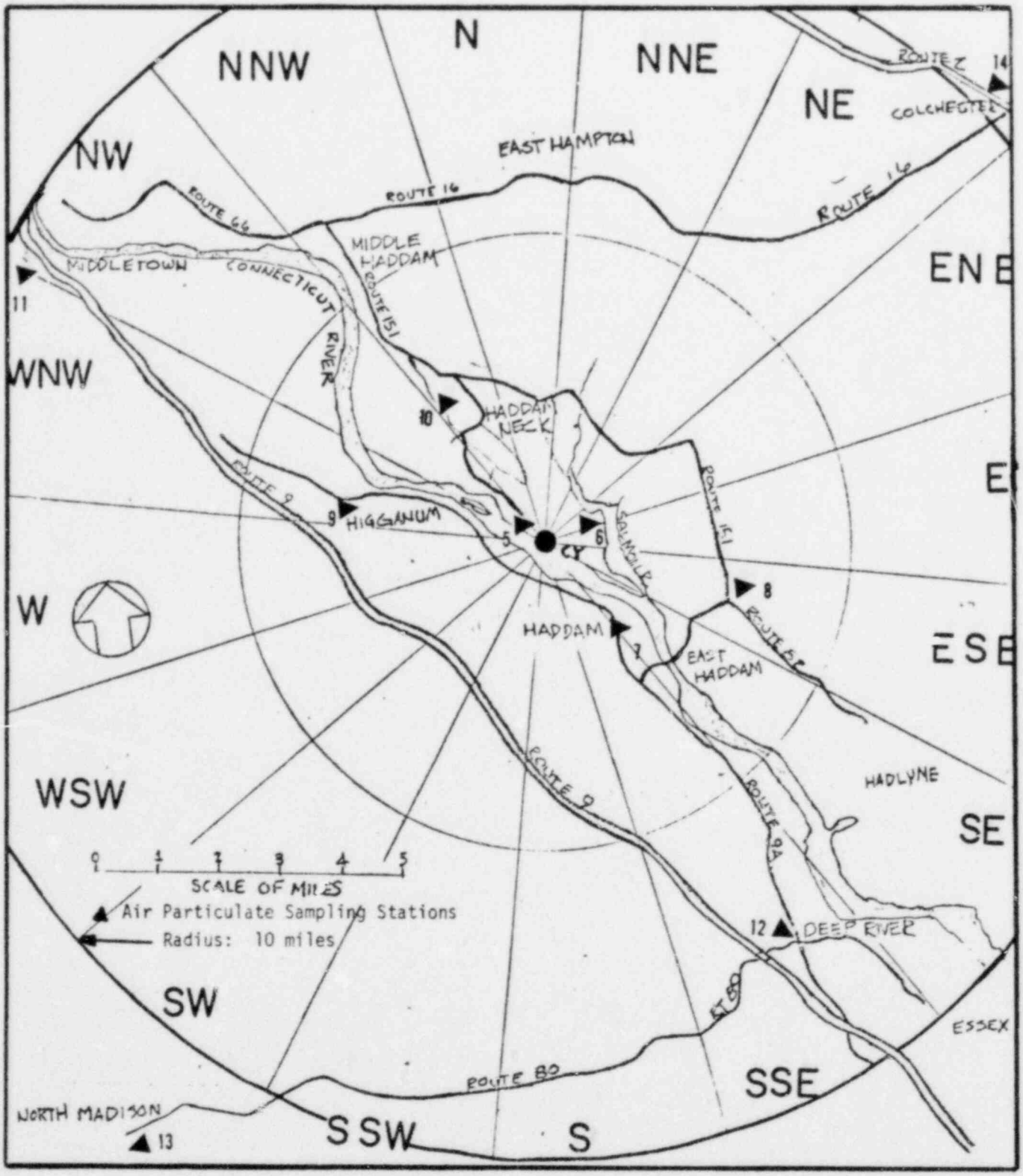


FIGURE 2.2
Inner and Outer Terrestrial Monitoring Stations
Haddam Neck Plant

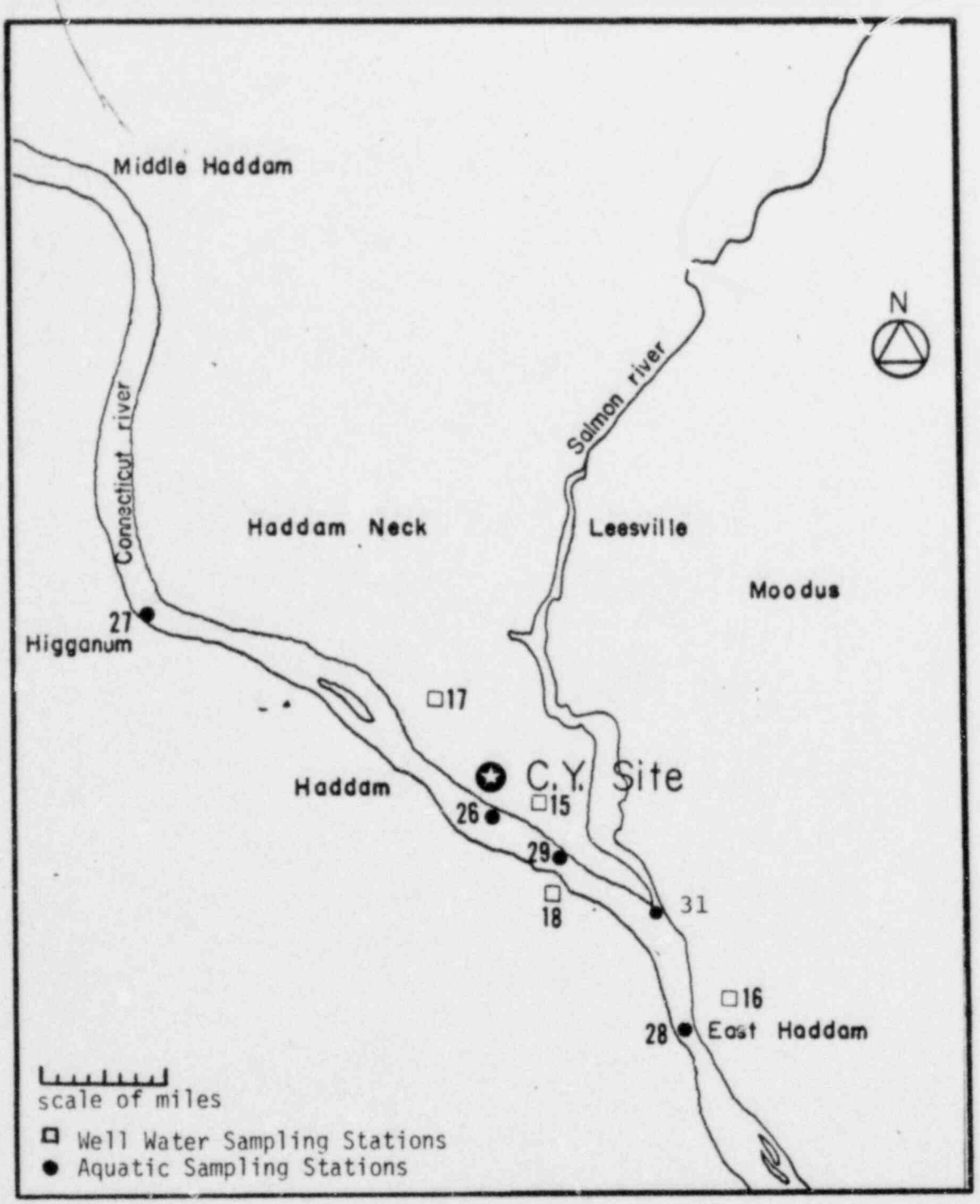


FIGURE 2.3
Aquatic and Well Water Sampling Stations
Haddam Neck Plant

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 Rate (TLD)	166
Air Particulates	520
Air Iodine	208
Soil	10
Dairy Milk	32
Goat Milk	14
Pasture Grass	2
Well Water	24
Fruit and Vegetables	8
River Water	8
Bottom Sediment	12
Fish	22
Shellfish	8
Total All Types	1,034

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 1980

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)	NUMBER OF NONROUTINE REPORTED MEASUREMENTS (c)
Gamma Dose (uR/hr)	119,47[d]	1.5	9.3 (6.4-23.3)	Onsite fence - Boron Waste Storage Tanks 0.5 miles N	14.7 (11.2-23.3)	8.1 (6.0-10.5)	0
Air Particulate and Iodine (pCi/m^3)	311,208 Beta	0.01 (e)	0.029 (0.008-0.098)	Substation 1 mile ENE	0.032 (0.013-0.094)	0.028 (0.007-0.098)	0
	NaI 156,52 I-131	0.04	0.003 (-0.03-0.06)	Substation 1 mile ENE	0.007 (-0.02-0.05)	-0.002 (0.03-0.05)	0
	Ge(Li) 72,48 CS-137	0.02 (f)	0.000 (0.00-0.003)	Substation 1 mile ENE	0.001 (0.00-0.003)	0.000 (0.000-0.002)	0
	CS-134	0.01 (f)	0.000	N/A[h]	N/A	0.000	0
	Ru-10[illegible]	--	0.001 (0.000-0.014)	Higganum 3.5 miles WNW	0.002 (0.000-0.019)	0.001 (0.000-0.015)	0
	Zr-95	0.02 (f)	0.001 (0.000-0.007)	Injun Hollow Road 0.5 miles NW	0.001 (0.000-0.006)	0.001 (0.000-0.006)	0
	Nb-95	--	0.001 (0.000-0.012)	Haddam [illegible] miles SE	0.001 (0.000-0.010)	0.001 (0.000-0.013)	0
	CS 24,16 CS	0.001 (g)	0.0004 (0.0000-0.0006)	Deep River 8 miles SSE	0.0004 (0.0002-0.0006)	0.0004 (0.0001-0.0008)	0
	Sr 24,16 Sr-89	0.002 (g)	0.0007 (-0.0005-0.0041)	Injun Hollow Road 0.5 miles NW	0.0010 (-0.0002-0.0041)	0.0006 (-0.0003-0.0036)	0
	Sr-90	0.001 (g)	0.0002 (0.0000-0.0008)	Haddam 2 miles SE	0.0004 (0.0002-.0008)	0.0002 (0.0000-0.0004)	0

TABLE 3-1
ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM SUMMARY
CONNECTICUT YANKEE ATOMIC POWER COMPANY, HADDAM NECK PLANT
DOCKET 50-213
JANUARY - DECEMBER 1980

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)	NUMBER OF NONROUTINE REPORTED MEASUREMENTS (c)
Soil (pCi/g)	Sr 6,4			Higganum 3.5 miles WNW			
	Sr-89	0.072	-0.020 (-0.01-0.011)		0.011 (N/A)	-0.001 (-0.02-0.010)	0
	Sr-90	0.036	0.14 (0.06-0.33)	Substation 1 mile ENE	0.33 (N/A)	0.20 (0.12-0.26)	0
	Ge(Li) 6.4			Deep River 8 miles SSE			
	CS-137	0.036	0.32 (0.14-1.97)		6.2 (N/A)	2.13 (0.49-6.20)	0
	CS-134	0.2	0.0	N/A	N/A	0.0	0
	Mn-54	0.2	0.0	N/A	N/A	0.0	0
	Co-58	0.2	0.0	N/A	N/A	0.0	0
	Co-60	0.2	0.0	N/A	N/A	0.0	0
	Zr-95	0.3	0.0	N/A	N/A	0.0	0
	Nb-95	--	0.0	N/A	N/A	0.0	0
	K-40	1.0	10.3 (9.1-11.9)	Colchester 10 miles ENE	17.0 (N/A)	13.2 (8.8-17.0)	0
	Ra-226	0.2	0.79 (0.54-1.05)	Deep River 8 miles SSE	2.0 (N/A)	1.17 (0.60-2.00)	0

TABLE 3-1
ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM SUMMARY
CONNECTICUT YANKEE ATOMIC POWER COMPANY, HADDAM NECK PLANT
DOCKET 50-213
JANUARY - DECEMBER 1980

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		NUMBER OF NONROUTINE REPORTED MEASUREMENTS (c)
			Mean	(b) (Range)	NAME, DISTANCE AND DIRECTION	Mean (b) (Range)	Mean	(b) (Range)	
Milk(Dairy) (pCi/l)	Iodine 30,10 I-131	0.5	0.18	(-0.2-6.0)	Dairy Farm #1 1.5 miles NNW	0.[illegible] (-0.2-6.0)	0.01	(-0.10-0.30)	0
	Sr 31,10 Sr-89	2	-0.14	(-2.0-1.3)	Dairy Farm #4 11 miles ENE	0.42 (-0.3-1.2)	0.42	(-0.3-1.2)	0
	Sr-90	1	6.[illegible]	(2.6-11.5)	Dairy Farm #1 1.5 miles NNW	7.6 (5.9-11.5)	4.7	(2.8-6.9)	0
	CS 31,10 CS-137	6	12.1	(3.9-24.9)	Dairy Farm #1 1.5 miles NNW	16.8 (12.3-23.4)	7.3	(4.1-11.6)	0
Goat Milk (pCi/l)	Iodine 10,8 I-131	0.5	0.54	(-0.1-5.4)	Goat Location #2 1.3 miles NW	0.54 (-0.1-5.4)	0.04	(-0.03-0.20)	0
	Sr 10,8 Sr-89	2	0.08	(-1.0-1.1)	Goat Location #2 1.3 miles NW	0.08 (-1.0-1.1)	-0.07	(-4.0-3.0)	0
	Sr-90	1	5.6	(3.1-11.5)	Goat Location #1 11 miles ENE	24.3 (16.8-34.0)	24.3	(16.8-34.0)	0
	CS 10,8 CS-137	6	11.4	(9.2-13.2)	Goat Location #1 11 miles ENE	66.5 (47-87)	66.5	(47-87)	0
Pasture Grass (pCi/g)	Sr 0,2 Sr-89	0.018	N/A		N/A	N/A	-0.03	(-0.04--0.01)	0
	Sr-90	0.009	N/A		N/A	N/A	0.41	(0.39-0.43)	0
	CS 0,2 CS-137	0.034	N/A		N/A	N/A	0.067	(0.06-0.07)	0

TABLE 3-1
ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM SUMMARY
CONNECTICUT YANKEE ATOMIC POWER COMPANY, HADDAM NECK PLANT
DOCKET 50-213
JANUARY - DECEMBER 1980

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)	NUMBER OF NONROUTINE REPORTED MEASUREMENTS (c)
	Ge(Li) 0,2 I-131	0.05	N/A	N/A	N/A	0.00	0
Groundwater (pCi/l)	Sr 20,4 Sr-89	2	0.0 (-0.3-0.5)	N/A	N/A	0.0 (-0.1-0.3)	0
	Sr-90	1	0.0 (-0.2-0.4)	State Highway Dept. East Haddam 3 miles S	0.2 (0.1-0.4)	0.2 (0.1-0.4)	0
	CS 20,4 CS-137	1	0.2 (-0.1-0.9)	Onsite Wells 0.5 miles SE	0.2 (-0.1-0.9)	-0.1 (-0.2-0.2)	0
	Ge(Li) 20,4 I-131	30**	0	N/A	N/A	0	0
	CS-1[illegible]	30	0	N/A	N/A	0	0
	Co-58	30	0	N/A	N/A	0	0
	Co-60	30	0	N/A	N/A	0	0
	Mn-54	30	0	N/A	N/A	0	0
	Tritium 20,4 H-3	60	2860 (90-7330)	Onsite Wells 0.5 miles SE	4620 (1770-7330)	80 (0-120)	0
	Beta 20,4 B	1	1.8 (0.7-5.5)	State Highway Dept. East Haddam 3 miles S	5.5 (0.6-10.0)	5.5 (0.6-10.0)	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 1980

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	(b) Mean (Range)	CONTROL LOCATIONS Mean	(b) (Range)	NUMBER OF NONROUTINE REPORTED MEASUREMENTS (c)
Fruits and Vegetables (pCi/g)	Sr 4,4 / Sr-89	0.018	-0.002	(-0.010-0.001)	Beyond 10 miles	0.003 (0.000-0.006)	0.003	(0.000-0.006)	0
	Sr-90	0.009	0.036	(0.007-0.081)	Within 10 miles	0.036 (0.007-0.081)	0.016	(0.001-0.034)	0
	Cs 4,4 / CS-137	0.009	0.008	(0.004-0.014)	Within 10 miles	0.008 (0.004-0.014)	0.007	(0.003-0.013)	0
	Ge(Li) 4,4 / I-131	0.05	0.00		N/A	N/A	0.00		0
	CS-134	0.04	0.00		N/A	N/A	0.00		0
	Mn-54	0.05	0.00		N/A	N/A	0.00		0
	Co-58	0.04	0.00		N/A	N/A	0.00		0
	Co-60	0.04	0.00		N/A	N/A	0.00		0
	K-40	0.5	2.5	(1.3-4.2)	Beyond 10 miles	3.1 (1.0-6.2)	3.1	(1.0-6.2)	0
	Ra-226	0.1	0.00		N/A	N/A	0.00		0
	Th-228	0.08	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 1980

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)	NUMBER OF NONROUTINE REPORTED MEASUREMENTS (c)
River Water (pCi/l)	Sr 4,4 / Sr-89	2	0.2	(-0.2-0.6)	Plant Discharge 0.5 miles ESE	0.2	(-0.2-0.6)	0.0	(-0.2-0.2)	0
	Sr-90	1	0.2	(-0.4-0.7)	Conn. River Middletown 9 miles NW	0.4	(0.2-0.6)	0.4	(0.2-0.6)	0
	CS 4,4 / CS-137	1	0.2	(-0.4-0.6)	Plant Discharge 0.5 miles ESE	0.2	(-0.4-0.6)	0.2	(-0.1-0.5)	0
	Ge(Li) 4,4 / I-131	--	0		N/A		N/A	0		0
	CS-134	30	0		N/A		N/A	0		0
	Mn-54	30	0		N/A		N/A	0		0
	Co-58	30	2	(0-8)	Plant Discharge 0.5 miles ESE	2	(0-8)	0		0
	Co-60	30	0		N/A		N/A	0		0
	Zr-95	60	0		N/A		N/A	0		0
	Tritium 4,4 / H-3	60	740	(150-1810)	Plant Discharge 0.5 miles ESE	740	(150-1810)	190	(140-280)	1
	Beta 4,4 / B	1	4.9	(0.0-14.2)	Plant Discharge 0.5 miles ESE	4.9	(0.0-14.2)	2.4	(-0.1-3.7)	0

TABLE 3-1
ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM SUMMARY
CONNECTICUT YANKEE ATOMIC POWER COMPANY, HADDAM NECK PLANT
DOCKET 50-213
JANUARY - DECEMBER 1980

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)	NUMBER OF NONROUTINE REPORTED MEASUREMENTS (c)
Bottom Sediment (pCi/g)	Sr 4,8 / Sr-89	0.072	0.003 (-0.005-0.013)	Higganum Light 3 miles NW	0.004 (-0.003-0.012)	0.004 (-0.006-0.012)	0
	Sr-90	0.036	0.007 (0.003-0.012)	East Haddam Bridge 2 miles SE	0.012 (0.004-0.018)	0.010 (0.004-0.018)	0
	CS 4,8 / CS-137	0.064	0.30 (0.123-0.718)	Plant Discharge 1 mile SE	0.30 (0.123-0.718)	0.097 (0.051-0.214)	0
	Ge(Li) 4,8 / I-131	0.2	0.0	N/A	0.0	N/A	0
	CS-134	0.2	0.15 (0.04-0.40)	Plant Discharge 1 mile SE	0.15 (0.04-0.40)	0.00	0
	Mn-54	0.2	0.00	N/A	N/A	0.00	0
	Co-58	0.2	0.00	N/A	N/A	0.00	0
	Co-60	0.2	0.03 (0.00-0.11)	Plant Discharge 1 mile SE	0.03 (0.00-0.11)	0.00 (0.00-0.02)	0
	Zr-95	0.3	0.00	N/A	N/A	0.00	0
	Nb-95	--	0.00	N/A	N/A	0.00	0
	K-40	1.0	9.8 (7.0-14.1)	Higganum Light 3 miles NW	12.8 (11.0-15.7)	11.1 (6.8-15.7)	0

TABLE 3-1
ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM SUMMARY
CONNECTICUT YANKEE ATOMIC POWER COMPANY, HADDAM NECK PLANT
DOCKET 50-213
JANUARY - DECEMBER 1980

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)	NUMBER OF NONROUTINE REPORTED MEASUREMENTS (c)
Shellfish (pCi/g)	Sr 4,4 Sr-89	0.018	-0.008 (-0.014-0.000)	Mouth of Salmon River - 1.5 miles SE	-0.008 (-0.014-0.000)	-0.017 (-0.06-0.009)	0
	Sr-90	0.009	0.27 (0.22-0.30)	Mouth of Salmon River - 1.5 miles SE	0.27 (0.22-0.30)	0.20 (0.17-0.22)	0
	Cs 4,4 CS-137	0.009	0.013 (0.005-0.020)	Mouth of Salmon River - 1.5 miles SE	0.013 (0.005-0.020)	0.011 (0.007-0.012)	0
	Ge(Li) 4,4 I-131	0.05	0.00	N/A	N/A	0.00	0
	CS-134	0.04	0.00	N/A	N/A	0.00	0
	Mn-54	0.05	0.00	N/A	N/A	0.00	0
	Co-58	0.04	0.00	N/A	N/A	0.00	0
	Co-60	0.04	0.00	N/A	N/A	0.00 (0.00-0.01)	0
	Zr-95	0.1	0.00 (0.00-0.01)	N/A	N/A	0.00	0
	Nb-95	--	0.01 (0.00-0.03)	Mouth of Salmon River - 1.5 miles SE	0.01 (0.00-0.03)	0.00	0
	K-40	0.5	0.15 (0.0-0.4)	Mouth of Salmon River - 1.5 miles SE	0.15 (0.00-0.4)	0.05 (0.0-0.1)	0

TABLE 3-1
ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM SUMMARY
CONNECTICUT YANKEE ATOMIC POWER COMPANY, HADDAM NECK PLANT
DOCKET 50-213
JANUARY - DECEMBER 1980

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		NUMBER OF NONROUTINE REPORTED MEASUREMENTS (c)
			Mean	(Range)	NAME, DISTANCE AND DIRECTION	(b) Mean (Range)	Mean	(b) (Range)	
Fish - Bullheads (pCi/g)	Sr 14,4 / Sr-89	0.018	0.000	(-0.038-0.016)	Intake Vicinity 0.5 miles SSW	0.004 (0.002-0.005)	0.002	(-0.003-0.006)	0
	Sr-90	0.009	0.042	(0.000-0.074)	Plant Discharge Canal - 0.5 miles ESE	0.044 (0.027-0.074)	0.041	(0.025-0.068)	0
	CS 14,4 / CS-137	0.009	0.057	(0.012-0.106)	Plant Discharge Canal - 0.5 miles ESE	0.062 (0.039-0.106)	0.037	(0.020-0.046)	0
	Ge(Li) 14,4 / I-131	0.05	0.00		N/A	N/A	0.00		0
	CS-134	0.04	0.00	(0.00-0.02)	N/A	N/A	0.00		0
	Mn-54	0.05	0.00		N/A	N/A	0.00		0
	Co-58	0.04	0.00		N/A	N/A	0.00		0
	Co-60	0.04	0.00		N/A	N/A	0.00		0
	Zr-95	0.1	0.00		N/A	N/A	0.00		0
	Nb-95	--	0.00		N/A	N/A	0.00		0
	K-40	0.5	2.1	(0.9-3.5)	Intake Vicinity 0.5 miles SSW	2.3 (1.0-3.5)	1.9	(1.7-2.2)	0

TABLE 3-1
ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM SUMMARY
CONNECTICUT YANKEE ATOMIC POWER COMPANY, HADDAM NECK PLANT
DOCKET 50-213
JANUARY - DECEMBER 1980

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)	NUMBER OF NONROUTINE REPORTED MEASUREMENTS (c)
Fish - Other (pCi/g)	Sr 12,4 / Sr-89	0.018	0.002 (-0.018-0.042)	Intake Vicinity 0.5 miles SSW	0.003 (-0.001-0.008)	-0.005 (-0.012-0.000)	0
	Sr-90	0.009	0.107 (0.051-0.170)	Plant Discharge Canal - 0.5 miles ESE	0.108 (0.051-0.170)	0.066 (0.033-0.091)	0
	CS 12,4 / CS-137	0.009	0.062 (0.031-0.142)	Plant Discharge Canal - 0.5 miles ESE	0.065 (0.037-0.142)	0.039 (0.020-0.060)	0
	Ge(Li) 12,4 / I-131	0.05	0.00	N/A	N/A	0.00	0
	CS-134	0.04	0.00	N/A	N/A	0.00	0
	Mn-54	0.05	0.00	N/A	N/A	0.00	0
	Co-58	0.04	0.00	N/A	N/A	0.00	0
	Co-60	0.04	0.00	N/A	N/A	0.00	0
	Zr-95	0.01	0.00	N/A	N/A	0.00	0
	Nb-95	--	0.00	N/A	N/A	0.00	0
	K-40	0.5	2.2 (1.2-3.1)	Middletown 9 miles NW	2.7 (2.4-2.8)	2.7 (2.4-2.8)	0

FOOTNOTES

a. For Ge(Li) measurements the MDL's $\approx 2 \times \sqrt{2B}$ 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 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.

