PEACH BOTTOM ATOMIC POWER STATION

ENVIRONS RADIATION MONITORING PROGRAM

January 1, 1983 through December 31, 1983

REPORT NO. 41

for

The Philadelphia Electric Company

May 1984

Chemical Waste Management
Of Massachusetts, Inc.
Five Strathmore Road
Natick, MA 01760

PEACH BOTTOM ATOMIC POWER STATION

ENVIRONS RADIATION MONITORING PROGRAM

January 1, 1983 through December 31, 1983

REPORT NO. 41

for

The Philadelphia Electric Company

May 1984

Chemical Waste Management
Of Massachusetts, Inc.
Five Strathmore Road
Natick, MA 01760

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

I. INTRODUCTION AND SUMMARY

A. INTRODUCTION

A pre-operational environmental radioactivity survey, initiated in March 1960, was conducted by Nuclear Science & Engineering Corporation for the Philadelphia Electric Company in connection with Peach Bottom Atomic Power Station located in Peach Bottom Township, York County, Pennsylvania. The initial loading of fuel into Unit 1, a 40 MWe (net) high temperature, gas-cooled reactor, was started on February 5, 1966, and initial criticality was achieved on March 3, 1966. Shutdown of Peach Bottom Unit 1 for decommissioning was on October 31, 1974. For the purposes of this monitoring program, the beginning of the operational period for Unit 1 is February 5, 1966. A summary of the Unit 1 pre-operational monitoring program is presented in a previous report (1).

Peach Bottom Units 2 and 3 are boiling water reactors each with a power output of approximately 1050 MWe (net). First fuel was loaded into Peach Bottom Unit 2 on August 9, 1973, criticality was achieved on September 16, 1973, and full power was reached on June 16, 1974. The first fuel was loaded into Peach Bottom Unit 3 on July 5, 1974, criticality was achieved on August 7, 1974, and full power was first reached on December 21, 1974. A pre-operational summary report (2) for Units 2 and 3 has been issued previously and summarizes the results of all analyses performed on samples collected from February 5, 1966 through August 8, 1973. Detailed program description, station designation, reporting units, abbreviations, etc., are given in that report reflecting the program status at that time. Where changes had been made from the original program, they are indicated in the appropriate sections of that year's report. In general, any such changes have been made to increase the scope and specificity of the program to fulfill the program objective and to reflect the latest recommendations of various government agencies. These changes are detailed in previous reports.

This report summarizes the results of analyses performed by Chemical Waste Management on samples representing the period January 1 through December 31, 1983 in the Chemical Waste Management portion of the overall Peach Bottom program.

The laboratory responsibility for performance of the environmental radiation monitoring program has been modified several times since the Peach Bottom Unit 1 pre-operational program was first undertaken in 1960. From the start of the program until the first quarter of 1969, a single laboratory located in Pittsburgh, Pa., was used. This was initially called Nuclear Science and Engineering Corporation and later became

Nuclear Science Division, International Chemical and Nuclear Corporation as a result of a change of ownership. During the first quarter of 1969, the program was transferred to ICN/Tracerlab, also part of the International Chemical and Nuclear Corporation and was performed by ICN in the Waltham, Mass., laboratory until the end of the first quarter of 1972. At this time the program was transferred to Interex Corporation laboratories in Waltham. The Interex Corporation laboratory was moved to Natick, Mass. in May 1974. Interex Corporation carried out sample collection, analysis and report preparation until November 1981 when the laboratory and certain other operatins were purchased by Chemical Waste Management, Inc., which is now performing these functions. During the various change-overs and moves, extreme care was taken to insure that continuity in all aspects of the overall program was maintained.

The objective of this program is to acquire quantitative data for the concentrations of radioactivity in environmental media in the vicinity of the reactor site prior to and during operation of the reactor plant. These data are then examined to determine the extent of the impact of the plant or plants on the environment as reflected by any changes in the radioactivity levels from those observed during the pre-operational survey. Generally, this is done by comparing the observed levels at those sampling stations which would be expected from various consideratons to show maximum effects of plant operation to levels at stations remote from the site. When possible, comparison is also made to data obtained by various government agencies. Since there are both natural and man-made radioactivity present in the environment which are not related to plant operation, it is important to understand and adequately measure these contributions.

A number of radioactive elements occur in nature. The most important of these are uranium and thorium, along wih their respective radioactive decay products, and potassium-40 (K-40). The concentrations of natural radioactivity vary with geographical location and with time and are primarily dependent on the concentration of the respective elements in the constituents of the lithosphere. Therefore, environmental radioactivity measurements must be performed at a number of locations representative of the general geographical area of interest.

Other radionuclides have been introduced into the biosphere as a result of the detonation of nuclear devices in the atmosphere. A significant fraction of these nuclides is generally disseminated throughout the upper atmosphere with the fine particulate debris from the detonation. Varying fractions of the nuclear debris eventually are deposited at ground level, principally in conjunction with precipitation. After their arrival at ground level, the radionuclides enter soil or bodies

of water, and varying fractions may enter drinking water supplies or be assimilated by edible plants or animals and thus enter the human food chain. Natural radioactivities are also introduced into the human diet by analogous processes.

The deposition patterns of nuclear debris depend on many factors including latitude, proximity to detonation sites, annual accumulation of precipitation, and the frequency, magnitude, location, and altitude of the detonations. In the absence of detonations, seasonal variations have been noted for several years, including maximum depostion rates in the spring and summer months and mimimum rates in the late fall or early winter. Distinct variations have also been noted in individual precipitations. These latter variations have been attributed to variations of meteorological conditions prevailing during the respective precipitation events.

Since significant geographical and temporal variations are expected in the concentrations of both natural and man-made radioactivity in environmental media, it is necessary to acquire experimental values for their concentrations over a period of several years to achieve statistically-significant data. Such an approach also provides data for seasonal or annual trends in the temporal behavior of these concentrations and permits correlations of these trends with meteorological or climatological factors or with known injections of man-made radionuclides into the atmosphere.

B. SUMMARY

Except for fish and silt samples no measurable amounts of radioactivity were found offsite by the environs radiation monitoring program which could be attributed to the operation of PBAPS. The program detected plant related radioactivity at very low levels in two sample types in Conowingo Pond. Cs-137, Cs-134, Zn-65, Co-60, Mn-54, and Cr-51 were found in fish samples from offsite locations. Slightly higher concentrations of these nuclides were found in samples from the plant water discharge system. Silt samples at five locations showed Cs-137, Cs-134, Co-60 and Zn-65. The resulting doses to the maximum exposed individual were well below 10 CFR 50 Appendix I design objectives.

Samples such as soil, vegetation, etc, showed gross and/or net activities which are consistent with the known presence of naturally-occurring nuclides or which are most probably attributable to fallout from nuclear testing and therefore did not result from PBAPS operation.

There was no other measurable environmental radioactivity which is attributed to the operation of PBAPS.

II. PROGRAM DESCRIPTION

The program as it existed at the end of the report period is described below. Since its inception, several changes have been made to better accomplish the program goals.

A. Environmental Monitoring Stations and Media Collected

The environmental monitoring stations are described in Table II. 1 and are shown in Figures II. 1 through II. 3. In general, stations have not been moved significantly since the start of the program.

B. Sampling and Analysis Program

The types of analysis performed, the frequency of sampling and analysis, the locations of samples, and the number of analyses per station scheduled for each location as of the end of the report period, are given in Table II. 2.

A summary of the analyses performed on samples representing January 1, 1983 through December 31, 1983 is given in Table II. 3.

TABLE II.1

ENVIRONMENTAL MONITORING STATIONS
January through December 1983

Station No.	Station Name	Station Location, Direction and Distance from Peach Bottom Site	Environmental Media Collected
1	Peach Bottom Site Area	Located in Site Area	Vegetation, Small Game
1A	Peach Bottom - Weather Station 1	On Site at Weather Station, 0.3 miles SE of Units 2 &3	Air Particulate, Precipitation
1B	Peach Bottom - Weather Station 2	On Site at Weather Station 2, 0.5 miles N of Units 2 & 3	Air Particulate, Precipitation
1M	Peach Bottom - Canal Discharge	On Site at Canal Discharge 1.0 miles SE of Units 2 & 3	Discharge Water
1Q	Peach Bottom Unit 2 Intake	On Site at Unit 2 Intake, 1200' ENE of Units 2 & 3	Surface Water
1U	Peach Bottom Site - Utility Building	Well at Plant Site, 1400' S of Units 2 & 3	Well Water
1V	Peach Bottom Site - Information Center	Well at Plant Site, 1400' SSE of Units 2 & 3	Well Water
1X	Peach Bottom Site - Cooling Tower Pond B1	About 1750' ESE of Units 2 & 3	Silt and Fish (Channel Catfish and White Crappie)
1AA	Peach Bottom - Discharge Canal Bank	Located about 2400' SE of Units 2 & 3 on the Discharge Canal Bank	Soil
1BB	Peach Bottom -	On Site in the Station Discharge Canal, 3300' SE of Units 2 & 3	Silt
1EE	Peach Bottom - Discharge Canal	In the Discharge Canal anywhere between the Peach Bottom Units 2 & 3 Liquid Radwaste Discharge and Canal Exit.	Fish (Channel Catfish and White Crappie)
1LL	Peach Bottom Units 2 & 3 Intake - Composite	Continuous Sampler on Site at Units 2 & 3 Intake, 1200' ENE of Units 2 & 3	Surface Water
1MM	Peach Bottom - Canal Discharge - Composite	Continuous Sampler on Site at Canal Discharge 1.0 miles SE of Units 2 & 3	Discharge Water

Station No.	Station Name	Station Location, Direction and Distance from Peach Bottom Site	Environmental Media Collected
2	Peach Bottom Site - 130° Sector Hill	On Site, 0.9 miles SE of Units 2 & 3	Air Particulate Soil
3A	Delta, Pa. - Substation	3.6 miles SW of Units 2 & 3 0.5 miles N of Maryland border	Air Particulate Vegetation, Soil
4A	Conowingo Dam - Powerhouse Roof	8.6 miles SE of Units 2 & 3 on Powerhouse roof in Cecil County, Md.	Air Particulate
4B	Conowingo Dam - Powerhouse Roof	8.6 miles SE of Units 2 & 3 on Powerhouse roof in Cecil County, Md.	Air Particulate
4D	Conowingo Pond, Pa.	500' downstream from the Peach Bottom Station Discharge	Silt
4F	Conowingo Dam - El. 33' MSL Grab	In the Conowingo Hydro-Electric Station about 8.6 miles SE of Units 2 & 3. Water is sampled from a header which continuously draws pond water from about elevation 33' MSL.	Surface Water
4I	Conowingo Pond - Net Trap 8	Located in Conowingo Pond about 1400' N of Units 2 & 3	Fish (Channel Catfish and White Crappie)
4J	Conowingo Pond - Net Trap 15	Located in Conowingo Pond about 1.4 miles SE of Units 2 & 3	Fish (Channel Catfish and White Crappie), Silt
4L	Conowingo Dam - El. 33 (Ft.) Composite	Continuous sampler in the Conowingo Hydro-Electric Station, about 8.6 miles SE of Units 2 & 3. Water is continuously sampled from a header which draws pond water from about elevation 33' MSL.	Surface Water
4M	Conowingo Dam - Downstream El. 40 (Ft.) MSL	West bank downstream of Conowingo Hydro-Electric Station about 8.6 miles SE of Units 2 & 3	Precipitation

Station No.	Station Name	Station Location, Direction and Distance from Peach Bottom Site	Environmental Media Collected
4N	Conowingo Dam - Environmental Station	Environmental Monitoring Station on west shore upstream of Conowingo Hydro-Electric Station about 8.6 miles SE of Units 2 & 3	Vegetation, Soil
4T	Conowingo Pond - Near Conowingo Dam	Near middle of Conowingo Pond, about 8.1 miles SE of Units 2 & 3	Silt
5	Wakefield, Pa.	4.6 miles E of Units 2 & 3	Air Particulate, Soil and Vegetation
6A	Holtwood Dam - Hydro-Electric Station	5.8 miles NW of Units 2 & 3	Surface Water (through Hydro Plant)
6B	Holtwood Dam - Hydro-Electric Station	5.8 miles NW of Units 2 & 3	Air Particulate (Hydro Powerhouse Roof)
6D	Holtwood, Pa.	5.8 miles NW of Units 2 & 3 near Holtwood Dam in Lancaster County	Vegetation
6F	Holtwood Dam - East Shore Upstream	5.8 miles NW of Units 2 & 3 in Lancaster County	Silt (above dam)
6G	Holtwood, Pa.	5.8 miles NW of Units 2 & 3 near Holtwood Dam in Lancaster County	Soil
6H	Holtwood Pond	Located in Holtwood Pond about 6.2 miles NW of Units 2 & 3	Fish
6I	Holtwood Dam - Hydro-Electric Station - composite	Continuous sampler at Holtwood Hydro-Electric Station intake about 5.8 miles NW of Units 2 & 3 Water is continually sampled and collected in a 175 gallon tank.	Surface Water
6J	Holtwood Pond	Located in Holtwood Pond near the east bank about 10.7 miles NNW of Units 2 & 3	Fish
7	Darlington, Maryland Area	9.6 miles SSE of Units 2 & 3 in Hartford County	Well Water
8	Colora, Maryland	9.9 miles ESE of Units 2 & 3 in Cecil County	Vegetation
12A	Philadelphia, Pa. 900 Sansom St.	63 miles ENE of Units 2 & 3 on the roof of 900 Sansom Street	Air Particulate

Station No.	Station Name	Station Location, Direction and Distance from Peach Bottom Site	Environmental Media Collected
12D	Philadelphia, Pa.	62 miles ENE of Units 2 & 3 on the roof of 2301 Market Street	Air Particulate
13A	Chester Water Intake Pond	On the east shore of Conowingo Pond at Chester Water Authority Intake, 2.4 miles ESE of Units 2 & 3	Surface Water
13B	Chester Water Intake Pump Discharge	At Chester Water Authority Intake 2.4 miles ESE of Units 2 & 3	Surface Water
14	Peters Creek	1.9 miles ESE of Units 2 & 3	Air Particulate
15	Silver Spring Road	3.6 miles N of Units 2 & 3	Air Particulate
17	Riverview Road	4.0 miles ESE of Units 2 & 3	Air Particulate
23	Peach Bottom 150° Sector Hill	Off-site, hill 1.0 miles SSE of Units 2 & 3	Vegetation
31	Pilottown Road	4.9 miles SE of Units 2 & 3 near Pilottown Road	Air Particulate
32	Slate Hill Road	2.7 miles ENE of Units 2 & 3 near Slate Hill Road	Air Particulate
33A	Fulton Weather Station	Fulton Main Weather Station 1.7 miles ENE of Units 2 & 3	Air Particulate
38	Peach Bottom Road	3.0 miles E of Units 2 & 3 near Peach Bottom Road	Air Particulate
40	Peach Bottom Site Area	Well in Site Area about 1.5 miles SW of Units 2 & 3	Well Water
	Peach Bottom Regional Farms	Nearby Regional Farms surrrounding the Peach Bottom site on the west side of Conowingo Pond are Designated G, J, and O. Intermediate distance farms on distance farms on the east side of the pond are designated D, L, M, and N. Distant regional on the west side of Conowingo Pond are designated A, B, and C, and a distant farm on the east side is designated Farm E. (1)	Milk

1. The precise farms involved in the program have changed in some cases due to circumstances beyond control of the program. The replacement farms are in the same general locations distributed so as to encircle the site close to and further away from the Peach Bottom site.

TABLE II.2

ENVIRONMENTAL RADIATION MONITORING PROGRAM

PERIOD JANUARY THROUGH DECEMBER 1983

Media	Type and Frequency of Analysis (1)	Type and Quantity of Sample	Sample Collection Frequency (2)	Number of Locations	Station Number (3)	Scheduled Samples Per Year
1. Airborne Particulate	Gross Beta	About 1 cfm continuous flow through filter paper (approx 2" diam) (4)	Filter Paper collected Weekly	Seventeen	1A, 1B, 2, 3A, 4A, 4B, 5, 6B, 12A, 12D, 14, 15 17, 31, 32 33A, 38	52 X 17
	Gamma Spectrum (Monthly)		Monthly Composite of weekly Samples	Seventeen	1A, 1B, 2, 3A, 4A, 4B, 5, 6B, 12A, 12D, 14, 15 17, 31, 32, 33A, 38	12 X 17
2. Water						
a. Precipitation	Gross Beta Sr-89, Sr-90 (Quarterly) Radioactive Cs (Quarterly)	Collected Continuously to form monthly composite sample.	Monthly	Three	1A, 1B, 4M	12 X 3
b. Surface Water	Gross Alpha(5) Gross Beta(5)	Spot; one gal.	Monthly	Four	1Q, 4F, 6A, 13A	12 X 4
			(6)	One	13B	(6)
		Continuous Composite; one gal	Monthly	Three	4L, 6I, 1LL	12 X 3
c. Discharge Water	Gross Alpha(5) Gross Beta (5)	Spot; one gal.	Monthly	One	1M	12 X 1
		Continuous Composite one gal	Monthly	One	1MM	12 X 1
d. Well Water	Gross Alpha Gross Beta Uranium Sr-89, Sr-90 (Semi-annually) Radioactive Cs (Semi-annually)	Spot; one gal.	Quarterly	Four	1U, 1V, 7, 40	4 X 4
3. Milk	Gross Beta Potassium-40 Sr-89, Sr-90 Cs-137, Cs-134 I-131	Spot; two gal.	Quarterly	Eleven	Farms A, B, C, D, E, G, O, J, L, M, N	4 X 11
					Farms A,C,G,J	4 X 4

Media	Type and Frequency of Analysis (1)	Type and Quantity of Sample	Sample Collection Frequency (2)	Number of Locations	Station Number (3)	Scheduled Samples Per Year
4. Vegetation	Gross Beta Potassium-40 Sr-89, Sr-90 Radioactive Cs	Stems, leaves and fruit; Foods whenever available; one container full	Spring, Summer, and Fall	Seven	1,3A,4N,5, 6D,8,23	3 X 2 (7) 6 X 5
5. Fish	Gross Beta Potassium-40 Sr-89,Sr-90 (one fish of each species) Gamma Spectrum (all fish of each species as one sample)	Channel Catfish and White Crappie, four fish each (if available)	Quarterly (no sample when ice conditions prevail)	Five	1X,4I,4J, 1EE,6H or 6J	32 X 5
6. Small Game	Gross Beta and Potassium-40 of muscle, soft tissue and bone separately I-131 of thyroid Sr-89, Sr-90 of bone	Rabbits, 5 at each collection (if available)	Semi-annually	One	1	10 X 1
7. Earth	Gross Beta Potassium-40 Sr-89, Sr-90 Radioactive Cs	Sunshine method; 500 grams	Semi-annually	Six	1AA,2,3A,4N, 5,6G	2 X 6
8. Silt	Gross Alpha Gross Beta Sr-89, Sr-90 Radioactive Cs Gamma Spectrum (GeLi)	Spot; 500 grams	Semi-annually	Six	1BB,1X,4J, 4D,4T,6F	2 X 6

FOOTNOTES

1. Frequency of each type of analysis is the same as the frequency of sample collection except where noted.

2. Sampling is conducted on the specified frequency unless unusual conditions, such as an equipment malfunction or an act of nature, prevent a specific sample from being obtained or analyzed.

3. Number indicates locations shown in Figures II.1, II.2, and II.3 and described in Table II.1

4. Sample flow rate is controlled with Restricting Orifice.

5. Soluble and insoluble radionuclide separately.

6. A monthly sample will be obtained only during those months in which the Chester Water Authority withdraws water from the pond.

7. Two kinds of vegetation during harvest at all locations except Delta and Conowingo.

TABLE II.3

SUMMARY OF ANALYSES PERFORMED ON SAMPLES COLLECTED

January 1, 1983 through December 31, 1983

Sample Type	Station Number	Number Samples	Gross Alpha	Gross Beta	Net Beta	K-40	U	Sr-89	Sr-90	I-131	Cs-134	(1) Cs-137	Gamma Spec.	Total Analyses
Air	1A	53		53									12	65
Particulate	1B	50		50									12	62
	2	49		49									12	61
	3A	51		51									12	63
	4B	53		53									12	65
	5	52		52									12	64
	6B	53		53									12	65
	12A	53		53									12	65
	12D	53		53									12	65
	14	52		52									12	64
	15	53		53									12	65
	17	53		53									12	65
	31	53		53									12	65
	32	50		50									12	62
	33A	53		53									12	65
	38	53		53									12	65
Precipitation	1A	12		12				4	4			4		24
	1B	12		12				4	4			4		24
	4M	12		12				4	4			4		24
Surface water	1LL	11	11	11										22
(Sol. & Insol.)	1Q	12	12	12										24
	4F	12	12	12										24
	4L	12	12	12										24
	6I	12	12	12										24
	6A	12	12	12										24
	13A	12	12	12										24
	13B	8	8	8										16

TABLE II.3 (Continued)

SUMMARY OF ANALYSES PERFORMED ON SAMPLES COLLECTED

January 1, 1983 through December 31, 1983

Sample Type	Station Number	Number Samples	Gross Alpha	Gross Beta	Net Beta	K-40	U	Sr-89	Sr-90	I-131	Cs-134	Cs-137	Gamma Spec.	Total Analyses
Discharge Water	1M	12	12	12										24
(Sol. & Insol.)	1MM	10	10	10										20
Well Water	1U	4	4	4			4	3	3			3		21
	1V	4	4	4			4	3	3			3		21
	7	4	4	4			4	3	3			3		21
	40	4	4	4			4	3	3			3		21
Soil	1AA	2		2	2	2		2	2			2		12
	2	2		2	2	2		2	2			2		12
	3A	2		2	2	2		2	2			2		12
	4N	2		2	2	2		2	2			2		12
	5	2		2	2	2		2	2			2		12
	6G	2		2	2	2		2	2			2		12
Silt	1BB	2	2	2				2	2			2	2	12
	1X	2	2	2				2	2			2	2	12
	4J	2	2	2				2	2			2	2	12
	4D	2	2	2				2	2			2	2	12
	4T	2	2	2				2	2			2	2	12
	6F	2	2	2				2	2			2	2	12
Fish														
Catfish	1X	30		16	16	16		4	4				5	61
Catfish	1EE	63		16	16	16		4	4				4	60
Catfish	4I	32		16	16	16		4	4				3	59
Wh. Crappie	4I	25		16	16	16		4	4				5	61
Catfish	4J	45		24	24	24		6	6				6	90
Wh. Crappie	4J	27		20	20	20		5	5				5	75
Catfish	6H	13		11	11	11		4	4				5	46
Wh. Crappie	6H	30		12	12	12		3	3				3	45

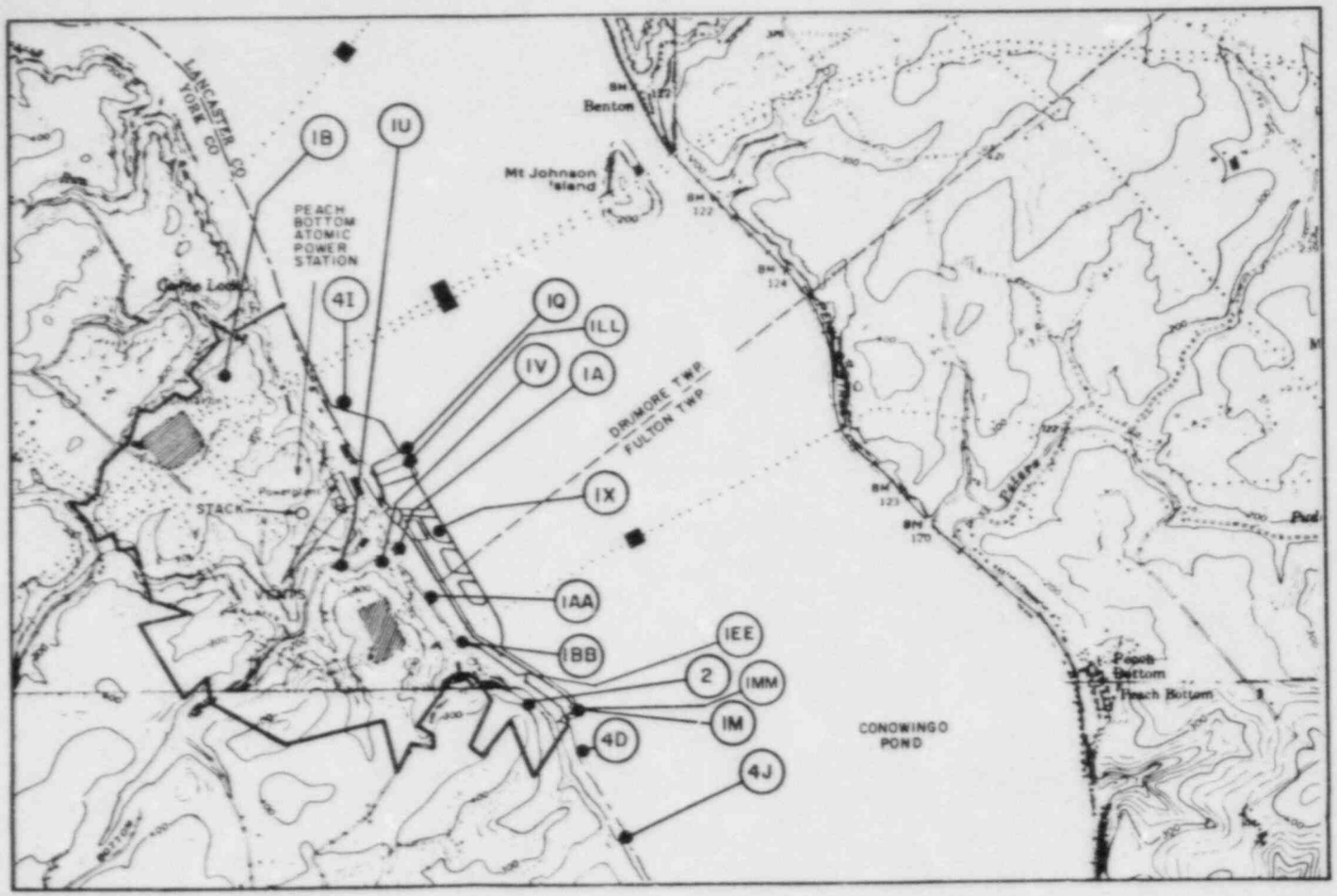
TABLE II.3 (Continued)

SUMMARY OF ANALYSES PERFORMED ON SAMPLES COLLECTED

January 1, 1983 through December 31, 1983

Sample Type	Station Number	Number Samples	Gross Alpha	Gross Beta	Net Beta	K-40	U	Sr-89	Sr-90	I-131	Cs-134	Cs-137	Gamma Spec.	Total Analyses
Vegetation	1	6		6	6	6		6	6			6		36
	3A	3		3	3	3		3	3			3		18
	4N	3		3	3	3		3	3			3		18
	5	6		6	6	6		6	6			6		36
	6D	6		6	6	6		6	6			6		36
	8	6		6	6	6		6	6			6		36
	23	3		3	3	3		3	3			3		18
Milk Farm	A	4		4	4	4		4	4	4	4	4		32
	B	4		4	4	4		4	4		4	4		28
	C	4		4	4	4		4	4	4	4	4		32
	D	4		4	4	4		4	4		4	4		28
	E	4		4	4	4		4	4		4	4		28
	G	4		4	4	4		4	4	4	4	4		32
	J	4		4	4	4		4	4	4	4	4		32
	L	4		4	4	4		4	4		4	4		28
	M	4		4	4	4		4	4		4	4		28
	N	4		4	4	4		4	4		4	4		28
	O	4		4	4	4		4	4		4	4		28
Rabbit														
Bone	1	5		5	5	5		5	5					25
Muscle	1	5		5	5	5								15
Thyroid	1	5								5				5
Tissue	1	5		5	5	5								15
TOTAL ANALYSES		1,385	141	1,246	235	235	16	164	164	21	44	125	240	2,631

(1) Cs-137 means all radioactive cesium for precipitation, well water, soil, silt, and vegetation.



LEGEND

ENVIRONMENTAL SAMPLING STATIONS

IA	PEACH BOTTOM WEATHER STATION NO.1
IB	PEACH BOTTOM WEATHER STATION NO.2
IM	PEACH BOTTOM CANAL DISCHARGE
IMM	PEACH BOTTOM CANAL DISCHARGE - COMPOSITE
ILL	PEACH BOTTOM UNITS 2&3 INTAKE - COMPOSITE
IQ	PEACH BOTTOM UNIT NO. 2 INTAKE
IU	PEACH BOTTOM SITE - UTILITY BUILDING
IV	PEACH BOTTOM SITE - INFORMATION CENTER
IX	PEACH BOTTOM SITE COOLING TOWER POND B-1
IAA	PEACH BOTTOM DISCHARGE CANAL BANK
IBB	PEACH BOTTOM DISCHARGE CANAL
IEE	PEACH BOTTOM DISCHARGE CANAL - BELOW RADWASTE DISCHARGE
2	PEACH BOTTOM SITE 130° SECTOR HILL
4D	CONOWINGO POND, PA.
4I	CONOWINGO POND NET TRAP NO.8
4J	CONOWINGO POND NET TRAP NO.15

ENVIRONMENTAL SAMPLING STATIONS ON OR NEAR PEACH BOTTOM SITE.

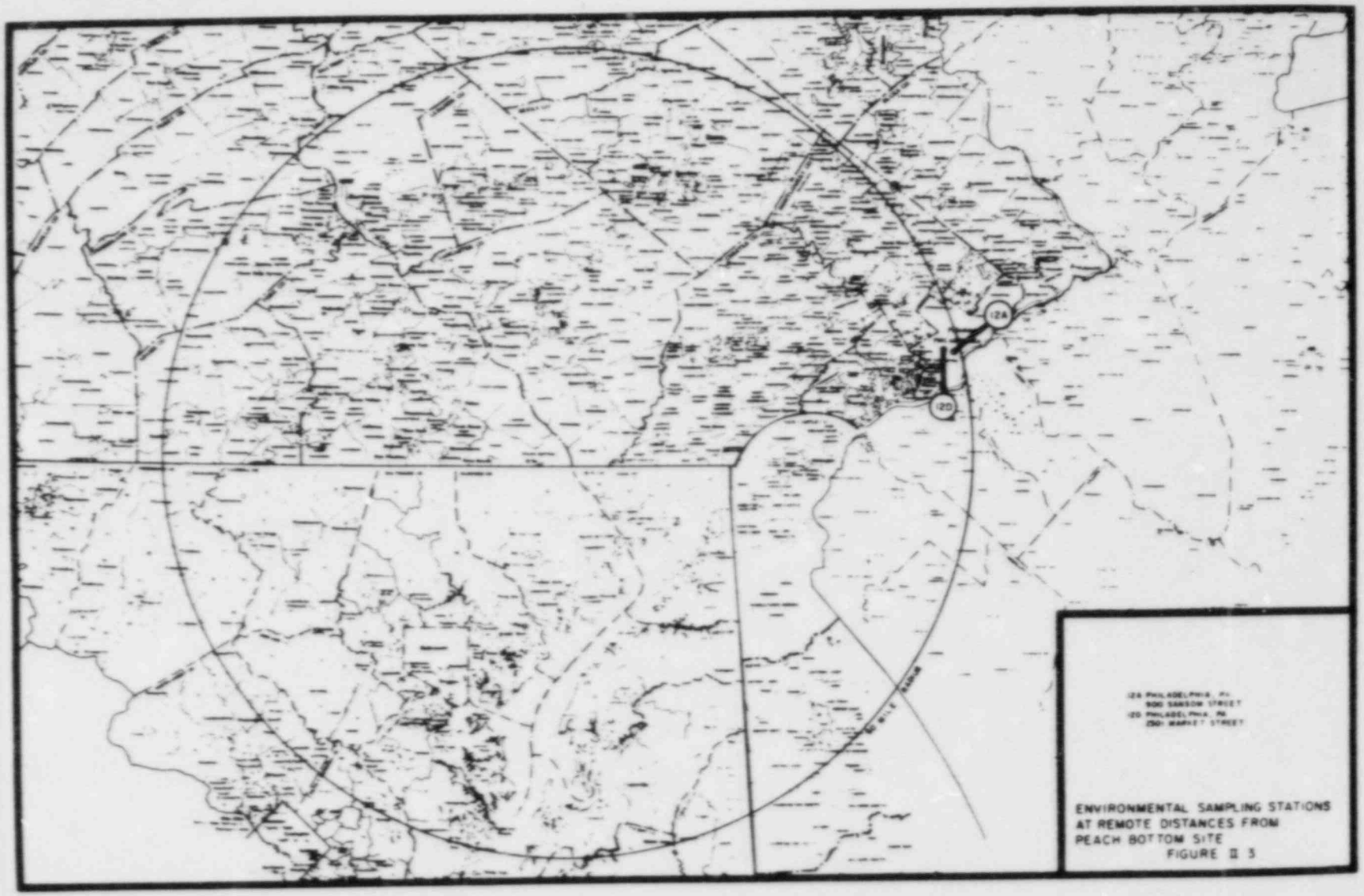
FIGURE II.1

3A DELTA, PA - SUBSTATION
4B CONOWINGO DAM, MARYLAND
4F CONOWINGO DAM, EL 33 (FT.) MSL GRAB
4H CONOWINGO DAM, TAILRACE
4L CONOWINGO DAM, EL. 33 (FT.) COMPOSITE
4M CONOWINGO DAM, DOWNSTREAM EL 40 (FT.) MSL
4N CONOWINGO DAM, ENVIRONMENTAL STATION
4T CONOWINGO POND-NEAR CONOWINGO DAM
5 WAKEFIELD, PA.

6A HULTWOOD DAM-HYDROELECTRIC STATION - GRAB
6B HOLTWOOD DAM-HYDROELECTRIC STATION
6D HOLTWOOD, PA.
6F HOLTWOOD DAM-EAST SHORE UPSTREAM
6G HOLTWOOD, PA.
6H HOLTWOOD POND PA
6I HOLTWOOD DAM-HYDROELECTRIC STATION - COMPOSITE
6J HOLTWOOD POND, PA.
7 DARLINGTON, MARYLAND AREA
8 COLORA MARYLAND
13A CHESTER WATER INTAKE-POND
13B CHESTER WATER INTAKE - PUMP DISCHARGE

14 PETERS CREEK
15 SILVER SPRING ROAD
17 RIVERVIEW ROAD
23 PEACH BOTTOM 150° SECTORHILL OFFSITE
31 PILOTOWN ROAD
32 SLATE HILL ROAD
33A FULTON WEATHER STATION
38 PEACH BOTTOM ROAD
40 PEACH BOTTOM SITE AREA

ENVIRONMENTAL SAMPLING STATIONS
AT INTERMEDIATE DISTANCES FROM
PEACH BOTTOM SITE
FIGURE II.2


124
120
ENVIRONMENTAL SAMPLING STATIONS
AT REMOTE DISTANCES FROM
PEACH BOTTOM SITE
FIGURE II 3

III. PROCEDURES

Detailed sample collection and handling procedures and reporting procedures are given in a previous report (2). The sample preparation and analytical procedures as well as equipment specifications are also given in an earlier report (4).

Starting with the fourth quarter milk samples the final precipitate was changed to palladous iodide restoring the procedure to that used prior to 1980. No additional changes were made in the analytical procedures for 1983.

TABLE III.1

TYPICAL ANALYTICAL SENSITIVITIES (1)

Sample Medium	Type of Analysis	Sample Size Analyzed	Limit of Detection (2)	Reporting Unit	Systematic Uncertainty of the Analysis (percent of) result) (4)
Air Particulate	Gross Beta	Filter	0.008 pCi/m3	pCi/m3	(5)
	Gamma Spectrum	1100-1500 m3	(3)	pCi/m3	
Precipitation	Gross Beta	500 ml	2 pCi/liter	pCi/liter, pCi/m2	+/-10
	Sr-89	1000 ml	0.3 pCi/liter	pCi/liter, pCi/m2	+/-15
	Sr-90	1000 ml	0.3 pCi/liter	pCi/liter, pCi/m2	+/-10
	Radioactive Cs	1000 ml	0.4 pCi/liter	pCi/liter, pCi/m2	+/-10
Surface Water & Discharge Water	Gross Alpha				
	Soluble	1000 ml	0.6 pCi/liter	pCi/liter	+/-20
	Insoluble	4000 ml	20 pCi/g ash	pCi/g ash	+/-20
	Gross Beta				
	Soluble	1000 ml	2 pCi/liter	pCi/liter	+/-10
	Insoluble	4000 ml	20 pCi/g ash	pCi/g ash	+/-10
Well Water	Gross Alpha	1000 ml	0.5 pCi/liter	pCi/liter	+/-20
	Gross Beta	1000 ml	2 pCi/liter	pCi/liter	+/-10
	Uranium	1000 ml	0.03 ug/liter	ug/liter	+/-10 (6)
	Sr-89	1000 ml	0.4 pCi/liter	pCi/liter	+/-15
	Sr-90	1000 ml	0.2 pCi/liter	pCi/liter	+/-10
	Radioactive Cs	1000 ml	0.3 pCi/liter	pCi/liter	+/-10
Soil, Silt	Gross Alpha	2 g dry wt.	0.8 pCi/g dry wt.	pCi/g dry wt.	+/-20
	Gross Beta	2 g dry wt.	1 pCi/g dry wt.	pCi/g dry wt.	+/-15
	K-40	1 g dry wt.	0.04 pCi/g dry wt.	pCi/g dry wt.	+/-15
	Sr-89	75 g dry wt.	0.01 pCi/g dry wt.	pCi/g dry wt.	+/-15
	Sr-90	75 g dry wt.	0.006 pCi/g dry wt.	pCi/g dry wt.	+/-15
	Radioactive Cs	75 g dry wt.	0.008 pCi/g dry wt.	pCi/g dry wt.	+/-15
	Gamma Spectrum	300-1000 g dry wt.	(3)	pCi/g dry wt.	
Fish	Gross Beta	200 mg ash	10 pCi/g ash	pCi/g ash	+/-10
	K-40	10-20 mg ash	1 pCi/g ash	pCi/g ash	+/-10
	Sr-89	5 g ash	0.3 pCi/g ash	pCi/g ash	+/-15
	Sr-90	5 g ash	0.1 pCi/g ash	pCi/g ash	+/-10
	Gamma Spectrum	200-1500 g orig. wt.	(3)	pCi/g	

Sample Medium	Type of Analysis	Sample Size Analyzed	Limit of Detection (2)	Reporting Unit	Systematic Uncertainty of the Analysis (percent of) result) (4)
Vegetation	Gross Beta	200 mg ash	10 pCi/g ash	pCi/g ash	+/-10
	K-40	20 mg ash	1 pCi/g ash	pCi/g ash	+/-10
	Sr-89	10 g ash	0.2 PCi/g ash	pCi/g ash	+/-15
	Sr-90	10 g ash	0.05 pCi/g ash	pCi/g ash	+/-10
	Radioactive Cs	10 g ash	0.08 pCi/g ash	pCi/g ash	+/-10
Rabbit	Gross Beta Muscle, Soft Tissue and Bone, Separately	200 mg ash	10 pCi/g ash	pCi/g ash	+/-10
	K-40 Muscle, Soft Tissue and Bone	20 mg ash	1 pCi/g ash	pCi/g ash	+/-10
	I-131 Thyroid	Total Thyriod	6 pCi/thyroid	pCi/thyroid	(5)
	Sr-89 Bone	10 g ash	0.3 pCi/g ash	pCi/g ash	+/-15
	Sr-90 Bone	10 g ash	0.1 pCi/g ash	pCi/g ash	+/-10
Milk	Gross Beta	200 mg ash	10 pCi/g ash, 75 pCi/liter	pCi/liter	+/-10
	K-40	20 mg ash	1 pCi/g ash, 8 pCi/liter	pCi/liter	+/-10
	Sr-89	1 liter	1 pCi/liter	pCi/liter	+/-15
	Sr-90	1 liter	0.3 pCi/liter	pCi/liter	+/-10
	I-131	4 liters	0.2 pCi/liter	pCi/liter	+/-10
	Cs-137	1 liter	2 pCi/liter	pCi/liter	+/-10
	Cs-134	1 liter	2 pCi/liter	pCi/liter	+/-10

FOOTNOTES

1. Defined as the result corresponding to two standard deviations in the net counting rate assuming typical count times, yields, etc.

2. Limits of detection are a function of sample volume, analytical methods, and instrument sensitivity. The values stated above are typical of those obtainable under the procedures used. Chemical yields, solids content, etc. will vary between samples and cause the sensitivity to change.

3. Limit of detection varies with sample size and type (i.e. geometry and internal absorption), with the specific nuclide in question and with the mixture of nuclides present.

4. Estimated overall error of measurement at levels where the counting error is not dominant.

5. There is no significant other systematic error compared to the counting error.

6. Or 0.03 ug/liter due to the low concentrations normally found.

IV. DISCUSSION OF RESULTS

The results obtained from the program are presented in the data tables and figures following this section and are discussed below according to sample type. Results of analyses which are performed on ashed samples of food products are reported in units of pCi/g original sample in addition to pCi/g ash. This is done to enable one to more easily estimate doses to man by reporting concentrations of radioactivity in food products, as determined by the radiation monitoring program, in terms of the sample state which is eaten by man. The results reported in these units, however, offer poorer comparisons of data because biological variables, such as water content, greatly affect the results. Results reported as radioactivity concentrations in terms of the ashed weights eliminate these variables and put the data on a more uniform basis for comparison. For this reason, the graphs in this report which are intended to show comparisons of concentrations of radioactivity between locations and time periods illustrate data reported in terms of the ashed weight, not the original sample weight.

All results are given with an error corresponding to two standard deviations in the net count rate except for K-40 which is generally 10% when significantly above the detection limit. Results which are less than the calculated error are reported as less than (<) the value corresponding to the error.

The heading "radioactive cesium" is used to indicate total radio-cesium which is the result from beta counting the radiochemically-separated cesium fraction. Where the nuclides are measured individually it is so indicated in the heading.

In calculating averages, results reported as "less than" a value are included as that value. The average of a series of numbers which contains at least one real number is given as a real number. If all of the numbers in a series to be averaged are "less than" numbers, the average value is given as a "less than" value. The deviation listed with means is equal to two standard deviations of the data comprising the mean.

In the discussion of data, general trends in the data are stressed as are comparisons of results from stations which would most likely be affected by Peach Bottom Atomic Power Station (PBAPS) operation, with data from those which are more remote from the site. Because of the presence of generally lower levels of radioactivity in the environment compared to earlier periods of atmospheric nuclear testing, precise trends tend to become obscured in the normal variability of data.

A. AIR PARTICULATES

The values of the concentrations of gross beta radioactivity observed in air particulate samples are listed in Tables IV.1.1 through IV.1.4 and are presented graphically in Figures IV.1.1 and IV.1.2. Gamma spectral analyses are given in Table IV.1.5.

For comparative purposes, stations have been divided into three groups. Group I, which is on the Peach Bottom site and closest to the plant release points, consists of Stations 1A, 1B, and 2. Group II rings the site at further distances and consists of Stations 3A, 4B, 5, 6B, 14, 15, 17, 31, 32, 33A, and 38. Group III, which is in Philadelphia, Pennsylvania serves as a reference group and consists of Stations 12A and 12D.

Gross beta radioactivity concentrations were generally below 0.05 pCi/m3 throughout the year. Values tended to be lower in the fall although the normal annual trend is becoming obscured at these low activity levels. Variability between weeks appears to be related to precipitation, which scavenges particulates from the air. The data are typical of those seen during the absence of recent nuclear testing.

As can be seen from Figures IV.1.1 and IV.1.2, there was no significant difference between the values obtained for the three groups of stations indicating no effects due to PBAPS operations.

Figures IV.1.3, IV.1.4 and IV.1.5 are long term plots comparing Peach Bottom data with Environmental Protection Agency (EPA) (5) data through 1978. The EPA data exhibit the same trend as the PBAPS data. Therefore, Harrisburg EPA data are no longer reported, effective with the 1979 report.

Figures IV.1.3 through IV.1.5 show comparable trends and values over the period 1966-1983 for all three groups of stations even though the composition of the groups has been changed by adding more sampling stations. This would indicate that the distribution of activity over the entire area is relatively uniform and is not affected by PBAPS.

Gamma spectrum measurements are made on monthly composite samples from each station. These samples generally consist of all weekly samples for the month from the given station taken together. Results of these analyses are given in Table IV.1.5. Naturally-occurring Be-7 was detected by GeLi gamma spectrometry in the majority of the samples as has been the case in the past. Naturally-occurring K-40 was measured at the detection limit in two samples. No other nuclides were present above the minimum detectable level.

No contribution from the operation of PBAPS is indicated.

B. PRECIPITATION

The concentrations and surface densities of gross beta, Sr-89, Sr-90, and Cesium radioactivity in precipitation samples collected at Stations 1A, 1B, and 4M are presented in Tables IV.2.1 and IV.2.2.

Most of the radioactivity in precipitation samples is in the form of particulates which are washed out of the air by rainfall and collected in sample containers. Since most of the particulate material is washed out in the initial part of a rainfall, the surface density, i.e., pCi/m2, is used in addition to concentration (pCi/l), because it tends to minimize the effect of sample volume. Lack of complete correlation with air particulate values comes about because rainfall generally does not occur at frequent intervals. The dependence of the activity levels on the precise conditions occurring at the start of each rainfall can cause wide variablity between samples even when taken over limited geographical areas.

Similar to air particulate values, the gross beta radioactivity concentrations in precipitation samples collected at Stations 1A and 1B did not show any spring increase that was typical of previous year's data. Individual monthly samples ranged from undetectable to approximately 10 pCi/l. Corresponding surface densities were mainly in the low hundreds of pCi/m2. There did not appear to be any discernible difference between locations. The values observed were similar to those seen in earlier years and are in the range of preoperational data.

The values of monthly gross beta radioactivity concentrations observed in the precipitation samples collected at Station 4M are similar to those from comparable samples from Stations 1A and 1B except that they are generally slightly lower when compared as pCi/m2. This has been the case since 1974 and was seen in several years during the pre-operational period.

No Sr-89 radioactivity was found in any of the samples.

Sr-90 radioactivity concentrations where measurable were generally a few tenths of a pCi/l. Surface densities were generally in the tens of pCi/m2. These levels are comparable to what has been observed in previous periods when there was no nuclear testing.

Cesium radioactivity concentrations and surface densities at Stations 1A, 1B, and 4M were generally undetectable to 1.4 pCi/l. Corresponding surface density ranged up to 80 pCi/m2. The detectable values were found at Stations 1A and 1B for the

period of May 15, 1983 to October 1, 1983. Due to the unpredictable nature of precipitation and limlited data available it is not possible to correlate the Cesium radioactivity with PBAPS operation.

The observed radioactivity concentrations at Station 1A, 1B, and 4M show the variability typical of precipitation and collectively do not indicate any contribution from the operation of PBAPS.

C. SURFACE WATER AND DISCHARGE WATER

The concentrations of gross alpha and gross beta radioactivity in the soluble and insoluble fractions of surface water and discharge water grab samples are given in Tables IV.3.1 and IV.3.3. Similar values for the composite samples from Stations 1LL, 1MM, 4L and 6I are given in Tables IV.3.2 and IV.3.4. Mean radioactivity concentrations are given in Tables IV.3.1 through IV.3.4. Comparative monthly and annual values are presented in Figures IV.3.1 through IV.3.6.

The reporting unit for the insoluble fractions is pCi/g ash which is intended to minimize the effect of varying amounts of insoluble material in the samples.

Gross alpha radioactivity was generally undetectable in the soluble fraction. The gross alpha radioactivity concentrations in the insoluble fraction were generally in the range of 29 to 40 pCi/g ash. The high value of 90 pCi/g ash was found at a reference Station 6A and resulted from the small weight. These values are consistent with those seen since 1981, the initial period for the use of this unit.

Data for gross beta radioactivity concentration in surface water and discharge water samples are shown in Figures IV.3.1 through IV.3.6. The values obtained for the soluble fraction were generally between the lower detection limit of approximately 2 pCi/l and 5 pCi/l. Results for the insoluble fraction were usually in the range of 40 to 100 pCi/g ash comparable to or slightly lower than seen in earlier periods. Occasional high values, e.g. 600 +/- 500 pCi/g ash as seen at location 6I, occur when the amount of solids in the sample is small.

As shown in Figure IV.3.2, the insoluble gross beta radioactivity concentration at Station 1MM averaged approximately twice that of Station 1LL. Comparison of the data shows a statistically significant difference ($P<.01$) between the stations.

No significant differences between grab samples and composite samples were observed in the gross alpha and gross beta radioactivity concentrations.

The similarity of results among stations shows no indication of any measurable radioactivity other than insoluble gross beta radioactivity in receiving water bodies due to the operation of PBAPS during the period of this report.

D. WELL WATER

Results of the analysis of well water samples for gross alpha, gross beta, Sr-89, Sr-90, Cesium radioactivity, and uranium are given in Table IV.4.1.

Radioactivity in well water samples generally arises from the leaching of naturally-occurring nuclides from the rocks and soil past which the water flows. As levels of the water table changes, variations can be encountered in the flow pattern followed by the water in a given well. This can cause changes in the radioactivity content of the water since the leachability of the radioactivity varies as the permeability of the soil and rock encountered by the water differs. An additional factor which can change radioactivity concentration is the well usage. A well which is used at a constant rate tends to maintain a more constant radioactivity level. Lack of usage can cause buildup of radioactivity concentration if conditions very close to the well are amenable to leaching, or it can cause concentrations to decrease if water from the major sources of the radioactivity does not reach the well when samples are taken.

Gross alpha radioactivity concentrations were generally found to be below the detection limit of several tenths of a pCi/l. This is consistent with data from the Units 2 and 3 preoperational period.

A few of the gross beta values were above the detection limit of 2 pCi/l. The measured values were in the range of 2 - 7 pCi/l.

Uranium was detectable in the majority of the samples. The highest value of 1.64 ug/l was found at an off-site location. The levels in general are somewhat higher than those seen in previous periods. This may be due to the higher-than-normal rainfall experienced by the region during 1983. Uranium is naturally-occurring in most rocks and is not of plant origin.

No Sr-89 radioactivity was detected in any of the samples. Sr-90 was measured in several samples up to 1.3 pCi/l.

Cesium was measured in one sample at the detection limit of 0.2 pCi/l. This is probably due to counting statistics.

Mean values as given in Table IV.4.1 show no significant differences between wells close to or on site and those at distant locations indicating no measureable radioactivity from the operation of PBAPS.

E. SOIL

The results obtained for concentrations of acid-leachable gross beta, K-40, net beta, Sr-90, Sr-89, and Cesium radioactivity in soil samples are given in Table IV. 5.1. Mean values for Sr-90, Sr-89 and Cesium are plotted in Figures IV.5.1 through IV.5.3.

Alpha and beta radioactivity are found in soil samples because of the presence of naturally-occurring nuclides in the uranium and thorium series and K-40, and from nuclides present in fallout from atmospheric nuclear weapons testing. Specific analysis for Sr-89, Sr-90 and Cesium, which are normally present in fallout, are done to measure these nuclides in the presence of the larger quantities of naturally-occurring radioactivity.

Net beta radioactivity, which was detectable in the majority of the samples, ranged from 1 to 6 pCi/g dry weight. Most of the results were below 5 pCi/g dry weight. This is within the range of normal variability.