LOCATION KEY FOR DATA TABLES

CONNECTICUT YANKEE

1	Boron Waste Storage Tanks Fence - N, .5 miles
2	Waste Gas Surge Sphere Fence - N, .5 miles
3	Discharge Canal Fence - SSE, .5 miles
4	Guard House Fence - WNW, .5 miles
5	Injun Hollow Road - NW, .5 miles
6	Substation - ENE, 1 mile
7	Haddam - SE, 2 miles
8	East Haddam - ESE, 3 miles
9	Higganum - WNW, 3.5 miles
10	Hurd Park Road - NNW, 3 miles
11A	Middletown - NW, 10 miles
12A	Deep River - SSE, 8 miles
13A	North Madison - SW, 12 miles
14A	Colchester - ENE, 10 miles
15A	On Site Wells 1 & 2 - SE, .5 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 - E, 3 miles
22	Cow Location #4 - ENE, 11 miles
23A	Goat Location #1 - ENE, 11 miles
24	Goat Location #2 - NW, 1.3 miles
25	Within 10 miles of plant
35A	Beyond 10 miles of plant
26	Conn. River - Intake Vicinity - SSW, .5 miles
27A	Conn. River - Higganum Light - NW, 3 miles
28A	Conn. River - E. Haddam Bridge - SE, 2 miles
29	Plant Discharge Canal - ESE, .5 miles
30A	Conn. River - Middletown - NW, 9 miles
31	Mouth of Salmon River - SE, 1.5 miles
40B	Near Intake Structure - SSW, .5 miles
41B	Picnic Area - NW, .5 miles
42B	Mouth of Discharge Canal - ESE, .5 miles
43B	Moodus - NE, 2.0 miles
44B	Shailerville (Horton Road) - SSW, .5 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
1/30/80(a)	13.1(b)	10.2	7.5	7.9	7.3	7.2	6.4	7.7	6.4	7.9	9.0
2/30/80	13.7	10.2	8.8	9.3	8.2	7.4	7.2	9.6	7.6	7.0	10.3
3/30/80	15.0	12.1	9.4	9.9	8.7	8.5	7.7	9.5	7.5	9.3	10.5
4/30/80	15.9	11.7	8.5	9.3	8.2	7.5	6.6	8.6	6.8	8.5	9.3
5/30/80	16.4	11.6	8.5	9.5	7.9	0.0(c)	6.9	8.3	6.7	8.2	9.6
6/30/80	23.3	13.4	9.8	11.6	9.2	8.3	7.0	9.2	7.2	8.7	10.0
7/30/80	17.7	11.6	9.1	8.7	9.1	7.8	7.0	9.0	7.1	8.3	9.8
8/30/80	18.3	12.9	9.8	10.3	8.8	8.1	7.3	9.1	7.0	8.5	10.2
9/30/80	12.8	12.4	9.6	9.0	9.4	8.5	7.3	9.4	7.3	8.9	10.5
10/30/80	12.3	12.0	9.3	8.8	9.3	8.3	7.3	9.2	7.6	8.8	10.4
11/30/80	11.2	11.0	8.6	8.1	8.4	8.1	6.8	8.6	6.8	8.0	9.8
12/30/80	11.3	11.3	8.7	8.4	8.8	8.0	6.9	8.8	7.4	8.4	9.9

	12A	13A	14A	40B	41B	42B	43B	44B	45B	46B
1/30/80	6.0	6.1	7.2	6.8	5.9	6.5	7.1	6.8	6.4	6.0
2/30/80	7.3	7.4	7.8	7.7	6.6	7.2	7.7	8.2	7.5	7.4
3/30/80	7.4	7.4	9.1	8.4	6.9	8.0	8.6	7.5	7.4	7.0
4/30/80	6.8	6.5	8.4	7.8	6.0	7.2	7.8	7.4	7.1	6.9
5/30/80	6.8	6.6	0.0(d)	9.1	6.1	7.0	7.7	7.3	6.6	6.3
6/30/80	7.2	6.7	9.1	9.2	0.0(e)	7.9	8.5	7.9	7.4	7.3
7/30/80	7.2	6.7	8.8	7.8	6.7	7.6	8.4	7.9	7.4	7.2
8/30/80	7.0	7.0	9.1	8.7	7.0	7.8	8.7	7.9	7.1	6.6
9/30/80	7.2	7.5	9.3	7.8	7.2	7.8	8.8	8.2	7.4	6.9
10/30/80	7.6	7.1	9.2	8.0	7.0	8.0	8.4	8.4	7.9	7.5
11/30/80	6.6	6.7	8.6	7.2	6.4	7.2	8.1	7.3	6.6	6.4
12/30/80	7.1	6.7	8.7	7.8	6.6	7.6	7.8	7.8	7.4	7.2

(a) not actual dates - TLD's are changed near the end of each month
(b) results are ± 20%
(c) TLD was missing
(d) TLD was destroyed by fire
(e) TLD was lost

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

PERIOD ENDING	LOCATIONS 01	02	03	04	05	06	07	08	09	10	11A
6/30/80	16.2	11.5	8.7	9.6	8.2	7.8	7.0	8.8	7.0	8.3	9.8
12/30/80	13.1	11.9	9.2	8.9	9.0	8.1	7.1	9.0	7.2	8.5	10.1

	12A	13A	14A	40B	41B	42B	43B	44B	45B	46B
6/30/80	6.9	6.8	8.3	8.2	6.3	7.3	7.9	7.5	7.1	6.8
12/30/80	7.1	6.9	8.9	7.9	6.8	7.7	8.4	7.9	7.3	7.0

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/ 7/80 (a)	0.024 (b)	0.031	0.034	0.026	0.030	0.023	0.026	0.046	0.019	0.027	0.031
1/14/80	0.044	0.048	0.040	0.040	0.039	0.047	0.028	0.041	0.036	0.046	0.039
1/21/80	0.022	0.023	0.024	0.018	0.023	0.024	0.017	0.018	0.021	0.020	0.016
1/28/80	0.021	0.024	0.023	0.016	0.014	0.016	0.010	0.018	0.015	0.019	0.019
2/ 4/80	0.026	0.022	0.026	0.022	0.024	0.018	0.015	0.024	0.015	0.032	0.024
2/11/80	0.031	0.032	0.024	0.027	0.022	0.026	0.015	0.024	0.024	0.027	0.023
2/19/80	0.054	0.042	0.033	0.029	0.028	0.032	0.023	0.030	0.018	0.038	0.032
2/25/80	0.023	0.025	0.024	0.019	0.018	0.025	0.018	0.022	0.023	0.026	0.019
3/ 3/80	0.033	0.035	0.035	0.029	0.029	0.037	0.023	0.029	0.030	0.028	0.031
3/10/80	0.024	0.025	0.024	0.023	0.023	0.028	0.019	0.023	0.025	0.026	0.026
3/17/80	0.019	0.037	0.022	0.020	0.017	0.019	0.013	0.020	0.018	0.028	0.015
3/24/80	0.019	0.022	0.017	0.016	0.022	0.019	0.016	0.020	0.018	0.022	0.019
3/31/80	0.014	0.013	0.015	0.008	0.009	0.009	0.007	0.009	0.012	0.010	0.010
4/ 7/80	0.025	0.023	0.025	0.020	0.020	0.021	0.020	0.020	0.026	0.023	0.024
4/14/80	0.025	0.024	0.022	0.019	0.020	0.020	0.016	0.023	0.023	0.018	0.025
4/21/80	0.019	0.028	0.027	0.023	0.025	0.026	0.018	0.024	0.027	0.024	0.023
4/28/80	0.011	0.015	0.014	0.009	0.011	0.011	0.008	0.010	0.010	0.010	0.012
5/ 5/80	0.015	0.021	0.020	0.012	0.015	0.015	0.011	0.017	0.013	0.016	0.017
5/12/80	0.024	0.019	0.016	0.017	0.015	0.017	0.016	0.019	0.019	0.017	0.014
5/20/80	0.021	0.020	0.017	0.015	0.015	0.016	0.020	0.017	0.016	0.014	0.017
5/27/80	0.031	0.026	0.026	0.022	0.027	0.022	0.022	0.024	0.026	0.021	0.024
6/ 2/80	0.030	0.035	0.031	0.026	0.028	0.026	0.023	0.028	0.029	0.027	0.033
6/ 9/80	0.016	0.022	0.022	0.019	0.015	0.019	0.018	0.021	0.021	0.018	0.018
6/17/80	0.021	0.026	0.024	0.018	0.020	0.020	0.017	0.025	0.026	0.020	0.021
6/24/80	0.016	0.015	0.016	0.015	0.015	0.014	0.012	0.020	0.018	0.019	0.019
6/30/80	0.030	0.036	0.029	0.028	0.023	0.026	0.021	0.027	0.027	0.025	0.026

(a) sample dates may vary by a day
(b) the error is approximately 0.010

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

CY

PERIOD ENDING	LOCATIONS 05	06	07	08	09	10	11A	12A	13A	14A	46B
7/ 7/80	0.024	0.024	0.022	0.018	0.018	0.019	0.017	0.023	0.022	0.022	0.024
7/14/80	0.021	0.024	0.023	0.018	0.017	0.022	0.014	0.019	0.022	0.020	0.018
7/21/80	0.034	0.032	0.033	0.027	0.026	0.025	0.019	0.028	0.032	0.029	0.028
7/28/80	0.024	0.025	0.026	0.019	0.020	0.020	0.015	0.022	0.025	0.021	0.021
8/ 4/80	0.028	0.031	0.026	0.025	0.023	0.032	0.021	0.027	0.029	0.028	0.032
8/11/80	0.022	0.029	0.027	0.023	0.021	0.022	0.020	0.026	0.025	0.023	0.028
8/18/80	0.022	0.021	0.062	0.016	0.019	0.019	0.011	0.019	0.019	0.016	0.020
8/25/80	0.016	0.020	0.020	0.018	0.017	0.017	0.013	0.021	0.020	0.019	0.019
9/ 2/80	0.027	0.028	0.033	0.025	0.024	0.022	0.019	0.026	0.026	0.023	0.025
9/ 8/80	0.029	0.028	0.029	0.025	0.022	0.023	0.020	0.026	0.030	0.024	0.025
9/15/80	0.031	0.028	0.035	0.025	0.026	0.025	0.025	0.027	0.028	0.028	0.026
9/22/80	0.026	0.028	0.025	0.017	0.018	0.017	0.021	0.020	0.027	0.019	0.023
9/29/80	0.019	0.020	0.016	0.015	0.015	0.017	0.015	0.016	0.007	0.017	0.016
10/ 6/80	0.026	0.026	0.027	0.021	0.019	0.022	0.020	0.022	0.023	0.023	0.024
10/14/80	0.016	0.024	0.023	0.022	0.020	0.019	0.019	0.020	0.026	0.020	0.023
10/20/80	0.032	0.033	0.032	0.032	0.027	0.031	0.029	0.032	0.032	0.028	0.035
10/27/80	0.012	0.014	0.016	0.012	0.013	0.011	0.011	0.015	0.013	0.011	0.012
11/ 3/80	0.023	0.024	0.025	0.022	0.023	0.027	0.021	0.025	0.035	0.025	0.025
11/10/80	0.043	0.049	0.029	0.038	0.036	0.039	0.043	0.042	0.039	0.038	0.049
11/17/80	0.029	0.041	0.043	0.031	0.035	0.034	0.031	0.039	0.034	0.031	0.038
11/24/80	0.050	0.059	0.054	0.051	0.046	0.050	0.047	0.053	0.063	0.051	0.047
12/ 1/80	0.058	0.061	0.059	0.055	0.098	0.063	0.061	0.057	0.058	0.051	0.062
12/ 8/80	0.074	0.075	0.076	0.068	0.031	0.068	0.073	0.089	0.065	0.070	0.076
12/15/80	0.085	0.094	0.088	0.088	0.069	0.083	0.080	0.092	0.083	0.084	0.086
12/22/80	0.059	0.071	0.063	0.054	0.032	0.059	0.055	0.081	0.053	0.057	0.061
12/29/80	0.079	0.089	0.080	0.075	0.080	0.078	0.080	0.098	0.077	0.070	0.072

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

PERIOD ENDING	LOCATIONS 05	(+/-)	06	(+/-)	07	(+/-)	13A	(+/-)	46B	(+/-)
1/ 7/80(a)	0.01	0.01	0.00	0.01	0.01	0.01	0.00	0.01	0.0	0.02
1/14/80	0.01	0.01	0.01	0.02	0.00	0.01	0.01	0.01	0.00	0.01
1/21/80	0.01	0.01	0.00	0.01	0.00	0.01	0.01	0.01	0.00	0.01
1/28/80	0.02	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.01
2/ 4/80	0.00	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.01
2/11/80	0.01	0.02	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01
2/19/80	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
2/25/80	0.01	0.02	0.01	0.02	0.01	0.02	0.01	0.02	0.02	0.02
3/ 3/80	0.02	0.01	0.01	0.01	0.02	0.02	-0.01	0.02	0.02	0.02
3/10/80	0.0	0.02	0.0	0.02	0.01	0.02	-0.01	0.02	0.01	0.02
3/17/80	-0.00	0.01	-0.01	0.01	-0.01	0.02	-0.01	0.01	0.01	0.02
3/24/80	-0.01	0.01	0.02	0.01	-0.02	0.01	-0.01	0.01	-0.00	0.01
3/31/80	-0.03	0.02	-0.00	0.01	-0.01	0.01	-0.02	0.01	0.00	0.01
4/ 7/80	-0.00	0.01	-0.01	0.01	-0.01	0.01	-0.01	0.01	-0.01	0.02
4/14/80	-0.01	0.01	-0.02	0.01	0.00	0.01	-0.00	0.01	-0.01	0.01
4/21/80	-0.00	0.01	0.01	0.01	0.00	0.01	-0.01	0.01	0.01	0.01
4/28/80	-0.01	0.01	0.0	0.01	0.00	0.01	-0.00	0.01	0.00	0.01
5/ 5/80	0.01	0.01	0.02	0.01	-0.01	0.01	0.01	0.01	-0.01	0.01
5/12/80	-0.02	0.02	-0.01	0.02	-0.02	0.02	0.0	0.02	-0.02	0.02
5/20/80	-0.01	0.02	0.0	0.02	-0.00	0.02	0.00	0.01	0.0	0.02
5/27/80	0.0	0.02	0.01	0.02	-0.02	0.02	-0.02	0.02	0.0	0.02
6/ 2/80	0.0	0.02	0.0	0.02	0.0	0.02	-0.00	0.02	0.0	0.02
6/ 9/80	-0.01	0.02	-0.01	0.02	-0.01	0.01	-0.01	0.01	-0.03	0.02
6/17/80	0.0	0.02	0.01	0.02	0.0	0.02	-0.02	0.02	0.0	0.02
6/24/80	0.00	0.01	0.02	0.02	0.0	0.02	0.0	0.01	0.0	0.02
6/30/80	0.0	0.02	0.02	0.02	0.00	0.01	0.01	0.01	0.01	0.02

(a) sample dates may vary by a day

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

PERIOD ENDING	LOCATIONS 05	(+/-)	06	(+/-)	07	(+/-)	13A	(+/-)	46S	(+/-)
7/ 7/80	0.01	0.02	0.0	0.02	0.0	0.02	-0.01	0.02	0.01	0.02
7/14/80	-0.01	0.02	0.01	0.02	0.0	0.02	0.0	0.02	0.0	0.02
7/21/80	-0.02	0.02	-0.01	0.02	0.01	0.02	0.0	0.02	0.0	0.02
7/28/80	0.01	0.02	0.02	0.02	0.03	0.02	0.0	0.02	0.05	0.03
8/ 4/80	-0.02	0.02	0.01	0.02	0.01	0.02	0.01	0.02	0.01	0.02
8/11/80	0.0	0.02	0.0	0.02	0.01	0.02	0.02	0.01	-0.01	0.02
8/18/80	-0.01	0.02	-0.00	0.02	0.01	0.02	0.01	0.01	0.02	0.02
8/25/80	-0.03	0.02	-0.02	0.03	0..	0.02	-0.02	0.02	0.0	0.03
9/ 2/80	-0.01	0.01	-0.01	0.01	-0.00	0.01	-0.00	0.01	-0.00	0.01
9/ 8/80	0.0	0.02	0.01	0.02	0.02	0.02	0.0	0.02	0.02	0.02
9/15/80*	0.03	0.03	0.05	0.03	0.06	0.03	0.03	0.03	0.09	0.04
9/22/80	0.0	0.02	0.04	0.02	0.04	0.03	0.05	0.03	0.03	0.03
9/29/80	0.00	0.02	0.02	0.02	0.0	0.03	0.02	0.01	0.01	0.03
10/ 6/80	0.0	0.02	0.01	0.02	0.0	0.02	0.0	0.02	0.0	0.02
10/14/80	0.0	0.02	0.01	0.02	0.01	0.02	0.0	0.02	0.02	0.02
10/20/80	0.02	0.02	0.0	0.02	0.0	0.02	0.01	0.02	0.0	0.02
10/27/80	-0.02	0.02	0.02	0.02	0.0	0.02	0.00	0.01	0.04	0.02
11/ 3/80	0.0	0.02	0.03	0.02	0.01	0.02	0.01	0.01	0.03	0.02
11/10/80	0.0	0.02	0.02	0.02	0.01	0.02	0.01	0.01	0.0	0.02
11/17/80	0.02	0.02	0.0	0.03	-0.03	0.02	0.01	0.02	0.03	0.03
11/24/80	-0.01	0.03	0.02	0.03	-0.03	0.03	0.01	0.02	0.03	0.03
12/ 1/80	-0.02	0.02	0.0	0.02	-0.01	0.02	-0.02	0.02	0.01	0.02
12/ 8/80	0.0	0.02	0.0	0.02	-0.01	0.02	0.02	0.01	0.01	0.02
12/15/80	-0.01	0.02	-0.01	0.02	-0.01	0.03	0.0	0.02	0.01	0.03
12/22/80	0.01	0.03	0.01	0.03	0.0	0.02	0.0	0.02	0.03	0.03
12/29/80	0.0	0.04	0.02	0.04	0.04	0.05	-0.21	0.04	0.0	0.05

* results for this week suggest counting equipment malfunctions

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

CY

A N A L Y S E S

LOCATION	CS-137	(+/-)	CS-134	(+/-)	RU-103	(+/-)	ZR-95	(+/-)	RU(RH)-106	(+/-)	K-40	(+/-)	TH-228	(+/-)	BE-7	(+/-)	NB-95	(+/-)
5	0.0	0.005	0.0	0.005	0.0	0.008	0.0	0.012	0.0	0.050	0.0	0.070	-.002	0.010	0.100	0.050	0.0	0.009
6	0.003	0.004	0.0	0.005	0.0	0.009	0.005	0.008	0.0	0.050	-.050	0.070	0.0	0.014	0.080	0.050	0.0	0.009
7	0.002	0.003	0.0	0.005	0.0	0.008	0.0	0.012	0.010	0.030	0.0	0.060	0.0	0.009	0.080	0.050	0.0	0.009
8	0.001	0.002	0.0	0.003	0.004	0.003	0.0	0.008	0.0	0.020	0.020	0.040	-.001	0.006	0.090	0.030	0.0	0.005
9	0.001	0.002	0.0	0.003	0.0	0.005	0.002	0.005	0.0	0.030	-.030	0.040	0.002	0.005	0.080	0.030	0.0	0.005
10	0.0	0.004	0.0	0.003	0.001	0.004	0.0	0.007	0.0	0.030	0.010	0.040	0.0	0.008	0.120	0.030	0.0	0.006
11A	0.001	0.003	0.0	0.004	0.0	0.006	0.0	0.009	0.0	0.030	0.010	0.040	0.002	0.007	0.080	0.030	0.0	0.005
12A	0.0	0.004	0.0	0.003	0.0	0.006	0.0	0.006	0.0	0.030	-.010	0.040	-.001	0.006	0.070	0.030	0.0	0.005
13A	0.002	0.004	0.0	0.005	0.0	0.009	0.002	0.009	0.0	0.050	0.010	0.060	0.008	0.009	0.070	0.040	0.0	0.008
14A	0.0	0.004	0.0	0.004	0.0	0.006	0.0	0.008	0.0	0.030	0.020	0.040	0.0	0.010	0.110	0.040	0.0	0.005
46B	0.0	0.005	0.0	0.006	0.004	0.007	0.0	0.012	0.0	0.040	0.010	0.070	-.001	0.009	0.080	0.040	0.0	0.008