The majority of the Sr-90 concentrations were grouped in an approximate range of a few tenths of a pCi/g dry weight. All of the values are consistent with previous annual averages.

Sr-89 concentration was measured slightly above the detection limit in one sample, probably due to counting statistics.

The concentration of Cesium generally was a few tenths to several pCi/g dry weight and measurable in all samples. All values were within the range of preoperational data.

Values obtained from samples taken at the Peach Bottom site are comparable to the average values from the surrounding sampling stations. Overall there is no indication of measurable radioactivity in soil from PBAPS operation.

F. SILT

Table IV.6.1 gives the analytical results and annual means for concentrations of acid-leachable gross alpha, gross beta, Sr-89, Sr-90 and Cesium radioactivity for silt samples. GeLi gamma spectrum analysis results are given in Table IV.6.2. Gross beta and specific nuclide activities observed at several stations are presented in Figures IV.6.1 through IV.6.4.

Silt samples are expected to contain naturally-occurring radioactivity, as discussed above for soil samples, in addition to any other activity introduced into the aquatic environment which would settle onto or be absorbed by the silt. As can be

seen by comparison of the data in Tables IV.5.1 and IV.6.1, the activity levels in silt generally are similar to those found in soil, exept as noted below.

The concentrations of gross alpha radioactivity at all sampling stations was generally a few tenths to 7 pCi/g dry weight and are well within the range of variability observed in PBAPS Units 2 and 3 preoperational period.

Gross beta radioactivity concentration was generally a few pCi/g dry weight. The results and variations between stations are consistent with the PBAPS Units 2 and 3 preoperational period.

Sr-90 concentrations occurred within the approximate range of 0.01 to 0.08 pCi/g continuing the lower trend seen since 1981. All results are within the range of variability observed during the PBAPS Units 2 and 3 preoperational period.

Sr-89 was found in one of the samples at the detection limit. This is probably due to counting statistics.

Samples analyzed showed Cesium generally at low levels of a few hundredths to a few tenths of a pCi/g dry weight which is well within the range of PBAPS preoperational data. A concentration of 8.02 +/- .07 pCi/g was found at Station 1BB on October 25, 1983 and is related to PBAPS operation. Any apparent discrepancy between the radio-chemistry values and gamma spectrum values most probably occurs because the gamma spectrum values given in Table IV.6.2 are more representative of the whole sample, which is inhomogenious, rather than only the aliquot analyzed. The differences between stations are discussed below under gamma spectrum analysis.

Figures IV.6.1 and IV.6.2 compare Stations 4D, 4J and 4T which are at increasing distances from the PBAPS discharge. There does not appear to be any consistent correlation of the observed levels with particular locations when normal variability is taken into account. The preoperational data show approximately the same spread in values and values of similar magnitude to those seen during this period. The observance of Cs-134 at several of the locations is discussed below.

Station 1BB, in the discharge canal down-flow the liquid rad-waste discharge, and Station 6F, above Holtwood Dam, are compared in Figures IV.6.3 and IV.6.4. Figure IV.6.3 indicates no positive addition of Sr-90 radioactivity by PBAPS operation. The concentrations of radioactive Cesium as shown in Figure IV. 6.4 indicate higher levels at Station 1BB, consistent with the gamma spectrum data.

Gamma spectrum analysis showed primarily the presence of K-40 and the U, Th series as represented by Ra-226 and Th-228 respectively, all of which are naturally-occurring, and Cs-137. Several nuclides associated with PBAPS operation were found during 1983. Cs-134 was found in samples from Stations 1BB, 1X, 4D, 4J and 4T. Co-60 and Zn-65 were found in samples from Stations 1BB and 4J.

Comparison of results between locations and with the preoperational data indicates no addition of radioactivity due to the operation of PBAPS except for small concentrations of Cs-134, Cs-137, Zn-65 and Co-60. If it is assumed that all Cesium, Co-60 and Zn-65 found at off-site locations is due to PBAPS releases, a dose calculation using the USNRC Regulatory Guide 1.109 model and assumptions results in a calculated dose of 6.94 E-3 mrem to a teenager's skin. This calculation conservatively assumes that the teenager was exposed to the maximum concentrations found for the entire exposure period. The calculated dose is 0.07% of 10CFR50 Appendix I design objectives.

G. FISH

The results of the analysis of fish samples for concentrations of gross beta, K-40, net beta, Sr-89 and Sr-90 radioactivity are given in Tables IV.7.1 and IV.7.2. Gamma spectrum data are presented in Table IV.7.3. Mean values are presented in Tables IV.7.1, IV.7.2, IV.7.4, and IV.7.5. Sr-90 concentrations are plotted in Figure IV.7.1.

Net beta radioactivity generally ranged from <10 to 30 pCi/g ash with an average of about 20 pCi/g ash. A high value of 200 pCi/g ash was found in a fish sample from the plant water discharge system. The composite samples from this location also had relatively high concentrations of several gamma-emitting nuclides. With this exception the values were well within the range of PBAPS preoperational data.

Radiostrontium analysis was resumed on a temporary basis during the second half of 1979 and continued through 1983 because of the possibility of release of Sr-89 and Sr-90 from a source upstream from the Peach Bottom site.

Sr-89 was measured at the detection limit in a few of the samples at a few tenths of a pCi/g ash.

Sr-90 radioactivity concentration as determined in samples from all locations was generally several tenths to approximately 2 pCi/g ash corresponding to several hundredths to 0.1 pCi/g original sample. The higher value was found in a sample from a remote location above Holtwood Dam.

Stations 1EE and 4J, as a group of stations which could be affected by PBAPS operation, and Station 6H which is above Holtwood Dam and therefore unaffected by PBAPS, are compared in

Figure IV.7.1. There is essentially no difference in the range of concentrations for Sr-90 radioactivity in fish from these locations.

Gamma spectrum analyses are shown in Table IV.7.3. In addition to naturally-occurring K-40, Ra-226 and Th-228, and Cs-137 from atmospheric nuclear weapons test fallout, Cs-134 and Zn-65 were found in most samples from Conowingo Pond and the plant water discharge system. These nuclides were found at Stations 1EE, 1X, 4I and 4J. In addition, Mn-54, Cr-51, and Co-60 were found in a few samples both from Conowingo Pond and the plant water discharge system.

Samples from Station 1EE taken on September 9, 1983 had significantly increased concentrations of Cs-137, Cs-134, Zn-65, Co-60, and Mn-54. A review of plant operations indicated that the activity was most likely the result of liquid radioactive waste releases during periods of lower-than-normal plant discharge canal flows.

Examination of data indicates essentially no difference other than normal variability between off-site stations for all nuclides except Cs-137, Cs-134 and Zn-65. The maximum dose calculated using the USNRC Regulatory Guide 1.109 model and assumptions is 6.05 E-01 mrem to a teenager's liver. The actual dose due to PBAPS operations is less, since the maximum concentrations of radionuclides was asssumed to exist all year. In addition, very small concentrations of Cr-51 and Co-60 were found in only one and two samples respectively and no credit was taken for Cs-137 from sources other than PBAPS. The calculated dose is 6.1% of the 10CFR50 Appendix I design objectives.

H. VEGETATION

The concentrations of gross beta, net beta, K-40, Sr-89, Sr-90, and Cesium radioactivity are given in Tables IV.8.1 and IV.8.2 for vegetation samples. Mean values are in Tables IV.8.1 and IV.8.2. Figures IV.8.1 and IV.8.2 show annual mean values for Sr-90 and Cesium radioactivity concentrations.

The concentrations of net beta radioactivity are similar for all stations and appear to have approximately the same spread. Measurable values ranged from 20 to 50 pCi/g ash. All results are in the range measured during the PBAPS Units 2 and 3 preoperational period. Corresponding values were generally several tenths of a pCi/g original sample. The raw weight to ashed weight ratio varies markedly between samples as would be expected from the different water content of various types of vegetables and vegetation.

Measurable Sr-90 radioactivity concentrations had a range

from about 1 to approximately 31 pCi/g ash with the majority of values between 1 and 20 pCi/g ash. Wild vegetation tended to have higher values probably due to greater accumulation of fallout because of the longer growing season. These concentrations are well within the range of PBAPS preoperational data. The corresponding values in terms of pCi/g original sample showed a similar range from a few hundredths to a few tenths of a pCi/g. The annual mean values of site area and distant stations, as shown in Figure IV.8.1 are approximately the same.

Sr-89 was detected in several samples probably due to counting statistics, since there is a relatively large amount of Sr-90 present.

Cesium radioactivity was generally measured at concentrations from a few tenths to a few pCi/g ash. The highest value was seen at remote Station 3A. The corresponding average values were a several thousandths to a few hundredths of a pCi/g original sample similar to previous values. The annual mean values shown in Figure IV.8.2 are comparable to each other.

There is no indication of a contribution to the radioactivity in vegetation from the operation of PBAPS.

I. MILK

The concentrations of gross beta, K-40, net beta, Sr-89, Sr-90, Cs-134, Cs-137, and I-131 radioactivity are given in Table IV.9.1 Mean values are presented in Tables IV 9.1 and IV 9.2. Mean concentrations of Sr-90, Cs-137, and I-131 are plotted in Figures IV.9.1 through IV.9.3.

For purposes of data comparison, farms have been divided into three groups: one containing Farms G, J, and O, which are regional farms near the Peach Bottom site; a second consisting of Farms A, B, C and E, which encircle the Peach Bottom site at remote distances; and a third consisting of Farms D, L, M, and N, which are at intermediate distances from the Peach Bottom site.

The concentration of net beta radioactivity generally ranges from undetectable to a few hundred pCi/l as has been the case during and since the preoperational period. The major beta activity in milk is due to the presence of naturally-occurring K-40 at concentrations of approximately 900 pCi/l. The residual net beta values are most probably the result of the difference between two types of measurements and are not real. The gross beta radioactivity is measured directly on milk ash while the K-40 value is calculated from chemical measurement of potassium on dissolved ash. From the known metabolic process of cows, it is unlikely that any radioactive nuclides from a nuclear power plant other than those of strontium, cesium, barium-lanthanum,

hydrogen or iodine would be present in milk.

The Sr-90 radioactivity concentration for all farms was in the range of about 3 to 9 pCi/l. This range is similar to the ranges for 1975 through 1982. These concentrations are well within the range of PBAPS preoperational data.

The annual mean values of Sr-90 for each farm group as shown in Figure IV.9.1 generally lie between 4 and 5 pCi/l. Comparison of the historical Sr-90 data shows a statistically significant difference ($P<.001$) between near, intermediate, and distant farms. Near and distant farms have the highest and lowest mean results respectively. This trend was noted in both the preoperational and postoperational periods. The preoperational/postoperational mean ratios are similar and therefore the higher Sr-90 radioactivity concentrations observed at the near farms are not due to PBAPS operation.

Sr-89 was found in a four of the samples at the detection limit, most likely due to counting statistics.

Measurable values for Cs-137 radioactivity concentration range from 2 to 10 pCi/l, similar to the range seen earlier. No significant difference was observed among the three farm groups as can be seen from Figure IV.9.2. The results are similar to those measured during Units 2 and 3 preoperational period.

Cs-134 was detected in one sample, probably due to counting statistics.The general absence of Cs-134 indicates that the Cs-137 is due to atmospheric nuclear weapons testing.

I-131 radioactivity concentration results, corrected for decay to date of sampling, are presented in Table IV.9.1. I-131 was barely detected in a few of the samples analyzed, probably due to counting statistics.

None of the samples contained radioactivity which can be attributed to the operation of PBAPS.

J. RABBITS

Tables IV. 10.1 and IV. 10.2 present the analytical data and mean values obtained from the analysis for gross beta, K-40, and net beta radioactivity concentrations in rabbit bone, soft tissue, and muscle, and Sr-89 and Sr-90 in bone. Iodine-131 concentrations in rabbit thyroids are also given. Quarterly mean values for net beta and Sr-90 radioactivity concentrations are shown in Figures IV. 10.1 and IV. 10.2. Samples collected July 4 through July 9 represent the first half of the year.

Measureable net beta radioactivity concentration in muscle and soft tissue ranged from 30 to 70 pCi/g ash indicating that

the majority of the activity is due to K-40. Corresponding values are about a factor of 100 lower as pCi/g original sample. For bone, values generally ranged from <10 to 20 pCi/g ash decreasing by a factor of 3-8 as pCi/g original sample. These values are consistent with the values seen during the PBAPS Units 2 and 3 preoperational period.

Sr-90 radioactivity values in bone ranged from about 3 to 10 pCi/g ash, similar to the range seen in previous periods. The pCi/g original sample values are a factor of 5-8 lower.

Sr-89 was measured at the detection limit in one sample, probably due to counting statistics.

I-131 was measured at the detection limit in two samples, probably due to counting statistics.

There is no indication of radioactivity in rabbits which can be attributed to operation of PBAPS.

V. REFERENCES

1. Pre-operational Environs Radioactivity Survey Summary Report, March, 1960 through January, 1966. (September 1967)

2. Peach Bottom Atomic Power Station Environs Radiation Monitoring Program Pre-operational Summary Report, Units 2 and 3, February 5, 1966 through August 8, 1973. (June 1977)

3. Peach Bottom Atomic Power Station Regional Environs Radiation Monitoring Program. January 1, 1978 through December 31, 1978. (May 1979)

4. Peach Bottom Atomic Power Station Regional Environs Radiation Monitoring Program. January 1, 1975 through December 31, 1975. July 1976)

5. Environmental Radiation Data, U.S. Environmental Protection Agency

6. USNRC Regulatory Guide 4.8, Branch Technical Position, Revision 1, October 1979.

TABLE IV.1.1
ANALYTICAL DATA FOR AIR-PARTICULATE SAMPLES
CONCENTRATIONS OF GROSS BETA RADIOACTIVITY (PCI/M3)

GROUP I - PEACH BOTTOM SITE

	COLLECTION PERIOD	1A	1B	2
82	12/24-01/01	.033 ± .006	.029 ± .006	.029 ± .006
83	01/01-01/08	.035 ± .008	.038 ± .008	.031 ± .008
	01/08-01/15	.04 ± .01	.022 ± .007	.015 ± .007
	01/15-01/22	.021 ± .008	.018 ± .007	.020 ± .007
	01/22-01/29	.030 ± .008	.030 ± .007	.024 ± .007
	01/29-02/05	.022 ± .007	.026 ± .007	.027 ± .007
	02/05-02/13	.026 ± .006	.022 ± .006	.030 ± .006
	02/13-02/20	.038 ± .007	.038 ± .008	.034 ± .008
	02/20-02/26	.034 ± .009	.032 ± .009	.025 ± .008
	02/26-03/05	.028 ± .007	.023 ± .007	.028 ± .007
	03/05-03/12	< .007	.010 ± .007	.008 ± .007
	03/12-03/19	.017 ± .007	.016 ± .007	.014 ± .007
	03/19-03/26	.022 ± .007	.025 ± .007	.018 ± .007
	03/26-04/02	.024 ± .007	.030 ± .008	.026 ± .007
	04/02-04/09	.015 ± .007	.014 ± .007	.021 ± .007
	04/09-04/16	.007 ± .007	.022 ± .009	< .007
	04/16-04/23	.030 ± .007	.034 ± .007	(A)
	04/23-04/30	.040 ± .008	.041 ± .008	(A)
	04/30-05/07	.029 ± .008	.035 ± .008	(A)
	05/07-05/15	.026 ± .007	.023 ± .007	(A)
	05/15-05/21	.023 ± .007	.023 ± .007	.020 ± .007
	05/21-05/28	.017 ± .006	.011 ± .006	.008 ± .006
	05/28-06/04	.026 ± .006	.019 ± .006	.018 ± .006
	06/04-06/12	.027 ± .006	.031 ± .006	.019 ± .005
	06/12-06/19	.055 ± .008	.055 ± .008	.043 ± .007
	06/19-06/25	.030 ± .009	.029 ± .009	.032 ± .009
	06/25-07/02	.023 ± .007	.029 ± .007	.021 ± .007
	07/02-07/09	.039 ± .007	.024 ± .007	.025 ± .007
	07/09-07/16	.041 ± .007	.045 ± .007	.034 ± .006
	07/16-07/23	.04 ± .01	.05 ± .01	.04 ± .01
	07/23-07/30	.033 ± .008	.040 ± .008	.032 ± .007
	07/30-08/06	.035 ± .008	.032 ± .007	.021 ± .007
	08/06-08/13	.035 ± .008	(B)	.028 ± .007
	08/13-08/20	.039 ± .009	.036 ± .009	.026 ± .008
	08/20-08/27	.034 ± .007	.031 ± .007	.026 ± .006
	08/27-09/03	.046 ± .007	.039 ± .007	.028 ± .006
	09/03-09/10	.050 ± .007	(B)	.028 ± .006
	09/10-09/17	.037 ± .007	.030 ± .006	.019 ± .006
	09/17-09/24	.038 ± .007	.047 ± .007	.024 ± .006
	09/24-10/01	.031 ± .006	.035 ± .006	.028 ± .006
	10/01-10/08	.045 ± .007	.039 ± .006	.031 ± .006
	10/08-10/15	.035 ± .008	.020 ± .006	.021 ± .006
	10/15-10/23	.044 ± .006	< .04	.024 ± .006
	10/23-10/29	.020 ± .007	.03 ± .02	.015 ± .007
	10/29-11/05	.029 ± .007	.04 ± .02	.018 ± .007
	11/05-11/12	.027 ± .006	.03 ± .02	.030 ± .006
	11/12-11/19	.028 ± .007	.02 ± .01	.021 ± .007
	11/19-11/26	.044 ± .008	(B)	.038 ± .008
	11/26-12/03	.040 ± .008	.06 ± .02	.044 ± .008
	12/03-12/11	.032 ± .007	.037 ± .007	.027 ± .006
	12/11-12/17	.031 ± .008	.022 ± .008	.022 ± .008
	12/17-12/24	.040 ± .008	.026 ± .007	.028 ± .008
	12/24-12/31	.046 ± .007	.041 ± .007	.026 ± .006
	ANNUAL MEAN	.032 ± .020	.031 ± .021	.025 ± .016

NOTES: (A) NO SAMPLE, SAMPLER OUT OF SERVICE
(B) NO SAMPLE, LOW VOLUME

TABLE IV.1.2
ANALYTICAL DATA FOR AIR-PARTICULATE SAMPLES
CONCENTRATIONS OF GROSS BETA RADIOACTIVITY (PCI/M3)

GROUP II - INTERMEDIATE DISTANCE LOCATIONS

	COLLECTION PERIOD	3A	4B	5	6B	14
82	12/24-01/01	.023 ± .006	.027 ± .006	.024 ± .006	.019 ± .006	.025 ± .006
83	01/01-01/08	.027 ± .007	.033 ± .008	.030 ± .008	.034 ± .008	.031 ± .008
	01/08-01/15	.019 ± .007	.019 ± .007	.017 ± .007	.021 ± .007	.016 ± .007
	01/15-01/22	.016 ± .007	.024 ± .007	.015 ± .007	.020 ± .008	.019 ± .007
	01/22-01/29	.030 ± .007	.030 ± .007			
	01/22-01/30			.026 ± .006	.025 ± .006	.029 ± .006
	01/29-02/05	.018 ± .007	.026 ± .007			
	01/30-02/05			.026 ± .008	.022 ± .008	.017 ± .008
	02/05-02/13	.027 ± .006	.026 ± .006	.020 ± .006	.017 ± .006	.024 ± .006
	02/13-02/20	.025 ± .007	.035 ± .007	.027 ± .007	.024 ± .007	.032 ± .007
	02/20-02/26	.031 ± .009	.028 ± .008	.028 ± .009	.031 ± .009	.023 ± .009
	02/26-03/05	.016 ± .007	.023 ± .007	.031 ± .007	.027 ± .007	.027 ± .007
	03/05-03/12	(A)	< .007	.011 ± .007	.009 ± .007	.010 ± .007
	03/12-03/19	(A)	.014 ± .007			
	03/12-03/20			.018 ± .006	.015 ± .006	.017 ± .006
	03/19-03/26	.02 ± .01	.019 ± .007			
	03/20-03/26			.017 ± .009	.023 ± .009	.026 ± .009
	03/26-04/02	.025 ± .007	.027 ± .007	.025 ± .008	.026 ± .007	.025 ± .007
	04/02-04/09	.017 ± .007	.017 ± .007	.012 ± .007	.007 ± .007	.016 ± .007
	04/09-04/16	.012 ± .007	.013 ± .007			
	04/09-04/17			< .006	.008 ± .006	.014 ± .006
	04/16-04/23	.022 ± .007	.022 ± .007			
	04/17-04/23			.021 ± .008	.021 ± .008	.031 ± .008
	04/23-04/30	.028 ± .008	.045 ± .008	.028 ± .008	.038 ± .008	.045 ± .008
	04/30-05/07	.022 ± .007	.024 ± .007			
	04/30-05/08			.015 ± .006	.026 ± .006	.029 ± .006
	05/07-05/15	.025 ± .007	.027 ± .006			
	05/08-05/15			.020 ± .008	.027 ± .008	.035 ± .008
	05/15-05/21	.021 ± .008	.020 ± .007	.013 ± .007	.019 ± .007	.019 ± .007
	05/21-05/28	.014 ± .006	.021 ± .006			
	05/21-05/29			.012 ± .005	.017 ± .005	.010 ± .005
	05/28-06/04	.022 ± .006	.027 ± .005			
	05/29-06/04			.008 ± .007	.022 ± .007	.022 ± .007
	06/04-06/12	.027 ± .005	.027 ± .005	.024 ± .005	.025 ± .005	.023 ± .005
	06/12-06/18				.06 ± .01	.047 ± .009
	06/12-06/19	.052 ± .007	.042 ± .007			
	06/18-06/25			< .04	.024 ± .007	.025 ± .007
	06/19-06/25	.025 ± .009	.027 ± .008			
	06/25-07/02	.027 ± .007	.020 ± .007	.024 ± .007	.022 ± .007	.027 ± .007
	07/02-07/09	.023 ± .007	.030 ± .007	.027 ± .007	.023 ± .007	.032 ± .007
	07/09-07/16	.037 ± .006	.046 ± .006	.037 ± .006	.035 ± .008	.031 ± .006
	07/16-07/23	.05 ± .01	.04 ± .01	.05 ± .01	.073 ± .009	.05 ± .01
	07/23-07/30	.031 ± .007	.029 ± .007			
	07/23-07/31			.028 ± .006	.027 ± .006	.034 ± .006
	07/31-08/06	.028 ± .007	.023 ± .007	.019 ± .009	.026 ± .009	.022 ± .008
	08/06-08/13	.032 ± .007	.027 ± .006	.031 ± .007	.034 ± .007	.037 ± .007
	08/13-08/20	.034 ± .008	.036 ± .007	.041 ± .007	.033 ± .007	.033 ± .007
	08/20-08/27	.027 ± .006	.030 ± .006	.029 ± .006	.028 ± .006	.026 ± .006
	08/27-09/02			.037 ± .007	.035 ± .007	(B)
	08/27-09/03	.037 ± .007	.035 ± .006			
	09/02-09/10			.039 ± .006	.037 ± .006	.041 ± .006
	09/03-09/10	.034 ± .006	.040 ± .006			
	09/10-09/17	.021 ± .006	.033 ± .006			
	09/10-09/18			.025 ± .005	.026 ± .005	.031 ± .005
	09/17-09/24	.040 ± .006	.040 ± .006			
	09/18-09/24			.044 ± .008	.038 ± .008	.048 ± .008
	09/24-10/01	.028 ± .006	.025 ± .005	.027 ± .006	.024 ± .006	.025 ± .006
	10/01-10/08	.034 ± .006	.045 ± .006	.035 ± .006	.035 ± .006	.041 ± .006
	10/08-10/15	.021 ± .006	.024 ± .006	.017 ± .006	.020 ± .006	.020 ± .006
	10/15-10/22			.026 ± .006	.024 ± .007	.027 ± .007
	10/15-10/23	.023 ± .006	.028 ± .005			
	10/22-10/29			.018 ± .006	.024 ± .006	.014 ± .006
	10/23-10/29	.013 ± .007	.025 ± .007			
	10/29-11/05	.021 ± .006	.022 ± .007	.017 ± .006	.017 ± .006	.022 ± .007
	11/05-11/12	.026 ± .006	.015 ± .006	.025 ± .006	.023 ± .006	.024 ± .006
	11/12-11/19	.025 ± .007	.021 ± .007	.026 ± .007	.021 ± .007	.026 ± .007
	11/19-11/26	.037 ± .007	.036 ± .008	.030 ± .007	.039 ± .007	.031 ± .007
	11/26-12/03	.040 ± .007	.039 ± .007	.032 ± .007	.018 ± .004	.032 ± .007
	12/03-12/10			.029 ± .007	.026 ± .008	.020 ± .007
	12/03-12/11	.030 ± .006	.025 ± .006			
	12/10-12/17			.019 ± .007	.029 ± .007	.023 ± .007
	12/11-12/17	.013 ± .008	.021 ± .008			
	12/17-12/24	.028 ± .007	.027 ± .007	.031 ± .007	.023 ± .007	.030 ± .007
	12/24-12/31	.040 ± .006	.034 ± .006	.037 ± .007	.036 ± .006	.035 ± .007
	ANNUAL MEAN	.027 ± .017	.028 ± .017	.025 ± .019	.027 ± .022	.027 ± .018

NOTES: (A) NO SAMPLE, SAMPLER OUT OF SERVICE
(B) NO SAMPLE, LOW VOLUME

TABLE IV.1.2
ANALYTICAL DATA FOR AIR-PARTICULATE SAMPLES
CONCENTRATIONS OF GROSS BETA RADIOACTIVITY (PCI/M3)

GROUP II - INTERMEDIATE DISTANCE LOCATIONS

	COLLECTION PERIOD	15	17	31	32	33A	38
82	12/24-01/01	.021 ± .006	.030 ± .006	.024 ± .006	.023 ± .006	.028 ± .006	.027 ± .006
83	01/01-01/08	.030 ± .008	.028 ± .007	.028 ± .008	.028 ± .007	.027 ± .007	.034 ± .008
	01/08-01/15	.017 ± .007	.017 ± .007	.019 ± .008	.016 ± .007	.018 ± .007	.022 ± .007
	01/15-01/22	.016 ± .007	.017 ± .007	.014 ± .007	.018 ± .007	.015 ± .007	.014 ± .007
	01/22-01/30	.021 ± .006	.023 ± .006	.023 ± .006	.029 ± .006	.031 ± .006	.025 ± .006
	01/30-02/05	.022 ± .009	.028 ± .009	.018 ± .008	.019 ± .009	.016 ± .008	.021 ± .009
	02/05-02/13	.026 ± .006	.019 ± .006	.019 ± .007	.021 ± .006	.024 ± .006	.021 ± .006
	02/13-02/20	.033 ± .008	.029 ± .007	.031 ± .008	.031 ± .007	.032 ± .007	.025 ± .007
	02/20-02/26	.026 ± .009	.028 ± .009	.030 ± .009	.027 ± .009	.037 ± .009	.033 ± .009
	02/26-03/05	.027 ± .007	.028 ± .007	.028 ± .007	.031 ± .007	.023 ± .007	.024 ± .007
	03/05-03/12	< .007	< .007	.009 ± .007	.007 ± .007	.013 ± .007	.012 ± .007
	03/12-03/20	.016 ± .006	.017 ± .006	.017 ± .006	.017 ± .006	.010 ± .006	.021 ± .006
	03/20-03/26	.030 ± .009	.026 ± .009	.029 ± .009	.025 ± .009	.017 ± .008	.033 ± .009
	03/26-04/02	.023 ± .008	.022 ± .007	.025 ± .008	.028 ± .008	.025 ± .007	.026 ± .008
	04/02-04/09	.020 ± .007	.011 ± .007	.017 ± .007	.016 ± .007	.021 ± .007	.012 ± .007
	04/09-04/17	.012 ± .006	.007 ± .006	.006 ± .006	< .006	.008 ± .006	.013 ± .006
	04/17-04/23	.025 ± .009	.026 ± .008	.036 ± .009	.032 ± .009	.041 ± .009	.042 ± .009
	04/23-04/30	.023 ± .008	.021 ± .007	.045 ± .008	.024 ± .008	.035 ± .008	.028 ± .008
	04/30-05/08	.037 ± .007	.027 ± .006	.037 ± .006	.037 ± .007	.028 ± .007	.021 ± .006
	05/08-05/15	.016 ± .008	.022 ± .008	.025 ± .008	.022 ± .008	.017 ± .008	.023 ± .008
	05/15-05/21	.015 ± .007	.017 ± .007	.019 ± .007	.020 ± .007	.015 ± .007	.022 ± .007
	05/21-05/29	.019 ± .005	.017 ± .005	.018 ± .005	.020 ± .005	.013 ± .005	.015 ± .005
	05/29-06/04	.028 ± .007	.021 ± .007	.023 ± .007	.024 ± .007	.023 ± .007	.028 ± .007
	06/04-06/12	.028 ± .005	.028 ± .005	.026 ± .005	.026 ± .005	.028 ± .005	.025 ± .005
	06/12-06/18	.061 ± .009	.054 ± .009	.063 ± .009	.057 ± .009	.064 ± .009	.059 ± .009
	06/18-06/25	.025 ± .007	.026 ± .007	.026 ± .007	.029 ± .007	.031 ± .007	.027 ± .007
	06/25-07/02	.022 ± .007	.026 ± .007	.031 ± .007	.024 ± .007	.029 ± .007	.026 ± .007
	07/02-07/09	.024 ± .007	.025 ± .007	.030 ± .007	.024 ± .007	.027 ± .007	.034 ± .007
	07/09-07/16	.047 ± .007	.040 ± .006	.040 ± .006	.033 ± .006	.042 ± .007	.042 ± .007
	07/16-07/23	.04 ± .01	.07 ± .01	.05 ± .01	.05 ± .01	.04 ± .01	.04 ± .01
	07/23-07/31	.035 ± .007	.029 ± .006	.037 ± .007	.031 ± .006	.029 ± .007	.024 ± .006
	07/31-08/06	.025 ± .009	.024 ± .008	.028 ± .009	.026 ± .009	.027 ± .009	.032 ± .009
	08/06-08/13	.039 ± .009	.033 ± .007	.031 ± .007	.036 ± .007	.036 ± .007	.043 ± .008
	08/13-08/20	.05 ± .01	.035 ± .007	.038 ± .007	.033 ± .007	.033 ± .007	.036 ± .007
	08/20-08/27	.027 ± .006	.024 ± .006	.026 ± .006	.028 ± .006	.032 ± .006	.029 ± .006
	08/27-09/02		.027 ± .006	.037 ± .007			.035 ± .007
	08/27-09/03	.031 ± .006		(A)	(B)	.029 ± .006	
	09/02-09/10		.031 ± .006				.044 ± .006
	09/03-09/10	.032 ± .006		.036 ± .006	(B)	.037 ± .006	
	09/10-09/18	.031 ± .006	.025 ± .005	.029 ± .005	(B)	.028 ± .006	.028 ± .005
	09/18-09/24	.042 ± .008	.035 ± .007	.040 ± .008	.042 ± .008	.046 ± .008	.037 ± .008
	09/24-10/01	.027 ± .006	.024 ± .005	.028 ± .006	.027 ± .006	.023 ± .006	.025 ± .006
	10/01-10/08	.034 ± .006	.037 ± .006	.039 ± .006	.030 ± .006	.037 ± .006	.042 ± .006
	10/08-10/15	.015 ± .006	.019 ± .006	.026 ± .006	.023 ± .006	.025 ± .006	.020 ± .006
	10/15-10/22	.025 ± .007	.027 ± .006	.031 ± .007	.026 ± .006	.031 ± .007	.034 ± .007
	10/22-10/29	.021 ± .006	.018 ± .006	.020 ± .006	.027 ± .006	.021 ± .006	.020 ± .006
	10/29-11/05	.017 ± .006	.020 ± .006	.020 ± .006	.019 ± .006	.019 ± .006	.027 ± .007
	11/05-11/12	.022 ± .006	.028 ± .006	.023 ± .006	.023 ± .006	.025 ± .006	.029 ± .006
	11/12-11/19	.019 ± .007	.021 ± .007	.026 ± .007	.023 ± .007	.026 ± .008	.025 ± .007
	11/19-11/26	.032 ± .007	.029 ± .007	.036 ± .008	.036 ± .007	.038 ± .008	.037 ± .007
	11/26-12/03	.014 ± .007	.036 ± .007	.036 ± .007	.035 ± .007	.025 ± .007	.038 ± .007
	12/03-12/10	.021 ± .007	.028 ± .007	.028 ± .007	.021 ± .007	.027 ± .007	.025 ± .007
	12/10-12/17	.024 ± .007	.024 ± .007	.020 ± .007	.018 ± .007	.025 ± .007	.026 ± .007
	12/17-12/24	.028 ± .008	.029 ± .007	.027 ± .007	.030 ± .007	.022 ± .007	.031 ± .007
	12/24-12/31	.028 ± .006	.036 ± .007	.041 ± .007	.034 ± .006	.038 ± .007	.039 ± .007
	ANNUAL MEAN	.026 ± .020	.026 ± .020	.029 ± .020	.027 ± .018	.028 ± .020	.029 ± .019

NOTES: (A) NO SAMPLE, PUMP OUT OF SERVICE
(B) NO SAMPLE, LOW VOLUME

TABLE IV.1.3
ANALYTICAL DATA FOR AIR-PARTICULATE SAMPLES
CONCENTRATIONS OF GROSS BETA RADIOACTIVITY (PCI/M3)

GROUP III - DISTANT LOCATIONS

	COLLECTION PERIOD	12A	12D
82	12/27-01/03	.039 ± .007	.030 ± .007
83	01/03-01/10	.027 ± .007	.029 ± .008
	01/10-01/17	.018 ± .007	.020 ± .007
	01/17-01/24	.024 ± .007	.011 ± .007
	01/24-01/31	.028 ± .007	.029 ± .007
	01/31-02/07	.018 ± .007	.018 ± .007
	02/07-02/14	.022 ± .007	.025 ± .008
	02/14-02/22	.028 ± .006	.030 ± .007
	02/22-02/28	.029 ± .008	.018 ± .008
	02/28-03/07	.024 ± .007	.030 ± .008
	03/07-03/14	< .007	.010 ± .007
	03/14-03/21	.015 ± .007	.018 ± .007
	03/21-03/28	.021 ± .007	.025 ± .007
	03/28-04/04	.024 ± .007	.033 ± .008
	04/04-04/11	.016 ± .007	.011 ± .007
	04/11-04/18	.014 ± .007	.011 ± .007
	04/18-04/25	.034 ± .007	.025 ± .008
	04/25-05/02	.045 ± .008	.041 ± .008
	05/02-05/09	.019 ± .007	.034 ± .008
	05/09-05/16	.013 ± .008	.024 ± .008
	05/16-05/23	.023 ± .006	.019 ± .006
	05/23-05/31	.015 ± .005	.018 ± .005
	05/31-06/06	.021 ± .007	.025 ± .007
	06/06-06/13	.029 ± .006	.023 ± .008
	06/13-06/20	.043 ± .008	.04 ± .01
	06/20-06/27	.032 ± .007	.035 ± .007
	06/27-07/05	.033 ± .007	.027 ± .007
	07/05-07/11	.028 ± .008	.027 ± .009
	07/11-07/18	.035 ± .007	.037 ± .008
	07/18-07/25	.034 ± .008	.031 ± .008
	07/25-08/01	.029 ± .007	.028 ± .008
	08/01-08/08	.028 ± .007	.034 ± .007
	08/08-08/15	.026 ± .007	.023 ± .007
	08/15-08/22	.037 ± .007	.035 ± .008
	08/22-08/29	.031 ± .006	.030 ± .006
	08/29-09/06	.031 ± .006	.028 ± .006
	09/06-09/12	.039 ± .007	.044 ± .007
	09/12-09/19	.021 ± .006	.026 ± .006
	09/19-09/26	.029 ± .006	.033 ± .006
	09/26-10/03	.027 ± .006	.026 ± .006
	10/03-10/11	.039 ± .006	.034 ± .006
	10/11-10/18	.018 ± .006	.019 ± .006
	10/18-10/24	.032 ± .008	.032 ± .008
	10/24-10/31	.020 ± .006	.020 ± .006
	10/31-11/07	.019 ± .007	.023 ± .007
	11/07-11/14	.030 ± .006	.029 ± .006
	11/14-11/21	.024 ± .007	.034 ± .007
	11/21-11/28	.032 ± .007	.044 ± .007
	11/28-12/05	.022 ± .007	.030 ± .007
	12/05-12/12	.031 ± .007	.035 ± .007
	12/12-12/19	.027 ± .007	.015 ± .007
	12/19-12/27	.026 ± .006	.028 ± .006
	12/27-01/03	.044 ± .007	.035 ± .006
	ANNUAL MEAN	.027 ± .017	.027 ± .016

NOTE:(A) SAMPLER OUT OF SERVICE

TABLE IV.1.4

MONTHLY MEAN VALUES OF WEEKLY AIR PARTICULATE SAMPLES

CONCENTRATIONS OF GROSS BETA RADIOACTIVITY (pCi/m^3)

Collection Period	GROUP I STATIONS (a) Min.	Max.	Mean	Collection Period	GROUP II STATIONS (b) Min.	Max.	Mean	Collection Period	GROUP III STATIONS (c) Min.	Max.	Mean
12/24/82-01/29/83	015	.040	.028±.015	12/24/82-01/30/83	.014	.050	.024±.013	12/27/82-01/31/83	.011	.039	.026±.015
01/29/83-02/26/83	.022	.038	.030±.011	01/29/83-02/26/83	.016	.037	.026±.011	01/31/83-02/28/83	.018	.030	.024±.010
02/26/83-04/02/83	<.007	.030	.020±.015	02/26/83-04/02/83	.007	.033	.020±.015	02/28/83-03/28/83	<.007	.030	.019±.016
04/02/83-04/30/83	.007	.041	.023±.025	04/02/83-04/30/83	<.006	.045	.022±.023	03/28/83-05/02/83	.011	.045	.025±.025
04/30/83-05/28/83	.008	.035	.022±.016	04/30/83-05/29/83	.010	.037	.021±.013	05/02/83-05/31/83	.013	.034	.021±.013
05/28/83-07/02/83	.018	.055	.031±.024	05/28/83-07/02/83	.008	.064	.031±.026	05/31/83-06/27/83	.021	.043	.031±.016
07/02/83-07/30/83	.024	.050	.037±.015	07/02/83-07/31/83	.023	.073	.036±.022	06/27/83-08/01/83	.027	.037	.031±.007
07/30/83-08/27/83	.021	.039	.031± 011	07/31/83-08/27/83	.019	.050	.031±.012	08/01/83-08/29/83	.023	.037	.031±.010
08/27/83-10/01/83	.019	.050	.034±.018	08/27/83-10/01/83	.021	.048	.033±.014	08/29/83-10/03/83	.021	.044	.030±.014
10/01/83-10/29/83	.015	.045	.030±.021	10/01/83-10/29/83	.013	.045	.026±.016	10/03/83-10/31/83	.018	.039	.027±.017
10/29/83-12/03/83	.018	.060	.034±.023	10/29/83-12/03/83	.014	.040	.027±.014	10/31/83-11/28/83	.019	.044	.029±.015
12/03/83-12/31/83	.022	.046	.032±.016	12/03/83-12/31/83	.013	.041	.028±.013	11/28/83-01/03/84	.015	.044	.029±.016
Overall	<.007	.060	.029±.020		<.006	.073	.027±.019		<.007	.045	.027±.016

(a) Group I consists of Stations 1A, 1B, and 2

(b) Group II consists of Stations 3A 4B, 5, 6B, 14, 16, 17, 31, 32, 33A, and 38

(c) Group III consists of Stations 12A and 12D

JWB/jwb/dg

TABLE IV 1.5
ANALTYICAL DATA FOR MONTHLY COMPOSITE AIR PARTICULATE SAMPLES
GAMMA SPECTRUM ALALYSIS
NUCLIDE CONCENTRATION (pCi/m^3)

Collection Period	Station	Be-7	Cs-137	I-131	Ba-140	Nb-95	K-40	Cr-51	Co-60	Cs-134	Zr-95
01/01/83-	1A	<.1	<.01	<.07	<.1	<.02	<.1	<.1	<.01	<.01	<.02
01/29,30/83	1B	.08±.06	<.008	<.05	<.1	<.01	<.07	<.09	<.009	<.008	<.01
	2	.07±.06	<.008	<.06	<.1	<.01	<.08	<.1	<.01	<.007	<.02
	3A	<.07	<.006	<.06	<.1	<.01	<.1	<.08	<.008	<.007	<.01
	4B	<.08	<.008	<.06	<.1	<.01	<.09	<.1	<.008	<.008	<.02
	5	<.09	<.007	<.06	<.1	<.01	<.05	<.1	<.01	<.009	<.02
	6B	.08±.06	<.006	<.05	<.1	<.01	<.1	<.07	<.008	<.007	<.02
	14	<.07	<.008	<.05	<.1	<.01	<.09	<.08	<.007	<.007	<.02
	15	<.07	<.007	<.05	<.1	<.01	<.1	<.08	<.007	<.007	<.02
	17	<.08	<.008	<.06	<.1	<.01	<.08	<.09	<.008	<.007	<.01
	31	.09±.06	<.008	<.05	<.1	<.01	<.08	<.09	<.007	<.007	<.01
	32	<.07	<.007	<.05	<.09	<.01	<.08	<.08	<.007	<.007	<.01
	38	.07±.06	<.008	<.08	<.1	<.01	<.1	<.1	<.007	<.009	<.02
	33A	.07±.06	<.007	<.06	<.1	<.01	<.09	<.09	<.008	<.007	<.02
01/03/83-	12A	.10±.07	<.008	<.08	<.1	<.02	<.06	<.1	<.009	<.009	<.02
01/31/83	12D	.08±.06	<.008	<.07	<.1	<.01	<.09	<.09	<.009	<.009	<.02
01/29/83-	1A	.07±.06	<.007	<.03	<.07	<.009	<.08	<.07	<.007	<.007	<.01
02/26/83	1B	.13±.07	<.008	<.04	<.08	<.01	<.09	<.1	<.008	<.007	<.02
	2	.07±.06	<.007	<.03	<.09	<.01	<.08	<.08	<.008	<.007	<.01
	3A	.11±.07	<.008	<.04	<.08	<.01	<.1	<.08	<.007	<.008	<.02
	4B	.09±.06	<.006	<.04	<.07	<.01	<.07	<.07	<.008	<.007	<.02
	5	.10±.06	<.007	<.04	<.09	<.01	<.09	<.08	<.007	<.008	<.02
	6B	.11±.07	<.008	<.04	<.09	<.01	<.09	<.09	<.01	<.009	<.02
	14	.09±.07	<.01	<.04	<.08	<.01	<.1	<.09	<.01	<.009	<.01
	15	.09±.06	<.008	<.04	<.09	<.01	<.06	<.08	<.008	<.007	<.02
	17	.11±.07	<.008	<.04	<.09	<.01	<.1	<.09	<.01	<.009	<.02
	31	.13±.06	<.007	<.04	<.08	<.01	<.1	<.08	<.009	<.007	<.01
	32	.10±.06	<.008	<.04	<.09	<.01	<.09	<.08	<.008	<.007	<.01
	38	.10±.07	<.008	<.04	<.08	<.01	<.09	<.09	<.01	<.009	<.02
	33A	.08±.07	<.008	<.04	<.09	<.01	<.09	<.08	<.009	<.006	<.02
01/31/83	12A	.09±.06	<.007	<.04	<.09	<.01	<.07	<.08	<.008	<.008	<.02
02/28/83	12D	.08±.05	<.009	<.04	<.08	<.009	<.07	<.08	<.007	<.008	<.01

TABLE IV 1.5
ANALTYICAL DATA FOR MONTHLY COMPOSITE AIR PARTICULATE SAMPLES
GAMMA SPECTRUM ALALYSIS
NUCLIDE CONCENTRATION (pCi/m^3)

Collection Period	Station	Be-7	Cs-137	I-131	Ba-140	Nb-95	K-40	Cr-51	Co-60	Cs-134	Zr-95
02/26/83-	1A	.11±.06	<.007	<.06	<.1	<.01	<.06	<.08	<.008	<.006	<.01
04/02/83	1B	.08±.05	<.005	<.06	<.09	<.01	<.04	<.07	<.007	<.006	<.01
	2	.10±.05	<.005	<.05	<.1	<.01	<.06	<.07	<.007	<.007	<.01
	3A	<.1	<.009	<.1	<.2	<.02	<.1	<.1	<.01	<.01	<.02
	4B	.12±.06	<.007	<.06	<.1	<.01	<.06	<.08	<.007	<.007	<.01
	5	.12±.06	<.006	<.06	<.1	<.01	<.07	<.08	<.006	<.006	<.02
	6B	.07±.05	<.004	<.05	<.09	<.009	<.07	<.06	<.006	<.005	<.01
	14	.09±.05	<.006	<.05	<.09	<.009	<.05	<.07	<.006	<.005	<.01
	15	.09±.06	<.007	<.06	<.1	<.01	<.06	<.09	<.007	<.007	<.01
	17	.10±.05	<.005	<.05	<.09	<.01	<.06	<.07	<.006	<.006	<.01
	31	.07±.06	<.006	<.06	<.1	<.01	<.07	<.09	<.007	<.007	<.01
	32	.08±.05	<.006	<.05	<.1	<.009	<.06	<.07	<.007	<.006	<.01
	38	.12±.06	<.007	<.07	<.1	<.01	<.07	<.08	<.006	<.006	<.02
	33A	.08±.05	<.006	<.05	<.1	<.008	<.07	<.07	<.006	<.006	<.01
02/28/83-	12A	.10±.06	<.006	<.06	<.1	<.01	<.07	<.09	<.007	<.006	<.01
04/04/83	12D	.08±.05	<.006	<.06	<.09	<.009	.08±.08	<.07	<.007	<.006	<.01
04/02/83-	1A	.10±.08	<.008	<.2	<.3	<.02	<.08	<.1	<.007	<.008	<.02
04/30/83	1B	<.1	<.007	<.2	<.3	<.01	<.07	<.1	<.008	<.008	<.02
	2	<.2	<.01	<.3	<.5	<.04	<.2	<.3	<.02	<.02	<.05
	3A	.11±.07	<.007	<.2	<.2	<.01	<.08	<.1	<.007	<.008	<.02
	4B	.12±.07	<.008	<.2	<.2	<.01	<.09	<.1	<.007	<.008	<.02
	5	<.08	<.007	<.2	<.2	<.02	<.08	<.1	<.01	<.007	<.02
	6B	.11±.08	<.007	<.2	<.2	<.01	<.06	<.1	<.009	<.008	<.02
	14	.10±.07	<.006	<.2	<.2	<.01	<.07	<.1	<.007	<.008	<.02
	15	.13±.07	<.008	<.2	<.3	<.02	<.08	<.1	<.009	<.008	<.02
	17	<.09	<.007	<.2	<.3	<.02	<.08	<.1	<.007	<.008	<.02
	31	.10±.08	<.006	<.2	<.3	<.01	<.06	<.1	<.009	<.007	<.02
	32	.10±.08	<.007	<.3	<.3	<.02	<.08	<.1	<.009	<.008	<.02
	38	.13±.08	<.007	<.2	<.3	<.02	<.09	<.1	<.008	<.008	<.02
	33A	.09±.08	<.007	<.3	<.3	<.02	<.08	<.1	<.009	<.007	<.02
04/04/83-	12A	.08±.07	<.007	<.3	<.3	<.02	<.08	<.1	<.008	<.008	<.02
05/02/83	12D	.13±.09	<.009	<.3	<.3	<.02	<.07	<.1	<.009	<.008	<.02

TABLE IV 1.5
ANALTYICAL DATA FOR MONTHLY COMPOSITE AIR PARTICULATE SAMPLES
GAMMA SPECTRUM ALALYSIS
NUCLIDE CONCENTRATION (pCi/m^3)

Collection Period	Station	Be-7	Cs-137	I-131	Ba-140	Nb-95	K-40	Cr-51	Co-60	Cs-134	Zr-95
04/30/83-	1A	.13±.08	<.008	<.2	<.3	<.02	<.07	<.1	<.008	<.008	<.02
05/28,29/83	1B	<.09	<.007	<.3	<.3	<.01	<.09	<.1	<.006	<.008	<.02
	2	<.2	<.02	<.5	<.5	<.04	<.1	<.3	<.02	<.02	<.05
	3A	.12±.07	<.009	<.2	<.3	<.02	<.08	<.1	<.009	<.007	<.02
	4B	.09±.08	<.007	<.2	<.3	<.02	<.07	<.1	<.008	<.008	<.02
	5	.07±.07	<.007	<.2	<.2	<.02	<.09	<.1	<.007	<.006	<.02
	6B	.10±.07	<.008	<.2	<.3	<.02	<.08	<.1	<.009	<.007	<.02
	14	<.09	<.007	<.2	<.2	<.02	<.09	<.1	<.007	<.007	<.01
	15	.15±.07	<.009	<.2	<.2	<.02	<.06	<.1	<.007	<.007	<.02
	17	.09±.07	<.007	<.2	<.2	<.01	<.06	<.1	<.008	<.006	<.02
	31	.10±.08	<.007	<.2	<.2	<.02	<.07	<.1	<.007	<.007	<.02
	32	.13±.08	<.007	<.2	<.3	<.02	<.06	<.1	<.009	<.007	<.02
	38	.08±.07	<.007	<.2	<.3	<.02	<.07	<.1	<.008	<.007	<.02
	33A	.13±.08	<.007	<.3	<.3	<.01	<.06	<.1	<.008	<.007	<.02
05/02/83-	12A	.11±.07	<.008	<.2	<.2	<.02	<.07	<.1	<.008	<.008	<.02
05/31/83	12D	.14±.07	<.007	<.2	<.3	<.01	<.07	<.1	<.008	<.008	<.02
05/28,29/83-	1A	.09±.05	<.007	<.04	<.08	<.009	<.06	<.07	<.006	<.006	<.01
07/02/83	1B	.15±.06	<.007	<.05	<.1	<.01	<.04	<.07	<.006	<.006	<.02
	2	.09±.05	<.005	<.05	<.07	<.01	<.04	<.06	<.006	<.005	<.01
	3A	.15±.06	<.007	<.05	<.09	<.01	<.05	<.07	<.007	<.006	<.01
	4B	.10±.05	<.006	<.04	<.09	<.009	<.06	<.06	<.005	<.005	<.01
	5	.13±.08	<.009	<.08	<.2	<.01	<.09	<.1	<.01	<.01	<.02
	6B	.10±.06	<.007	<.05	<.08	<.01	<.06	<.07	<.006	<.006	<.01
	14	.10±.06	<.006	<.05	<.09	<.01	<.06	<.08	<.006	<.006	<.02
	15	.14±.06	<.005	<.05	<.1	<.009	<.05	<.07	<.006	<.007	<.01
	17	.10±.06	<.006	<.06	<.1	<.009	<.06	<.07	<.007	<.007	<.01
	31	.10±.06	<.006	<.05	<.1	<.01	<.06	<.07	<.007	<.006	<.01
	32	.11±.06	<.007	<.05	<.08	<.01	<.07	<.07	<.006	<.006	<.01
	38	.11±.06	<.007	<.06	<.1	<.01	<.07	<.08	<.007	<.006	<.02
	33A	.14±.06	<.006	<.06	<.1	<.01	<.07	<.07	<.007	<.007	<.01
05/31/83-	12A	.10±.05	<.006	<.05	<.08	<.008	<.08	<.07	<.006	<.006	<.01
07/05/83	12D	.09±.07	<.006	<.07	<.1	<.01	<.06	<.09	<.007	<.007	<.02