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

A N A L Y S E S

LOCATION	CS-137	(+/-)	CS-134	(+/-)	RU-103	(+/-)	ZR-95	(+/-)	RU(RH)-106	(+/-)	K-40	(+/-)	TH-228	(+/-)	BE-7	(+/-)	NB-95	(+/-)
5	0.0	0.007	0.0	0.007	0.004	0.008	0.004	0.011	0.0	0.070	0.020	0.090	0.0	0.020	0.090	0.060	0.0	0.011
6	0.0	0.007	0.0	0.007	0.005	0.007	0.0	0.020	0.0	0.060	-.040	0.100	0.0	0.020	0.110	0.070	0.0	0.010
7	0.0	0.006	0.0	0.007	0.0	0.010	0.004	0.012	0.0	0.060	0.040	0.090	-.002	0.012	0.120	0.060	0.0	0.010
8	0.0	0.004	0.0	0.004	0.0	0.006	0.0	0.009	0.020	0.020	0.0	0.060	0.0	0.011	0.110	0.040	0.0	0.006
9	0.0	0.004	0.0	0.004	0.0	0.006	0.0	0.009	0.0	0.030	-.020	0.060	0.0	0.011	0.120	0.040	0.0	0.007
10	0.0	0.004	0.0	0.005	0.0	0.007	0.0	0.009	0.0	0.040	0.010	0.060	0.0	0.009	0.140	0.040	0.0	0.007
11A	0.0	0.005	0.0	0.004	0.0	0.007	0.0	0.010	0.0	0.040	0.050	0.060	-.002	0.007	0.080	0.040	0.0	0.006
12A	0.0	0.004	0.0	0.005	0.001	0.005	0.0	0.011	0.0	0.040	0.020	0.060	0.0	0.008	0.120	0.040	0.0	0.007
13A	0.0	0.006	0.0	0.006	0.0	0.010	0.005	0.009	0.0	0.050	0.010	0.090	0.001	0.009	0.080	0.060	0.0	0.010
14A	0.0	0.005	0.0	0.005	0.0	0.008	0.0	0.010	0.0	0.040	-.020	0.060	0.0	0.010	0.110	0.040	0.0	0.008
46B	0.002	0.005	0.0	0.007	0.0	0.011	0.0	0.020	0.0	0.060	-.010	0.080	0.008	0.011	0.090	0.060	0.0	0.011

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

CY

A N A L Y S E S

LOCATION	CS-137	(+/-)	CS-134	(+/-)	RU-103	(+/-)	ZR-95	(+/-)	RU(RH)-106	(+/-)	K-40	(+/-)	TH-228	(+/-)	BE-7	(+/-)	NB-95	(+/-)
5	0.0	0.007	0.0	0.007	0.0	0.010	0.0	0.020	0.0	0.060	-.020	0.090	-.003	0.012	0.110	0.060	0.0	0.012
6	0.0	0.006	0.0	0.007	0.0	0.010	0.0	0.014	0.0	0.060	0.0	0.080	0.002	0.012	0.110	0.060	0.0	0.010
7	0.0	0.006	0.0	0.007	0.0	0.010	0.0	0.014	0.0	0.060	0.020	0.090	0.0	0.020	0.060	0.050	0.0	0.010
8	0.0	0.004	0.0	0.004	0.0	0.006	0.001	0.005	0.0	0.030	-.020	0.040	0.0	0.010	0.090	0.030	0.004	0.004
9	0.001	0.003	0.0	0.004	0.0	0.006	0.0	0.009	0.0	0.040	0.0	0.050	0.0	0.007	0.090	0.040	0.0	0.006
10	0.001	0.003	0.0	0.004	0.0	0.007	0.0	0.010	0.0	0.030	0.010	0.050	0.0	0.011	0.080	0.040	0.0	0.006
11A	0.0	0.004	0.0	0.004	0.0	0.007	0.003	0.006	0.010	0.030	0.010	0.050	0.0	0.010	0.060	0.030	0.001	0.004
12A	0.0	0.004	0.0	0.004	0.002	0.004	0.0	0.009	0.010	0.020	-.020	0.050	0.0	0.011	0.080	0.040	0.0	0.006
13A	0.0	0.006	0.0	0.006	0.0	0.010	0.0	0.020	0.0	0.060	-.020	0.080	0.0	0.012	0.090	0.060	0.0	0.010
14A	0.0	0.004	0.0	0.004	0.0	0.007	0.0	0.010	0.0	0.030	0.010	0.060	0.0	0.011	0.110	0.040	0.0	0.007
46B	0.0	0.007	0.0	0.007	0.0	0.010	0.0	0.014	0.020	0.040	0.030	0.090	0.006	0.013	0.090	0.060	0.0	0.011

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

A N A L Y S E S

LOCATION	CS-137	(+/-)	CS-134	(+/-)	RU-103	(+/-)	ZR-95	(+/-)	RU(RH)-106	(+/-)	K-40	(+/-)	TH-228	(+/-)	BE-7	(+/-)	NB-95	(+/-)
5	0.0	0.007	0.0	0.007	0.0	0.008	0.0	0.013	0.0	0.060	0.0	0.080	0.0	0.015	0.110	0.050	0.0	0.010
6	0.0	0.006	0.0	0.007	0.0	0.010	0.0	0.009	0.0	0.060	0.0	0.080	0.0	0.020	0.070	0.060	0.0	0.007
7	0.0	0.006	0.0	0.006	0.0	0.007	0.0	0.014	0.0	0.050	0.0	0.070	0.0	0.020	0.110	0.050	0.0	0.010
8	0.0	0.004	0.0	0.004	0.0	0.007	0.0	0.008	0.0	0.030	0.0	0.040	0.0	0.010	0.070	0.030	0.0	0.006
9	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	0.006	0.100	0.040	0.0	0.005
10	0.0	0.004	0.0	0.004	0.0	0.007	0.0	0.009	0.0	0.030	0.0	0.050	0.0	0.006	0.100	0.040	0.0	0.007
11A	0.0	0.004	0.0	0.004	0.0	0.007	0.0	0.009	0.0	0.040	0.0	0.050	0.0	0.010	0.060	0.040	0.0	0.007
12A	0.0	0.003	0.0	0.004	0.0	0.006	0.0	0.006	0.0	0.030	0.0	0.050	0.0	0.006	0.100	0.040	0.0	0.006
13A	0.0	0.006	0.0	0.006	0.0	0.012	0.0	0.020	0.0	0.050	0.0	0.090	0.0	0.020	0.090	0.060	0.0	0.009
14A	0.0	0.004	0.0	0.004	0.0	0.007	0.0	0.009	0.0	0.040	0.0	0.050	0.0	0.007	0.100	0.030	0.0	0.007
46B	0.0	0.004	0.0	0.007	0.0	0.008	0.0	0.020	0.0	0.060	0.0	0.080	0.0	0.020	0.080	0.060	0.0	0.011

TABLE 4E
AIR PARTICULATES
GAMMA SPECTRA - MAY
(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	0.002	0.004	0.0	0.005	0.0	0.009	0.003	0.009	0.0	0.050	0.030	0.070	0.0	0.010	0.100	0.050	0.0	0.009
6	0.001	0.004	0.0	0.005	0.0	0.008	0.0	0.012	0.0	0.040	0.0	0.060	0.0	0.013	0.120	0.050	0.0	0.008
7	0.002	0.004	0.0	0.005	0.0	0.008	0.0	0.011	0.0	0.050	0.020	0.060	0.0	0.012	0.100	0.040	0.0	0.007
8	0.0	0.003	0.0	0.003	0.0	0.005	0.0	0.006	0.0	0.030	-.040	0.040	0.0	0.007	0.110	0.030	0.0	0.005
9	0.0	0.003	0.0	0.003	0.0	0.005	0.0	0.006	0.0	0.030	-.010	0.040	0.0	0.006	0.120	0.030	0.0	0.005
10	0.0	0.003	0.0	0.003	0.0	0.005	0.0	0.007	0.0	0.030	0.010	0.040	0.002	0.006	0.110	0.030	0.0	0.005
11A	0.001	0.002	0.0	0.004	0.0	0.005	0.001	0.005	0.0	0.030	-.030	0.040	0.0	0.009	0.060	0.030	0.0	0.005
12A	0.001	0.002	0.0	0.003	0.0	0.005	0.0	0.007	0.0	0.030	0.020	0.040	0.0	0.006	0.120	0.030	0.0	0.005
13A	0.001	0.003	0.0	0.005	0.0	0.008	0.0	0.011	0.0	0.050	-.010	0.060	0.0	0.013	0.130	0.040	0.0	0.008
14A	0.0	0.003	0.0	0.003	0.0	0.005	0.0	0.007	0.0	0.030	-.030	0.040	0.0	0.005	0.110	0.030	0.0	0.005
46B	0.0	0.005	0.0	0.005	0.0	0.009	0.0	0.011	0.020	0.040	-.040	0.060	0.0	0.020	0.100	0.050	0.0	0.008

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	0.002	0.003	0.0	0.004	0.0	0.005	0.0	0.007	0.0	0.030	-.040	0.070	0.0	0.009	0.090	0.040	0.0	0.006
6	0.003	0.003	0.0	0.003	0.0	0.005	0.0	0.007	0.0	0.030	-.040	0.070	0.0	0.010	0.090	0.050	0.0	0.005
7	0.0	0.004	0.0	0.003	0.0	0.004	0.0	0.006	0.0	0.030	0.0	0.070	0.0	0.009	0.120	0.040	0.0	0.004
8	0.002	0.002	0.0	0.002	0.003	0.003	0.004	0.004	0.0	0.020	-.010	0.040	0.0	0.005	0.100	0.030	0.0	0.003
9	0.0	0.002	0.0	0.002	0.0	0.003	0.002	0.004	0.0	0.014	-.010	0.040	0.0	0.005	0.110	0.030	0.0	0.003
10	0.0	0.002	0.0	0.002	0.0	0.003	0.0	0.004	0.010	0.020	-.020	0.040	0.003	0.005	0.090	0.030	0.0	0.003
11A	0.0	0.003	0.0	0.003	0.0	0.004	0.0	0.005	0.0	0.020	0.0	0.050	0.0	0.007	0.080	0.030	0.0	0.004
12A	0.002	0.002	0.0	0.002	0.0	0.004	0.0	0.005	0.0	0.020	0.0	0.050	0.001	0.005	0.110	0.030	0.0	0.003
13A	0.002	0.003	0.0	0.003	0.0	0.005	0.0	0.005	0.0	0.020	-.040	0.060	-.002	0.007	0.130	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	0.040	0.0	0.005	0.100	0.030	0.0	0.003
46B	0.0	0.003	0.0	0.003	0.0	0.005	0.0	0.007	0.0	0.030	0.050	0.080	0.0	0.009	0.120	0.040	0.0	0.006

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

CY

A N A L Y S E S

LOCATION	CS-137		CS-134		RU-103		ZR-95		RU(RH)-106		K-40		TH-228		BE-7		NB-95	
		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)
5	0.0	0.004	0.0	0.004	0.0	0.005	0.0	0.008	0.0	0.030	0.0	0.050	0.0	0.010	0.060	0.030	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	0.0	0.040	0.0	0.009	0.080	0.040	0.0	0.005
7	0.0	0.003	0.0	0.004	0.0	0.006	0.0	0.007	0.0	0.030	0.0	0.030	0.0	0.009	0.090	0.040	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	0.005	0.080	0.030	0.0	0.003
9	0.0	0.003	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	0.030	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	0.030	0.0	0.005	0.080	0.030	0.0	0.003
11A	0.0	0.003	0.0	0.002	0.0	0.003	0.0	0.005	0.0	0.020	0.0	0.020	0.0	0.006	0.060	0.030	0.0	0.003
12A	0.0	0.002	0.0	0.002	0.0	0.003	0.0	0.005	0.0	0.020	0.0	0.030	0.0	0.006	0.080	0.030	0.0	0.004
13A	0.0	0.004	0.0	0.003	0.0	0.004	0.0	0.006	0.0	0.040	0.0	0.040	0.0	0.009	0.070	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	0.0	0.030	0.0	0.006	0.100	0.030	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 4H
AIR PARTICULATES
GAMMA SPECTRA - AUG
(PCI/M3)

A N A L Y S E S

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	0.050	0.0	0.009	0.110	0.040	0.0	0.005
6	0.0	0.004	0.0	0.003	0.0	0.005	0.0	0.008	0.0	0.030	0.0	0.040	0.0	0.009	0.110	0.040	0.0	0.005
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	0.009	0.110	0.040	0.0	0.005
8	0.0	0.002	0.0	0.002	0.0	0.004	0.0	0.00[illegible]	0.0	0.020	0.0	0.030	0.0	0.005	0.100	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	0.020	0.0	0.005	0.090	0.030	0.0	0.004
10	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	0.090	0.030	0.0	0.004
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	0.006	0.070	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	0.006	0.130	0.030	0.0	0.003
13A	0.0	0.004	0.0	0.003	0.0	0.005	0.0	0.008	0.0	0.030	0.0	0.050	0.0	0.008	0.110	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	0.0	0.030	0.0	0.004	0.120	0.030	0.0	0.003
46B	0.0	0.004	0.0	0.004	0.0	0.006	0.0	0.009	0.0	0.030	0.0	0.050	0.0	0.009	0.120	0.040	0.0	0.006

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

CY

A N A L Y S E S

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	0.006	0.006	0.0	0.030	0.0	0.030	0.0	0.007	0.050	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	0.020	0.0	0.030	0.0	0.007	0.060	0.030	0.0	0.004
7	0.0	0.003	0.0	0.003	0.0	0.005	0.0	0.005	0.0	0.020	0.0	0.030	0.0	0.007	0.070	0.030	0.0	0.004
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	0.004	0.090	0.020	0.0	0.002
9	0.0	0.002	0.0	0.002	0.0	0.002	0.0	0.004	0.0	0.012	0.0	0.020	0.0	0.004	0.070	0.020	0.0	0.003
10	0.0	0.002	0.0	0.002	0.0	0.003	0.0	0.004	0.020	0.014	0.0	0.020	0.0	0.004	0.070	0.020	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	0.005	0.070	0.020	0.0	0.003
12A	0.0	0.002	0.0	0.002	0.0	0.002	0.0	0.003	0.0	0.020	0.0	0.014	0.0	0.004	0.070	0.020	0.0	0.002
13A	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	0.006	0.050	0.020	0.0	0.004
14A	0.0	0.001	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	0.020	0.0	0.003
46B	0.0	0.004	0.0	0.003	0.0	0.004	0.0	0.005	0.030	0.020	0.0	0.030	0.0	0.008	0.110	0.030	0.0	0.004

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

A N A L Y S E S

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	0.006	0.0	0.006	0.0	0.030	0.0	0.040	0.0	0.008	0.080	0.040	0.0	0.005
6	0.0	0.003	0.0	0.003	0.0	0.005	0.0	0.008	0.0	0.020	0.0	0.030	0.0	0.008	0.070	0.030	0.0	0.006
7	0.0	0.002	0.0	0.003	0.0	0.005	0.0	0.007	0.0	0.030	0.0	0.040	0.0	0.007	0.060	0.040	0.006	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	0.100	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	0.040	0.020	0.0	0.003
10	0.0	0.002	0.0	0.002	0.0	0.004	0.0	0.004	0.0	0.015	0.0	0.020	0.0	0.004	0.070	0.020	0.0	0.003
11A	0.0	0.002	0.0	0.002	0.0	0.003	0.005	0.004	0.0	0.020	0.0	0.020	0.0	0.004	0.050	0.020	0.0	0.003
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	0.080	0.020	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	0.070	0.040	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	0.050	0.020	0.0	0.003
46B	0.0	0.003	0.0	0.003	0.0	0.005	0.0	0.006	0.0	0.030	0.0	0.040	0.0	0.007	0.090	0.040	0.0	0.005

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

CY

A N A L Y S E S

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	0.006	0.0	0.009	0.0	0.040	0.0	0.050	0.0	0.008	0.0	0.040	0.0	0.006
6	0.0	0.004	0.0	0.004	0.	0.007	0.0	0.010	0.0	0.040	0.0	0.050	0.0	0.009	0.0	0.040	0.0	0.008
7	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	0.009	0.060	0.040	0.0	0.006
8	0.0	0.002	0.0	0.002	0.004	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
9	0.0	0.002	0.0	0.002	0.010	0.004	0.007	0.005	0.0	0.020	0.0	0.020	0.0	0.006	0.030	0.030	0.0	0.004
10	0.0	0.002	0.0	0.003	0.0	0.005	0.0	0.005	0.0	0.020	0.0	0.060	0.0	0.006	0.080	0.030	0.0	0.004
11A	0.0	0.003	0.0	0.003	0.0	0.005	0.0	0.006	0.0	0.020	0.0	0.060	0.0	0.007	0.060	0.030	0.0	0.005
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	0.006	0.040	0.030	0.0	0.004
13A	0.0	0.003	0.0	0.003	0.0	0.006	0.0	0.008	0.0	0.030	0.0	0.040	0.0	0.008	0.0	0.040	0.0	0.007
14A	0.0	0.002	0.0	0.002	0.005	0.004	0.0	0.004	0.0	0.020	0.0	0.020	0.0	0.006	0.050	0.030	0.006	0.004
46B	0.0	0.004	0.0	0.004	0.0	0.007	0.0	0.009	0.0	0.040	0.0	0.050	0.0	0.009	0.070	0.040	0.0	0.008

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

A N A L Y S E S

LOCATION	CS-137		CS-134		RU-103		ZR-95		RU(RH)-106		K-40		TH-228		BE-7		NB-95	
		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)
5	0.0	0.004	0.0	0.004	0.011	0.008	0.0	0.010	0.0	0.040	0.0	0.030	0.0	0.010	0.070	0.040	0.012	0.008
6	0.0	0.003	0.0	0.004	0.011	0.007	0.0	0.010	0.0	0.030	0.0	0.040	0.0	0.008	0.080	0.040	0.002	0.007
7	0.0	0.004	0.0	0.004	0.011	0.007	0.0	0.009	0.0	0.040	0.0	0.050	0.0	0.009	0.080	0.050	0.010	0.007
8	0.0	0.002	0.0	0.002	0.007	0.004	0.0	0.006	0.0	0.020	0.0	0.020	0.0	0.005	0.080	0.030	0.008	0.005
9	0.0	0.003	0.0	0.003	0.009	0.006	0.0	0.007	0.0	0.030	0.0	0.030	0.0	0.007	0.060	0.030	0.012	0.005
10	0.0	0.002	0.0	0.003	0.014	0.005	0.0	0.007	0.0	0.020	0.0	0.030	0.0	0.006	0.100	0.030	0.007	0.005
11A	0.0	0.004	0.0	0.003	0.010	0.007	0.0	0.008	0.0	0.030	0.0	0.030	0.0	0.008	0.070	0.040	0.013	0.007
12A	0.0	0.002	0.0	0.003	0.009	0.006	0.0	0.007	0.0	0.030	0.0	0.020	0.0	0.006	0.070	0.040	0.010	0.006
13A	0.0	0.004	0.0	0.004	0.015	0.007	0.0	0.008	0.0	0.030	0.0	0.040	0.0	0.011	0.070	0.040	0.007	0.006
14A	0.0	0.002	0.0	0.002	0.011	0.005	0.006	0.006	0.0	0.020	0.0	0.030	0.0	0.006	0.080	0.030	0.006	0.004
46B	0.0	0.004	0.0	0.004	0.015	0.008	0.0	0.010	0.0	0.040	0.0	0.040	0.0	0.010	0.070	0.050	0.014	0.008

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

CY

STRONTIUM-89

LOCATION	1ST QTR		2ND QTR		3RD QTR		4TH QTR	
		(+/-)		(+/-)		(+/-)		(+/-)
5	0.010	0.050	-0.020	0.070	-0.020	0.040	0.410	0.120
6	0.010	0.050	0.0	0.040	0.040	0.040	0.240	0.120
7	-0.030	0.040	-0.040	0.090	0.0	0.070	0.320	0.100
8	0.020	0.030	-0.030	0.020	0.040	0.030	0.330	0.070
9	0.010	0.030	-0.030	0.020	-0.050	0.030	0.140	0.090
10	0.020	0.030	0.0	0.030	0.0	0.030	0.250	0.060
11A	-0.030	0.030	0.010	0.030	0.0	0.030	0.020	0.060
12A	-0.010	0.030	0.0	0.020	0.0	0.030	0.310	0.060
13A	0.0	0.040	0.020	0.040	0.0	0.020	0.250	0.110
14A	0.0	0.030	0.0	0.020	0.0	0.030	0.360	0.070
46B	0.040	0.040	0.010	0.040	0.020	0.060	0.370	0.110

STRONTIUM-90

LOCATION	1ST QTR		2ND QTR		3RD QTR		4TH QTR	
		(+/-)		(+/-)		(+/-)		(+/-)
5	0.023	0.010	0.050	0.020	0.024	0.010	0.0	0.020
6	0.018	0.010	0.038	0.011	0.023	0.010	0.010	0.020
7	0.023	0.008	0.076	0.010	0.029	0.013	0.021	0.013
8	0.019	0.006	0.031	0.007	0.019	0.006	-0.005	0.012
9	0.018	0.006	0.027	0.007	0.034	0.011	0.010	0.020
10	0.014	0.005	0.034	0.007	0.019	0.007	0.007	0.008
11A	0.018	0.006	0.020	0.010	0.029	0.008	0.003	0.012
12A	0.018	0.007	0.038	0.006	0.031	0.006	0.013	0.008
13A	0.015	0.009	0.031	0.013	0.024	0.009	0.010	0.020
14A	0.016	0.006	0.025	0.007	0.027	0.006	0.004	0.010
46B	0.018	0.008	0.036	0.012	0.019	0.014	0.010	0.020

CESIUM

LOCATION	1ST QTR		2ND QTR		3RD QTR		4TH QTR	
		(+/-)		(+/-)		(+/-)		(+/-)
5	0.064	0.014	0.057	0.009	0.040	0.020	0.010	0.020
6	0.040	0.020	0.053	0.009	0.050	0.030	0.020	0.020
7	0.030	0.020	0.054	0.008	0.060	0.020	0.020	0.020
8	0.031	0.012	0.055	0.005	0.020	0.012	0.008	0.010
9	0.030	0.013	0.054	0.007	0.054	0.012	0.007	0.010
10	0.033	0.014	0.044	0.006	0.023	0.011	0.0	0.020
11A	0.024	0.011	0.043	0.011	0.019	0.012	0.024	0.009
12A	0.062	0.015	0.054	0.007	0.038	0.014	0.025	0.009
13A	0.060	0.020	0.047	0.010	0.050	0.020	0.010	0.020
14A	0.028	0.013	0.041	0.006	0.080	0.020	0.011	0.012
46B	0.020	0.020	0.060	0.020	0.020	0.020	0.020	0.030

(a) *10E+2 indicates that all the 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	5/23/80	-0.002	0.014	0.062	0.005	0.14	0.05	0.0	0.12	0.0	0.08	0.0	0.05	0.0	0.05
6	5/23/80	-0.100	0.050	0.331	0.014	0.75	0.06	0.0	0.12	0.0	0.07	0.0	0.05	0.0	0.05
7	5/23/80	0.0	0.020	0.115	0.006	1.97	0.10	0.0	0.20	0.0	0.09	0.0	0.06	0.0	0.06
8	5/23/80	-0.032	0.014	0.199	0.006	0.91	0.07	0.0	0.09	0.0	0.06	0.0	0.04	0.0	0.04
9	5/23/80	0.011	0.013	0.057	0.005	0.38	0.07	0.0	0.11	0.0	0.09	0.0	0.06	0.0	0.06
10	5/27/80	0.001	0.012	0.073	0.006	0.77	0.07	0.0	0.12	0.0	0.07	0.0	0.05	0.0	0.05
11A	5/23/80	0.010	0.013	0.123	0.006	0.49	0.07	0.0	0.11	0.0	0.09	0.0	0.07	0.0	0.06
12A	5/23/80	0.0	0.020	0.226	0.008	6.20	0.30	0.0	0.30	0.0	0.20	0.0	0.13	0.0	0.12
13A	5/23/80	0.007	0.015	0.199	0.006	0.77	0.08	0.0	0.11	0.0	0.08	0.0	0.06	0.0	0.06
14A	5/23/80	-0.020	0.030	0.256	0.015	1.06	0.11	0.0	0.20	0.0	0.11	0.0	0.08	0.0	0.08

		CO-60	(+/-)	FE-59	(+/-)	ZN-65	(+/-)	ZR-95	(+/-)	RU(RH)-106	(+/-)	CR-51	(+/-)	K-40	(+/-)
5	5/23/80	0.0	0.05	0.0	0.12	0.0	0.14	0.0	0.10	0.0	0.50	0.0	0.50	11.90	1.00
6	5/23/80	0.0	0.05	0.0	0.12	0.0	0.13	0.0	0.10	0.0	0.50	0.0	0.50	10.20	0.90
7	5/23/80	0.0	0.06	0.0	0.15	0.0	0.20	0.0	0.13	0.0	0.70	0.0	0.70	10.30	1.10
8	5/23/80	0.0	0.04	0.0	0.10	0.0	0.11	0.0	0.08	0.0	0.40	0.0	0.40	9.10	0.80
9	5/23/80	0.0	0.06	0.0	0.15	0.0	0.20	0.0	0.12	0.0	0.60	0.0	0.60	9.70	1.20
10	5/27/80	0.0	0.05	0.0	0.12	0.0	0.14	0.0	0.10	0.0	0.50	0.0	0.50	10.80	1.00
11A	5/23/80	0.0	0.07	0.0	0.15	0.0	0.20	0.0	0.12	0.0	0.60	0.0	0.60	13.90	1.10
12A	5/23/80	0.0	0.12	0.0	0.30	0.0	0.30	0.10	0.20	0.0	1.50	0.0	1.40	13.00	2.00
13A	5/23/80	0.0	0.06	0.0	0.14	0.0	0.20	0.0	0.11	0.0	0.60	0.0	0.60	8.80	1.10
14A	5/23/80	0.0	0.08	0.0	0.20	0.0	0.20	0.0	0.20	0.0	0.80	0.0	0.80	17.00	2.00

		RA-226	(+/-)	TH-228	(+/-)	BE-7	(+/-)	NB-95	(+/-)
5	5/23/80	0.96	0.11	0.92	0.15	0.0	0.50	0.0	0.06
6	5/23/80	0.74	0.10	0.73	0.13	0.40	0.40	0.0	0.06
7	5/23/80	1.05	0.10	0.70	0.20	0.0	0.80	0.0	0.08
8	5/23/80	0.54	0.09	0.53	0.12	0.0	0.40	0.0	0.05
9	5/23/80	0.74	0.13	0.50	0.20	0.0	0.50	0.0	0.07
10	5/27/80	0.68	0.10	0.53	0.14	0.0	0.50	0.0	0.06
11A	5/23/80	0.77	0.13	0.90	0.20	0.0	0.60	0.0	0.07
12A	5/23/80	2.00	0.20	1.20	0.40	0.0	2.00	0.04	0.09
13A	5/23/80	0.60	0.12	0.60	0.20	0.0	0.60	0.0	0.06
14A	5/23/80	1.30	0.20	1.10	0.20	0.0	0.80	0.0	0.09

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	2/25/80	-0.8	0.8	5.9	0.4	20.8	0.5	0.0	0.2	0.0	6.0	0.0	30.0	0.0	8.00
19	4/ 9/80	0.8	1.2	6.3	0.4	18.7	0.5	-0.1	0.2	0.0	7.0	0.0	30.0	0.0	11.00
19	5/ 6/80	0.4	0.8	6.3	0.4	12.3	0.8	0.0	0.2	0.0	7.0	0.0	20.0	0.0	8.00
19	6/10/80	0.1	1.0	7.2	0.4	12.8	1.1	0.1	0.2	0.0	7.0	0.0	30.0	0.0	9.00
19	7/ 8/80	0.0	1.3	6.3	0.5	16.6	1.0	0.1	0.1	0.0	7.0	0.0	20.0	0.0	8.00
19	8/ 5/80	-0.5	0.8	6.4	0.3	15.9	1.2	-0.0	0.1	0.0	7.0	0.0	30.0	0.0	6.00
19	9/ 8/80	-0.7	1.4	11.5	1.1	16.9	0.5	-0.2	0.2	0.0	7.0	0.0	30.0	0.0	7.00
19	10/ 6/80	-0.5	1.1	7.3	0.4	17.7	1.0	0.1	0.3	0.0	8.0	0.0	30.0	0.0	7.00
19	11/13/80	-0.6	0.8	7.7	0.3	12.8	0.9	6.0	1.4	0.0	9.0	0.0	30.0	0.0	8.00
19	12/ 9/80	-0.6	2.0	10.7	0.6	23.4	1.2	0.0	0.4	0.0	8.0	0.0	30.0	0.0	10.00
20	2/25/80	-0.2	0.5	2.6	0.3	8.8	0.8	0.0	0.2	0.0	7.0	0.0	30.0	0.0	8.00
20	4/ 8/80	-0.3	0.7	3.6	0.4	5.6	0.7	0.0	0.2	0.0	7.0	0.0	30.0	0.0	8.00
20	5/ 6/80	-0.7	0.7	4.9	0.4	5.5	0.7	-0.1	0.1	0.0	7.0	0.0	20.0	0.0	8.00
20	6/ 9/80	-0.4	0.8	6.8	0.3	6.2	0.3	-0.1	0.1	0.0	7.0	0.0	20.0	8.00	12.00
20	7/ 7/80	0.0	0.7	6.6	0.3	6.8	0.4	0.0	0.1	0.0	7.0	0.0	30.0	11.00	11.00
20	8/ 6/80	-0.8	0.7	6.8	0.3	8.5	0.7	-0.0	0.1	0.0	8.0	0.0	30.0	0.0	8.00
20	9/ 9/80	0.7	0.7	5.6	0.3	8.8	0.9	-0.2	0.2	0.0	8.0	0.0	30.0	0.0	8.00
20	10/ 7/80	0.3	1.1	6.0	0.4	3.9	0.3	-0.1	0.2	0.0	9.0	0.0	30.0	0.0	8.00
20	11/12/80	0.7	1.0	7.2	0.4	4.5	0.6	0.0	0.3	0.0	7.0	0.0	20.0	0.0	7.00
20	12/ 8/80	-0.8	1.0	4.6	0.4	5.3	0.7	0.0	0.4	0.0	8.0	0.0	30.0	0.0	9.00
21	2/25/80	0.0	0.8	5.4	0.3	8.6	0.4	-0.1	0.1	0.0	8.0	0.0	30.0	0.0	9.00
21	4/ 8/80	-0.4	1.0	5.2	0.4	7.0	0.3	-0.0	0.1	0.0	7.0	0.0	30.0	0.0	8.00
21	5/ 6/80	-2.0	0.7	5.6	0.3	6.6	0.6	0.0	0.0	0.0	8.0	0.0	30.0	0.0	10.00
21	5/14/80	0.8	0.7	3.8	0.4	7.9	0.7	-0.0	0.1	0.0	4.0	0.0	13.0	0.0	4.00
21	6/ 9/80	0.7	0.9	5.7	0.4	10.5	0.8	-0.0	0.1	0.0	8.0	0.0	30.0	0.0	9.00
21	7/ 7/80	0.4	0.7	7.9	0.4	6.7	0.7	-0.0	0.1	0.0	8.0	0.0	30.0	2.00	13.00
21	8/ 6/80	-0.1	1.0	6.3	0.4	18.6	1.0	0.0	0.2	0.0	7.0	0.0	[illegible]	0.0	7.00
21	9/ 9/80	-0.5	0.8	7.3	0.4	15.4	1.1	0.0	0.2	0.0	7.0	0.0	20.0	0.0	6.00
21	10/ 7/80	-0.8	1.2	7.6	0.4	18.9	1.0	-0.1	0.2	0.0	9.0	0.0	30.0	0.0	8.00
21	11/12/80	0.1	1.4	7.5	0.5	18.8	1.0	0.3	0.2	0.0	8.0	0.0	20.0	30.00	20.00
21	12/ 8/80	1.3	1.3	6.6	0.4	24.9	1.4	0.0	0.3	0.0	8.0	0.0	30.0	0.0	9.00
22A	2/25/80	-0.3	1.0	6.9	0.4	8.3	0.4	0.0	0.2	0.0	7.0	0.0	30.0	0.0	10.00
22A	4/ 8/80	0.9	1.1	5.5	0.4	7.7	0.3	-0.1	0.2	0.0	8.0	0.0	30.0	0.0	10.00
22A	5/ 6/80	0.8	0.8	4.5	0.3	6.1	0.6	-0.0	0.1	0.0	8.0	0.0	30.0	0.0	8.00
22A	6/ 9/80	0.0	0.8	5.0	0.3	4.1	0.6	0.0	0.2	0.0	8.0	0.0	20.0	0.0	8.00
22A	7/ 8/80	0.1	0.7	4.2	0.4	8.8	0.7	0.0	0.2	0.0	8.0	0.0	30.0	0.0	9.00
22A	8/ 5/80	0.4	0.6	2.8	0.3	11.6	1.3	0.0	0.2	0.0	8.0	0.0	30.0	0.0	10.00
22A	9/ 9/80	0.5	1.1	4.4	0.8	8.7	0.9	-0.1	0.2	0.0	9.0	0.0	30.0	0.0	7.00
22A	10/ 7/80	0.3	1.0	3.6	0.3	5.7	0.3	0.0	0.2	0.0	8.0	0.0	30.0	0.0	6.00
22A	11/12/80	0.3	1.0	5.2	0.3	5.0	0.7	0.3	0.2	0.0	8.0	0.0	30.0	0.0	8.00
22A	12/ 8/80	1.2	1.4	4.8	0.4	7.2	0.7	0.0	0.4	0.0	7.0	0.0	30.0	0.0	6.00

TABLE 8
GOAT MILK
(PCI/L)

CY

LOCATION	COLLECTION DATE	SR-89	(+/-)	SR-90	(+/-)	CS-137	(+/-)	I-131	(+/-)	CS-134	(+/-)	BA-140	(+/-)	LA-140	(+/-)
23A	5/ 6/80 (a) (b)	-1.5	1.4	14.7	0.5	25.0	2.0	0.0	0.2	0.0	3.0	0.0	11.0	0.0	3.00
23A	5/20/80	0.0	2.0	30.9	0.7	48.0	2.0	0.0	0.2	0.0	4.0	0.0	14.0	0.0	4.00
23A	6/ 9/80	0.0	2.0	26.3	0.7	60.0	2.0	0.1	0.2	0.0	3.0	0.0	12.0	0.0	3.00
23A	7/ 7/80	2.0	1.5	22.7	0.6	59.8	0.7	0.2	0.2	0.0	3.0	0.0	13.0	0.0	5.00
23A	8/ 6/80	0.4	0.2	24.6	0.7	73.0	3.0	-0.0	0.1	0.0	4.0	0.0	13.0	0.0	3.00
23A	9/ 9/80	-4.0	3.0	34.0	2.0	47.0	2.0	0.0	0.2	0.0	4.0	0.0	13.0	0.0	4.00
23A	10/ 7/80	0.0	2.0	19.9	0.6	71.0	2.0	-0.0	0.1	0.0	4.0	0.0	13.0	0.0	4.00
23A	11/12/80	-0.5	2.0	16.8	0.6	86.0	2.0	0.1	0.1	0.0	4.0	0.0	14.0	0.0	4.00
23A	12/ 8/80	3.0	2.0	19.2	0.7	87.0	3.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	3.00
24	2/25/80	-1.0	2.0	11.5	1.5	12.3	1.0	0.0	0.1	0.0	3.0	0.0	12.0	0.0	4.00
24	4/ 9/80	-1.0	1.0	6.8	0.4	12.9	0.4	-0.1	0.2	0.0	4.0	0.0	13.0	0.0	4.00
24	5/ 7/80	1.1	1.3	7.9	0.4	12.4	1.3	0.0	0.2	0.0	4.0	0.0	13.0	0.0	4.00
24	6/10/80	0.5	1.1	3.9	0.3	10.5	0.9	0.0	0.2	0.0	4.0	0.0	13.0	0.0	4.00
24	7/ 8/80	0.7	0.8	3.1	0.3	13.1	1.1	0.1	0.1	0.0	4.0	0.0	14.0	0.0	4.00
24	8/ 6/80	0.4	0.8	5.9	0.3	13.2	0.8	-0.0	0.1	0.0	4.0	12.0	11.0	0.0	3.00
24	9/ 9/80	-0.4	0.7	4.9	0.3	9.5	0.8	0.0	0.2	0.0	4.0	0.0	12.0	0.0	3.00
24	10/ 6/80	0.5	1.0	3.9	0.3	9.2	0.9	-0.0	0.1	0.0	4.0	0.0	12.0	0.0	3.00
24	11/12/80	-0.1	1.0	4.5	0.3	9.5	0.8	0.1	0.1	0.0	4.0	0.0	12.0	0.0	3.00
24	12/ 8/80	0.1	1.3	4.0	0.4	11.1	0.9	5.4	1.3	0.0	4.0	0.0	12.0	0.0	3.00

(a) no milk available during February and April at location 23A - grass samples were obtained
(b) extra sample taken from 7.5 miles north

TABLE 9
PASTURE GRASS
(PCI/G)

CY

LOCATION	COLLECTION DATE	SR-89	(+/-)	SR-90	(+/-)	CS-137	(+/-)	I-131	(+/-)	CS-134	(+/-)	MN-54	(+/-)	CO-58	(+/-)
23A	2/25/80	-0.040	0.013	0.433	0.005	0.060	0.010	0.0	0.12*	0.0	0.08	0.0	0.07	0.0	0.07
23A	4/ 9/80	-0.010	0.020	0.387	0.006	0.074	0.003	0.0	0.01	0.0	0.01	0.0	0.01	0.0	0.01

LOCATION	COLLECTION DATE	CO-60	(+/-)	FE-59	(+/-)	ZN-65	(+/-)	ZR-95	(+/-)	RU(RH)-106	(+/-)	CR-51	(+/-)	K-40	(+/-)
23A	2/25/80	0.0	0.07	0.0	0.20	0.0	0.20	0.0	0.13	0.0	0.70	0.0	0.60	1.80	1.00
23A	4/ 9/80	0.0	0.01	0.0	0.02	0.0	0.02	0.0	0.02	0.0	0.09	0.0	0.08	1.12	0.13

LOCATION	COLLECTION DATE	RA-226	(+/-)	TH-228	(+/-)	BE-7	(+/-)	NB-95	(+/-)
23A	2/25/80	0.0	0.15	0.0	0.20	11.60	0.70	0.0	0.07
23A	4/ 9/80	0.0	0.02	-0.01	0.02	7.23	0.11	0.0	0.01

* high error due to the low weight of the sample caused by the dryness of grass at this time of year

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	1/11/80	0.0	0.3	0.1	0.2	0.3	0.4	0.	14.	0.	20.	0.	11.	0.	11.
15	2/ 8/80	0.2	0.3	-0.1	0.2	0.2	0.3	0.	70.	0.	12.	0.	20.	0.	20.
15	3/12/80	0.0	0.3	0.0	0.2	0.0	0.4	0.	20.	0.	13.	0.	14.	0.	12.
15	4/16/80	-0.2	0.4	0.0	0.2	0.6	0.4	0.	30.	0.	11.	0.	12.	0.	12.
15	5/ 7/80	0.4	0.4	0.0	0.2	0.1	0.2	0.	20.	0.	20.	0.	20.	0.	14.
15	6/ 9/80	0.2	0.4	-0.1	0.2	0.1	0.3	0.	6.	0.	3.	0.	3.	0.	3.
15	7/14/80	-0.3	0.4	0.2	0.2	-0.1	0.3	0.	40.	0.	13.	0.	11.	0.	10.
15	8/15/80	-0.3	0.4	0.2	0.2	0.1	0.5	0.	8.	0.	4.	0.	4.	0.	3.
15	9/ 5/80	0.1	0.3	-0.2	0.1	-0.1	0.2	0.	40.	0.	3.	0.	3.	0.	4.
15	10/31/80	0.5	0.6	0.0	0.2	0.1	0.2	0.	8.	0.	3.	0.	3.	0.	3.
15	11/21/80	-0.3	0.4	0.2	0.2	0.9	0.8	0.	40.	0.	3.	0.	3.	0.	4.
15	12/ 5/80	0.0	0.4	-0.1	0.2	0.2	0.2	0.	30.	0.	4.	0.	4.	0.	4.
16A	3/12/80	-0.1	0.3	0.1	0.2	-0.2	0.4	0.	20.	0.	20.	0.	20.	0.	15.
16A	6/10/80	-0.1	0.4	0.4	0.4	0.0	0.4	0.	6.	0.	3.	0.	3.	0.	3.
16A	9/ 8/80	0.0	0.3	0.2	0.2	-0.2	0.4	0.	20.	0.	3.	0.	3.	0.	3.
16A	12/ 5/80	0.3	0.5	0.1	0.2	0.2	0.2	0.	40.	0.	3.	0.	3.	0.	3.
17	3/12/80	0.1	0.3	0.0	0.2	0.2	0.4	0.	30.	0.	20.	0.	20.	0.	20.
17	6/ 9/80	-0.2	0.3	-0.1	0.2	0.1	0.4	0.	8.	0.	4.	0.	4.	0.	4.
17	9/ 5/80	0.1	0.3	-0.1	0.2	0.3	0.4	0.	40.	0.	4.	0.	4.	0.	4.
17	12/ 5/80	0.1	0.5	0.1	0.2	-0.1	0.2	0.	20.	0.	3.	0.	3.	0.	4.
18	3/12/80	-0.2	0.3	0.2	0.2	-0.1	0.4	0.	20.	0.	13.	0.	13.	0.	12.
18	6/10/80	0.2	0.3	0.4	0.2	0.0	0.5	0.	9.	0.	4.	0.	4.	0.	3.
18	9/ 8/80	0.1	0.4	-0.1	0.2	0.2	0.4	0.	20.	0.	4.	0.	4.	0.	4.
18	12/ 5/80	0.0	0.5	0.1	0.2	0.2	0.2	0.	50.	0.	4.	0.	4.	0.	4.

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	1/11/80	0.	12.	0.	30.	0.	30.	0.	20.	0.	90.	0.	90.	0.	200.
15	2/ 8/80	0.	20.	0.	50.	0.	40.	0.	30.	0.	110.	0.	150.	-100.	300.
15	3/12/80	0.	14.	0.	30.	0.	30.	0.	20.	0.	130.	0.	100.	-300.	200.
15	4/16/80	0.	13.	0.	30.	0.	30.	0.	20.	0.	100.	0.	120.	-100.	200.
15	5/ 7/80	0.	20.	0.	40.	0.	40.	0.	30.	0.	200.	0.	140.	-100.	300.
15	6/ 9/80	0.	3.	0.	8.	0.	7.	0.	5.	0.	30.	0.	30.	30.	60.
15	7/14/80	0.	10.	0.	30.	0.	30.	0.	20.	0.	100.	0.	120.	0.	110.
15	8/15/80	0.	4.	0.	8.	0.	8.	0.	6.	0.	30.	0.	30.	0.	30.
15	9/ 5/80	0.	3.	0.	9.	0.	7.	0.	6.	0.	30.	0.	50.	0.	30.
15	10/31/80	0.	3.	0.	7.	0.	7.	0.	5.	0.	30.	0.	30.	0.	30.
15	11/21/80	0.	3.	0.	9.	0.	7.	0.	6.	0.	30.	0.	50.	0.	30.
15	12/ 5/80	0.	3.	0.	11.	0.	8.	0.	7.	0.	30.	0.	50.	0.	30.
16A	3/12/80	0.	15.	0.	40.	0.	50.	0.	30.	0.	140.	0.	140.	-100.	200.
16A	6/10/80	0.	3.	0.	8.	0.	8.	0.	6.	0.	30.	0.	30.	-60.	60.
16A	9/ 8/80	0.	3.	0.	8.	0.	7.	0.	6.	0.	30.	0.	40.	0.	30.
16A	12/ 5/80	0.	3.	0.	9.	0.	7.	0.	7.	0.	30.	0.	50.	0.	30.
17	3/12/80	0.	20.	0.	40.	0.	50.	0.	30.	0.	140.	0.	200.	-100.	300.
17	6/ 9/80	0.	4.	0.	9.	0.	9.	0.	7.	0.	30.	0.	30.	-80.	80.
17	9/ 5/80	0.	3.	0.	10.	0.	8.	0.	8.	0.	30.	0.	50.	0.	30.
17	12/ 5/80	0.	3.	0.	9.	0.	7.	0.	6.	0.	30.	0.	40.	0.	30.
18	3/12/80	0.	20.	0.	30.	0.	40.	0.	20.	0.	130.	0.	110.	100.	200.
18	6/10/80	0.	4.	0.	9.	0.	9.	0.	6.	0.	30.	0.	30.	-80.	80.
18	9/ 8/80	0.	3.	0.	10.	0.	8.	0.	7.	0.	30.	0.	40.	0.	30.
18	12/ 5/80	0.	3.	0.	10.	0.	9.	0.	7.	0.	30.	0.	50.	0.	40.