TABLE IV 1.5
ANALTYICAL DATA FOR MONTHLY COMPOSITE AIR PARTICULATE SAMPLES
GAMMA SPECTRUM ALALYSIS
NUCLIDE CONCENTRATION (pCi/m^3)

Collection Period	Station	Be-7	Cs-137	I-131	Ba-140	Nb-95	K-40	Cr-51	Co-60	Cs-134	Zr-95
07/02/83-	1A	.12±.09	<.007	<.4	<.4	<.02	<.1	<.1	<.009	<.007	<.02
07/31/83	1B	.15±.09	<.01	<.2	<.2	<.01	<.08	<.1	<.01	<.009	<.02
	2	.08±.07	<.006	<.1	<.2	<.02	<.1	<.1	<.006	<.007	<.02
	3A	.11±.08	<.008	<.1	<.2	<.01	<.1	<.1	<.008	<.007	<.02
	4B	.17±.07	<.007	<.2	<.2	<.01	<.07	<.1	<.008	<.007	<.02
	5	.13±.07	<.007	<.1	<.2	<.01	<.09	<.1	<.008	<.007	<.02
	6B	.14±.08	<.008	<.2	<.2	<.01	<.08	<.1	<.009	<.009	<.02
	14	.18±.07	<.008	<.2	<.2	<.02	<.06	<.1	<.009	<.008	<.02
	15	.13±.08	<.007	<.1	<.2	<.01	<.07	<.1	<.007	<.007	<.02
	17	.13±.07	<.006	<.1	<.2	<.02	<.08	<.1	<.007	<.006	<.02
	31	.11±.07	<.009	<.1	<.2	<.01	<.08	<.1	<.007	<.007	<.02
	32	.10±.07	<.006	<.2	<.2	<.01	<.1	<.1	<.008	<.007	<.02
	38	.10±.07	<.008	<.2	<.2	<.02	<.07	<.1	<.008	<.006	<.02
	33A	.12±.07	<.008	<.1	<.2	<.01	<.1	<.1	<.006	<.007	<.02
07/05/83-	12A	.15±.08	<.007	<.2	<.2	<.02	<.1	<.1	<.009	<.008	<.02
08/01/83	12D	.13±.07	<.007	<.1	<.2	<.01	<.1	<.1	<.009	<.007	<.01
07/31/83-	1A	.10±.08	<.006	<.1	<.2	<.01	<.08	<.1	<.007	<.006	<.02
08/27/83	1B	.2±.1	<.008	<.1	<.2	<.02	<.1	<.1	<.009	<.01	<.02
	2	.12±.07	<.006	<.1	<.2	<.01	<.09	<.08	<.007	<.005	<.01
	3A	.09±.07	<.005	<.1	<.1	<.009	<.09	<.08	<.007	<.005	<.01
	4B	.14±.07	<.005	<.1	<.1	<.01	<.08	<.08	<.005	<.005	<.01
	5	<.07	<.005	<.1	<.1	<.01	<.1	<.08	<.007	<.005	<.01
	6B	.12±.08	<.006	<.1	<.1	<.01	<.08	<.09	<.007	<.006	<.01
	14	.08±.07	<.005	<.1	<.1	<.01	<.09	<.08	<.005	<.005	<.01
	15	<.09	<.006	<.1	<.2	<.01	<.1	<.1	<.009	<.007	<.02
	17	.09±.07	<.005	<.1	<.1	<.01	<.08	<.09	<.005	<.005	<.01
	31	<.08	<.006	<.1	<.1	<.01	<.1	<.09	<.008	<.005	<.01
	32	<.08	<.006	<.1	<.2	<.01	<.1	<.09	<.007	<.005	<.02
	38	.09±.08	<.007	<.1	<.2	<.01	<.08	<.09	<.007	<.006	<.01
	33A	<.08	<.006	<.1	<.2	<.01	<.08	<.09	<.006	<.006	<.01
08/01/83-	12A	.13±.08	<.005	<.1	<.2	<.01	<.09	<.1	<.006	<.006	<.01
08/29/83	12D	<.07	<.005	<.1	<.1	<.01	<.08	<.09	<.006	<.006	<.01

TABLE IV 1.5
ANALTYICAL DATA FOR MONTHLY COMPOSITE AIR PARTICULATE SAMPLES
GAMMA SPECTRUM ALALYSIS
NUCLIDE CONCENTRATION (pCi/m^3)

Collection Period	Station	Be-7	Cs-137	I-131	Ba-140	Nb-95	K-40	Cr-51	Co-60	Cs-134	Zr-95
08/27/83-	1A	<.09	<.008	<.12	<.2	<.01	<.07	<.1	<.008	<.007	<.02
10/01/83	1B	.09±.08	<.006	<.2	<.2	<.01	<.1	<.1	<.009	<.008	<.02
	2	.08±.07	<.007	<.1	<.2	<.01	<.06	<.1	<.006	<.007	<.02
	3A	.11±.05	<.005	<.1	<.1	<.01	<.07	<.1	<.006	<.005	<.015
	4B	.13±.06	<.005	<.1	<.1	<.01	<.05	<.1	<.006	<.006	<.01
	5	.06±.06	<.006	<.1	<.1	<.01	<.08	<.1	<.006	<.007	<.02
	6B	.10±.06	<.006	<.1	<.2	<.01	<.06	<.1	<.007	<.007	<.02
	14	.08±.07	<.007	<.2	<.2	<.01	<.07	<.1	<.007	<.007	<.02
	15	.09±.06	<.006	<.1	<.2	<.01	<.07	<.1	<.005	<.006	<.01
	17	.11±.06	<.006	<.1	<.2	<.01	<.05	<.1	<.007	<.007	<.02
	31	.16±.06	<.006	<.2	<.2	<.01	<.07	<.1	<.008	<.007	<.01
	32	.1±.1	<.01	<.3	<.3	<.02	<.1	<.2	<.01	<.01	<.03
	38	.14±.08	<.008	<.2	<.3	<.01	<.07	<.1	<.009	<.007	<.02
	33A	.09±.06	<.006	<.1	<.2	<.01	<.08	<.1	<.006	<.006	<.01
08/29/83-	12A	.13±.06	<.007	<.2	<.2	<.01	<.04	<.1	<.004	<.007	<.02
10/03/83	12D	.13±.04	<.005	<.2	<.2	<.01	.06±.06	<.08	<.007	<.006	<.02
10/01/83-	1A	<.1	<.009	<.1	<.2	<.01	<.08	<.1	<.009	<.009	<.02
10/29/83	1B	<.1	<.01	<.1	<.2	<.02	<.1	<.1	<.01	<.01	<.03
	2	.10±.07	<.007	<.1	<.1	<.02	<.07	<.1	<.009	<.007	<.02
	3A	.12±.08	<.008	<.1	<.2	<.01	<.1	<.1	<.007	<.007	<.02
	4B	<.07	<.006	<.08	<.1	<.01	<.09	<.09	<.008	<.008	<.01
	5	.09±.07	<.007	<.1	<.2	<.01	<.1	<.1	<.009	<.008	<.02
	6B	.09±.07	<.008	<.1	<.2	<.01	<.1	<.08	<.007	<.009	<.02
	14	.07±.07	<.008	<.1	<.2	<.01	<.08	<.1	<.007	<.008	<.02
	15	.11±.06	<.008	<.1	<.1	<.02	<.1	<.1	<.008	<.007	<.02
	17	.12±.06	<.008	<.09	<.1	<.01	<.1	<.1	<.007	<.009	<.02
	31	.10±.07	<.009	<.09	<.1	<.01	<.09	<.08	<.008	<.008	<.02
	32	.12±.07	<.008	<.1	<.1	<.01	<.1	<.1	<.008	<.008	<.02
	38	.12±.06	<.007	<.1	<.1	<.01	<.1	<.1	<.009	<.007	<.02
	33A	.13±.08	<.007	<.2	<.2	<.02	<.05	<.1	<.009	<.009	<.02
10/03/83-	12A	.12±.07	<.008	<.1	<.2	<.01	<.1	<.1	<.009	<.008	<.02
10/31/83	12D	.11±.08	<.008	<.1	<.2	<.01	<.1	<.1	<.009	<.009	<.02

TABLE IV 1.5
ANALTYICAL DATA FOR MONTHLY COMPOSITE AIR PARTICULATE SAMPLES
GAMMA SPECTRUM ALALYSIS
NUCLIDE CONCENTRATION (pCi/m^3)

Collection Period	Station	Be-7	Cs-137	I-131	Ba-140	Nb-95	K-40	Cr-51	Co-60	Cs-134	Zr-95
10/29/83-	1A	<.1	<.008	<.2	<.3	<.02	<.08	<.1	<.008	<.009	<.02
11/26/83	1B	<.4	<.03	<.9	<.1	<.07	<.3	<.4	<.03	<.03	<.08
	2	.09±.07	<.007	<.2	<.3	<.02	<.1	<.1	<.008	<.008	<.02
	3A	.11±.08	<.006	<.3	<.3	<.02	<.05	<.1	<.008	<.008	<.02
	4B	.12±.07	<.007	<.2	<.2	<.01	<.09	<.1	<.008	<.008	<.02
	5	.13±.07	<.007	<.2	<.3	<.02	<.08	<.1	<.01	<.009	<.02
	6B	<.1	<.007	<.2	<.3	<.01	<.1	<.1	<.008	<.007	<.02
	14	<.1	<.008	<.2	<.3	<.02	<.1	<.1	<.008	<.008	<.02
	15	.07±.07	<.006	<.2	<.3	<.02	<.1	<.1	<.008	<.007	<.02
	17	.11±.08	<.008	<.2	<.3	<.02	<.09	<.06	<.008	<.008	<.02
	31	.12±.08	<.007	<.3	<.3	<.02	<.1	<.1	<.008	<.008	<.02
	32	.09±.07	<.007	<.2	<.02	<.1	<.1	<.008	<.008	<.02	<.02
	38	<.1	<.008	<.2	<.3	<.02	<.1	<.2	<.007	<.009	<.02
	33A	<.1	<.009	<.3	<.3	<.02	<.08	<.01	<.01	<.009	<.02
10/31/83-	12A	<.09	<.008	<.2	<.3	<.02	<.1	<.1	<.008	<.007	<.02
11/28/83	12D	.10±.08	<.007	<.3	<.2	<.02	<.08	<.1	<.008	<.007	<.02
11/26/83-	1A	.09±.04	<.007	<.04	<.07	<.005	<.05	<.05	<.007	<.003	<.02
12/31/83	1B	.06±.06	<.006	<.05	<.1	<.008	<.08	<.09	<.007	<.007	<.01
	2	.10±.04	<.006	<.07	<.1	<.01	<.07	<.07	<.008	<.006	<.01
	3A	<.05	<.004	<.06	<.08	<.01	<.07	<.07	<.006	<.006	<.01
	4B	.07±.05	<.006	<.07	<.1	<.01	<.07	<.08	<.005	<.006	<.01
	5	<.07	<.007	<.05	<.1	<.01	<.07	<.06	<.005	<.007	<.02
	6B	.07±.05	<.007	<.07	<.1	<.01	<.07	<.08	<.007	<.006	<.01
	14	.07±.05	<.006	<.07	<.1	<.01	<.08	<.08	<.007	<.006	<.01
	15	.08±.05	<.007	<.08	<.1	<.009	<.07	<.08	<.005	<.007	<.01
	17	.05±.05	<.006	<.06	<.1	<.009	<.07	<.07	<.006	<.006	<.01
	31	.13±.06	<.007	<.08	<.1	<.01	<.06	<.09	<.008	<.006	<.02
	32	.07±.04	<.005	<.08	<.1	<.01	<.07	<.08	<.006	<.006	<.01
	38	.09±.05	<.007	<.09	<.1	<.01	<.07	<.09	<.007	<.007	<.02
	33A	.06±.05	<.006	<.07	<.1	<.01	<.08	<.07	<.008	<.007	<.02
11/28/83-	12A	.07±.06	<.007	<.08	<.1	<.01	<.04	<.08	<.007	<.007	<.01
01/03/84	12D	<.07	<.006	<.08	<.1	<.009	<.06	<.07	<.007	<.006	<.01

TABLE IV.2.1
ANALYTICAL DATA FOR PRECIPITATION SAMPLES
CONCENTRATION (PCI/L)

STATION CODE		COLLECTION PERIOD	VOLUME (LITERS)	G.BETA		SR-89	SR-90		RADIOACTIVE CESIUM
1A	83	01/08-02/20	3.65	4	± 2	< .4	.3	± .2	< .2
		02/20-03/12	2.25	2	± 2				
		03/12-04/09	4.55	2	± 2				
		04/09-05/15	6.30	3	± 2	< .8	.6	± .3	< .3
		05/15-06/12	2.90	3	± 2				
		06/12-07/09	3.85	2	± 2				
		07/09-08/06	.62	6	± 3				
		08/06-09/10	2.25	4	± 2				
		09/10-10/01	1.85	3	± 2	< .9	.6	± .4	1.4 ± .3
		10/01-11/05	5.45	< 2		< 2	< .6		< .2
		11/05-12/03	4.95	< 1					
		12/03-01/07	6.20	3	± 2				
		ANNUAL MEAN		3	± 3	< 1	.5	± .3	.5 ± 1.2
1B	83	01/08-02/20	3.60	3	± 2	< .4	.4	± .2	< .2
		02/20-03/12	1.85	6	± 2				
		03/12-04/09	3.55	4	± 2				
		04/09-05/15	3.35	< 2		< .8	.6	± .3	< .3
		05/15-06/12	3.55	< 2					
		06/12-07/09	3.70	< 2					
		07/09-08/06	1.60	3	± 2				
		08/06-09/10	1.95	8	± 2				
		09/10-10/01	1.85	5	± 2	< 1	.5	± .4	.4 ± .3
		10/01-11/05	4.60	< 2		< .8	.8	± .3	< .2
		11/05-12/03	3.75	2	± 2				
		12/03-01/07	7.70	2	± 1				
		ANNUAL MEAN		3	± 4	< .8	.6	± .3	.3 ± .2
4M	83	01/08-02/20	3.55	< 2		< .4	.5	± .2	< .2
		02/20-03/12	1.65	2	± 2				
		03/12-04/09	3.65	2	± 2				
		04/09-05/16	6.40	< 2		< .7	.4	± .3	< .3
		05/16-06/12	2.70	2	± 2				
		06/12-07/09	3.90	2	± 2				
		07/09-08/06	.14	< 10					
		08/06-09/10	1.15	< 3					
		09/10-10/01	1.55	< 2		< 1	.7	± .4	< .2
		10/01-11/05	3.40	< 1		< .9	.8	± .4	< .2
		11/05-12/03	3.95	< 1					
		12/03-01/07	6.10	3	± 2				
		ANNUAL MEAN		3	± 5	<.8	.6	± .4	< .2
		MEAN (1A,1B)		3	± 3	<.9	.6	± .3	.4 ± .8
		MEAN ALL STATIONS		3	± 4	<.8	.6	± .3	.3 ± .7

TABLE IV.2.2
ANALYTICAL DATA FOR PRECIPITATION SAMPLES
CONCENTRATION (PCI/SQ. M)

STATION CODE		COLLECTION PERIOD	VOLUME (LITERS)	G.BETA	SR-89	SR-90	RADIOACTIVE CESIUM
1A	83	01/08-02/20	3.65	500 ± 200	< 50	30 ± 20	< 20
		02/20-03/12	2.25	100 ± 100			
		03/12-04/09	4.55	300 ± 300			
		04/09-05/15	6.30	600 ± 400	< 100	110 ± 60	< 70
		05/15-06/12	2.90	200 ± 100			
		06/12-07/09	3.85	200 ± 200			
		07/09-08/06	.62	120 ± 60			
		08/06-09/10	2.25	300 ± 100			
		09/10-10/01	1.85	200 ± 100	< 50	30 ± 20	80 ± 20
		10/01-11/05	5.45	< 300	< 300	< 90	< 30
		11/05-12/03	4.95	< 200			
		12/03-01/07	6.20	500 ± 300			
		ANNUAL MEAN		290 ± 320	< 125	65 ± 82	50 ± 59
1B	83	01/08-02/20	3.60	400 ± 200	< 40	40 ± 20	< 20
		02/20-03/12	1.85	300 ± 100			
		03/12-04/09	3.55	400 ± 200			
		04/09-05/15	3.35	< 200	< 80	60 ± 30	< 30
		05/15-06/12	3.55	< 200			
		06/12-07/09	3.70	< 200			
		07/09-08/06	1.60	100 ± 100			
		08/06-09/10	1.95	500 ± 100			
		09/10-10/01	1.85	300 ± 100	< 50	30 ± 20	20 ± 10
		10/01-11/05	4.60	< 200	< 100	110 ± 50	< 30
		11/05-12/03	3.75	300 ± 200			
		12/03-01/07	7.70	500 ± 300			
		ANNUAL MEAN		300 ± 256	< 68	60 ± 71	25 ± 12
4M	83	01/08-02/20	3.55	< 200	< 40	50 ± 20	< 20
		02/20-03/12	1.65	90 ± 90			
		03/12-04/09	3.65	200 ± 200			
		04/09-05/16	6.40	< 300	< 100	70 ± 50	< 70
		05/16-06/12	2.70	100 ± 100			
		06/12-07/09	3.90	300 ± 200			
		07/09-08/06	.14	< 60			
		08/06-09/10	1.15	< 100			
		09/10-10/01	1.55	< 100	< 50	30 ± 20	< 10
		10/01-11/05	3.40	< 200	< 90	80 ± 40	< 20
		11/05-12/03	3.95	< 200			
		12/03-01/07	6.10	500 ± 300			
		ANNUAL MEAN		196 ± 250	<70	58 ± 44	< 30
		MEAN (1A,1B)		297 ± 283	<96	63 ± 72	38 ± 48
		MEAN-ALL STATIONS		263 ± 286	<88	61 ± 62	35 ± 48

TABLE IV.3.1
ANALYTICAL DATA FOR SURFACE WATER GRAB SAMPLES
CONCENTRATION (PCI/L)

STATION CODE	COLLECTION DATE	G.ALPHA SOLUBLE	G.ALPHA INSOLUBLE (A)	G.BETA SOLUBLE	G.BETA INSOLUBLE (A)
1Q	83 01/08	< .7	< 30	< 2	< 100
	02/20	< .8	< 30	< 2	< 100
	03/12	< .9	30 ± 10	3 ± 2	30 ± 20
	04/09	< 1	30 ± 20	< 2	70 ± 40
	05/15	< 1	< 20	< 2	< 80
	06/12	< .7	< 20	3 ± 2	< 100
	07/09	< .7	30 ± 20	< 2	60 ± 40
	08/06	< 1	< 20	3 ± 3	< 100
	09/10	< 1	< 30	3 ± 2	< 100
	10/01	< .6	< 30	4 ± 2	< 200
	11/05	< 2	20 ± 10	< 2	< 50
	12/03	< 1	< 20	< 2	< 50
	ANNUAL MEAN	< 1.0	26 ± 10	3 ± 1	87 ± 87
4F	83 01/08	< .9	20 ± 10	2 ± 2	< 30
	02/20	< .7	< 20	< 2	60 ± 60
	03/12	< .7	20 ± 10	< 2	50 ± 20
	04/09	< 1	40 ± 10	< 2	40 ± 20
	05/15	< .8	10 ± 10	< 2	30 ± 30
	06/12	< 1	20 ± 10	< 2	30 ± 20
	07/09	< .9	40 ± 10	2 ± 2	73 ± 8
	08/06	< 1	30 ± 10	< 3	40 ± 10
	09/10	< 2	20 ± 10	< 2	50 ± 10
	10/01	< 2	30 ± 10	< 2	30 ± 10
	11/05	< 2	30 ± 10	< 2	40 ± 20
	12/03	< .9	20 ± 10	< 2	30 ± 10
	ANNUAL MEAN	< 1.2	25 ± 18	2 ± 1	42 ± 28
6A	83 01/08	< .7	< 30	< 2	< 200
	02/20	< .5	90 ± 50	< 2	< 200
	03/12	< .7	30 ± 10	< 2	30 ± 20
	04/09	< 2	20 ± 10	< 2	50 ± 30
	05/15	< 2	< 10	< 3	30 ± 30
	06/12	< 1	20 ± 10	< 2	60 ± 40
	07/09	< 1	< 20	< 2	< 60
	08/06	< 2	30 ± 20	3 ± 3	< 80
	09/10	< 2	30 ± 20	< 2	< 100
	10/01	< 2	30 ± 20	5 ± 2	< 100
	11/05	< 2	20 ± 10	< 2	< 40
	12/03	< 1	30 ± 20	< 2	< 50
	ANNUAL MEAN	< 1.4	30 ± 40	2 ± 2	83 ± 119

NOTES: (A) GROSS ALPHA AND GROSS BETA INSOLUBLE RESULTS ARE IN UNITS OF PCI/GRAM

TABLE IV.3.1 (CONTINUED)
ANALYTICAL DATA FOR SURFACE WATER GRAB SAMPLES
CONCENTRATION (PCI/L)

STATION CODE	COLLECTION DATE	G.ALPHA SOLUBLE	G.ALPHA INSOLUBLE (A)	G.BETA SOLUBLE	G.BETA INSOLUBLE (A)
13A	83 01/08	< .8	< 10	< 2	< 60
	02/20	< .9	< 30	< 2	< 100
	03/12	< .9	30 ± 10	< 2	51 ± 7
	04/09	< 1	30 ± 20	< 2	80 ± 50
	05/15	< 1	< 20	< 2	80 ± 50
	06/12	< .9	< 8	< 2	< 30
	07/09	< .8	20 ± 10	2 ± 2	40 ± 30
	08/06	< .9	< 20	< 3	200 ± 100
	09/10	< 1	< 20	2 ± 2	< 100
	10/01	< 1	20 ± 10	4 ± 2	< 50
	11/05	< 3	30 ± 20	< 2	< 60
	12/03	< .9	20 ± 20	< 2	< 60
	ANNUAL MEAN	< 1.1	22 ± 15	2 ± 1	76 ± 90
13B	83 01/13	< .6	20 ± 10	< 2	40 ± 10
	02/15	< .6	30 ± 20	4 ± 2	< 50
(B)	07/21	< .9	10 ± 10	< 3	< 50
	08/09	< 2	< 30	< 2	< 200
	09/14	< 1	< 10	2 ± 2	< 80
	10/12	< 2	20 ± 10	< 2	< 20
	11/15	< 1	20 ± 10	< 2	< 40
	12/08	< 1	40 ± 20	2 ± 2	< 50
	ANNUAL MEAN	< 1.1	23 ± 21	2 ± 1	66 ± 113
	MEAN POTENTIALLY AFFECTED STATIONS (1Q,4F,13A)	< 1.1	24 ± 15	2 ± 1	68 ± 81
	MEAN(1Q,4F,6A,13A)	< 1.2	25 ± 23	2 ± 1	71 ± 94

NOTES: (A) GROSS ALPHA AND GROSS BETA INSOLUBLE RESULTS ARE IN UNITS OF PCI/GRAM
(B) STATION 13B SAMPLES ARE TAKEN ONLY WHEN THE PUMPING STATION IS OPERATED

TABLE IV.3.2
ANALYTICAL DATA FOR SURFACE WATER COMPOSITE SAMPLES
CONCENTRATION (PCI/L)

STATION CODE		COLLECTION PERIOD	G.ALPHA SOLUBLE	G.ALPHA INSOLUBLE (A)	G.BETA SOLUBLE	G.BETA INSOLUBLE (A)
1LL	83	01/07-02/10	< .8	20 ± 10	< 2	< 40
		02/10-03/11	< .6	50 ± 20	4 ± 2	< 50
		03/11-04/08	< 1	< 10	< 2	40 ± 40
		04/08-05/13	< .6	30 ± 10	< 2	50 ± 20
		05/13-06/10	< .8	13 ± 9	< 2	40 ± 20
		06/10-07/08	< 1	30 ± 10	< 2	55 ± 8
		07/08-08/05	< 2	30 ± 10	5 ± 3	50 ± 20
		08/05-09/09	< 1	30 ± 20	4 ± 2	60 ± 40
		09/09-09/23	< 2	10 ± 10	< 2	< 40
		10/07-10/07	< 2	< 20	< 2	< 90
		10/07-12/09	(B)	(B)	(B)	(B)
		12/09-01/06	< 1	30 ± 10	< 2	50 ± 10
		ANNUAL MEAN	< 1.2	25 ± 24	3 ± 2	51 ± 29
4L	83	01/08-02/13	< .9	< 20	< 2	140 ± 90
		02/13-03/12	< .9	30 ± 20	< 2	< 100
		03/12-04/09	< 1	30 ± 20	< 2	90 ± 70
		04/09-05/15	< .6	20 ± 10	< 2	40 ± [illegible]
		05/15-06/12	< 1	20 ± 10	< 2	40 [illegible]
		06/12-07/09	< 1	20 ± 10	< 2	30 [illegible]
		07/09-08/06	< 1	< 20	3 ± 2	200 ± 100
		08/06-09/10	< 1	40 ± 20	2 ± 2	< 90
		09/10-10/01	< 1	30 ± 20	5 ± 2	< 100
		10/01-11/05	< 2	20 ± 10	< 2	< 40
		11/05-12/03	< 1	40 ± 20	< 2	< 60
		12/03-01/07	< .9	30 ± 10	2 ± 2	50 ± 20
		ANNUAL MEAN	< 1.0	27 ± 16	2 ± 2	82 ± 100
6I	83	01/08-02/13	< .8	< 20	< 2	< 70
		02/13-03/12	< .8	< 20	< 2	< 100
		03/12-04/09	< 1	< 20	< 2	< 70
		04/09-05/15	< 2	40 ± 20	< 2	60 ± 10
		05/15-06/12	< .8	< 10	2 ± 2	< 40
		06/12-07/02	< 1	70 ± 50	2 ± 2	< 200
		07/09-08/06	< .7	< 60	4 ± 2	600 ± 500
		08/06-09/10	< 2	< 70	3 ± 2	< 400
		09/10-10/01	< 2	< 90	4 ± 2	< 600
		10/01-11/05	< 2	< 10	< 3	< 60
		11/05-12/03	< 2	< 10	< 2	< 30
		12/03-01/07	2 ± 2	< 40	< 2	< 100
		ANNUAL MEAN	1.4 ± 1.2	38 ± 56	3 ± 2	194 ± 429