TABLE 10
WELL WATER
(PCI/L)

CY

LOCATION	COLLECTION DATE	BI-214		TH-228		BE-7		NB-95		H-3		GROSS BETA	
			(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)
15	1/11/80	20.	20.	0.	30.	0.	100.	0.	13.	5470.	330.	2.3	0.2
15	2/ 8/80	10.	30.	0.	40.	0.	130.	0.	20.	5270.	320.	1.1	0.4
15	3/12/80	140.	20.	0.	30.	0.	110.	0.	11.	3990.	240.	0.7	0.4
15	4/16/80	20.	20.	0.	30.	0.	110.	0.	15.	5780.	340.	2.0	0.2
15	5/ 7/80	620.	60.	10.	50.	0.	140.	0.	20.	7330.	460.	5.5	0.3
15	6/ 9/80	20.	7.	0.	8.	0.	30.	0.	3.	4080.	240.	0.8	0.2
15	7/14/80	0.	20.	0.	30.					4800.	290.	1.3	0.2
15	8/15/80	20.	7.	0.	10.	0.	30.			4960.	300.	0.8	0.2
15	9/ 5/80	0.	6.	0.	8.					5870.	360.	0.9	0.2
15	10/31/80	33.	7.	0.	8.					1770.	160.	1.4	0.2
15	11/21/80	0.	6.	0.	8.					2550.	170.	1.4	0.2
15	12/ 5/80	0.	7.	0.	9.					3550.	260.	1.0	0.3
16A	3/12/80	540.	50.	10.	40.	0.	120.	0.	20.	120.	70.	0.6	0.7
16A	6/10/80	60.	7.	0.	9.	0.	30.	0.	3.	90.	70.	3.2	0.3
16A	9/ 8/80	0.	6.	0.	8.			0.	4.	100.	80.	8.3	1.0
16A	12/ 5/80	0.	6.	0.	8.					0.	60.	10.0	1.1
17	3/12/80	600.	60.	0.	50.	0.	200.	0.	20.	140.	80.	2.2	0.5
17	6/ 9/80	90.	9.	0.	11.	0.	30.	0.	4.	180.	90.	1.1	0.2
17	9/ 5/80	0.	7.	0.	10.					200.	70.	2.5	0.5
17	12/ 5/80	0.	6.	0.	8.					440.	90.	2.0	0.2
18	3/12/80	160.	40.	0.	30.	0.	110.	0.	14.	110.	70.	2.0	0.4
18	6/10/80	11.	7.	0.	10.	0.	30.	0.	4.	420.	70.	2.3	0.4
18	9/ 8/80	0.	6.	0.	9.			0.	5.	90.	60.	1.7	0.6
18	12/ 5/80	0.	7.	0.	9.					120.	70.	3.3	0.3

TABLE 11
RESERVOIR WATER
(PCI/L)

CY

LOCATION	COLLECTION DATE	SR-89	(+/-)	SR-90	(+/-)	CS-137	(+/-)	I-131	(+/-)	CS-134	(+/-)	MN-54	(+/-)	CO-58	(+/-)
51B	3/12/80	0.1	0.3	0.4	0.2	0.2	0.4	0.	40.	0.	30.	0.	30.	0.	20.
51B	6/ 6/80	-0.1	0.3	0.4	0.2	0.5	0.4	0.	20.	0.	7.	0.	7.	0.	8.
51B	9/ 8/80	0.2	0.4	0.5	0.2	0.2	0.3	0.	30.	0.	7.	0.	7.	0.	7.
51B	12/ 5/80	0.6	0.5	0.5	0.2	0.2	0.2	0.	30.	0.	7.	0.	7.	0.	7.
52B	3/12/80	0.0	0.3	0.2	0.2	0.1	0.3	0.	40.	0.	30.	0.	20.	0.	20.
52B	6/ 6/80	0.1	0.5	0.3	0.3	0.2	0.4	0.	20.	0.	6.	0.	7.	0.	7.
52B	9/ 8/80	-0.1	0.4	0.4	0.2	0.2	0.4	0.	20.	0.	6.	0.	6.	0.	6.
52B	12/ 5/80	0.1	0.5	0.6	0.2	0.1	0.2	0.	11.	0.	7.	0.	7.	0.	6.

LOCATION	COLLECTION DATE	CO-60	(+/-)	FE-59	(+/-)	ZN-65	(+/-)	ZR-95	(+/-)	RU(RH)-106	(+/-)	CR-51	(+/-)	K-40	(+/-)
51B	3/12/80	0.	30.	0.	50.	0.	50.	0.	40.	0.	200.	0.	200.	-100.	300.
51B	6/ 6/80	0.	8.	0.	20.	0.	20.	0.	14.	0.	70.	0.	70.	0.	200.
51B	9/ 8/80	0.	7.	0.	20.	0.	20.	0.	10.	0.	70.	0.	70.	0.	80.
51B	12/ 5/80	0.	7.	0.	20.	20.	20.	0.	15.	0.	60.	0.	80.	0.	70.
52B	3/12/80	0.	20.	0.	60.	0.	[illegible].	0.	40.	0.	200.	0.	200.	-100.	400.
52B	6/ 6/80	0.	7.	0.	20.	0.	[illegible].	0.	11.	0.	60.	0.	70.	-40.	130.
52B	9/ 8/80	0.	5.	0.	20.	0.	10.	0.	10.	0.	60.	0.	60.	0.	60.
52B	12/ 5/80	0.	7.	0.	20.	0.	14.	0.	12.	0.	60.	0.	60.	0.	90.

TABLE 11
RESERVOIR WATER
(PCI/L)

CY

LOCATION	COLLECTION DATE	RA-226	(+/-)	TH-228	(+/-)	BE-7	(+/-)	NB-95	(+/-)	H-3	(+/-)	GROSS BETA	(+/-)
51B	3/12/80	20.	40.	0.	50.			0.	20.	80.	60.	3.3	0.5
51B	6/ 6/80	0.	15.	0.	20.	0.	60.	0.	9.	0.	60.	2.0	0.2
51B	9/ 8/80	0.	10.	0.	20.			0.	8.	90.	60.	2.0	0.2
51B	12/ 5/80	0.	12.	0.	20.					130.	80.	2.1	0.4
52B	3/12/80	20.	30.	30.	50.			0.	30.	90.	60.	2.0	0.5
52B	6/ 6/80	10.	13.	0.	20.	0.	60.	0.	8.	90.	70.	0.6	0.2
52B	9/ 8/80	0.	10.	0.	20.			0.	7.	130.	90.	1.2	0.5
52B	12/ 5/80	0.	13.	0.	20.					0.	60.	1.4	0.4

TABLE 12
FRUITS & VEGETABLES
(PCI/G)

CY

LOCATION	COLLECTION DATE	TYPE	SR-89	(+/-)	SR-90	(+/-)	CS-137	(+/-)	I-131	(+/-)	CS-134	(+/-)	MN-54	(+/-)
25	7/23/80	LETTUCE	-0.010	0.007	0.031	0.001	0.014	0.003	0.0	0.020	0.0	0.020	0.0	0.020
25	8/19/80	PEACHES	0.001	0.001	0.007	0.001	0.004	0.001	0.0	0.013	0.0	0.014	0.0	0.012
25	9/ 8/80	PEACHES	0.0	0.001	0.007	0.001	0.005	0.001	0.0	0.020	0.0	0.015	0.0	0.012
25	9/ 9/80	CABBAGE	0.0	0.005	0.047	0.002	0.008	0.001	0.0	0.200*	0.0	0.030	0.0	0.030
35A	7/ 7/80	LETTUCE	0.006	0.005	0.034	0.002	0.013	0.004	0.0	0.030	0.0	0.030	0.0	0.030
35A	8/19/80	PEACHES	0.000	0.001	0.007	0.001	0.003	0.001	0.0	0.020	0.0	0.015	0.0	0.020
35A	9/ 8/80	PEACHES	0.004	0.003	0.021	0.001	0.009	0.001	0.0	0.020	0.0	0.020	0.0	0.015
35A	9/ 9/80	CABBAGE	0.001	0.001	0.001	0.001	0.004	0.001	0.0	0.200*	0.0	0.030	0.0	0.020

LOCATION	COLLECTION DATE	TYPE	CO-58	(+	CO-60	(+/-)	FE-59	(+/-)	ZN-65	(+/-)	ZR-95	(+/-)	RU(RH)-106	(+/-)
25	7/23/80	LETTUCE	0.0	0	0.0	0.030	0.0	0.050	0.0	0.060	0.0	0.040	0.0	0.200
25	8/19/80	PEACHES	0.0	0	0.0	0.014	0.0	0.030	0.0	0.030	0.0	0.020	0.0	0.120
25	9/ 8/80	PEACHES	0.0	0.012	0.0	0.014	0.0	0.030	0.0	0.030	0.0	0.020	0.0	0.120
25	9/ 9/80	CABBAGE	0.0	0.030	0.0	0.030	0.0	0.080	0.0	0.060	0.0	0.060	0.0	0.200
35A	7/ 7/80	LETTUCE	0.0	0.020	0.0	0.030	0.0	0.070	0.0	0.080	0.0	0.040	0.0	0.200
35A	8/19/80	PEACHES	0.0	0.012	0.0	0.015	0.0	0.040	0.0	0.030	0.0	0.020	0.0	0.140
35A	9/ 8/80	PEACHES	0.0	0.020	0.0	0.020	0.0	0.040	0.0	0.030	0.0	0.020	0.0	0.130
35A	9/ 9/80	CABBAGE	0.0	0.020	0.0	0.030	0.0	0.070	0.0	0.060	0.0	0.050	0.0	0.200

LOCATION	COLLECTION DATE	TYPE	CR-51	(+/-)	K-40	(+/-)	RA-226	(+/-)	TH-228	(+/-)	BE-7	(+/-)	NB-95	(+/-)
25	7/23/80	LETTUCE	0.0	0.200	4.200	0.700	0.0	0.040	0.0	0.060	0.0	0.200	0.0	0.020
25	8/19/80	PEACHES	0.0	0.100	1.200	0.300	0.0	0.020	0.0	0.030	0.0	0.100	0.0	0.013
25	9/ 8/80	PEACHES	0.0	0.100	1.600	0.400	0.0	0.030	0.0	0.040	0.0	0.110	0.0	0.014
25	9/ 9/80	CABBAGE	0.0	0.300	2.700	0.700	0.0	0.050	0.0	0.070	0.0	0.200	0.0	0.040
35A	7/ 7/80	LETTUCE	0.0	0.200	6.200	0.900	0.0	0.050	0.0	0.090	0.00	0.200	0.0	0.030
35A	8/19/80	PEACHES	0.0	0.100	1.000	0.400	0.0	0.030	0.0	0.030	0.0	0.110	0.0	0.014
35A	9/ 8/80	PEACHES	0.0	0.120	1.600	0.400	0.0	0.030	0.0	0.040	0.0	0.130	0.0	0.014
35A	9/ 9/80	CABBAGE	0.0	0.200	3.600	0.700	0.0	0.040	0.0	0.060	0.0	0.200	0.0	0.030

* high error resulting from a delay in sample analysis due to sample overload

TABLE 13
MEAT, POULTRY & EGGS *
(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 (+/-)

* these samples were not available during 1980

TABLE 14
RIVER WATER
(PCI/L)

CY

LOCATION	COLLECTION DATE	SR-89	(+/-)	SR-90	(+/-)	CS-137	(+/-)	I-131	(+/-)	CS-134	(+/-)	MN-54	(+/-)	CO-58	(+/-)
29	2/15/80	-0.2	0.6	0.6	0.2	0.6	0.4	0.	1150.	0.	20.	0.	20.	0.	30.
29	5/12/80	0.3	0.2	-0.4	0.4	-0.4	0.4	0.	400.	0.	7.	0.	7.	0.	8.
29	8/16/80	0.6	0.7	0.7	0.2	0.3	0.5	0.	300.	0.	6.	0.	7.	8.	8.
29	11/14/80	0.6	0.9	0.2	0.2	0.2	0.5	0.	2000.	0.	7.	0.	7.	0.	10.
30A	1/22/80	0.0	0.4	0.6	0.2	0.5	0.4	0.	300.	0.	30.	0.	30.	0.	30.
30A	4/21/80	0.0	0.4	0.2	0.2	-0.1	0.3	0.	200.	0.	30.	0.	30.	0.	30.
30A	7/27/80	0.2	0.6	0.3	0.2	0.1	0.5	0.	60.	0.	6.	0.	6.	0.	7.
30A	10/22/80	-0.3	0.7	0.4	0.2	0.1	0.4	0.	400.	0.	7.	0.	6.	0.	9.

		CO-60	(+/-)	FE-59	(+/-)	ZN-65	(+/-)	ZR-95	(+/-)	RU(RH)-106	(+/-)	CR-51	(+/-)	K-40	(+/-)
29	2/15/80	0.	20.	0.	80.	0.	50.	0.	60.	0.	200.	0.	500.	-200.	300.
29	5/12/80	0.	7.	0.	30.	0.	20.	0.	20.	0.	70.	0.	200.	0.	60.
29	8/16/80	0.	6.	0.	20.	0.	10.	0.	20.	0.	60.	0.	140.	0.	60.
29	11/14/80	0.	5.	0.	30.	0.	20.	0.	20.	0.	60.	0.	200.	0.	60.
30A	1/22/80	0.	20.	0.	80.	0.	60.	0.	50.	0.	300.	0.	400.	-100.	300.
30A	4/21/80	0.	30.	0.	80.	0.	50.	0.	50.	0.	200.	0.	400.	-300.	300.
30A	7/27/80	0.	5.	0.	20.	0.	13.	0.	12.	0.	60.	0.	90.	0.	60.
30A	10/22/80	0.	5.	0.	20.	0.	14.	0.	20.	0.	50.	0.	200.	0.	60.

		RA-226	(+/-)	TH-228	(+/-)	BE-7	(+/-)	NB-95	(+/-)	H-3	(+/-)	GROSS BETA	(+/-)
29	2/15/80	20.	30.	0.	60.			0.	50.	1810.	130.	3.5	0.3
29	5/12/80	0.	10.	0.	20.	0.	100.	0.	20.	650.	100.	0.0	2.0
29	8/16/80	0.	10.	0.	20.			0.	20.	350.	80.	14.2	1.1
29	11/14/80	0.	12.	0.	20.					150.	90.	1.9	0.7
30A	1/22/80	0.	30.	10.	50.			0.	40.	150.	70.	-0.1	0.4
30A	4/21/80	0.	40.	0.	70.	0.	300.	0.	40.	280.	60.	3.7	0.3
30A	7/27/80	0.	11.	0.	15.	0.	60.			140.	70.	2.8	0.2
30A	10/22/80	0.	11.	0.	20.					190.	90.	3.3	0.7

TABLE 15
BOTTOM SEDIMENT
(PCI/G)

CY

LOCATION	COLLECTION DATE	SR-89	(+/-)	SR-90	(+/-)	CS-1	(+/-)	I-131	(+/-)	CS-134	(+/-)	MN-54	(+/-)	CO-58	(+/-)
27A	3/11/80	-0.003	0.011	0.010	0.030	0.100	0.020	0.0	0.090	0.0	0.060	0.0	0.060	0.0	0.050
27A	6/12/80	0.005	0.013	0.007	0.004	0.077	0.003	0.0	0.200	0.0	0.040	0.0	0.040	0.0	0.040
27A	9/ 5/80	0.012	0.008	0.006	0.003	0.074	0.007	0.0	0.300	0.0	0.050	0.0	0.040	0.0	0.050
27A	12/ 5/80	0.002	0.011	0.011	0.005	0.070	0.007	0.0	0.120	0.0	0.030	0.0	0.030	0.0	0.030
28A	3/11/80	-0.006	0.012	0.014	0.012	0.121	0.009	0.0	0.090	0.0	0.060	0.0	0.050	0.0	0.050
28A	6/12/80	0.006	0.009	0.018	0.004	0.204	0.005	0.0	0.060	0.0	0.040	0.0	0.030	0.0	0.030
28A	9/ 5/80	0.007	0.008	0.012	0.003	0.083	0.007	0.0	0.200	0.0	0.040	0.0	0.040	0.0	0.040
28A	12/ 5/80	0.007	0.008	0.004	0.003	0.051	0.006	0.0	0.090	0.0	0.020	0.0	0.020	0.0	0.020
29	3/11/80	0.0	0.007	0.003	0.003	0.181	0.011	0.0	0.080	0.040	0.040	0.0	0.040	0.0	0.040
29	6/12/80	-0.005	0.010	0.012	0.004	0.718	0.009	0.0	0.070	0.400	0.060	0.0	0.040	0.0	0.040
29	9/ 5/80	0.013	0.009	0.009	0.003	0.123	0.009	0.0	0.200	0.050	0.040	0.0	0.040	0.0	0.040
29	12/ 8/80	0.003	0.006	0.004	0.003	0.183	0.011	0.0	0.090	0.100	0.030	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	3/11/80	0.0	0.060	0.0	0.130	0.0	0.140	0.0	0.100	0.0	0.500	0.0	0.500	12.500	1.200
27A	6/12/80	0.0	0.040	0.0	0.150	0.0	0.100	0.0	0.060	0.0	0.300	0.0	0.400	11.000	1.000
27A	9/ 5/80	0.0	0.040	0.0	0.130	0.0	0.110	0.0	0.080	0.0	0.400	0.0	0.500	15.700	1.500
27A	12/ 5/80	0.0	0.030	0.0	0.090	0.0	0.080	0.0	0.050	0.0	0.300	0.0	0.300	11.800	1.100
28A	3/11/80	0.0	0.050	0.0	0.120	0.0	0.140	0.0	0.090	0.0	0.500	0.0	0.400	9.600	1.000
28A	6/12/80	0.020	0.030	0.0	0.080	0.0	0.090	0.0	0.050	0.0	0.300	0.0	0.300	10.800	1.000
28A	9/ 5/80	0.0	0.040	0.0	0.100	0.140	0.090	0.0	0.070	0.0	0.400	0.0	0.400	10.900	1.100
28A	12/ 5/80	0.0	0.020	0.0	0.050	0.0	0.060	0.0	0.040	0.0	0.200	0.0	0.200	6.800	0.600
29	3/11/80	0.0	0.050	0.0	0.110	0.0	0.110	0.0	0.080	0.0	0.400	0.0	0.400	8.700	0.900
29	6/12/80	0.110	0.050	0.0	0.100	0.0	0.100	0.0	0.070	0.0	0.400	0.0	0.400	14.100	1.300
29	9/ 5/80	0.0	0.030	0.0	0.090	0.0	0.080	0.0	0.070	0.0	0.300	0.0	0.400	9.200	1.000
29	12/ 8/80	0.0	0.020	0.0	0.070	0.0	0.060	0.0	0.050	0.0	0.200	0.0	0.300	7.000	0.800

TABLE 15
BOTTOM SEDIMENT
(PCI/G)

CY

LOCATION	COLLECTION DATE	RA-226	(+/-)	TH-228	(+/-)	BE-7	(+/-)	NB-95	(+/-)
27A	3/11/80	0.260	0.090	0.520	0.100			0.0	0.06
27A	6/12/80	0.340	0.080	0.360	0.120	0.0	0.300	0.0	0.05
27A	9/ 5/80	0.320	0.090	0.480	0.130	0.0	0.400	0.0	0.06
27A	12/ 5/80	0.290	0.070	0.230	0.090	0.0	0.300	0.0	0.04
28A	3/11/80	0.460	0.090	0.400	0.130			0.0	0.05
28A	6/12/80	0.580	0.080	0.600	0.110	0.400	0.300	0.0	0.04
28A	9/ 5/80	0.390	0.090	0.540	0.120	0.0	0.300	0.0	0.05
28A	12/ 5/80	0.480	0.060	0.390	0.070	0.200	0.200	0.0	0.03
29	3/11/80	0.230	0.080	0.340	0.110			0.0	0.05
29	6/12/80	0.680	0.110	0.800	0.200	1.100	0.400	0.0	0.04
29	9/ 5/80	0.620	0.100	0.940	0.140	0.0	0.300	0.0	0.05
29	12/ 8/80	0.600	0.080	0.680	0.100	0.300	0.200	0.0	0.03

LOCATION	COLLECTION DATE	SR-89	(+/-)	SR-90	(+/-)	CS-137	(+/-)	I-131	(+/-)	CS-134	(+/-)	MN-54	(+/-)	CO-58	(+/-)
27A	2/ 6/80	-0.0600	.0200	0.2210	.0070	0.012	0.002	0.0	0.070	0.0	0.040	0.0	0.040	0.0	0.040
27A	5/ 6/80	0.0050	.0100	0.2050	.0040	0.007	0.003	0.0	0.080	0.0	0.030	0.0	0.030	0.0	0.030
27A	8/19/80	0.0090	.0100	0.1670	.0040	0.012	0.003	0.0	0.020	0.0	0.020	0.0	0.020	0.0	0.020
27A	11/18/80	-0.0200	.0200	0.2010	.0060	0.011	0.004	0.0	0.040	0.0	0.030	0.0	0.020	0.0	0.020
28B	2/ 6/80	-0.0230	.0080	0.2120	.0040	0.007	0.001	0.0	0.070	0.0	0.040	0.010	0.030	0.0	0.040
28B	5/ 6/80	-0.0070	.0090	0.2480	.0040	0.008	0.003	0.0	0.040	0.0	0.040	0.0	0.040	0.0	0.030
28B	8/19/80	0.0070	.0100	0.2060	.0040	0.012	0.003	0.0	0.040	0.0	0.030	0.0	0.030	0.0	0.030
28B	11/18/80	-0.0040	.0060	0.0580	.0020	-0.001	0.003	0.0	0.030	0.0	0.020	0.0	0.020	0.0	0.020
31	2/ 6/80	0.0	.0200	0.3020	.0040	0.005	0.001	0.0	0.070	0.0	0.040	0.0	0.040	0.0	0.030
31	5/ 6/80	-0.0070	.0090	0.2730	.0040	0.016	0.002	0.0	0.030	0.0	0.040	0.0	0.030	0.0	0.030
31	8/19/80	-0.0140	.0090	0.2200	.0030	0.012	0.003	0.0	0.020	0.0	0.020	0.0	0.020	0.0	0.020
31	11/18/80	-0.0100	.0200	0.2650	.0070	0.020	0.005	0.0	0.040	0.0	0.030	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/ 6/80	0.0	0.040	0.0	0.080	0.0	0.090	0.0	0.070	0.0	0.400	0.0	0.300	0.100	0.400
27A	5/ 6/80	0.010	0.020	0.0	0.070	0.0	0.070	0.0	0.060	0.0	0.300	0.0	0.300	0.100	0.400
27A	8/19/80	0.0	0.020	0.0	0.050	0.0	0.040	0.0	0.040	0.0	0.200	0.0	0.140	0.0	0.200
27A	11/18/80	0.0	0.020	0.0	0.060	0.0	0.060	0.0	0.040	0.0	0.200	0.0	0.200	0.0	0.300
28B	2/ 6/80	0.010	0.030	0.0	0.090	0.0	0.090	0.0	0.070	0.0	0.400	0.0	0.400	0.300	0.600
28B	5/ 6/80	0.0	0.030	0.0	0.070	0.050	0.050	0.0	0.060	0.0	0.300	0.0	0.300	0.100	0.500
28B	8/19/80	0.0	0.030	0.0	0.060	0.0	0.060	0.0	0.050	0.0	0.300	0.0	0.200	0.0	0.300
28B	11/18/80	0.0	0.020	0.0	0.050	0.0	0.050	0.0	0.040	0.0	0.200	0.0	0.200	0.0	0.200
31	2/ 6/80	0.0	0.040	0.0	0.090	0.0	0.090	0.010	0.050	0.0	0.400	0.0	0.300	0.200	0.500
31	5/ 6/80	0.0	0.020	0.0	0.060	0.0	0.060	0.0	0.050	0.0	0.300	0.0	0.300	0.400	0.300
31	8/19/80	0.0	0.020	0.0	0.040	0.0	0.030	0.0	0.030	0.0	0.200	0.0	0.140	0.0	0.200
31	11/18/80	0.0	0.020	0.0	0.050	0.0	0.060	0.0	0.040	0.0	0.200	0.0	0.200	0.0	0.200

TABLE 16
SHELL FISH
(PCI/G)

LOCATION	COLLECTION DATE	RA-226	(+/-)	TH-228	(+/-)	BE-7	(+/-)	NB-95	(+/-)
27A	2/ 6/80	0.100	0.060	0.170	0.080			0.0	0.040
27A	5/ 6/80	0.110	0.040	0.100	0.060			0.0	0.030
27A	8/19/80	0.0	0.040	0.090	0.060	0.0	0.200	0.0	0.020
27A	11/18/80	0.080	050	0.0	0.060	0.0	0.200	0.0	0.030
28B	2/ 6/80	0.060	0.060	0.120	0.090			0.0	0.040
28B	5/ 6/80	0.050	0.050	0.100	0.070	0.0	0.300	0.0	0.030
28B	8/19/80	0.0	0.060	0.0	0.080	0.0	0.200	0.0	0.030
28B	11/18/80	0.050	0.040	0.0	0.050	0.0	0.200	0.0	0.020
31	2/ 6/80	0.120	0.070	0.180	0.090			0.030	0.030
31	5/ 6/80	0.100	0.050	0.170	0.070	0.0	0.200	0.0	0.030
31	8/19/80	0.070	0.040	0.070	0.050	0.140	0.140	0.0	0.020
31	11/18/80	0.110	0.050	0.0	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 *	4/14/80	0.0050	.0070	0.0	.0020	0.012	0.003	0.0	0.050	0.0	0.050	0.0	0.040	0.0	0.040
26	7/29/80	0.0020	.0070	0.0640	.0030	0.040	0.002	0.0	0.040	0.0	0.030	0.0	0.030	0.0	0.030
28 B	4/ 8/80	0.0020	.0050	0.0330	.0020	0.089	0.002	0.0	0.080	0.020	0.040	0.0	0.050	0.0	0.040
28 B	7/17/80	0.0040	.0090	0.0510	.0030	0.050	0.005	0.0	0.200	0.0	0.040	0.0	0.030	0.0	0.040
28 B	10/25/80	0.0060	.0060	0.0240	.0020	0.062	0.005	0.0	0.040	0.0	0.030	0.0	0.030	0.0	0.030
29	1/14/80	0.0020	.0060	0.0460	.0020	0.062	0.004	0.0	0.050	0.0	0.060	0.0	0.040	0.0	0.040
29	2/28/80	0.0130	.0070	0.0700	.0020	0.078	0.005	0.0	0.050	0.0	0.040	0.0	0.030	0.0	0.030
29	3/25/80	-0.0380	.0100	0.0740	.0030	0.073	0.005	0.0	0.050	0.0	0.050	0.0	0.050	0.0	0.040
29	4/ 8/80	0.0020	.0080	0.0470	.0030	0.040	0.002	0.0	0.090	0.0	0.060	0.0	0.060	0.0	0.060
29	5/30/80	-0.0030	.0050	0.0380	.0020	0.039	0.004	0.0	0.070	0.0	0.060	0.0	0.050	0.0	0.050
29	6/24/80	0.0	.0020	0.0390	.0011	0.040	0.005	0.0	0.030	0.020	0.030	0.0	0.030	0.0	0.020
29	7/16/80	-0.0070	.0110	0.0340	.0030	0.106	0.003	0.0	0.060	0.0	0.040	0.0	0.030	0.0	0.030
29	8/19/80	0.0	.0070	0.0450	.0030	0.041	0.004	0.0	0.030	0.0	0.030	0.0	0.020	0.0	0.020
29	9/29/80	-0.0020	.0040	0.0310	.0020	0.051	0.012	0.0	0.050	0.0	0.030	0.0	0.030	0.0	0.030
29	10/25/80	0.0010	.0090	0.0330	.0030	0.057	0.004	0.0	0.040	0.0	0.030	0.0	0.030	0.0	0.030
29	11/18/80	0.0160	.0110	0.0270	.0030	0.083	0.007	0.0	0.030	0.0	0.020	0.0	0.020	0.0	0.020
29	12/19/80	0.0150	.0070	0.0410	.0020	0.079	0.006	0.0	0.200	0.0	0.020	0.0	0.020	0.0	0.020
30A	1/21/80	0.0030	.0060	0.0400	.0020	0.020	0.003	0.0	0.200	0.0	0.080	0.0	0.080	0.0	0.080
30A	4/ 7/80	0.0020	.0050	0.0320	.0020	0.046	0.002	0.0	0.090	0.0	0.060	0.0	0.050	0.0	0.050
30A	7/16/80	0.0060	.0070	0.0680	.0030	0.039	0.004	0.0	0.050	0.0	0.030	0.0	0.030	0.0	0.030
30A	10/25/80	-0.0030	.0040	0.0250	.0020	0.043	0.005	0.0	0.040	0.0	0.030	0.0	0.030	0.0	0.030

*Missing samples at this location were not available

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	4/14/80	0.0	0.040	0.0	0.090	0.0	0.090	0.0	0.070	0.0	0.400	0.0	0.300	1.000	0.700
26	7/29/80	0.0	0.030	0.0	0.060	0.0	0.070	0.0	0.050	0.0	0.300	0.300	0.200	3.500	0.300
28B	4/ 8/80	0.0	0.050	0.0	0.110	0.0	0.100	0.0	0.070	0.0	0.400	0.0	0.400	2.200	0.800
28B	7/17/80	0.0	0.030	0.0	0.110	0.0	0.090	0.0	0.060	0.0	0.300	0.0	0.400	2.600	0.900
28B	10/25/80	0.0	0.030	0.0	0.060	0.0	0.070	0.0	0.060	.0	0.300	0.0	0.300	2.600	0.800
29	1/14/80	0.0	0.050	0.0	0.090	0.0	0.100	0.0	0.070	0.0	0.400	0.0	0.300	1.900	0.600
29	2/28/80	0.0	0.040	0.0	0.080	0.0	0.080	0.0	0.060	0.0	0.300	0.0	0.300	2.700	0.500
29	3/25/80	0.0	0.050	0.0	0.100	0.0	0.100	0.0	0.080	0.0	0.400	0.0	0.300	1.700	0.800
29	4/ 8/80	0.0	0.060	0.0	0.140	0.0	0.130	0.0	0.110	0.0	0.600	0.0	0.500	2.700	0.900
29	5/30/80	0.0	0.060	0.0	0.110	0.0	0.110	0.0	0.090	0.0	0.500	0.0	0.400	1.600	0.800
29	6/24/80	0.0	0.030	0.0	0.070	0.0	0.060	0.0	0.040	0.0	0.200	0.0	0.200	2.600	0.600
29	7/16/80	0.0	0.030	0.0	0.080	0.0	0.080	0.0	0.070	0.0	0.300	0.0	0.300	2.800	0.900
29	8/19/80	0.0	0.020	0.0	0.060	0.0	0.060	0.0	0.040	0.0	0.200	0.0	0.200	0.900	0.600
29	9/29/80	0.0	0.030	0.0	0.060	0.0	0.070	0.0	0.040	0.0	0.300	0.0	0.300	2.200	0.800
29	10/25/80	0.0	0.030	0.0	0.070	0.0	0.070	0.0	0.050	0.0	0.300	0.0	0.200	1.800	0.800
29	11/18/80	0.0	0.020	0.0	0.050	0.0	0.050	0.0	0.030	0.0	0.200	0.0	0.200	1.500	0.500
29	12/19/80	0.0	0.020	0.0	0.060	0.0	0.050	0.0	0.050	0.0	0.200	0.0	0.300	1.900	0.500
30A	1/21/80	0.0	0.070	0.0	0.200	0.0	0.200	0.0	0.150	0.0	0.800	0.0	0.700	1.700	1.200
30A	4/ 7/80	0.0	0.050	0.0	0.120	0.0	0.110	0.0	0.090	0.0	0 500	0.0	0.400	1.700	0.800
30A	7/16/80	0.0	0.030	0.0	0.070	0.0	0.060	0.0	0.050	0.0	0.300	0.0	0.300	2.200	0.700
30A	10/25/80	0.0	0.030	0.0	0.080	0.0	0.070	0.0	0.040	0.0	0.300	0.0	0.200	2.100	0.800

TABLE 17A
FISH-BULLHEADS
(PCI/G)

LOCATION	COLLECTION DATE	RA-226	(+/-)	TH-228	(+/-)	BE-7	(+/-)	NB-95	(+/-)
26	4/14/80	0.0	0.080	0.0	0.120			0.0	0.040
26	7/29/80	0.0	0.050	0.0	0.070	0.0	0.200	0.0	0.030
28B	4/ 8/80	0.020	0.060	0.0	0.130			0.0	0.040
28B	7/17/80	0.0	0.070	0.0	0.090	0.0	0.400	0.0	0.050
28B	10/25/80	0.0	0.060	0.0	0.090	0.0	0.200	0.0	0.030
29	1/14/80	0.100	0.060	0.0	0.110			0.0	0.040
29	2/28/80	0.0	0.070	0.0	0.090			0.0	0.040
29	3/25/80	0.030	0.070	-0.010	0.090			0.0	0.050
29	4/ 8/80	0.0	0.110	0.0	0.200			0.0	0.060
29	5/30/80	0.0	0.110	0.0	0.150	0.0	0.500	0.0	0.050
29	6/24/80	0.050	0.050	0.030	0.060	0.0	0.200	0.0	0.020
29	7/16/80	0.0	0.070	0.0	0.090	0.0	0.300	0.0	0.040
29	8/19/80	0.0	0.040	0.0	0.070	0.0	0.200	0.0	0.020
29	9/29/80	0.0	0.060	0.0	0.080	0.0	0.300	0.0	0.020
29	10/25/80	0.0	0.060	0.0	0.070	0.0	0.200	0.0	0.030
29	11/18/80	0.0	0.040	0.0	0.050	0.0	0.200	0.0	0.020
29	12/19/80	0.0	0.040	0.0	0.050	0.0	0.200	0.0	0.030
30A	1/21/80	0.050	0.110	0.0	0.200			0.0	0.090
30A	4/ 7/80	0.0	0.100	0.0	0.130			0.0	0.050
30A	7/16/80	0.100	0.060	0.0	0.080	0.200	0.200	0.0	0.030
30A	10/25/80	0.0	0.060	0.0	0.070	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	1/21/80*	PERCH	0.0050	0.0120	0.1420	0.0030	0.031	0.003	0.0	0.090	0.0	0.050	0.0	0.050
26	4/ 7/80	PERCH	-0.0010	0.0080	0.1150	0.0030	0.099	0.006	0.0	0.090	0.0	0.060	0.0	0.050
26	7/30/80	PERCH	-0.0010	0.0080	0.0780	0.0030	0.064	0.002	0.0	0.040	0.0	0.030	0.0	0.030
26	10/27/80	PERCH	0.0080	0.0130	0.0830	0.0050	0.034	0.002	0.0	0.040	0.0	0.040	0.0	0.040
28B	4/ 9/80	PERCH	-0.0050	0.0100	0.1500	0.0040	0.108	0.003	0.0	0.090	0.0	0.070	0.0	0.060
28B	7/18/80	EELS	0.0020	0.0070	0.0250	0.0020	0.030	0.004	0.0	0.200	0.0	0.030	0.0	0.030
28B	10/27/80	PERCH	0.0140	0.0070	0.0140	0.0020	0.050	0.004	0.0	0.040	0.0	0.030	0.0	0.020
29	1/15/80	PERCH	-0.0180	0.0100	0.1650	0.0030	0.037	0.002	0.0	0.040	0.0	0.050	0.0	0.030
29	4/ 7/80	PERCH	0.0060	0.0100	0.0960	0.0040	0.069	0.003	0.0	0.090	0.0	0.060	0.0	0.060
29	5/31/80	CATFISH	0.0040	0.0080	0.0980	0.0030	0.066	0.006	0.0	0.070	0.0	0.070	0.0	0.060
29	7/17/80	PERCH	0.0	0.0100	0.1020	0.0040	0.046	0.004	0.0	0.040	0.0	0.030	0.0	0.020
29	8/20/80	PERCH	-0.0100	0.0090	0.1090	0.0040	0.067	0.006	0.0	0.040	0.0	0.030	0.0	0.020
29	9/27/80	PERCH	-0.0060	0.0070	0.0510	0.0030	0.042	0.004	0.0	0.040	0.0	0.030	0.0	0.030
29	10/26/80	PERCH	-0.0050	0.0100	0.0760	0.0040	0.051	0.006	0.0	0.030	0.0	0.030	0.0	0.030
29	12/20/80	PERCH	0.0420	0.0110	0.1700	0.0040	0.142	0.007	0.0	0.300	0.0	0.040	0.0	0.030
30A	1/22/80	Bass & Perch	-0.0120	0.0060	0.0630	0.0020	0.020	0.003	0.0	0.070	[illegible]	0.030	0.0	0.030
30A	4/ 8/80	PERCH	-0.0020	0.0050	0.0330	0.0020	0.060	0.002	0.0	0.060	[illegible]	0.040	0.0	0.040
30A	7/17/80	PERCH	-0.0070	0.0060	0.0910	0.0030	0.031	0.004	0.0	0.040	[illegible]	0.020	0.0	0.020
30A	10/26/80	PERCH	0.0	0.0100	0.0760	0.0030	0.044	0.005	0.0	0.030	[illegible]	0.030	0.0	0.030

*Sample dates may vary by a day

TABLE 17B
FISH-OTHER
(PCI/G)

CY

LOCATION	COLLECTION DATE	TYPE	CO-58	(+/-)	CO-60	(+/-)	FE-59	(+/-)	ZN-65	(+/-)	ZR-95	(+/-)	RU(RH)-106	(+/-)
26	1/21/80	PERCH	0.0	0.050	0.0	0.050	0.0	0.120	0.0	0.110	0.0	0.090	0.0	0.500
26	4/ 7/80	PERCH	0.0	0.050	0.0	0.050	0.0	0.120	0.0	0.120	0.0	0.090	0.0	0.400
26	7/30/80	PERCH	0.0	0.020	0.0	0.030	0.0	0.060	0.0	0.060	0.0	0.050	0.0	0.200
26	10/27/80	PERCH	0.0	0.030	0.0	0.040	0.0	0.080	0.0	0.100	0.0	0.060	0.0	0.400
28B	4/ 9/80	PERCH	0.0	0.060	0.0	0.050	0.0	0.130	0.0	0.130	0.0	0.100	0.0	0.600
28B	7/18/80	EELS	0.0	0.030	0.0	0.030	0.0	0.090	0.0	0.080	0.0	0.060	0.0	0.300
28B	10/27/80	PERCH	0.0	0.020	0.0	0.030	0.0	0.060	0.0	0.050	0.0	0.040	0.0	0.200
29	1/15/80	PERCH	0.0	0.030	0.0	0.040	0.0	0.060	0.0	0.080	0.0	0.050	0.0	0.300
29	4/ 7/80	PERCH	0.0	0.060	0.0	0.060	0.0	0.130	0.0	0.140	0.0	0.100	0.0	0.500
29	5/31/80	CATFISH	0.0	0.050	0.0	0.060	0.0	0.130	0.0	0.130	0.0	0.090	0.0	0.500
29	7/17/80	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	8/20/80	PERCH	0.0	0.020	0.0	0.020	0.0	0.060	0.0	0.060	0.0	0.040	0.0	0.200
29	9/27/80	PERCH	0.0	0.030	0.0	0.030	0.0	0.080	0.0	0.070	0.0	0.050	0.0	0.300
29	10/26/80	PERCH	0.0	0.020	0.0	0.030	0.0	0.060	0.0	0.070	0.0	0.040	0.0	0.300
29	12/20/80	PERCH	0.0	0.030	0.0	0.030	0.0	0.100	0.0	0.080	0.0	0.060	0.0	0.300
30A	1/22/80	Bass & Perch	0.0	0.030	0.0	0.030	0.0	0.080	0.0	0.080	0.0	0.060	0.0	0.300
30A	4/ 8/80	PERCH	0.0	0.040	0.0	0.040	0.0	0.090	0.0	0.080	0.0	0.070	0.0	0.300
30A	7/17/80	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
30A	10/26/80	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

TABLE 17B
FISH OTHER
(PCI/G)

CY

LOCATION	COLLECTION DATE	TYPE	CR-51	(+/-)	K-40	(+/-)	RA-226	(+/-)	TH-228	(+/-)	BE-7	(+/-)	NB-95	(+/-)
26	1/21/80	PERCH	0.0	0.400	2.400	0.800	0.0	0.100	0.0	0.140			0.0	0.050
26	4/ 7/80	PERCH	0.0	0.400	1.200	0.800	0.020	0.070	0.0	0.130			0.0	0.050
26	7/30/80	PERCH	0.0	0.200	2.400	0.200	0.0	0.050	0.0	0.070	0.0	0.200	0.0	0.030
26	10/27/80	PERCH	0.0	0.200	3.100	1.000	0.0	0.070	0.0	0.090	0.0	0.300	0.0	0.040
28B	4/ 9/80	PERCH	0.0	0.500	1.900	0.900	0.0	0.110	0.0	0.200			0.0	0.060
28B	7/18/80	EELS	0.0	0.400	2.600	0.700	0.0	0.050	0.0	0.070	0.0	0.300	0.0	0.040
28B	10/27/80	PERCH	0.0	0.200	2.800	0.700	0.0	0.040	0.0	0.060	0.0	0.200	0.0	0.020
29	1/15/80	PERCH	0.0	0.300	2.000	0.500	0.050	0.050	0.0	0.080			0.0	0.030
29	4/ 7/80	PERCH	0.0	0.500	1.500	0.800	0.020	0.080	0.060	0.110			0.0	0.060
29	5/31/80	CATFISH	0.0	0.400	2.400	0.900	0.0	0.110	0.0	0.200	0.0	0.500	0.0	0.060
29	7/17/80	PERCH	0.0	0.200	2.300	0.600	0.0	0.040	0.0	0.050	0.0	0.200	0.0	0.020
29	8/20/80	PERCH	0.0	0.200	1.900	0.600	0.0	0.040	0.0	0.070	0.0	0.200	0.0	0.020
29	9/27/80	PERCH	0.0	0.200	2.300	0.800	0.0	0.050	0.0	0.080	0.0	0.200	0.0	0.030
29	10/26/80	PERCH	0.0	0.200	2.200	0.800	0.0	0.050	0.0	0.080	0.0	0.200	0.0	0.020
29	12/20/80	PERCH	0.0	0.400	3.100	0.900	0.0	0.060	0.0	0.080	0.0	0.400	0.0	0.040
30A	1/22/80	Bass & Perch	0.0	0.300	2.800	0.500	0.010	0.050	0.010	0.070			0.0	0.040
30A	4/ 8/80	PERCH	0.0	0.300	2.400	0.600	0.020	0.060	0.0	0.100			0.0	0.040
30A	7/17/80	PERCH	0.0	0.200	2.700	0.600	0.0	0.050	0.0	0.060	0.0	0.200	0.0	0.020
30A	10/26/80	PERCH	0.0	0.200	2.700	0.700	0.0	0.050	0.0	0.060	0.0	0.200	0.0	0.020

4.0 DISCUSSION OF RESULTS

Gamma Exposure Rate (Table 1)

The gamma exposure rate is determined from the integral exposure measured over periods of approximately one month using thermoluminescent dosimeters (TLD's). Dosimeters are strategically placed at a number of on-site locations, as well as at inner and outer environmental locations. The dosimeters are subject to inherent self-irradiation which has been empirically determined for each dosimeter. Consequently, the results shown in Table 1 have been adjusted for self-irradiation effects. The range of self-irradiation correction factors was 0.3 uR/hr to 1.7 uR/hr with a mean of approximately 1 uR/hr.

The data for 1980 exhibits the same trends as that of previous years. For the off-site inner and outer ring locations, the integrated gamma exposure rate did not differ significantly. The on-site locations at the boron waste storage tank, waste gas surge sphere, discharge canal and guard house were the only locations showing any plant effects. At these locations, there was an annual average increase from 1 uR/hr to 13 uR/hr due to direct radiation from plant components. These locations are within the on-site fenced in areas and, as such, are away from areas where members of the general public are usually allowed. Dosimeters located at areas which are acessible to the public, such as the picnic area (location 41B) and the mouth of the discharge (location 42B), did not indicate any increase in exposure rate due to the plant.

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

Air is continuously sampled at a number of locations by passing it through a particulate filter. Filters are collected weekly and counted for gross beta radioactivity. Results are shown in Figure 4-1 and Table 2. The average gross beta activity levels at all locations were significantly less than levels observed in 1979. As in 1979, 1980 data failed to show the usual increases in the spring and summer due to the lack of recent atmospheric nuclear testing in the northern hemisphere. However, the effects of the Chinese nuclear weapons test in mid-October were observed as gross beta activity levels increased significantly in November and December. It is anticipated that this latest weapons test will result in increased detectable gross beta activity for the spring and summer months of 1981. Comparison of the measured levels of the inner and outer rings (see Figure 4-1) of monitoring stations failed to show any significant variations

For the collection of iodine, charcoal cartridges are included at a selected portion of the air particulate sampling locations. As indicated by Table 3, other than the two weeks during September, I-131 was not seen above the minimum detectable level (MDL). The relatively higher values observed during these two weeks are a result of counting equipment malfunctions. This is supported by the facts that the values do not vary significantly between indicator

and control locations, similar values were observed in the Millstone samples for this time period, and milk (Tables 7 and 8), which is a more sensitive indicator of I-131 in the environment, did not show any detectable I-131. Excluding these two weeks, there are other instances where the positive values exceed the calculated error. This small percentage (approximately 5%) is expected due to statistical fluctuations in counting.

The weekly air particulate filters are composited monthly for gamma spectral analyses. The results, as indicated in Tables 4A-4L, show the presence of naturally occurring Be-7, which is produced by cosmic processes. No other radionuclides were detected except for Ru-103 in the November and December samples and Nb-95 in the December samples. Indication of these two radionuclides futher confirms the presence of Chinese weapons test fallout as observed in results of the gross beta analyses.

For the measurement of strontium and total cesium, the air particulate filters are composited quarterly. The results of these radiochemical separation analyses, as shown in Table 5, are much more sensitive indicators of radioactivity than the monthly gamma spectral analyses. This is possible since compositing results in larger volumes for analysis and beta counting allows for a higher degree of sensitivity. However, radiochemical separation does not allow for separation of Cs-134 from Cs-137; subsequently, results for quarterly composites are presented as total cesium. The total cesium results agreed favorably with the monthly gamma spectra and are lower than the 1979 results.

Sr-90 was evident in all samples at lower levels than observed in 1979. However, the shorter lived Sr-89 was not detectable until the fourth quarter when fresh fallout appeared. The levels were comparable in both indicator and control stations, showing a lack of plant effect. In conclusion, since the results of indicator and control monitoring stations are similar, and since Cs-134 or plant related Sr-89 were not detected above the respective MDL's, it is concluded that plant effects are negligible.

Soil (Table 6)

Soil samples are collected annually at each air particulate monitoring station and are analyzed for strontium 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 and the naturally occurring radionuclides, K-40, Ra-226 and Th-228. 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 the aforementioned radionuclides did not vary between indicator and control locations and 1980 results were similar to the results observed in the past five years.