NOTES: (A) GROSS ALPHA INSOLUBLE AND GROSS BETA INSOLUBLE IN UNITS OF PCI/GRAM
(B) SAMPLER OUT OF OPERATION

TABLE IV.3.3
ANALYTICAL DATA FOR DISCHARGE WATER GRAB SAMPLES
CONCENTRATION (PCI/L)

STATION CODE	COLLECTION DATE	G.ALPHA SOLUBLE	G.ALPHA INSOLUBLE (A)	G BETA SOLUBLE	G.BETA INSOLUBLE (A)
1M	83 01/08	< .7	< 30	2 ± 2	< 100
	02/20	< .9	< 60	< 2	< 300
	03/12	< .9	20 ± 10	2 ± 2	90 ± 30
	04/09	< 1	30 ± 20	2 ± 2	80 ± 40
	05/15	< 1	20 ± 10	< 2	40 ± 20
	06/12	< 1	30 ± 10	< 2	< 40
	07/09	< .9	20 ± 10	< 2	70 ± 30
	08/06	< 1	10 ± 10	< 3	130 ± 60
	09/10	< 2	20 ± 20	4 ± 2	< 50
	10/01	< 2	< 10	4 ± 2	< 60
	11/05	< 3	80 ± 20	4 ± 2	< 50
	12/03	< .8	30 ± 20	< 2	< 30
	ANNUAL MEAN	< 1.3	30 ± 41	3 ± 2	87 ± 146

TABLE IV.3.4
ANALYTICAL DATA FOR DISCHARGE WATER COMPOSITE SAMPLES
CONCENTRATION (PCI/L)

STATION CODE	COLLECTION PERIOD	G.ALPHA SOLUBLE	G.ALPHA INSOLUBLE (A)	G.BETA SOLUBLE	G.BETA INSOLUBLE (A)
1MM	83 01/07-02/10	< .6	< 30	< 2	< 100
	02/10-03/11	< .6	20 ± 20	< 2	< 70
	03/11-04/08	< 1	40 ± 20	< 2	110 ± 50
	04/08-05/13	< .7	40 ± 10	< 2	80 ± 20
	05/13-06/10	< 1	20 ± 10	6 ± 2	100 ± 40
	06/10-07/08	< 1	20 ± 10	< 2	80 ± 30
	07/08-08/05	< 1	20 ± 20	4 ± 2	80 ± 70
	08/05-08/26	< 1	30 ± 10	3 ± 2	130 ± 30
	09/09-09/16	< 2	< 30	< 2	< 200
	10/04-10/14	< 2	20 ± 20	< 2	< 80
	NOVEMBER	(B)	(B)	(B)	(B)
	DECEMBER	(B)	(B)	(B)	(B)
	ANNUAL MEAN	< 1.1	27 ± 16	3 ± 3	103 ± 77

NOTES: A) GROSS ALPHA INSOLUBLE AND GROSS BETA INSOLUBLE RESULTS ARE IN UNITS OF PCI/GRAM
(B) SAMPLER OUT OF SERVICE

TABLE IV.4.1
ANALYTICAL DATA FOR WELL WATER SAMPLES
CONCENTRATION (PCI/L)

STATION CODE	COLLECTION DATE	G.ALPHA	G.BETA	SR-89	SR-90	RADIOACTIVE CESIUM	URANIUM (A)
1U	83 02/20	< .6	< 2				< .03
	05/15	< .7	3 ± 2	< 2	.7 ± .5	< .4	.13
	07/09	< .7	< 2	< .5	< .2	< .3	.12
	10/01	< .4	< 2	< .9	< .4	< .2	< .02
	ANNUAL MEAN	< .6	2 ± 1	<1	.4 ± .5	< .3	.08 ± .12
1V	83 02/20	< .3	< 2				.2
	05/15	< .4	2 ± 2	< 1	.9 ± .5	< .4	.12
	07/09	< .5	< 2	< .6	< .3	< .3	.33
	10/01	< .2	3 ± 2	< .7	< .4	< .2	< .02
	ANNUAL MEAN	< .4	2 ± 1	< .8	.5 ± .6	< .3	.17 ± .26
7	83 02/21	< .7	< 2				1
	05/15	< .7	2 ± 2	< 1	1.3 ± .4	< .3	.17
	07/10	< .7	< 2	< .6	.6 ± .3	< .4	1.64
	11/05	< .8	< 2	< .7	.6 ± .4	< .2	.27
	ANNUAL MEAN	< .7	2 ± 0	< .8	.8 ± .8	< .3	.8 ± 1.4
40	83 02/20	< .5	< 2				< .03
	05/15	< .7	3 ± 2	< 2	< .7	< .4	.07
	07/09	1 ± 1	< 2	< .6	< .3	< .3	.12
	10/01	< .4	7 ± 2	< .7	.6 ± .4	.2 ± .2	< .02
	ANNUAL MEAN	.7 ± .5	4 ± 5	< 1.1	.5 ± .4	.3 ± .2	.06 ± .09
	MEAN (1U,1V)	< .5	2 ± 1	< 1.0	.5 ± .5	< .3	.12 ± .2
MEAN-ALL STATIONS		.6 ± .4	3 ± 3	< .9	.6 ± .6	.3 ± .2	.3 ± .9

NOTE: (A) URANIUM CONCENTRATION IN UG/LITER

TABLE IV.5.1
ANALYTICAL DATA FOR SOIL SAMPLES
CONCENTRATION (PCI/G DRY)

STATION CODE	COLLECTION DATE	G.BETA	K-40	N.BETA	SR-89	SR-90	RADIOACTIVE CESIUM
1AA	83 06/19	3 ± 1	.11 ± .04	3 ± 1	.03 ± .02	.294 ± .008	.45 ± .02
	09/24	5 ± 1	.25 ± .04	5 ± 1	< .01	.044 ± .003	.061 ± .004
	ANNUAL MEAN	4 ± 3	.18 ± .20	4 ± 3	.02 ± .03	.169 ± .354	.26 ± .55
2	83 06/19	2 ± 1	.15 ± .04	2 ± 1	< .03	.42 ± .01	.25 ± .01
	09/24	2 ± 1	.23 ± .04	2 ± 1	< .03	.309 ± .007	.215 ± .006
	ANNUAL MEAN	2 ± 0	.19 ± .11	2 ± 0	< .03	.36 ± .16	.23 ± .05
3A	83 06/19	4 ± 1	.31 ± .04	4 ± 1	< .02	.154 ± .008	.81 ± .02
	09/24	7 ± 1	.27 ± .04	6 ± 1	< .02	.270 ± .007	.278 ± .007
	ANNUAL MEAN	6 ± 4	.29 ± .06	5 ± 3	< .02	.212 ± .164	.54 ± .75
4N	83 06/19	1 ± 1	.19 ± .04	< 1	< .02	.107 ± .005	.28 ± .01
	09/24	4 ± 1	.83 ± .08	4 ± 1	< .02	.121 ± .005	.167 ± .006
	ANNUAL MEAN	3 ± 4	.51 ± .91	3 ± 4	< .02	.114 ± .020	.22 ± .16
5	83 06/18	3 ± 1	.31 ± .04	2 ± 1	< .01	.060 ± .004	.16 ± .01
	09/24	6 ± 1	.41 ± .04	6 ± 1	< .01	.050 ± .003	.103 ± .005
	ANNUAL MEAN	5 ± 4	.36 ± .14	4 ± 6	< .01	.055 ± .014	.13 ± .08
6G	83 06/18	3 ± 1	.24 ± .04	3 ± 1	< .02	.214 ± .007	.48 ± .02
	09/24	5 ± 1	.72 ± .07	5 ± 1	< .03	.218 ± .008	.314 ± .007
	ANNUAL MEAN	4 ± 3	.48 ± .68	4 ± 3	< .03	.216 ± .006	.40 ± .24
MEAN-ONSITE STATIONS(1AA,2)		3 ± 3	.19 ± .13	3 ± 3	.03 ± .02	.267 ± .318	.24 ± .32
MEAN-DISTANT STATIONS (3A,4N, 5, 6G)		4 ± 4	.41 ± .47	4 ± 4	< .02	.149 ± .158	.32 ± .46
MEAN-ALL STATIONS		4 ± 4	.34 ± .44	4 ± 3	.02 ± .02	.188 ± .238	.30 ± .41

TABLE IV.6.1
ANALYTICAL DATA FOR SILT SAMPLES
CONCENTRATION (PCI/G DRY)

STATION CODE	COLLECTION DATE	G.ALPHA	G.BETA	SR-89	SR-90	RADIOACTIVE CESIUM
1BB	83 06/09	.7 ± .3	< 1	< .02	.012 ± .004	.20 ± .01
	10/25	4 ± 1	11 ± 1	< .02	.028 ± .006	8.02 ± .07
	ANNUAL MEAN	2.4 ± 4.7	6 ± 4	< .02	.020 ± .023	4.11 ± 11.06
1X	83 06/09	7 ± 1	3 ± 1	< .02	.011 ± .005	.023 ± .006
	10/25	4.5 ± .9	3 ± 1	< .02	.015 ± .008	.049 ± .008
	ANNUAL MEAN	5.8 ± 3.5	3 ± 0	< .02	.013 ± .006	.036 ± .037
4D	83 06/09	1.3 ± .5	3 ± 1	< .03	.077 ± .009	.43 ± .02
	10/25	.5 ± .2	4 ± 1	< .01	.008 ± .004	.091 ± .009
	ANNUAL MEAN	.9 ± 1.1	4 ± 1	< .02	.043 ± .098	.26 ± .48
4J	83 06/09	2.1 ± .6	2.0 ± .9	< .08	.03 ± .01	.10 ± .01
	10/25	1.3 ± .4	1.7 ± .8	< .02	.010 ± .006	.093 ± .008
	ANNUAL MEAN	1.7 ± 1.1	1.9 ± .4	< .05	.02 ± .03	.10 ± .01
4T	83 06/09	.9 ± .4	3 ± 1	< .02	.043 ± .005	.44 ± .02
	10/25	3 ± 2	4 ± 1	< .02	.036 ± .004	.37 ± .01
	ANNUAL MEAN	2.0 ± 3.0	4 ± 1	< .02	.040 ± .010	.41 ± .10
6F	83 06/09	.8 ± .4	2 ± 1	,02 ± .02	.045 ± .006	.18 ± .01
	10/25	1.9 ± .6	1.3 ± .9	< .07	.014 ± .009	.016 ± .003
	ANNUAL MEAN	1.4 ± 1.6	1.7 ± 1.0	.05 ± .07	.030 ± .044	.10 ± .23
MEAN-ALL STATIONS		2.3 ± 3.9	3.3 ± 5.3	.03 ± .04	.027 ± .041	.83 ± 4.54

TABLE IV 6.2

ANALYTICAL DATA FOR SILT
GAMMA SPECTRUM ANALYSIS (GeLi)
(pCi/g dry)

Station	Collection Date	Cs-137	Cs-134	K-40	Ra-226	Th-228	Be-7	Co-60	I-131	Cr-51	Ba-140
1BB	06/09/83	.11±.04	.05±.04	11±6	.53±.08	.8±.1	<.9	.04±.04	<20	<2	<8
	10/25/83(b)	13.7±.3	14.8±.4	12±1	1.1±.4	1.2±.6	<3	4.0±.2	<1	<2	<2
	MEAN	6.9±19.2	7.4±20.8	11.5±1.4	.8±.8	1.0±.6	<1.9	2.0±5.6	<10	<2	<5
IX	06/09/83	<.04	.05±.04	13.3±.7	.51±.08	.7±.1	<.6	<.05	<1	<.9	<1
	10/25/83	<.04	<.05	16±.1	.7±.1	.9±.1	<.4	<.05	<.2	<.5	<.4
	MEAN	<.04	.05±.0	14.7±3.8	.6±3	.8±.3	<.5	<.05	<.6	<.7	<.7
4D	06/09/84	.6±.1	.23±.09	12±1	1.0±.2	1.0±.3	1±1	<.1	<3	<2	<3
	10/25/83	.12±.07	<.07	13±1	1.1±.2	1.2±.2	<.6	<.06	<.3	<.8	<.6
	MEAN	.36±.68	.15±.23	12.5±.1.4	1.1±.1	1.1±.3	.8±.6	<.08	<1.7	<1.4	<1.8
4J	06/09/84 (a)	.12±.04	<.2	11±6	.42±.08	.6±.1	<6	.06±.04	<1	<.9	<1
	10/25/83	.10±.04	.05±.04	8.0±.6	.38±.07	.4±.1	<.3	<.04	<.2	<.4	<.3
	MEAN	.11±.03	.12±.2	9.5±4.2	.40±.06	.5±.3	<3.2	.05±.03	<.6	<.7	<.7
4T	06/09/83	.8±.1	.1±.1	15±1	1.1±.2	1.4±.3	<1	<.1	<3	<2	<3
	10/25/83	.7±.1	.2±.1	15±1	1.2±.2	1.5±.3	<1	<.1	<.5	<1	<1
	MEAN	.8±.1	.2±.1	15±0	1.2±.1	1.5±.1	<1	<.1	<.1.8	<1.5	<2
6F	06/09/83	.38±.08	<.09	15±1	1.1±.2	1.3±.2	<1	<.08	<2	<2	<2
	10/25/83	<.04	<.04	6.8±.5	.29±.07	.37±.09	<.4	<.04	<.2	<.4	<.3
	MEAN	.2±.5	<.07	10.9±11.6	.69±1.1	.8±1.3	<.7	<.06	<1.1	<1.2	<1.2

a. Zn-65 1±1

b. Zn-65 7.7±.5

TABLE IV.7.1
ANALYTICAL DATA FOR FISH SAMPLES
CONCENTRATION (PCI/G ASH)

STATION CODE	MEDIA	COLLECTION DATE	ID	G.BETA	K-40	N.BETA	SR-89	SR-90
1EE	CATFISH 83	03/17	5A4571	30 ± 10	32 ± 3	< 10		
			5B4571	40 ± 10	28 ± 3	< 10	< 2	1.4 ± .3
			5C4571	30 ± 10	29 ± 3	< 10		
			5D4571	30 ± 10	29 ± 3	< 10		
		04/27	5A4676	30 ± 10	47 ± 5	< 10	< .8	.53 ± .08
			5B4676	40 ± 10	37 ± 4	< 10		
			5C4676	50 ± 10	33 ± 3	20 ± 10		
			5D4676	40 ± 10	35 ± 3	< 10		
		09/09	5A4763	80 ± 10	32 ± 3	50 ± 10	< .2	.67 ± .05
			5B4763	44 ± 9	21 ± 2	24 ± 9		
			5C4763	44 ± 9	22 ± 2	21 ± 9		
			5D4763	220 ± 10	23 ± 2	200 ± 10		
		10/16	5B4816	21 ± 9	29 ± 3	< 9		
			5D4816	28 ± 9	33 ± 3	< 10		
		11/16	5A4816	32 ± 9	37 ± 4	< 10	< .2	.56 ± .06
			5C4816	28 ± 9	35 ± 4	< 10		
		ANNUAL MEAN		49 ± 95	31 ± 13	27 ± 95	< .8	.79 ± .82
1X	CATFISH 83	03/17	5A4570	30 ± 10	35 ± 4	< 10	< .5	.91 ± .07
			5B4570	50 ± 10	51 ± 5	< 10		
			5C4570	90 ± 10	74 ± 7	20 ± 10		
			5D4570	150 ± 10	110 ± 10	30 ± 20		
		04/26	5A4675	50 ± 10	42 ± 4	< 10	< .3	.43 ± .03
			5B4675	40 ± 10	33 ± 3	< 10		
			5C4675	50 ± 10	39 ± 4	10 ± 10		
			5D4675	40 ± 10	42 ± 4	< 10		
		09/09	5A4760	19 ± 8	26 ± 3	< 8	< .2	.81 ± .05
			5B4760	20 ± 8	28 ± 3	< 9		
			5C4760	63 ± 9	78 ± 8	< 10		
			5D4760	24 ± 8	29 ± 3	< 9		
		11/02	5C4820	50 ± 10	35 ± 3	< 10		
			5D4820	40 ± 10	32 ± 3	10 ± 10		
		11/11	5A4820	30 ± 10	28 ± 3	< 10	.2 ± .2	.62 ± .07
			5B4820	30 ± 10	32 ± 3	< 10		
		ANNUAL MEAN		49 ± 65	45 ± 47	12 ± 11	.3 ± .3	.69 ± .42

TABLE IV.7.1 (CONTINUED)
ANALYTICAL DATA FOR FISH SAMPLES
CONCENTRATION (PCI/G ASH)

STATION CODE	MEDIA	COLLECTION DATE	ID	G.BETA	K-40	N.BETA	SR-89	SR-90
4I	CATFISH 83	03/28	5A4565	40 ± 10	38 ± 4	< 10	< .5	.89 ± .08
			5B4565	50 ± 10	39 ± 4	10 ± 10		
			5D4565	30 ± 10	31 ± 3	< 10		
		03/29	5C4565	90 ± 10	67 ± 7	20 ± 10		
		04/28	5C4669	30 ± 10	23 ± 2	< 10		
		06/06	5D4669	50 ± 10	39 ± 4	10 ± 10		
		06/21	5A4669	40 ± 10	35 ± 3	< 10	< .9	.9 ± .1
			5B4669	50 ± 10	29 ± 3	20 ± 10		
		08/29	5A4762	15 ± 8	29 ± 3	< 8	.2 ± .2	.63 ± .03
			5B4762	40 ± 10	30 ± 3	< 10		
			5C4762	28 ± 8	40 ± 4	< 9		
			5D4762	40 ± 10	30 ± 3	10 ± 10		
		10/05	5A4817	30 ± 9	49 ± 5	< 10	.4 ± .3	.64 ± .05
			5B4817	27 ± 9	36 ± 4	< 10		
		10/05	5C4817	90 ± 10	120 ± 10	< 20		
			5D4817	110 ± 10	110 ± 10	< 20		
		ANNUAL MEAN		48 ± 53	47 ± 57	12 ± 9	.5 ± .6	.77 ± .30
	CRAPPIE 83	03/28	5A4566	40 ± 10	49 ± 5	< 10	< .3	.59 ± .03
			5B4566	40 ± 10	47 ± 5	< 10		
			5C4566	50 ± 10	51 ± 5	< 10		
			5D4566	50 ± 10	38 ± 4	20 ± 10		
		04/28	5A4670	40 ± 10	39 ± 4	< 10	< .3	.52 ± .04
			5B4670	50 ± 10	33 ± 3	20 ± 10		
			5C4670	60 ± 10	58 ± 6	< 10		
			5D4670	60 ± 10	59 ± 6	< 10		
		08/29	5A4761	29 ± 9	36 ± 4	< 9	< .1	.70 ± .03
			5B4761	32 ± 9	40 ± 4	< 9		
			5C4761	34 ± 9	43 ± 4	< 10		
			5D4761	29 ± 9	39 ± 4	< 9		
		10/05	5A4818	24 ± 9	35 ± 4	< 10	< .3	.48 ± .04
			5B4818	33 ± 9	40 ± 4	< 10		
			5C4818	32 ± 9	43 ± 4	< 10		
			5D4818	36 ± 9	51 ± 5	< 10		
		ANNUAL MEAN		40 ± 22	44 ± 16	11 ± 7	< .3	.57 ± .19

TABLE IV.7.1 (CONTINUED)
ANALYTICAL DATA FOR FISH SAMPLES
CONCENTRATION (PCI/G ASH)

STATION CODE	MEDIA	COLLECTION DATE	ID	G.BETA	K-40	N.BETA	SR-89	SR-90
4J	CATFISH 83	03/29	5A4569	20 ± 10	33 ± 3	< 10		
			5C4567	50 ± 10	47 ± 5	< 10		
			5C4569	20 ± 10	26 ± 3	< 10	< 3	1.1 ± .2
			5D4569	20 ± 10	25 ± 2	< 10		
		03/30	5B4569	30 ± 10	33 ± 3	< 10		
			5D4567	50 ± 10	36 ± 4	10 ± 10		
		04/06	5A4567	40 ± 10	35 ± 3	< 10	< 2	1.2 ± .4
			5B4567	50 ± 10	33 ± 3	10 ± 10		
		04/28	5C4673	30 ± 10	36 ± 4	< 10		
			5D4673	30 ± 10	33 ± 3	< 10		
		05/11	5A4671	40 ± 10	33 ± 3	< 10	< 1	1.1 ± .1
			5B4671	40 ± 10	35 ± 4	< 10		
			5C4671	40 ± 10	32 ± 3	< 10		
			5D4671	40 ± 10	34 ± 3	< 10		
		05/12	5A4673	30 ± 10	26 ± 3	< 10		
			5B4673	40 ± 10	31 ± 3	< 10	< .7	.79 ± .09
		08/31	5A4766	32 ± 8	30 ± 3	< 9	< .2	.83 ± .03
			5B4766	36 ± 8	32 ± 3	< 9		
			5C4766	37 ± 8	39 ± 4	< 9		
			5D4766	110 ± 10	110 ± 10	< 10		
		[illegible]/04	5A4814	34 ± 9	38 ± 4	< 9	< .3	.62 ± .05
			5B4814	44 ± 9	52 ± 5	< 10		
			5C4814	36 ± 9	35 ± 4	< 9		
		11/01	5D4814	90 ± 10	79 ± 8	< 10		
		ANNUAL MEAN		41 ± 40	39 ± 37	9.8 ± .8	< 1.2	.94 ± .45
	CRAPPIE 83	03/28	5A4568	50 ± 10	44 ± 4	< 10	< .4	1.21 ± .07
			5B4568	40 ± 10	38 ± 4	< 10		
			5C4568	60 ± 10	51 ± 5	< 10		
			5D4568	50 ± 10	54 ± 5	< 10		
		04/27	5B4674	70 ± 10	56 ± 6	10 ± 10		
		04/28	5A4672	50 ± 10	45 ± 4	< 10	< .3	.47 ± .05
			5A4674	50 ± 10	48 ± 5	< 10	< .4	.52 ± .05
			5B4672	70 ± 10	50 ± 5	10 ± 10		
			5C4672	60 ± 10	55 ± 5	< 10		
			5C4674	70 ± 10	58 ± 6	10 ± 10		
			5D4672	50 ± 10	47 ± 5	< 10		
			5D4674	70 ± 10	60 ± 6	< 10		
		08/29	5D4767	47 ± 9	38 ± 4	< 10		
		08/31	5B4767	39 ± 9	26 ± 3	13 ± 9		
			5C4767	20 ± 8	30 ± 3	< 9		
		09/20	5A4767	38 ± 9	44 ± 4	< 10	.2 ± .2	.44 ± .04
		10/07	5B4815	36 ± 9	52 ± 5	< 10		
		11/01	5A4815	42 ± 9	42 ± 4	< 10	< .1	.38 ± .03
			5C4815	70 ± 10	58 ± 6	20 ± 10		
		11/14	5D4815	59 ± 9	62 ± 6	< 10		
		ANNUAL MEAN		52 ± 28	48 ± 19	11 ± 5	.28 ± .26	.60 ± .69

TABLE IV.7.1 (CONTINUED)
ANALYTICAL DATA FOR FISH SAMPLES
CONCENTRATION (PCI/G ASH)

STATION CODE	MEDIA	COLLECTION DATE	ID	G.BETA	K-40	N.BETA	SR-89	SR-90
6H	CATFISH 83	04/06	5A4572	20 ± 10	28 ± 3	< 10	< .5	.81 ± .09
			5B4572	30 ± 10	30 ± 3	< 10		
		05/03	5A4677	30 ± 10	36 ± 4	< 10	< 1	.8 ± .1
			5C4677	20 ± 10	23 ± 2	< 10		
			5D4677	40 ± 10	33 ± 3	< 10		
		05/10	5B4677	20 ± 10	22 ± 2	< 10		
		08/31	5A4764	90 ± 10	88 ± 9	< 10	< .3	.70 ± .07
		11/02	5A4819	50 ± 10	41 ± 4	< 10	< .3	.77 ± .06
			5B4819	80 ± 10	72 ± 7	< 10		
			5C4819	90 ± 10	100 ± 10	< 20		
			5D4819	70 ± 10	76 ± 8	< 10		
		ANNUAL MEAN		49 ± 57	50 ± 57	< 11	.5 ± .7	.77 ± .10
	CRAPPIE 83	04/06	5A4573	40 ± 10	39 ± 4	< 10	< .3	.61 ± .06
			5B4573	30 ± 10	34 ± 3	< 10		
			5C4573	40 ± 10	35 ± 4	< 10		
			5D4573	50 ± 10	33 ± 3	10 ± 10		
		05/03	5B4678	40 ± 10	40 ± 4	< 10	< .6	.53 ± .08
		05/10	5A4678	40 ± 10	37 ± 4	< 10		
			5C4678	50 ± 10	37 ± 4	20 ± 10		
			5D4678	40 ± 10	44 ± 4	< 10		
		08/31	5A4765	50 ± 10	33 ± 3	20 ± 10	< .3	1.64 ± .05
			5B4765	38 ± 8	39 ± 4	< 9		
			5C4765	34 ± 8	41 ± 4	< 9		
			5D4765	70 ± 10	41 ± 4	20 ± 10		
		ANNUAL MEAN		44 ± 21	38 ± 7	12 ± 9	< .4	.93 ± 1.24
	ANNUAL MEAN-CATFISH			46 ± 62	42 ± 44	14 ± 43	.7 ± 1.5	.81 ± .47
	ANNUAL MEAN-CRAPPIE			46 ± 26	44 ± 18	11 ± 7	.3 ± .3	.67 ± .74