Cow Milk (Table 7)

I-131 was detected above the respective MDL in only one out of 41 samples. For this same sampling period (11/13/80) which is coincident from fallout of the mid-October Chinese nuclear weapons test, two out of the remaining three sampling locations exhibited positive values of I-131 greater than the calculated errors, at levels less than the MDL. Therefore, it is concluded that the samples from this time period exhibit the effects of the Chinese weapons test. This is supported by the data from the Millstone samples which also show relatively higher values of I-131 for the same sampling period.

As typically seen in milk samples of previous years, Sr-90 was observed in all samples. All results indicated values below 12 pCi/l and represented data similar to previous years. Sr-89 was not detected in any of the samples at levels above the respective MDL. Therefore, the presence of Sr-90 is a result of weapons fallout.

Cs-137, like Sr-90, was observed at levels above the MDL in all of the cow milk samples. The levels ranged from 4 to 25 pCi/l and were quite similar to levels observed in the past four years. Two out of three indicator locations exhibited higher values than the control location. However, this trend is consistent with data from the previous years. The values of Cs-137 listed in Table 7 are representative of total cesium as determined by chemistry. However, these values are confirmed by gamma spectrometry for Cs-137 and since Cs-134 is not observed the values are listed as solely Cs-137 resulting from weapons fallout. The variability of Cs-137 and Sr-90 concentrations in milk is discussed in more detail in Section 6.0.

Goat Milk (Table 8)

Similar to the results of cow milk samples, Sr-90 and Cs-137 were also observed at levels above the respective MDL's in all of the samples at levels similar to data from previous years. As usual, the levels of Sr-90 and Cs-137 were higher than those observed in cow milk as a result of dietary or metabolic differences. Sr-89 was observed at levels above the MDL in one sample. However, this sample was from a control location and the positive value is attributed to either statistical fluctuations in counting or fresh fallout. Therefore, since plant related Sr-89 has been ruled out and sice Cs-134 was not observed in any of the samples, the presence of Sr-90 and Cs-137 is a result of weapons fallout. This is further confirmed by the higher values existing in the control location.

I-131 was observed at a level greater than the MDL for one indicator sample taken during the month of December. However, this value is neither conclusive nor inconclusive of plant related activity as counting equipment malfunction was suspect at the time of the sample count and Chinese fallout may still have been present.

Pasture Grass (Table 9)

Samples of pasture grass are required by the Environmental Technical Specifications when samples of milk are unobtainable. The results of the grass samples were similar to values observed in previous years. The only radionuclides observed were the naturally occurring nuclides of Be-7 and K-40 and the fallout nuclides of Sr-90 and Cs-137. The absence of Sr-89 and Cs-134 confirmed the origin of Sr-90 and Cs-137.

Well Water (Table 10)

Well water samples exhibited activity levels similar to those in previous years. Also consistent with previous years, the gross beta values for the control location at the State Highway Department were somewhat higher than the indicator location values.

Once again, the on-site well exhibited high values of plant related H-3 consistent with previous years. These high values are a result of the well being located in the ground water flow path between the discharge canal and the river. The results of the tritium analyses for this particular well are not required to be reported as Anomolous Measurements. There is no dose consequence via this pathway since the water from this well is used only in process streams at the station.

As usual, naturally occurring Bi-214 was also observed in many of the samples. However, as mentioned in the 1979 report, this daughter product of Ra-226 is not necessarily in equilibrium with the parent in well water samples, and therefore, is not indicative of the Ra-226 concentrations.

These three types of activity (mentioned above) were the only ones to be observed above the MDL's.

Reservoir Water (Table 11)

As indicated in data from previous years, no plant related radioactivity was observed in samples of reservoir water. The only detectable activity observed in these samples consisted of H-3 and gross beta which existed at levels similar to data from other years. This radioactivity is not attributable to plant operation.

Fruits and Vegetables (Table 12)

As usual, this sampling media did not exhibit any radionuclides attributable to plant operation since Sr-89, I-131 and Cs-134 were not detected. The fallout radionuclides of Cs-137 and Sr-90 were detected above or near the respective MDL's in all samples. The predominant radionuclide observed was the naturally occurring K-40 which was observed at levels from 1 to 6 pCi/l.

River Water (Table 14)

The sampling procedure utilized for the collection of river water samples varies between the indicator collection point and the control location. The river water samples from the control station (Middletown) are quarterly composites of weekly grab samples. However, a continuous sampler is utilized at the indicator station located in the area of the plant discharge.

As observed in previous years, tritium was detectable at the indicator location and is attributed to plant operation. However, the dose consequence from these tritium levels is negligible due to the low energy beta particles and since the river water is not used for drinking. The only dose consequence due to the presence of this nuclide is via the fish pathway. Gross beta was the only other activity detectable above the MDL's. All values, except for one, were typical of previous years. The one relatively high gross beta value may be attributable to plant operation.

Bottom Sediment (Table 15)

As observed in previous years, all samples exhibited the presence of naturally occurring radionuclides such as K-40, Ra-226 and Th-228. Aside from these radionuclides there was indication of plant related activity in the indicator samples. Cs-137 was measured at levels which were higher in the indicator than the control stations, especially in the second quarter, where together with the presence of Cs-134 and Co-60 above their respective MDL's indicated plant releases. The only other radionuclide exhibiting a positive value above the MDL's was Zn-65. However, this relatively higher Zn-65 value was observed in a control sampling location and is attributable to statistical fluctuations in counting rather than the actual presence of Zn-65. The presence of plant related activity in this media for 1980 is related to the higher volumes of waste discharged as a result of the 1980 refueling outage.

Shellfish (Table 16)

As usual, the only activity observed in levels near or above the respective MDL's consisted of Sr-90, Cs-137 and the naturally occurring radionuclides, K-40, Ra-226 and Th-228. Neither the Sr-90 nor the Cs-137 levels varied between indicator or control samples. Also, the levels of these radionuclides were consistent with data from the past five years. Therefore, the presence of Sr-90 and Cs-137 is attributed to fallout.

Fish-Bullheads (Table 17A)

Similar to results exhibited in shellfish samples, the only detectable radionuclides at levels greater than the respective MDL's consisted of Sr-90, Cs-137 and the naturally occurring K-40. Sr-89 was not detected above the MDL in any of the samples, therefore, indicating that the Sr-90 is attributable to fallout. As noted in previous years, Cs-137 levels are somewhat higher in samples taken from the

indicator locations. Therefore, the Cs-137 in these samples could be attributable, in part, to plant operation (See Section 5.0 for dose consequence).

Fish-Perch and other Types (Table 17B)

These fish samples exhibit the same results as the bullhead samples. The predominant activity was the naturally occurring K-40. Sr-90 levels were consistent in all three 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 slightly higher levels in samples from the discharge canal than in samples from the control location. This trend was observed in 1978 and 1979 and the dose consequence is discussed in Section 5.0.

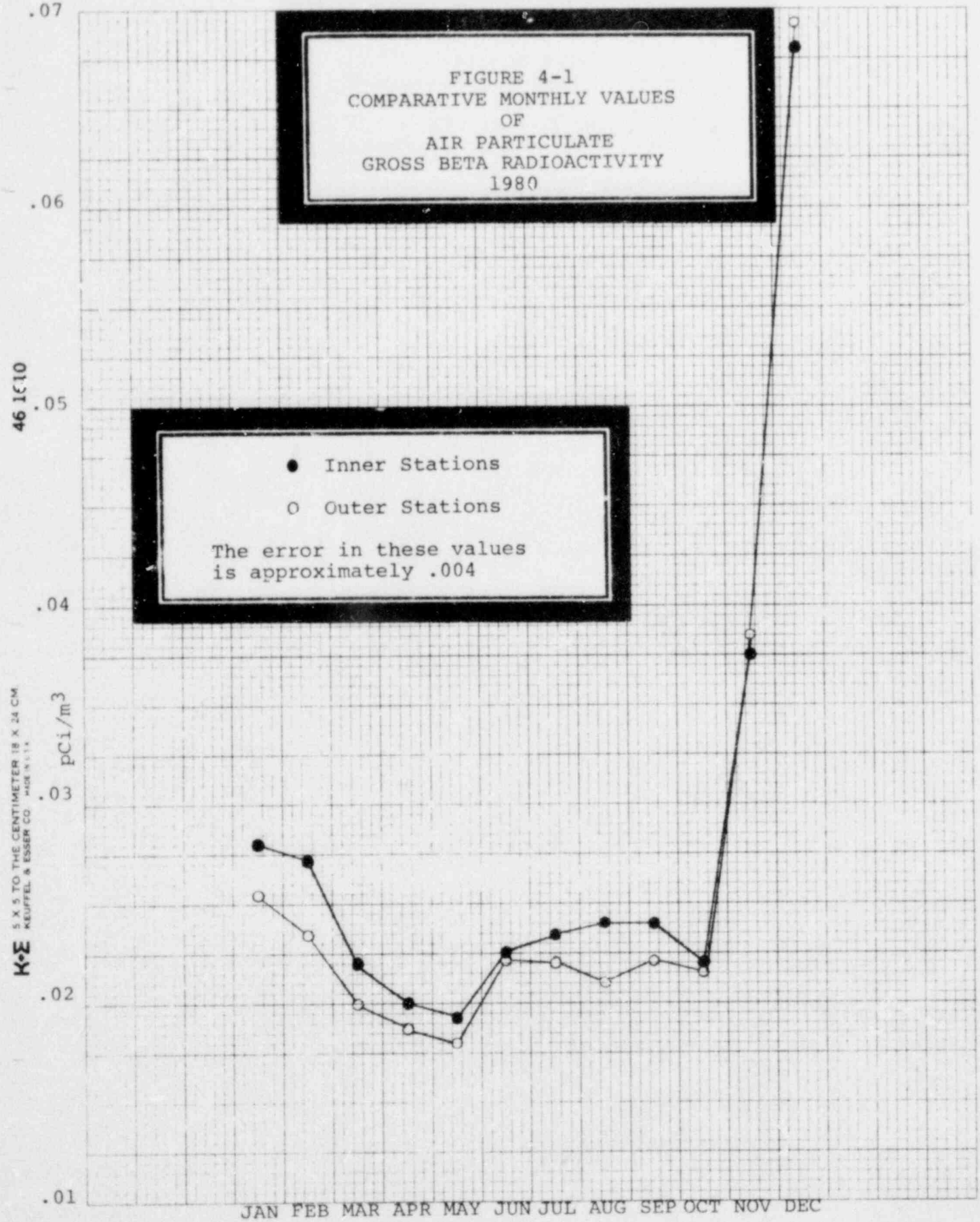


FIGURE 4-1
COMPARATIVE MONTHLY VALUES
OF
AIR PARTICULATE
GROSS BETA RADIOACTIVITY
1980
● Inner Stations
○ Outer Stations
The error in these values
is approximately .004
.07
.06
.05
.04
.03
.02
.01
pCi/m3
JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC
46 1610
K•E 5 X 5 TO THE CENTIMETER 18 X 24 CM
KEUFFEL & ESSER CO

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 already 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 providing an upper bound estimate of 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 convential 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 could be detected, in fish caught in the discharge canal, bottom sediment samples 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: 1.25 mrem whole body to an adult, 0.30 mrem to an infant's thyroid, and 1.43 mrem to a teenager's liver. The calculated doses for all other locations and other age groups will be less than those shown.

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 1980 for the average individual:

ANNUAL WHOLE BODY DOSE DUE TO AIRBORNE EFFLUENTS = 0.00014 mrem

ANNUAL WHOLE BODY DOSE DUE TO LIQUID EFFLUENTS = 0.0015 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 19^0 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 1980

PATHWAY	ORGAN	ANNUAL DOSE[6] (MILLIREM) METHOD 1[1]	METHOD 2[1]
AIRBORNE EFFLUENTS			
1. External Gamma Dose	Max. Ind.[2]-Whole Body	0.22[6]	ND[3]
2. a. Inhalation	Max. Ind.-Thyroid	0.038	NAD[4] <0.6
b. Vegetables	Max. Ind.-Thyroid	0.14	NAD
c. Goat's Milk	Max. Ind.-Thyroid	0.27	NAD, <2.3
d. All Ingestion and Inhalation Pathways	Max. Ind.-Thyroid	0.30	
LIQUID EFFLUENTS			
1. Fish	Max. Ind.-Whole Body	1.03	0.039
	Max. Ind.-Liver[5]	1.43	0.062

(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, child for vegetables, and infant for all ingestion and inhalation pathways), at the location of maximum concentration of plant related activity. The dose to the average individual is much less than the maximum individual dose.

(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 teenager.

(6) Does not include the maximum potential whole body dose of 0.03 mrem to an individual from abnormal releases. Doses due to these incidences were not detected in the environmental samples.

6.0 Discussion

The variability of the levels of radioactivity in environmental media depends on many factors. These factors include station release rates, meteorology, number and size of nuclear weapons tests, seasonal variability of fallout, soil conditions (mineral content, pH, etc.), pasturing habits of animals, local terrain, and locational variability of natural background. All of these factors need to be considered in order to explain the levels of radioactivity in the environment. Anyone could cause significant variations in measured radioactivity. A failure to consider these factors could cause erroneous conclusions.

For example, consider the levels of Sr-90 and Cs-137 measured in cow and goat milk. A casual observer could notice that in some cases the levels of these two isotopes are higher at farms closer to the station than at those further away from the station. The station effluents might at first appear to be responsible. However, the investigation of the following facts proves this conclusion wrong.

1. The station accurately measures Sr-90 and Cs-137 in its 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 station to yield the measured concentrations in milk.

2. Based on the ratio of Sr-89 to Sr-90 in the measured releases from the station and on the similar chemical properties of the two nuclides, plant-related Sr-90 could not be detected in milk without also detecting Sr-89. Since plant related Sr-89 has never been detected in milk, the levels of Sr-90 observed must be attributable to nuclear weapon's testing.

3. 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.

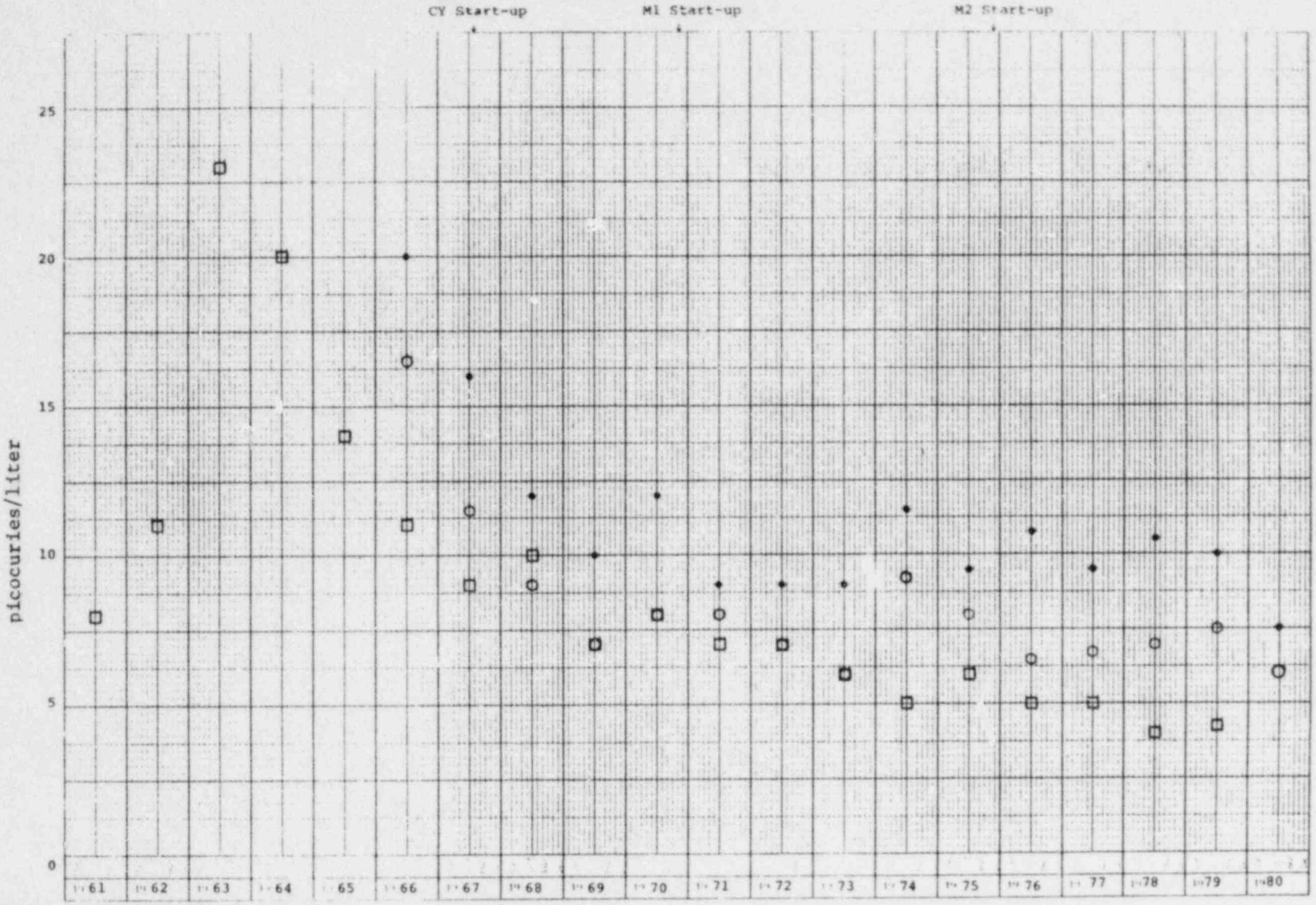
4. Local variability of Sr-90 and Cs-137 in milk is common throughout the United States. Due to the variability in soil conditions, pasturing methods, rainfall, etc., it is the rule rather than the exception. Therefore, it is not surprising that certain farms have higher levels of radioactivity than 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 (i.e., see Connecticut Yankee Goat Milk data and Millstone Point Cow Milk data).

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.

Figure 6-1 Strontium-90 in Milk



□ Central Connecticut Area--Samples of pooled milk taken in Hartford--Yearly average of monthly data--all 12 months.

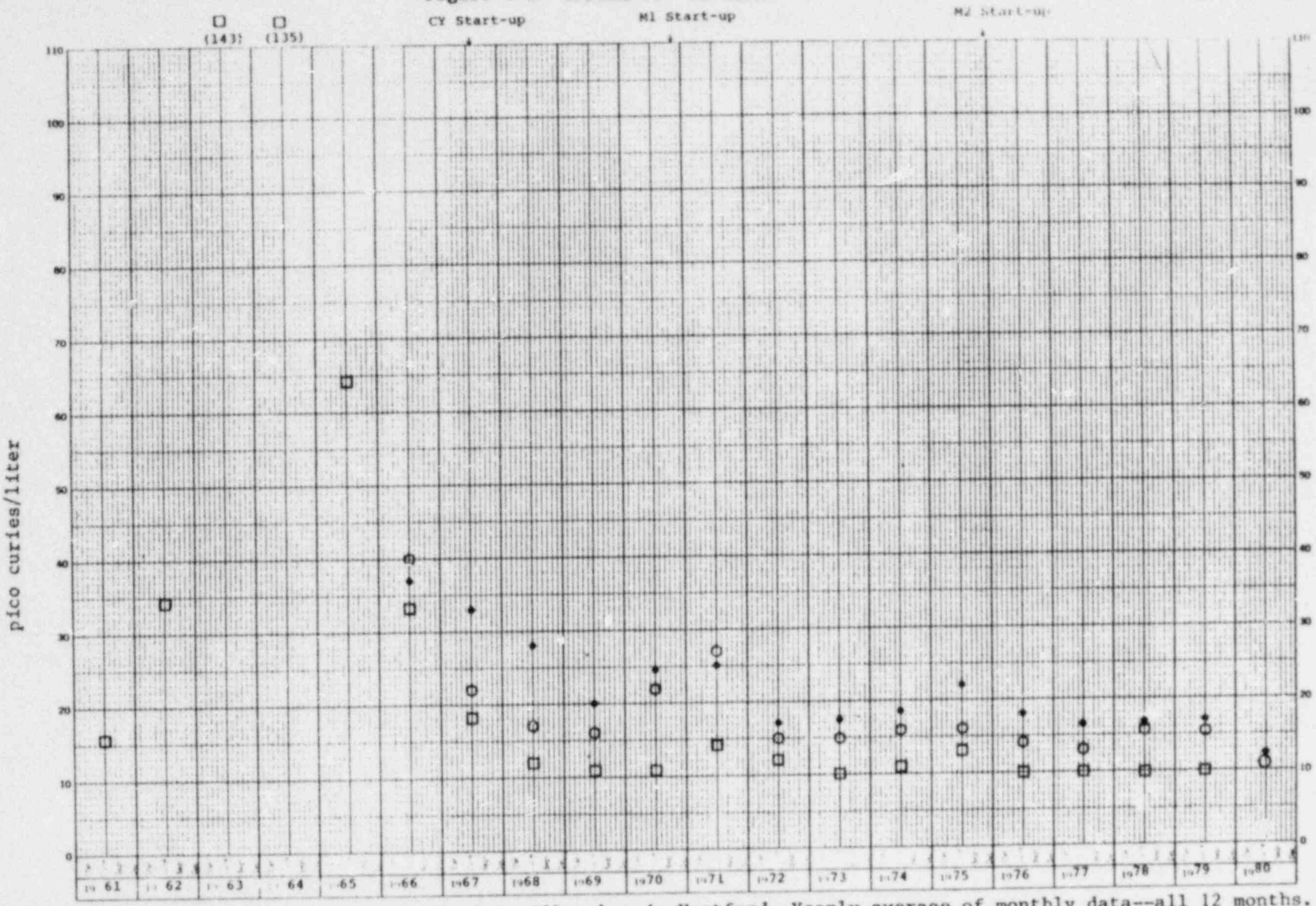
○ Haddam Neck Area--Average of individual farm samples in the area of Connecticut Yankee.

Source--1966 - 1973 Connecticut State Department of Health--average of 1 to 4 samples from each farm--all months
1974 - 1979 Northeast Utilities Data--samples from 4 farms for the months of Feb and Apr through Oct.

• Millstone Area--Average of individual farm samples in the area of Millstone Point.

Source--1966 - 1973 Connecticut State Department of Health--average of 1 to 4 samples from each farm--all months
1974 - 1979 Northeast Utilities Data--samples from 4 farms for the months of Feb and Apr through Oct.

Figure 6-2 Cesium-137 in Milk



□ Central Connecticut Area--Samples of pooled milk taken in Hartford--Yearly average of monthly data--all 12 months.

○ Haddam Neck Area--Average of individual farm samples in the area of Connecticut Yankee.
Source--1966 - 1973 Connecticut State Department of Health--average of 1 to 4 samples from each farm--all months
1974 - 1979 Northeast Utilities Data--samples from 4 farms for the months of Feb and Apr through Oct.

• Millstone Area--Average of individual farm samples in the area of Millstone Point.
Source--1966 - 1973 Connecticut State Department of Health--average of 1 to 4 samples from each farm--all months
1974 - 1979 Northeast Utilities Data--samples from 4 farms for the months of Feb and Apr through Oct.

APPENDIX A

Cow and Goat Census for 1980

DAIRY COWS WITHIN 17.5 MILES OF CONNECTICUT YANKEE

AS OF JUNE 1980

Dairy #	Name & Address	No. of Cows	Direction	Distance
110	Alfred C. Anderson 216 Northford Road Wallingford, CT 06492	30	WSW	17 miles
66	Daniel D. Anderson Blague Dairy Farm 56 Strong Avenue Portland, CT 06480	50	NW	9.5 miles
125	Fred J. & Lawrence Augur Forrest Road Northford, CT 06472 (North Branford)	74	WSW	17.5 miles
111	Walter Augur & George Cooke Co Ag Farm, Inc. 180 Northford Road Wallingford, CT 06492	207	WSW	17 miles
50	Burton L. Avery Sr. Burton L. Avery Farm RFD #4 Rathbun Hill Road Colchester, CT 06415 (Salem)	62	ENE	14 miles
65	Elbridge F. Ball RR 2 Hebron, CT 06248	15	NNE	16 miles
33	Henry, Albert, and/or Roger Berten Berten's Farm Haddam Quarter Road Durham, CT 06422	65	W	8 miles
43	Dr. David B. Bingham Bingham Farm Rte. 82, RFD 3 (Salem Farm) Colchester, CT 06415 (Salem)	44	E	11 miles
102	Bilger Bros. Hickory Grove Farm 705 Westfield Road Meriden, CT 06450	32	WNW	15 miles

Dairy #	Name & Address	No. of Cows	Direction	Distance
20	E. Leroy Brock Brock Farm 796 Ridge Road Middletown, CT 06457	48	WNW	8 miles
63	William & Shirley Bromley Bromley Farm P. O. Box 24 Hebron, CT 06231 (Amston)	50	NE	12.5 miles
32	Henry Bugai Powder Hill Dairy Farm Powder Hill Road Durham, CT 06422	182	W	12.5 miles
34	Tony Caltabiano Friendly Acres Dairy Farm Parmalee Hill Road, RFD Durham, CT 06422	42	W	11.5 miles
112	David Cella 899 Old Rock Hill Road Wallingford, CT 06492	22	W	14.5 miles
113	Cella Bros. Whirlwind Hill 2 No. Branford Street Wallingford, CT 06492	140	WSW	14 miles
94	Joseph Cieniewicz Lower Lane Dairy Lower Lane Road Berlin, CT 06037	56	NW	17 miles
35	Clark Brothers New Haven Road Durham, CT 06422	29	W	11.5 miles
12	D.B.A. Stoney Hill Farm Waterhole Road Colchester, CT 06415 (Farm in East Hampton)	20	NE	4.5 miles

Dairy #	Name & Address	No. of Cows	Direction	Distance
4	William Dill Cloverdale Farm Beebe Road East Haddam, CT 06423	105	ENE	6.5 miles
98	Frank Dornfried 159 Edgewood Road Kensington, CT 06037	38	WNW	18 miles
92	John W. Dwyer 119 Tanner Marsh Road Guilford, CT 06437	55	SSW	16 miles
114	Carl Farkas 1390 Whirlwind Hill Road Wallingford, CT 06492	50	WSW	14 miles
164	Foothills Farm RFD Hebron, CT 06248	60	N	15 miles
44	Stuart & Judith Gadbois RFD #4 Colchester, CT 06415 (Salem)	170	E	14 miles
115	Harold C. Gehrke, Sr. Fairlawn Dairy Farm 178 Grieb Road Wallingford, CT 06492	77	W	15 miles
5	Mortimer A. Gelston Maple Ridge Farm RFD, Maple Avenue East Haddam, CT 06423	67	ESE	2.5 miles
12	Goldberg Brothers Farm 1203 Hebron Avenue Glastonbury, CT 06033	105	NNW	17.5 miles
6	Grandpa Hill Farm R.S., R.S. Jr. Cone RFD, Box 251 East Haddam, CT 06423	70	ENE	6 miles
103	Charles Greenbacker & Sons, Inc. Farm #1 743 Murdock Avenue Meriden, CT 06450	48	W	14.5 miles
104	Charles Greenbacker & Sons, Inc. Farm #2 743 Murdock Avenue Meriden, CT 06450	120	W	14.5 miles

Dairy #	Name & Address	No. of Cows	Direction	Distance
93	Thomas W. Haggarty RFD #2 Hoop Hole Road Guilford, CT 06437	45	SW	13 miles
13	Halls Pride Farm John and/or Beverly Hall RR #1 Haddam East Hampton, CT 06424	22	NNW	2.5 miles
95	John Hanson 506 Spruce Brook Road Berlin, CT 06037	34	WNW	15 miles
149	J. Ely Harding Ashlawn Farm Old Lyme, CT 06371	70	SE	12 miles
21	Wilbur R. Harris RFD #2 174 Wilcox Road Middletown, CT 06457	34	WNW	7 miles
22	Willie Harvey Lee Street Middletown, CT 06457	75	WNW	7 miles
23	Higgins Farm, Inc. 837 Ridgewood Road Middletown, CT 06457	69	NW	13 miles
59	Hills Farm 527 Gilead Street Hebron, CT 06248	82	NNE	14 miles
24	Edward Hills Brooks Road Middletown, CT 06457	41	NW	6 miles
69	Henry L. Killan Roaring Brook Farm 77 Tryon Street South Glastonbury, CT 06073	35	NNW	14 miles
25	John Kolman Meriden Road (Middlefield) Middletown, CT 06457	60	WNW	12.5 miles
116	John F. Kranyak 1349 Whirlwind Hill Road Wallingford, CT 06492	46	WSW	14 miles

Dairy #	Name & Address	No. of Cows	Direction	Distance
73	Kristoff Brothers Hyland Farm 183 Bailey Street Glastonbury, CT 06033	150	N	15 miles
99	Edward Kristopik 532 Kensington Road Kensington, CT 06037	60	WNW	17 miles
14	John L. Kruger RFD #1 Haddam, CT	27	N	1.5 miles
74	Louis P., Michael W., Paul J. Longo Minnechaug Farm 2992 Hebron Avenue Glastonbury, CT 06033	157	N	16 miles
64	Mapleleaf Farm, Inc. Route 2 Gilead, CT 06248 (Hebron)	162	NNE	14.5 miles
150	Edward G. Marsh Mile Creek Road Old Lyme, CT 06371	25	SE	16 miles
117	Masonic Charity Foundation Masonic Home Farm Wallingford, CT 06492	38	W	17.5 miles
77	Charles Matway Est. Box 238 Brook Street Rocky Hill, CT 06067	20	NNW	13 miles
45	Marvin S. or Alice Maynard RFD #2 Colchester, CT 06415	46	NE	9.5 miles
101	Judson Meigs Webster Street Newington, CT 06111	35	NW	17 miles
78	John W. Meisterling Meisterling Dairy Farm Box 385 France Street Rocky Hill, CT 06067	49	NW	15.5 miles

Dairy #	Name & Address	No. of Cows	Direction	Distance
28	William J. and/or Thomas E. Mintz Walnut Hill Farm Jackson Hill Road Middlefield, CT 06455	93	WNW	12 miles
100	Munson Bros. Dairy 756 Kensington Road Kensington, CT 06037	62	WNW	17 miles
46	John George Mohrlein RFD #1 Colchester, CT 06415	60	NE	8.5 miles
138	Raymond Muschinsky Grassy Hill Road East Lyme, CT 06333	27	ESE	14.5 miles
126	Newton Brothers Village Street Northford, CT 06472	29	WSW	17.5 miles
16	Steven F. Pach Pach Stock Farm Town Street Moodus, CT 06469 (Farm in East Haddam)	20	E	3.0 miles
128	Richard Page Totoket Road North Branford, CT 06471	67	WSW	19 miles
129	Judson W. or Pamela A. Page Mill Road East North Haven, CT 06473	67	WSW	19.0 miles
127	Walter Palasiewski Box 42, Forest Road Northford, CT 06471	63	WSW	17.5 miles
96	Henry Pekrul 65 Symour Road Berlin, CT 06037	79	NW	17 miles
60	Douglas H. Porter Porter Farm, Inc. RFD #1 Hebron, CT 06248	176	NNE	13.5 miles
83	Robert W. Raudat Mid Valley Acres Old Durham Road Killingworth, CT 06417	40	WSW	8 miles

Dairy #	Name & Address	No. of Cows	Direction	Distance
36	Richard H.; Richard R. Rowe Box 4 Higganum Road Durham, CT 06422	35	W	8.5 miles
61	Ronald G. Saglio Wood Mill Farm RFD #1 Hebron, CT 06248	78	NNE	15 miles
17	Richard Saltus Saltus Farm Middletown Avenue East Hampton, CT 06424	40	N	6 miles
29	Linus L. Sanstrom, Jr. Strickland Road Middlefield, CT 06455	33	W	12.5 miles
30	Gustave Schmaltz Far View Farm Jackson Hill Road Middlefield, CT 06455	68	WNW	12.5 miles
79	Steven Schultz 132 France Street Rocky Hill, CT 06067	19	NW	15.5 miles
26	George E. & Marion K. Seifert Arbutusland Farm Kelsey Street Middletown, CT 06457	36	WNW	8 miles
118	Robert C. Self & Janet M. Self Fieldstone Farm 63 Grieb Road Wallingford, CT 06492	105	W	14.5 miles
48	Swider, Blanche & Walter RFD #3 Colchester, CT 06415	53	ENE	11 miles
119	Albert Tartaglia, Jr. 25 No. Airline Road Wallingford, CT 06492	21	WSW	16.5 miles
151	Leon H., Jr. and John J. Tiffany Sterling City Road Old Lyme, CT 06371	86	SE	11.0 miles
120	Tomlinson Bros. Three Meadows Farm 355 Woodhouse Avenue Wallingford, CT 06492	71	WSW	17 miles

Dairy #	Name & Address	No. of Cows	Direction	Distance
121	Claude Tremper 595 Woodhouse Avenue Wallingford, CT 06492	44	WSW	17.5 miles
49	Garry and/or Nadine Vaill Forsythe Rd. RFD (Salem) Colchester, CT 06415	27	E	13.5 miles
62	Jonas & Jane Valys RFD #1 Hardy Road Hebron, CT 06248	200	NNE	14.5 miles
122	Thomas J. Wall 963 Northrop Road Wallingford, CT 06492	70	W	13 miles
97	Mary Wasilewski Riverside Farm RFD #2 Berlin, CT 06037 (Rocky Hill)	54	NW	15 miles
123	Alex Werbiski North Farms 1069 Farms Road Wallingford, CT 06492	26	W	14 miles
106	Richard L. Westfort 543 Allen Avenue Meriden, CT 06450	95	WNW	13.5 miles
124	Dwight Williams & Sons 989 East Center Street Wallingford, CT 06492	59	WSW	16 miles
37	Raymond R. Wimler Guilford Road Durham, CT 06422	135	WSW	11 miles

GOATS WITHIN 20 MILES OF CONNECTICUT YANKEE
AS OF SEPTEMBER 1980

Dairy #	Name & Address	No. of Goats	Direction	Distance
89	Al-Sa Acres Dairy Emily Bolduc 1029 Hoop Pole Road North Guilford, CT 06437	6	SW	14.5 miles
134	Alan Aroh 27 Marion Drive East Lyme, CT	2	ESE	16.5 miles
55	Jason Baker Jones Street Hebron, CT	2	NNE	11 miles
8	Philip Bourdon Young Street (Rt. 196) East Hampton, CT 06424	11	N	7.5 miles
163	Annette Beatty Goshen Hill Road Lebanon, CT	1	ENE	16.5 miles
27	Fred Berner 27 Ross Road Middlefield, CT	2	WNW	10.5 miles
18	Loren Blackford 35 Knowles Avenue Middletown, CT 06457	3	WNW	10.0 miles
56	Joan Bowers 350 Wall Street Hebron, CT	5	NNE	16 miles
42	T. C. Bradshaw Rt. 149 Colchester, CT	1	NE	7.0 miles

Dairy #	Name & Address	No. of Goats	Direction	Distance
38	Lawrence Brown West Road Colchester, CT	11	ENE	11.0 miles
68	Marilyn Carini 797 Mott Hill Road South Glastonbury, CT	7	N	12.5 miles
51	Nelson Chamberlain 51 Webster Lane Hebron, CT	2	NNE	17 miles
80	Karen Connelly 277 Roast Meat Hill Road Killingworth, CT	7	SSW	7.5 miles
165	Sara Cross Rt. 85 Hebron, CT	2	NNE	14 miles
75	Penny Damiata 43 North Road Cromwell, CT	5	NW	13.5 miles
1	Don Donofrio Indian Hollow Road Haddam, CT	15	NW	1.5 miles
40	Elizabeth Gillman Cato Corner Road Colchester, CT	4	NE	8.5 miles
87	Michael Garritta 254 Cow Hill Road Clinton, CT 669-7225	2	S	11.5 miles

Dairy #	Name & Address	No. of Goats	Direction	Distance
2	Mrs. Horton Clark Hill Road East Haddam, CT	1	ESE	6 miles
136	Ellie Korineck 233 Upper Pattagansett Road East Lyme, CT	6	ESE	15 miles
70	Kim Kristoff Marlborough Road Glastonbury, CT	3	N	15 miles
39	Jay & Maurice Lizotte Old Hebron Road Colchester, CT	2	NE	11.5 miles
81	Beverly Lapham River Road Killingworth, CT	3	SSW	12 miles
67	Kenneth LaRoche South Road Portland, CT	9	NNW	9.5 miles
140	Dan Mazzella 49 Fairhaven Road Niantic, CT	3	ESE	18 miles
82	Donald McDougall Alders Bridge Road Killingworth, CT	3	SSW	7.5 miles
148	Francis McTigue 9 Lyme Street Old Lyme, CT	2	SE	11.5 miles

Dairy #	Name & Address	No. of Goats	Direction	Distance
*166	Lynn Miller Goshen Hill Road Lebanon, CT	5	ENE	16.5 miles
31	Kerry Monroe Wallingford Road Durham, CT	2	W	10.5 miles
107	Jeff Nagy 175 Pond Hill Road Wallingford, CT	1	WSW	17 miles
53	Elaine Phillips 310 Burnt Hill Road Hebron, CT	11	NNE	16.0 miles
108	Robert Pogmore 177 Williams Road Wallingford, CT	11	W	14.5 miles
141	Walter Reifeiss Flanders Road Niantic, CT	3	ESE	18 miles
52	Cynthia Ruth 8 Porter Road Hebron, CT	1	NNE	13.5 miles
167	Jamie Sabo Rt. 87 Lebanon, CT	8	NE	18 miles
15	William Sattler RFD #1, Box 71 Moodus, CT	3	ENE	2.5 miles

* Goats do not graze, are grain fed.

Dairy #	Name & Address	No. of Goats	Direction	Distance
41	Joseph Schall West Road Colchester, CT	2	ENE	10.5 miles
*19	Martha Seifert Kelsey Street Middletown, CT 06457	1	WNW	8 miles
88	John Sevanick 11 Neck Road Clinton, CT	2	S	14.5 miles
91	Robert Sperry 22 Broad Street Guilford, CT	2	SW	18.5 miles
86	Victor Trudeau 174 Horse Hill Road Westbrook, CT	4	S	11.5 miles
10	Christine Walters 96 Chestnut Hill Road East Hampton, CT 06424	2	NNW	5 miles
3	Jane Wagoner A. P. Gates Road East Haddam, CT	1	ESE	6.5 miles
71	Charles Walstedt 51 Wassuc Road Glastonbury, CT	11	N	13.5 miles
54	Kathy Waters Burnt Hill Road Hebron, CT	2	NNE	15.5 miles

* Goats do not graze, are grain fed.

Dairy #	Name & Address	No. of Goats	Direction	Distance
11	Yvonne Webber Skinner Street East Hampton, CT 06424 267-2362	2	N	5.5 miles
109	Russell Woodman 35 David Drive Wallingford, CT 269-2595	1	W	18 miles
84	Walter Zanelli Brainard Hill Higganum, CT 345-4885	1	W	4.5 miles

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, Interex Corporation (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) and is in addition to that performed internally by Interex Corporation and by their participation in EPA's Environmental Radioactivity Laboratory Intercomparison Studies Program.

The 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.

A fourth quality control method is performed on all of the cesium (Cs) chemistry analyses (except air particulate quarterly composites) by comparing the chemistry and the Geli (gamma) spectrometry results.

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, 4, and 5. These four 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 all the rest of the QA 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 has to satisfy the acceptance criteria as developed from the above-mentioned U.S. Department of Health, Education, and Welfare document. For all Geli analyses the criteria that need be satisfied 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 all analyses except that of total cesium (Cs chemistry).

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. From the totals at the bottom of Table 3 this requirement is satisfied for all cases except that of total cesium (Cs chemistry).

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 all cases except for I-131 in milk and Cs chemistry.

Investigations have been performed into the cases, mentioned above, where the results had deviated from the acceptance criteria. The first three methods of quality control indicate a potential problem with the cesium chemistry analyses (except for air particulates). This problem has to a lesser extent existed in the past. Therefore, for the past three years all of the results of these analyses have been verified by Geli spectrometry (Cs-137 Geli) and in 1980 the fourth method of QA was instituted in order to further evaluate the total cesium results. This method, the comparison of the total cesium and Geli results is shown on Table 5. Evaluation of the results, even before any reanalysis shows acceptable agreement (i.e., < 10 percent were unacceptable). After reanalysis, all but five of the unacceptable measurements showed better agreement. Therefore, it can be concluded that the data presented for total cesium (Cs chemistry) in this report is valid.

The only other deviation from the acceptance criteria occurred in the I-131 milk spikes. This problem was investigated by having a special set of spiked samples analyzed in December; however, possible influences of fallout from the recent Chinese nuclear test precluded any definitive results. Further investigation will continue in 1981.

Table 1
Number of Quality Control* Samples

Sample Type	Number of QC Samples	Number of Routine Required Samples[a,b]
Milk	32	112
Well Water[c]	20	28
Sea Water	2	16
River Water	2	8
Soil	3	16
Bottom Sediment	4	26
Aquatic Flora	4	12
Fish	13	40
Shellfish	4	52
Lobster	0	12
Fruits and Vegetables	0	16
Air Particulate - Gross Beta	16	1092
- Iodine	12	416
- 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 35.

Table 2

Precision

Media	Analysis	Acceptance Criteria	Number of Measurements Acceptable	Unacceptable
Milk	Sr^{90}	$\Delta/\sigma \leq 4$*	20	1
	Sr^{89}	$\Delta/\sigma \leq 4$	21	0
	Cs (chemistry)	$\Delta/\sigma \leq 4$	17	4
	Cs^{137} (Geli)	$\Delta/\sigma \leq 3$	21	0
Water	H-3	$\Delta/\sigma \leq 4$	10	0
Soil & Bottom Sediment	Geli's	$\Delta/\sigma \leq 3$	4	0
	Sr^{90}	$\Delta/\sigma \leq 4$	4	0
Aquatic	Geli's	$\Delta/\sigma \leq 3$	4	0
	Sr^{90}	$\Delta/\sigma \leq 4$	3	1
Total	Sr^{90}	$\Delta/\sigma \leq 4$	27	2
	Cs (chemistry)	$\Delta/\sigma \leq 4$	17	4
	Geli	$\Delta/\sigma \leq 3$	29	0
	H-3	$\Delta/\sigma \leq 4$	10	0

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

Table 3

Interlaboratory Comparisons

Media	Analysis	Acceptance Criteria	Number of Measurements Acceptable	Unacceptable
Milk	Sr^{90}	$\Delta/\sigma \leq 4$*	6	0
	Sr^{89}	$\Delta/\sigma \leq 4$	6	0
	Cs (chemistry)	$\Delta/\sigma \leq 4$	5	4
	Cs^{137} (Geli)	$\Delta/\sigma \leq 3$	9	0
Water	Sr^{90}	$\Delta/\sigma \leq 4$	6	0
	H-3	$\Delta/\sigma \leq 4$	14	0
Soil & Bottom Sediment	Geli's	$\Delta/\sigma \leq 3$	3	0
	Sr^{90}	$\Delta/\sigma \leq 4$	3	0
Aquatic	Geli's	$\Delta/\sigma \leq 3$	9	1
	Sr^{90}	$\Delta/\sigma \leq 4$	6	1
Total	Sr^{90}	$\Delta/\sigma \leq 4$	21	1
	H-3	$\Delta/\sigma \leq 4$	14	0
	Geli	$\Delta/\sigma \leq 3$	18	1
	Cs (chemistry)	$\Delta/\sigma \leq 4$	5	4

* 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}	$\Delta \leq 30\%$	8	3	4	3
	Sr^{90}	$\Delta/\sigma \leq 4$	4	1	0	1
	Cs^{137} (chemistry)	$\Delta/\sigma \leq 4$	4	-	0	-
	Cs^{137}	$\Delta/\sigma \leq 3$	4	2	0	0
	Cs^{134}	$\Delta/\sigma \leq 3$	1	1	0	0
Water	Geli	$\Delta/\sigma \leq 3$	12	4	0	2
	Sr^{90}	$\Delta/\sigma \leq 4$	12	6	0	0
	H-3	$\Delta/\sigma \leq 4$	7	4	0	0
	Cs (chemistry)	$\Delta/\sigma \leq 4$	9	-	2	-
Aquatic	Geli	$\Delta/\sigma \leq 3$	4	2	1	0
	Sr^{90}	$\Delta/\sigma \leq 4$	4	1	1	0
	Cs (chemistry)	$\Delta/\sigma \leq 4$	1	-	1	0
Air Particulate	Gross β	$\Delta/\sigma \leq 4$	15	-	1	-
	Geli	$\Delta/\sigma \leq 4$	24	-	0	-
	Cs^{137} (chemistry)	$\Delta/\sigma \leq 4$	8	-	0	-
	Sr^{90}	$\Delta/\sigma \leq 4$	7	-	1	-
	I^{131}	$\Delta/\sigma \leq 4$	11	-	1	-
Total	I^{131} (milk)	$\Delta \leq 30\%$	8	3	4	3
	Sr^{90}	$\Delta/\sigma \leq 4$	27	8	2	1
	Cs (chemistry)	$\Delta/\sigma \leq 4$	22	-	3	-
	Geli	$\Delta/\sigma \leq 3$	44	8	1	2
	H-3	$\Delta/\sigma \leq 4$	7	4	0	0
	I^{131} (air)	$\Delta/\sigma \leq 4$	11	-	1	-
	Gross β	$\Delta/\sigma \leq 4$	15	-	1	-

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

Table 5

Cs Chemistry and Geli Comparisons*

	Number of Measurements			
	Before Any Reanalysis		After Reanalysis	
Media	Acceptable	Unacceptable	Acceptable	Unacceptable
Milk	140	12	149	3
Fish	38	3	41	0
Bottom Sediment	11	2	12	1
Grass	6	1	6	1
Fruits and Vegetables	7	1	8	0
Total	202	19	216	5

Acceptance criteria is $\Delta/\sigma \leq 4$ where Δ = the difference between the two values
σ = the standard deviation