TABLE IV.7.2
ANALYTICAL DATA FOR FISH SAMPLES
CONCENTRATION (PCI/GRAM ORIGINAL SAMPLE)

STATION CODE	MEDIA	COLLECTION DATE	ID	G.BETA	K-40	N.BETA	SR-89	SR-90
1EE	CATFISH 83	03/17	*A4571	1.3 ± .4	1.2 ± .1	< .4		
			*B4571	1.4 ± .4	1.1 ± .1	< .4	< .07	.05 ± .01
			*C4571	1.4 ± .4	1.3 ± .1	< .5		
			*D4571	.7 ± .2	.58 ± .06	< .2		
		04/27	*A4676	1.2 ± .4	1.8 ± .2	< .4	< .03	.020 ± .003
			*B4676	1.5 ± .4	1.6 ± .2	< .5		
			*C4676	2.1 ± .4	1.3 ± .1	.8 ± .4		
			*D4676	1.8 ± .5	1.6 ± .2	< .5		
		09/09	*A4763	4.1 ± .5	1.7 ± .2	2.4 ± .6	< .010	.035 ± .002
			*B4763	2.8 ± .6	1.3 ± .1	1.5 ± .6		
			*C4763	3.0 ± .6	1.5 ± .2	1.5 ± .6		
			*D4763	12.9 ± .8	1.4 ± .1	11.5 ± .8		
		10/16	*B4816	1.2 ± .5	1.6 ± .2	< .5		
			*D4816	1.4 ± .5	1.7 ± .2	< .5		
		11/16	*A4816	1.6 ± .5	1.9 ± .2	< .5	< .010	.029 ± .003
			*C4816	1.6 ± .5	2.0 ± .2	< .6		
		ANNUAL MEAN		2.5 ± 5.8	1.5 ± .7	1.4 ± 5.5	< .03	.034 ± .025
1X	CATFISH 83	03/17	*A4570	1.2 ± .4	1.5 ± .2	< .5	< .02	.039 ± .003
			*B4570	1.9 ± .4	1.9 ± .2	< .4		
			*C4570	1.9 ± .2	1.6 ± .2	.4 ± .3		
			*D4570	2.9 ± .2	2.2 ± .2	.7 ± .3		
		04/26	*A4675	2.8 ± .5	2.4 ± .2	< .7	< .02	.025 ± .002
			*B4675	1.9 ± .5	1.7 ± .2	< .6		
			*C4675	1.9 ± .4	1.5 ± .1	.4 ± .4		
			*D4675	1.8 ± .5	1.9 ± .2	< .5		
		09/09	*A4760	1.1 ± .5	1.5 ± .2	< 5	< .01	.047 ± .003
			*B4760	1.0 ± .4	1.4 ± .1	< .4		
			*C4760	1.6 ± .2	2.0 ± .2	< .3		
			*D4760	1.1 ± .4	1.4 ± .1	< .4		
		11/02	*C4820	2.1 ± .5	1.6 ± .2	< .5		
			*D4820	2.4 ± .6	1.8 ± .2	.7 ± .6		
		11/11	*A4820	1.7 ± .6	1.6 ± .2	< .6	.01 ± .01	.037 ± .004
			*B4820	1.5 ± .6	1.7 ± .2	< .6		
		ANNUAL MEAN		1.8 ± 1.1	1.7 ± .6	.8 ± 2.3	.02 ± .01	.037 ± .018

TABLE IV.7.2 (CONTINUED)
ANALYTICAL DATA FOR FISH SAMPLES
CONCENTRATION (PCI/GRAM ORIGINAL SAMPLE)

STATION CODE	MEDIA	COLLECTION DATE	ID	G.BETA	K-40	N.BETA	SR-89	SR-90
4I	CATFISH 83	03/28	*A4565	1.9 ± .5	1.7 ± .2	< .5	< .02	.040 ± .003
			*B4565	2.6 ± .5	2.0 ± .2	.6 ± .6		
			*D4565	1.6 ± .5	1.6 ± .2	< .6		
		03/29	*C4565	3.0 ± .4	2.3 ± .2	.8 ± .4		
		04/28	*C4669	1.6 ± .5	1.2 ± .1	< .5		
		06/06	*D4669	9 ± 2	6.6 ± .7	2 ± 2		
		06/21	*A4669	1.6 ± .4	1.3 ± .1	< .4	< .03	.032 ± .003
			*B4669	2.7 ± .6	1.7 ± .2	1.0 ± .6		
		08/29	*A4762	.8 ± .4	1.6 ± .2	< .5	< .01	.034 ± .002
			*B4762	2.0 ± .5	1.6 ± .2	< .5		
			*C4762	1.4 ± .4	2.0 ± .2	< .5		
			*D4762	2.3 ± .5	1.6 ± .2	.7 ± .5		
		10/05	*A4817	1.1 ± .3	1.9 ± .2	< .4	.01 ± .01	.024 ± .002
			*B4817	1.5 ± .5	2.0 ± .2	< .6		
		10/05	*C4817	1.9 ± .2	2.5 ± .2	< .3		
			*D4817	2.6 ± .3	2.7 ± .3	< .4		
		ANNUAL MEAN		2.4 ± 3.7	2.1 ± 2.5	.64 ± .80	.02 ± .02	.03 ± .01
	CRAPPIE 83	03/28	*A4566	2.0 ± .5	2.5 ± .3	< .6	< .010	.030 ± .002
			*B4566	1.9 ± .5	2.4 ± .2	< .6		
			*C4566	2.4 ± .6	2.7 ± .3	< .6		
			*D4566	3.0 ± .6	2.2 ± .2	.9 ± .6		
		04/28	*A4670	2.3 ± .5	2.0 ± .2	< .6	< .02	.027 ± .002
			*B4670	2.1 ± .5	1.4 ± .1	.8 ± .5		
			*C4670	2.7 ± .5	2.6 ± .3	< .6		
			*D4670	2.9 ± .5	2.7 ± .3	< .6		
		08/29	*A4761	1.6 ± .5	2.1 ± .2	< .5	< .008	.040 ± .002
			*B4761	1.4 ± .4	1.8 ± .2	< .4		
			*C4761	1.6 ± .4	2.0 ± .2	< .4		
			*D4761	1.3 ± .4	1.8 ± .2	< .4		
		10/05	*A4818	1.0 ± .4	1.5 ± .2	< .4	< .01	.021 ± .002
			*B4818	1.8 ± .5	2.2 ± .2	< .6		
			*C4818	1.5 ± .4	2.0 ± .2	< .5		
			*D4818	1.7 ± .4	2.3 ± .2	< .5		
		ANNUAL MEAN		2.0 ± 1.2	2.1 ± .8	.6 ± .3	< .01	.030 ± .016

TABLE IV.7.2 (CONTINUED)
ANALYTICAL DATA FOR FISH SAMPLES
CONCENTRATION (PCI/GRAM ORIGINAL SAMPLE)

STATION CODE	MEDIA	COLLECTION DATE	ID	G.BETA	K-40	N.BETA	SR-89	SR-90
4J	CATFISH 83	03/29	*A4569	.6 ± .3	.87 ± .09	< .3		
			*C4567	2.4 ± .5	2.1 ± .2	< .5		
			*C4569	1.1 ± .5	1.3 ± .1	< .5	< .1	.041 ± .006
			*D4569	1.2 ± .6	1.3 ± .1	< .6		
		03/30	*B4569	1.7 ± .5	1.7 ± .2	< .6		
			*D4567	2.3 ± .5	1.7 ± .2	.6 ± .5		
		04/06	*A4567	1.9 ± .5	1.5 ± .2	< .5	< .08	.05 ± .02
			*B4567	2.2 ± .5	1.5 ± .2	.6 ± .5		
		04/28	*C4673	1.3 ± .5	1.9 ± .2	< .6		
			*D4673	1.6 ± .6	2.0 ± .2	< .7		
		05/11	*A4671	2.3 ± .6	2.0 ± .2	.3 ± .6	< .07	.069 ± .009
			*B4671	2.1 ± .5	1.9 ± .2	< .6		
			*C4671	2.2 ± .6	1.8 ± .2	< .6		
			*D4671	1.9 ± .5	1.7 ± .2	< .5		
		05/12	*A4673	1.6 ± .6	1.6 ± 2	< .6		
			*B4673	2.0 ± .6	1.8 ± .2	< .6	< .04	.045 ± .005
		08/31	*A4766	1.8 ± .5	1.7 ± .2	< .5	< .01	.046 ± .002
			*B4766	1.9 ± .4	1.7 ± .2	< .5		
			*C4766	1.6 ± .4	1.7 ± .2	< .4		
			*D4766	1.8 ± .2	1.8 ± .2	< .2		
		10/04	*A4814	1.6 ± .4	1.8 ± .2	< .4	< .01	.030 ± .002
			*B4814	1.9 ± .4	2.3 ± .2	< .5		
			*C4814	1.7 ± .4	1.7 ± .2	< .4		
		11/01	*D4814	2.5 ± .3	2.2 ± .2	< .4		
		ANNUAL MEAN		1.8 ± .9	1.7 ± .6	.5 ± .2	< .05	.05 ± .03
	CRAPPIE 83	03/28	*A4568	2.7 ± .6	2.3 ± .2	< .6	< .02	.065 ± .004
			*B4568	2.1 ± .5	2.0 ± .2	< .6		
			*C4568	2.7 ± .5	2.5 ± .3	< .6		
			*D4568	2.4 ± .5	2.5 ± .2	< .5		
		04/27	*B4674	3.4 ± .6	2.8 ± .3	.6 ± .6		
		04/28	*A4672	3.0 ± .7	2.8 ± .3	< .7	< .02	.029 ± .003
			*A4674	2.7 ± .5	2.3 ± .2	< .6	< .02	.026 ± .003
			*B4672	3.1 ± .5	2.5 ± .3	.6 ± .5		
			*C4672	3.0 ± .5	2.5 ± .3	< .6		
			*C4674	3.2 ± .5	2.6 ± .3	.6 ± .5		
			*D4672	2.5 ± .6	2.5 ± .3	< .6		
			*D4674	3.1 ± .5	2.6 ± .3	< .5		
		08/29	*D4767	2.6 ± .5	2.1 ± .2	< .5		
		08/31	*B4767	2.1 ± .5	1.4 ± .1	.7 ± .5		
			*C4767	2.1 ± .8	3.0 ± .3	< .9		
		09/20	*A4767	2.3 ± .5	2.6 ± .3	< .6	.01 ± .01	.026 ± .002
		10/07	*B4815	1.7 ± .4	2.5 ± .2	< .5		
		11/01	*A4815	2.1 ± .4	2.2 ± .2	< .5	< .007	.019 ± .002
			*C4815	1.5 ± .2	1.2 ± .1	.3 ± .2		
		11/14	*D4815	2.6 ± .4	2.7 ± .3	< .5		
		ANNUAL MEAN		2.5 ± 1.0	2.4 ± .9	.6 ± .2	.02 ± .01	.033 ± .037

TABLE IV.7.2 (CONTINUED)
ANALYTICAL DATA FOR FISH SAMPLES
CONCENTRATION (PCI/GRAM ORIGINAL SAMPLE)

STATION CODE	MEDIA	COLLECTION DATE	ID	G.BETA	K-40	N.BETA	SR-89	SR-90
6K	CATFISH 83	04/06	*A4572	1.1 ± .6	1.8 ± .2	< .6	< .03	.050 ± .006
			*B4572	2.0 ± .6	1.8 ± .2	< .6		
		05/03	*A4677	1.6 ± .5	1.8 ± .2	< .5	< .06	.040 ± .008
			*C4677	1.5 ± .6	1.3 ± .1	< .6		
			*D4677	1.7 ± .5	1.6 ± .2	< .5		
		05/10	*B4677	1.4 ± .7	1.6 ± .2	< .7		
		08/31	*A4764	2.3 ± .2	2.1 ± .2	< .3	< .008	.017 ± .002
		11/02	*A4819	2.0 ± .5	1.8 ± .2	< .5	< .01	.033 ± .003
			*B4819	2.3 ± .3	2.1 ± .2	< .4		
			*C4819	2.2 ± .3	2.5 ± .3	< .4		
			*D4819	2.5 ± .4	2.6 ± .3	< .5		
		ANNUAL MEAN		1.9 ± .9	1.9 ± .8	< .5	< .027	.035 ± .028
	CRAPPIE 83	04/06	*A4573	2.3 ± .6	2.2 ± .2	< .6	< .02	.035 ± .003
			*B4573	1.8 ± .5	1.8 ± .2	< .6		
			*C4573	2.1 ± .6	1.9 ± .2	< .6		
			*D4573	2.8 ± .6	2.0 ± .2	.8 ± .7		
		05/03	*B4678	2.1 ± .5	2.1 ± .2	< .6	< .03	.029 ± .004
		05/10	*A4678	2.3 ± .6	2.0 ± .2	< .6		
			*C4678	2.8 ± .6	2.0 ± .2	.8 ± .6		
			*D4678	2.5 ± .6	2.6 ± .3	< .7		
		08/31	*A4765	3.0 ± .6	2.0 ± .2	1.0 ± .6	< .02	.100 ± .003
			*B4765	1.8 ± .4	1.9 ± .2	< .5		
			*C4765	1.6 ± .4	2.0 ± .2	< .5		
			*D4765	3.0 ± .5	1.9 ± .2	1.2 ± .5		
		ANNUAL MEAN		2.3 ± 1.0	2.0 ± .4	.7 ± .4	< .02	.055 ± .079
	ANNUAL MEAN-CATFISH			2.1 ± 3.1	1.8 ± .1.3	.8 ± 2.7	.03 ± .06	.038 ± .024
	ANNUAL MEAN-CRAPPIE			2.3 ± 1.2	2.2 ± .8	.6 ± .3	.02 ± .01	.037 ± .046

TABLE IV 7.3

ANALYTICAL DATA FOR FISH
GAMMA SPECTRUM ANALYSIS (GELI)
(pCi/g ORIGINAL SAMPLE)

Station	Collection Date	Type	Cs-137	Cs-134	Mn-54	Co-58	Co-60	Fe-59	Zn-65	I-131	Cr-51	K-40	Ra-226	Th-228	Be-7	Ba-140
1 EE	03/17/83	Channel Catfish	.08±.01	.04±.01	<.008	<.011	.029±.009	<.03	.59±.04	<.3	<.2	1.2±.1	.03±.01	<.02	<.1	<.3
	04/27/83	Channel Catfish	.06±.01	.04±.01	<.01	<.02	.02±.01	<.08	.52±.05	<20	<.6	1.8±.2	.04±.02	<.03	<.2	<4
	09/09/83	Channel Catfish	5.16±.06	3.60±.06	.04±.03	<.04	1.32±.03	<.06	32.5±.2	<.7	<.4	1.3±.1	<.05	<.07	.5±.3	<.7
	11/16/83	Channel Catfish	.27±.01	.18±.01	<.007	<.007	.014±.007	<.02	.63±.03	<.03	.11±.07	1.2±.1	<.01	<.02	<.07	<.07
1X	03/17/83	Channel Catfish	.014±.004	<.005	<.005	<.006	<.004	<.02	.09±.01	<.2	<.09	1.23±.08	.017±.008	<.012	<.06	<.2
	04/26/83	Channel Catfish	.03±.01	.02±.01	<.01	<.02	<.010	<.09	.14±.03	<30	<.7	2.2±.2	<.02	<.03	<.3	<6
	09/09/83	Channel Catfish	.13±.01	.15±.02	<.007	<.010	<.007	<.03	.10±.02	<.2	<.1	1.1±.1	<.01	<.02	<.1	<.2
	11/11/83	Channel Catfish	.17±.01	.17±.01	<.007	<.008	.013±.007	<.02	.12±.02	<.07	<.1	1.2±.1	<.01	<.02	<.08	<.1
4I	03/28/83	Channel Catfish	.009±.007	<.008	<.007	<.008	<.007	<.02	.06±.02	<.08	<.09	1.3±.1	<.01	<.02	<.07	<.1
	03/28/83	White Crappie	.017±.006	<.007	<.006	<.007	<.006	<.02	.16±.02	<.07	<.08	1.7±.1	<.01	<.02	<.06	<.09
	04/28/84	Channel Catfish	.02±.01	.01±.01	<.01	<.02	.01±.01	<.07	.17±.03	<20	<.6	1.6±.2	.04±.02	.03±.03	<.2	<4
	04/28/83	White Crappie	.025±.006	.011±.007	<.007	<.01	<.006	<.05	<.02	<10	<.3	1.5±.1	<.01	<.02	<.1	<2
	08/29/83	White Crappie	.022±.007	.011±.007	<.007	<.009	<.006	<.03	.05±.02	<.4	<.1	1.4±.1	<.01	<.02	<.09	<.3
	08/29/83	Channel Catfish	.031±.008	.015±.009	<.008	<.01	<.008	<.04	.03±.02	<.5	<.2	1.8±.1	<.01	<.02	<.11	<.4
	10/05/83	Channel Catfish	.012±.005	<.006	<.006	<.008	<.006	<.03	<.01	<1	<.2	1.1±.1	<.009	<.01	<.09	<.5
	10/05/83	White Crappie	.047±.009	.04±.01	<.008	<.01	<.008	<.04	.04±.02	<1	<.2	2.0±.1	<.01	<.02	<.1	<.7
4J	03/28/83	White Crappie	.027±.007	.015±.007	<.007	<.008	<.006	<.02	.21±.02	<.1	<.09	1.7±.1	<.01	.02±.02	<.07	<.1
	03/29/83	Channel Catfish	.03±.02	<.02	<.02	<.02	<.02	<.08	.18±.05	<.3	<.3	1.8±.3	<.03	<.05	<.2	<.4
	04/06/83	Channel Catfish	.02±.01	<.02	<.01	<.02	<.01	<.04	.14±.04	<.1	<.2	1.6±.2	<.03	<.04	<.1	<.2
	04/28/83	White Crappie	.025±.009	.02±.01	<.01	<.02	<.008	<.07	.23±.03	<20	<.5	1.6±.2	<.02	<.02	<.2	<3
	05/06/83	Channel Catfish	.02±.01	.01±.01	<.01	<.02	<.01	<.08	.10±.03	<10	<.5	1.3±.2	<.02	.06±.03	<.2	<3
	04/28/83	White Crappie	.014±.006	.007±.006	<.006	<.01	<.006	<.04	.11±.02	<10	<.3	1.5±.1	<.009	<.01	<.1	<2
	05/11/83	Channel Catfish	.06±.02	.02±.02	<.02	<.03	.02±.02	<.09	.11±.05	<10	<.6	1.7±.2	<.03	<.04	<.3	<3
	08/29/83	Channel Catfish	.063±.007	.051±.008	<.006	<.008	<.006	<.03	.10±.02	<.6	<.1	1.6±.1	<.010	.02±.02	<.09	<.4
	08/31/83	White Crappie	.09±.02	.08±.02	<.01	<.02	<.01	<.06	.16±.04	<.1	<.3	2.0±.2	<.02	<.04	<.2	<.8
	11/01/83	Channel Catfish	.107±.009	.01±.01	.008±.006	<.007	<.006	<.02	.30±.02	<.1	<.1	1.4±.1	<.01	<.02	<.07	<.1
	11/17/83	White Crappie	.070±.008	.058±.009	<.006	<.007	<.007	<.02	.06±.02	<.03	<.07	1.9±.1	<.01	<.02	<.06	<.06
6H	04/06/83	Channel Catfish	<.02	<.02	<.02	<.02	<.02	<.06	<.04	<.2	<.2	.4±.3	<.03	.06±.04	<.2	<.3
	04/06/83	White Crappie	<.005	<.006	<.006	<.006	<.005	<.02	<.01	<.04	<.07	1.5±.1	<.009	<.014	<.06	<.07
	05/03/83	Channel Catfish	<.02	<.020	<.02	<.04	<.02	<.1	<.05	<20	<.9	1.5±.3	<.03	<.05	<.4	<5
	05/10/83	White Crappie	.007±.005	<.006	<.006	<.010	<.005	<.04	<.01	<6	<.3	2.0±.1	<.009	<.01	<.1	<2
	08/31/83	Channel Catfish	.03±.02	<.02	<.02	<.02	<.02	<.07	<.04	<.1	<.4	1.9±.3	<.03	<.05	<.2	<.8
	08/31/83	White Crappie	<.01	<.02	<.02	<.02	<.01	<.06	.08±.04	<.8	<.3	2.2±.2	<.02	<.04	<.2	<.6
	11/02/83	Channel Catfish	.009±.007	<.007	<.006	<.008	<.007	<.02	<.02	<.1	<.1	.7±.1	<.01	<.02	<.08	<.1

TABLE IV.7.4

MEAN RADIOACTIVITY IN CHANNEL CATFISH AND WHITE CRAPPIE

(pCi/g Ash)

Environmental Station No.	Period	Collection Dates	G. Beta	K-40	N. Beta	Sr-89	Sr-90
1EE & 4J (a)	1st	3/17-4/06	38±26	36±18	< 10	<1.9	1.23± .25
6H (b)	Quarter	4/06	35±21	33± 8	10± 0	< .4	.71± .28
1EE & 4J (a)	2nd	4/27-5/12	47±28	42±21	11± 4	< .6	.68± .53
6H (b)	Quarter	5/03-5/10	35±21	34±16	11± 7	< .8	.67± .38
1EE & 4J (a)	3rd	8/29-9/09	64±115	37±50	33±113	< .2	.75± .23
6H (b)	Quarter	8/31	56±47	48±45	14±12	< .3	1.17±1.33
1EE & 4J (a)	4th	9/20-11/16	43±39	46±28	11± 6	<.2	.50± .22
6H (b)	Quarter	11/02	73±34	72±48	13±10	<.3	.77
1EE & 4J (a)	Annual Mean	3/17-11/16	47±57	40±19	15±50	<.8	.79± .66
6H (b)	Annual Mean	4/06-11/02	46±42	44±41	12± 8	<.5	.84± .74
Overall Mean		3/17-11/16	47±53	41±33	14±43	<.69	.80± .67

(a) Potentially Affected Stations

(b) Unaffected Stations

TABLE IV.7.5

MEAN RADIOACTIVITY IN CHANNEL CATFISH AND WHITE CRAPPIE

(pCi/g Original Sample)

Environmental Station No.	Period	Collection Dates	G. Beta	K-40	N. Beta	Sr-89	Sr-90
1EE & 4J (a)	1st	3/17-4/06	1.8±1.4	1.6±1.1	< .50	<.068	.052±.020
6H (b)	Quarter	4/06	2.0±1.1	1.9± .3	.63±.16	<.025	.043±.021
1EE & 4J (a)	2nd	4/27-5/12	2.3±1.4	2.1± .9	.58±.21	<.036	.038±.039
6H (b)	Quarter	5/03-5/10	2.0±1.0	1.9± .8	.63±.21	<.045	.035±.016
1EE & 4J (a)	3rd	8/29-9/09	3.3±6.5	1.8± .9	1.87±6.52	<.010	.041±.016
6H (b)	Quarter	8/31	3.0±2.3	2.0± .2	.70±.76	<.014	.059±.117
1EE & 4J (a)	4th	9/20-11/16	1.8± .9	2.0± .9	.48±.17	<.009	.026±.010
6H (b)	Quarter	11/02	2.5±2.3	2.3± .7	.45±.12	<.010	.033
1EE & 4J (a)	Annual Mean	3/17-11/16	2.2±3.1	1.9±1.0	.77±2.89	<.034	.039±.031
6H (b)	Annual Mean	4/06-11/12	2.1±1.0	2.0± .6	.61±.39	<.025	.043±.054
Overall Mean		3/17-11/16	2.2±2.3	1.9± .9	.73±2.46	<.03	.040±.038

(a) Potentially Affected Stations

(b) Unaffected Stations

TABLE IV.8.1
ANALYTICAL DATA FOR VEGETATION SAMPLES
CONCENTRATION (PCI/G ASH)

STATION CODE	COLLECTION DATE	SAMPLE TYPE	G.BETA	K-40	N.BETA	SR-89	SR-90	RADIOACTIVE CESIUM
1	83 07/18	BEANS	200 ± 10	160 ± 20	40 ± 20	.6 ± .4	7.0 ± .1	.5 ± .1
		CORN	230 ± 10	200 ± 20	< 20	< .6	2.4 ± .2	1.5 ± .3
	08/13	BEANS	140 ± 10	140 ± 10	< 20	< 1	15.9 ± .3	1.6 ± .2
		CORN	200 ± 10	200 ± 20	< 20	< .5	2.1 ± .2	.4 ± .3
	09/17	BEANS	130 ± 10	120 ± 10	< 20	< .5	13.9 ± .2	1.40 ± .08
		BROCCOLI	210 ± 10	190 ± 20	< 20	.4 ± .3	4.0 ± .1	.77 ± .06
	ANNUAL MEAN		185 ± 81	168 ± 67	23 ± 16	.60 ± .42	7.6 ± 2.0	1.0 ± 1.1
3A	83 07/17	WILD VEGETATION	190 ± 10	160 ± 20	20 ± 20	< .9	16.4 ± .3	1.1 ± .3
	08/13	WILD VEG & APPLE	170 ± 10	160 ± 20	< 20	< .5	12.6 ± .2	.8 ± .2
	09/17	WILD VEGETATION	160 ± 10	110 ± 10	50 ± 20	< .9	23.5 ± .4	5.7 ± .2
	ANNUAL MEAN		173 ± 31	143 ± 58	30 ± 35	< .8	17.5 ± 11.1	2.5 ± 5.5
4N	83 07/17	WILD VEGETATION	170 ± 10	200 ± 20	< 20	< .7	7.1 ± .3	1.7 ± .3
	08/13	WILD VEGETATION	140 ± 10	140 ± 10	< 20	.4 ± .4	9.6 ± .1	1.42 ± .06
	09/17	WILD VEGETATION	120 ± 10	120 ± 10	< 20	< .5	10.4 ± .2	.87 ± .06
	ANNUAL MEAN		143 ± 50	153 ± 83	< 20	.5 ± .3	9.0 ± 3.4	1.3 ± .8
5	83 07/17	BEANS	140 ± 10	160 ± 20	< 20	.3 ± .3	3.20 ± .08	.40 ± .08
		BEETS	190 ± 10	210 ± 20	< 20	< .3	1.3 ± .1	.6 ± .1
	08/13	BEANS	90 ± 10	81 ± 8	< 10	< .1	1.66 ± .05	.43 ± .02
		BEETS	190 ± 10	210 ± 20	< 20	< .2	2.00 ± .07	.56 ± .09
	09/18	BEANS	170 ± 10	160 ± 20	< 20	1.2 ± .7	7.4 ± .2	.9 ± .1
		PEPPERS	240 ± 10	220 ± 20	< 30	< .2	1.26 ± .08	.40 ± .06
	ANNUAL MEAN		170 ± 102	174 ± 105	< 20	.4 ± .8	2.8 ± 4.7	.5 ± .4
6D	83 07/18	BEANS	180 ± 10	190 ± 20	< 20	< .8	12.4 ± .3	1.2 ± .2
		CABBAGE	120 ± 10	110 ± 10	< 20	< .5	11.6 ± .1	.24 ± .06
	08/13	BEANS	140 ± 10	100 ± 10	30 ± 10	< 1	31.3 ± .5	.9 ± .1
		BROCCOLI	160 ± 10	160 ± 20	< 20	.6 ± .4	9.2 ± .2	1.15 ± .09
	09/18	BEANS	140 ± 10	100 ± 10	40 ± 10	< .8	25.7 ± .4	1.0 ± .1
		PEPPERS	170 ± 10	190 ± 20	< 20	1.2 ± .4	8.4 ± .1	.58 ± .04
	ANNUAL MEAN		152 ± 45	142 ± 87	25 ± 17	.8 ± .5	16.4 ± 19.4	.85 ± .74

TABLE IV.8.1 (CONTINUED)
ANALYTICAL DATA FOR VEGETATION SAMPLES
CONCENTRATION (PCI/G ASH)

STATION CODE	COLLECTION DATE	SAMPLE TYPE	G.BETA	K-40	N.BETA	SR-89	SR-90	RADIOACTIVE CESIUM
8	83 07/18	CABBAGE	110 ± 10	110 ± 10	< 20	1.2 ± .4	8.6 ± .1	.37 ± .06
		CORN	190 ± 10	200 ± 20	< 20	< .6	2.0 ± .2	.9 ± .3
	08/13	BEANS	110 ± 10	100 ± 10	< 10	.6 ± .2	5.63 ± .08	.52 ± .06
		CABBAGE	130 ± 10	150 ± 10	< 20	< .3	4.5 ± .1	.30 ± .05
	09/18	BEANS	170 ± 10	160 ± 20	< 20	< .4	6.9 ± .2	1.3 ± .1
		CABBAGE	160 ± 10	180 ± 20	< 20	< .4	3.3 ± .1	.72 ± .07
	ANNUAL MEAN		145 ± 67	150 ± 78	< 18	.6 ± .7	5.2 ± 4.8	.7 ± .7
23	83 07/17	APPLES	190 ± 10	150 ± 10	40 ± 20	< .4	13.6 ± .2	.4 ± .1
	08/13	PEACHES	210 ± 10	160 ± 20	40 ± 20	< .5	13.8 ± .2	.30 ± .06
	09/17	APPLES	200 ± 10	220 ± 20	< 20	< 2	2.8 ± .9	1.0 ± .6
	ANNUAL MEAN		200 ± 20	177 ± 76	33 ± 23	< 1	10.1 ± 12.6	.6 ± .8
	MEAN-SITE AREA STATIONS (1,23)		190 ± 66	171 ± 66	27 ± 20	.7 ± 1.0	8.4 ± 11.6	.9 ± 1.0
	MEAN-DISTANT STATIONS (3A,4N,5,6D,8)		156 ± 67	153 ± 83	22 ± 17	.6 ± .7	9.4 ± 15.9	1.0 ± 2.1
	MEAN-ALL STATIONS		165 ± 73	158 ± 79	23 ± 18	.6 ± .8	9.1 ± 14.7	1.0 ± 1.9

TABLE IV.8.2
ANALYTICAL DATA FOR VEGETATION SAMPLES
CONCENTRATION (PCI/GRAM ORIGINAL SAMPLE)

STATION CODE	COLLECTION DATE	SAMPLE TYPE	G.BETA	K-40	N.BETA	SR-89	SR-90	RADIOACTIVE CESIUM
1	83 07/18	BEANS	4.5 ± .3	3.6 ± .4	.9 ± .4	.013 ± .009	.155 ± .003	.012 ± .002
		CORN	3.1 ± .2	2.8 ± .3	< .3	< .008	.032 ± .003	.019 ± .004
	08/13	BEANS	1.4 ± .1	1.4 ± .1	< .2	< .01	.156 ± .003	.015 ± .002
		CORN	1.7 ± .1	1.7 ± .2	< .2	< .004	.017 ± .002	.004 ± .002
	09/17	BEANS	2.3 ± .2	2.1 ± .2	< .3	< .009	.239 ± .004	.024 ± .001
		BROCCOLI	3.6 ± .2	3.2 ± .3	< .4	.006 ± .005	.067 ± .002	.013 ± .001
	ANNUAL MEAN		2.8 ± 2.4	2.5 ± 1.7	.4 ± .5	.008 ± .006	.111 ± .173	.015 ± .014
3A	83 07/17	WILD VEGETATION	2.5 ± .2	2.2 ± .2	.3 ± .3	< .01	.221 ± .004	.015 ± .004
	08/13	WILD VEG & APPLE	2.4 ± .2	2.2 ± .2	< .3	< .007	.177 ± .003	.012 ± .002
	09/17	WILD VEGETATION	2.5 ± .2	1.8 ± .2	.8 ± .2	< .01	.378 ± .006	.092 ± .003
	ANNUAL MEAN		2.5 ± .1	2.1 ± .5	.5 ± .6	< .009	.259 ± .211	.040 ± .091
4N	83 07/17	WILD VEGETATION	2.9 ± .2	3.2 ± .3	< .4	< .01	.119 ± .004	.029 ± .004
	08/13	WILD VEGETATION	3.6 ± .3	3.8 ± .4	< .5	.01 ± .01	.257 ± .004	.038 ± .002
	09/17	WILD VEGETATION	2.6 ± .2	2.5 ± .3	< .3	< .008	.165 ± .003	.019 ± .001
	ANNUAL MEAN		3.0 ± 1.0	3.2 ± 1.3	< .4	.009 ± .002	.180 ± .141	.029 ± .01[illegible]
5	83 07/17	BEANS	3.8 ± .3	4.3 ± .4	< .5	.008 ± .007	.086 ± .002	.011 ± .002
		BEETS	4.0 ± .2	4.4 ± .4	< .5	< .006	.027 ± .002	.014 ± .002
	08/13	BEANS	3.6 ± .4	3.2 ± .3	< .5	< .005	.066 ± .002	.0171 ± .0009
		BEETS	4.7 ± .3	5.0 ± .5	< .6	< .004	.048 ± .002	.014 ± .002
	09/18	BEANS	2.2 ± .1	2.1 ± .2	< .3	.016 ± .009	.096 ± .003	.012 ± .002
		PEPPERS	4.1 ± .2	3.8 ± .4	< .4	< .003	.021 ± .001	.007 ± .001
	ANNUAL MEAN		3.7 ± 1.7	3.8 ± 2.1	< .5	.007 ± .009	.057 ± .061	.013 ± .007
6D	83 07/18	BEANS	2.7 ± .2	2.8 ± .3	< .3	< .01	.188 ± .005	.018 ± .003
		CABBAGE	3.9 ± .3	3.8 ± .4	< .5	< .02	.389 ± .005	.008 ± .002
	08/13	BEANS	2.0 ± .2	1.5 ± .1	.5 ± .2	< .01	.449 ± .007	.013 ± .002
		BROCCOLI	2.7 ± .2	2.8 ± .3	< .3	.011 ± .008	.160 ± .003	.020 ± .001
	09/18	BEANS	2.2 ± .2	1.6 ± .2	.6 ± .2	< .01	.393 ± .005	.015 ± .002
		PEPPERS	4.3 ± .3	4.5 ± .5	< .5	.029 ± .009	.205 ± .003	.014 ± .001
	ANNUAL MEAN		3.0 ± 1.9	2.8 ± 2.4	.5 ± .2	.015 ± .016	.297 ± .253	.015 ± .008

TABLE IV.8.2 (CONTINUED)
ANALYTICAL DATA FOR VEGETATION SAMPLES
CONCENTRATION (PCI/GRAM ORIGINAL SAMPLE)

STATION CODE	COLLECTION DATE	SAMPLE TYPE	G.BETA	K-40	N.BETA	SR-89	SR-90	RADIOACTIVE CESIUM
8	83 07/18	CABBAGE	3.5 ± .3	3.4 ± .3	< .5	.04 ± .01	.264 ± .003	.011 ± .002
		CORN	2.0 ± .1	2.1 ± .2	< .2	< .006	.020 ± .002	.009 ± .003
	08/13	BEANS	4.6 ± .4	4.4 ± .4	< .6	.03 ± .01	.241 ± .003	.022 ± .003
		CABBAGE	2.1 ± .2	2.5 ± .2	< .3	< .005	.077 ± .002	.0051 ± .0009
	09/18	BEANS	3.9 ± .3	3.6 ± .4	< .4	< .008	.155 ± .004	.028 ± .003
		CABBAGE	2.1 ± .1	2.4 ± .2	< .3	< .005	.044 ± .002	.0093 ± .0009
	ANNUAL MEAN		3.0 ± 2.2	3.1 ± 1.8	< .4	.02 ± .03	.134 ± .206	.014 ± .018
23	83 07/17	APPLES	3.1 ± .2	2.4 ± .2	.7 ± .3	< .007	.222 ± .003	.007 ± .002
	08/13	PEACHES	3.5 ± .2	2.8 ± .3	.7 ± .3	< .008	.235 ± .003	.005 ± .001
	09/17	APPLES	.65 ± .04	.72 ± .07	< .08	< .005	.009 ± .003	.003 ± .002
	ANNUAL MEAN		2.4 ± 3.1	2.0 ± 2.2	.5 ± .7	< .007	.155 ± .254	.005 ± .004
	MEAN-SITE AREA STATIONS (1,23)		2.7 ± 2.5	2.3 ± 1.8	.4 ± .6	.008 ± .005	.123 ± .192	.011 ± .014
	MEAN-DISTANT STATIONS (3A,4N,5,6D,8)		3.1 ± 1.8	3.1 ± 2.0	.4 ± .3	.012 ± .018	.177 ± .255	.019 ± .035
	MEAN-ALL STATIONS		3.0 ± 2.0	2.9 ± 2.1	.4 ± .4	.011 ± .016	.163 ± .241	.017 ± .031

TABLE IV.9.1
ANALYTICAL DATA FOR MILK SAMPLES
CONCENTRATION (PCI/L)

NEAR FARMS

STATION CODE	COLLECTION DATE	I-131	G.BETA	K-40	N.BETA	SR-89	SR-90	CS-134	CS-137
G	83 01/10	< .1	1220 ± 90	1000 ± 100	200 ± 100	1 ± 1	6.7 ± .4	< 4	10 ± 4
	05/16	< .1	1190 ± 90	940 ± 90	200 ± 100	1 ± 1	4.8 ± .4	< 3	< 3
	07/11	< .09	1000 ± 90	890 ± 90	< 100	< 2	4.9 ± .3	< 3	< 2
	11/07	< .1	770 ± 90	740 ± 70	< 100	< .9	3.5 ± .4	7 ± 5	< 4
	ANNUAL MEAN	< .1	1045 ± 415	893 ± 222	150 ± 115	1 ± 1	5.0 ± 2.6	4 ± 4	5 ± 7
J	83 01/10	.2 ± .1	1500 ± 100	1100 ± 100	400 ± 100	< .8	4.3 ± .4	< 3	< 2
	05/16	< .2	970 ± 90	780 ± 80	200 ± 100	< 2	6.9 ± .6	< 3	4 ± 3
	07/11	< .08	960 ± 90	900 ± 90	< 100	< .9	5.5 ± .4	< 2	< 2
	11/07	< .2	1500 ± 100	1100 ± 100	500 ± 200	< .9	3.7 ± .4	< 2	< 2
	ANNUAL MEAN	.2 ± .1	1233 ± 618	970 ± 316	300 ± 365	< 1	5.1 ± 2.8	< 3	2.5 ± 2
O	83 01/10		1200 ± 90	1000 ± 100	200 ± 100	< 1	5.3 ± .4	< 4	< 3
	05/16		280 ± 60	470 ± 50	< 70	< 1	4.0 ± .6	< 3	< 2
	07/11		970 ± 90	910 ± 90	< 100	< .8	3.7 ± .4	< 4	< 4
	11/07		1100 ± 100	1000 ± 100	< 200	< .7	3.0 ± .3	< 4	< 4
	ANNUAL MEAN		888 ± 832	845 ± 507	143 ± 135	< .9	4.0 ± 1.9	< 4	< 3

TABLE IV.9.1 (CONTINUED)
ANALYTICAL DATA FOR MILK SAMPLES
CONCENTRATION (PCI/L)

INTERMEDIATE DISTANT FARMS

STATION CODE	COLLECTION DATE	I-131	G.BETA	K-40	N.BETA	SR-89	SR-90	CS-134	CS-137
D	83 01/10		1240 ± 90	1000 ± 100	300 ± 100	< .6	2.8 ± .3	< 3	< 3
	05/16		900 ± 80	780 ± 80	100 ± 100	< 1	5.2 ± .5	< 3	< 3
	07/11		970 ± 90	880 ± 90	< 100	< 2	6.5 ± .4	< 3	< 2
	11/07		1400 ± 100	1000 ± 100	400 ± 200	< .8	2.9 ± .3	< 3	< 2
	ANNUAL MEAN		1128 ± 467	915 ± 212	225 ± 300	< 1.1	4.4 ± 3.6	< 3	< 3
L	83 01/10		1130 ± 80	920 ± 90	200 ± 100	< .8	2.9 ± .3	< 3	5 ± 3
	05/16		390 ± 70	460 ± 50	< 80	< 2	5.1 ± .7	< 3	< 3
	07/11		960 ± 90	920 ± 90	< 100	< .8	3.5 ± .3	< 3	< 2
	11/07		630 ± 90	530 ± 50	< 100	< .8	2.7 ± .4	< 4	< 4
	ANNUAL MEAN		778 ± 663	708 494	120 108	< 1	3.6 ± 2.2	< 3	3.5 ± 2.6
M	83 01/10		1300 ± 100	1100 ± 100	200 ± 100	< .8	3.2 ± .3	< 4	< 3
	05/16		1060 ± 80	790 ± 80	300 ± 100	< 2	7.2 ± .5	< 3	< 3
	07/11		950 ± 90	900 ± 90	< 100	< .9	4.9 ± .4	< 3	< 3
	11/07		1000 ± 100	1000 ± 100	< 200	1 ± 1	3.3 ± .3	< 3	< 2
	ANNUAL MEAN		1078 ± 310	948 ± 266	200 ± 163	1.2 ± 1.1	4.7 ± 3.7	< 3	< 3
N	83 01/10		1270 ± 90	1100 ± 100	200 ± 100	< 1	3.7 ± .4	< 5	< 4
	05/16		890 ± 90	800 ± 80	< 100	< 2	8.3 ± .5	< 3	< 3
	07/11		910 ± 80	900 ± 90	< 100	< 1	5.3 ± .4	< 6	< 4
	11/07		1100 ± 100	1000 ± 100	< 100	< .6	3.2 ± .3	< 3	4 ± 3
	ANNUAL MEAN		1043 ± 358	950 ± 258	125 ± 100	< 1	5.1 ± 4.6	< 4	4 ± 1

TABLE IV.9.1 (CONTINUED)
ANALYTICAL DATA FOR MILK SAMPLES
CONCENTRATION (PCI/L)

DISTANT FARMS

STATION CODE	COLLECTION DATE	I-131	G.BETA	K-40	N.BETA	SR-89	SR-90	CS-134	CS-137
A	83 01/10	.1 ± .1	1230 ± 90	1000 ± 100	200 ± 100	< .9	4.3 ± .3	< 3	< 3
	05/16	< .06	980 ± 80	860 ± 90	100 ± 100	< 1	3.2 ± .4	< 2	< 2
	07/11	< .10	950 ± 80	830 ± 80	100 ± 100	< .9	2.9 ± .3	< 5	< 5
	11/07	< .1	1300 ± 100	1000 ± 100	300 ± 200	< .8	2.8 ± .3	< 3	< 3
	ANNUAL MEAN	.09 ± .04	1115 ± 352	923 ± 181	175 ± 191	< .9	3.3 ± 1.4	< 3	< 3
B	83 01/10		1160 ± 90	1000 ± 100	200 ± 100	< .8	3.7 ± .3	< 2	3 ± 2
	05/16		820 ± 80	720 ± 70	100 ± 100	< 1	6.4 ± .5	< 3	3 ± 3
	07/11		890 ± 80	840 ± 80	< 100	< 1	4.5 ± .4	< 4	< 3
	11/07		300 ± 60	370 ± 40	< 70	< 1	3.1 ± .4	< 3	< 3
	ANNUAL MEAN		793 ± 719	733 ± 535	118 ± 114	< 1	4.4 ± 2.9	< 3	3 ± 0
C	83 01/10	.1 ± .1	1180 ± 90	1000 ± 100	200 ± 100	< .7	2.9 ± .3	< 3	< 2
	05/16	< .1	1000 ± 100	950 ± 90	< 100	< 1	5.7 ± .5	< 2	< 2
	07/11	< .10	1100 ± 100	950 ± 90	< 100	< .9	4.3 ± .4	< 3	< 2
	11/07	.3 ± .2	1300 ± 100	1100 ± 100	< 200	< .7	3.0 ± .3	< 3	< 2
	ANNUAL MEAN	.2 ± .2	1145 ± 254	1000 ± 141	150 ± 115	< .8	4.0 ± 2.6	< 3	< 3
E	83 01/10		1230 ± 90	1000 ± 100	200 ± 100	1 ± 1	9.4 ± .4	< 2	< 2
	05/16		990 ± 90	840 ± 80	100 ± 100	< .9	4.7 ± .5	< 3	< 3
	07/11		890 ± 90	840 ± 80	< 100	< 1	3.7 ± .4	< 5	< 4
	11/07		1000 ± 100	890 ± 90	< 100	< .8	3.7 ± .3	< 3	< 2
	ANNUAL MEAN		1028 ± 288	893 ± 151	125 ± 100	.9 ± .2	5.4 ± 5.4	< 3	< 3

TABLE IV.9.2

1983 MEAN RADIOACTIVITY CONCENTRATION IN MILK SAMPLES

Farm Groups	Collection Dates	G. Beta	K-40	N. Beta	Sr-89	Sr-90	Cs-134	Cs-137	I-131
Distant	1/10	1200 ± 71	1000 ± 0	200 ± 0	0.9 ± 0.3	5.1 ± 5.9	< 2.5	2.5 ± 1.2	.1 ± 0
Farms	5/16	948 ± 171	843 ± 189	100 ± 0	< 1.0	5.0 ± 2.8	< 2.5	2.5 ± 1.2	< .08
(A,B,C,E)	7/11	958 ± 198	865 ± 114	100 ± 0	< 1.0	3.9 ± 1.4	< 4.3	< 3.5	< .1
	11/7	975 ± 943	840 ± 650	168 ± 209	< .8	3.2 ± .8	< 3.0	< 2.5	.2
Annual Mean	1/10-11/7	1020 ± 489	887 ± 336	142 ± 129	0.9 ± 0.2	4.3 ± 3.4	< 3.1	2.8 ± 1.7	.12 ± .15
Nearby	1/10	1307 ± 335	1033 ± 115	267 ± 231	.9 ± .2	5.4 ± 2.4	< 3.7	5.0 ± 8.7	.15 ± .14
Farms	5/16	813 ± 950	730 ± 478	157 ± 150	1.3 ± 1.2	5.2 ± 3.0	< 3.0	3.0 ± 2.0	< .15
(G,J,O)	711	977 ± 42	900 ± 20	100	< 1.2	4.7 ± 1.8	< 3.0	< 2.7	< .09
	11/7	1123 ± 731	947 ± 372	267 ± 416	< .8	3.4 ± .7	4.3 ± 5.0	< 3.3	< .15
Annual Mean	1/10-11/7	1055 ± 653	903 ± 350	198 ± 261	1.1 ± .9	4.7 ± 2.5	3.5 ± 2.6	3.5 ± 4.5	.13 ± 11
Intermed.	1/10	1235 ± 148	1030 ± 174	225 ± 100	< .8	3.2 ± .8	< 3.8	3.8 ± 1.9	-
Farms	5/16	810 ± 581	708 ± 330	143 ± 208	< 1.8	6.5 ± 3.1	< 3.0	< 3.0	-
(D,L,M,N)	7/11	948 ± 53	900 ± 33	100	< 1.2	5.1 ± 2.5	< 3.8	< 2.8	-
	11/7	1033 ± 635	883 ± 470	200 ± 282	.8 ± .3	3.0 ± .6	< 3.3	3.0 ± 2.3	-
Annual Mean	1/10-11/7	1006 ± 505	808 ± 358	168 ± 191	1.1 ± 1.1	4.4 ± 3.5	< 3.4	3.1 ± 1.8	-
Overall Mean	1/10-11/7	1025 ± 532	889 ± 340	166 ± 195	1.0 ± .8	4.4 ± 3.2	3.3 ± 2.1	3.1 ± 2.8	.13 ± .13

TABLE IV.10.1
ANALYTICAL DATA FOR RABBIT SAMPLES
CONCENTRATION (PCI/G ASH)

COLLECTION DATE		ID	G.BETA	K-40	N.BETA	SR-89	SR-90
83 07/04	BONE	5B4667	40 ± 10	19 ± 2	20 ± 10	< 1	9.2 ± .4
	SOFT TISSUE	5T4667	150 ± 10	150 ± 20	< 20		
	MUSCLE	5M4667	190 ± 10	120 ± 10	70 ± 20		
07/06	BONE	5B4668	20 ± 10	15 ± 1	< 10	< .4	2.8 ± .1
	SOFT TISSUE	5T4668	40 ± 9	39 ± 4	< 9		
	MUSCLE	5M4668	180 ± 10	120 ± 10	60 ± 20		
07/09	BONE	5B4665	20 ± 10	8 ± 1	10 ± 10	< .5	5.0 ± .1
		5B4666	10 ± 10	6 ± 1	< 10	.8 ± .7	5.0 ± .2
	SOFT TISSUE	5T4665	160 ± 10	150 ± 20	< 20		
		5T4666	150 ± 10	150 ± 20	< 20		
	MUSCLE	5M4665	180 ± 10	120 ± 10	60 ± 20		
		5M4666	140 ± 10	110 ± 10	30 ± 20		
09/17	BONE	5B4768	< 8	8 ± 1	< 8	< .4	2.74 ± .09
	SOFT TISSUE	5T4768	200 ± 10	200 ± 20	< 20		
	MUSCLE	5M4768	160 ± 10	200 ± 20	< 20		
ANNUAL MEAN							
	BONE		20 ± 25	11 ± 11	12 ± 10	.6 ± .5	4.9 ± 5.3
	SOFT TISSUE		140 ± 119	138 ± 119	18 ± 10		
	MUSCLE		170 ± 40	134 ± 74	48 ± 43		

TABLE IV.10.2
ANALYTICAL DATA FOR RABBIT SAMPLES
CONCENTRATION (PCI/GRAM ORIGINAL SAMPLE)

COLLECTION DATE		ID	G.BETA	I-131 (A)	K-40	N.BETA	SR-89	SR-90
83 07/04	BONE	*B4667	5 ± 1		2.3 ± .2	3 ± 1	< .1	1.15 ± .04
	THYROID	504667		< 20				
	SOFT TISSUE	*T4667	2.1 ± .2		2.2 ± .2	< .3		
	MUSCLE	*M4667	2.9 ± .2		1.9 ± .2	1.0 ± .3		
07/06	BONE	*B4668	3 ± 2		2.4 ± .2	< 2	< .07	.46 ± .02
	THYROID	504668		20 ± 20				
	SOFT TISSUE	*T4668	5 ± 1		4.8 ± .5	< 1		
	MUSCLE	*M4668	3.5 ± .2		2.3 ± .2	1.2 ± .3		
07/09	BONE	*B4665	4 ± 2		1.7 ± .2	3 ± 2	< .1	1.09 ± .03
		*B4666	3 ± 2		1.4 ± .3	< 2	.2 ± .2	1.26 ± .05
	THYROID	504665		< 10				
		504666		20 ± 20				
	SOFT TISSUE	*T4665	2.7 ± .2		2.6 ± .3	< .3		
		*T4666	2.4 ± .2		2.5 ± .2	< .3		
	MUSCLE	*M4665	3.3 ± .2		2.2 ± .2	1.1 ± .3		
		*M4666	3.2 ± .3		2.5 ± .2	.7 ± .4		
09/17	BONE	*B4768	< 1		1.5 ± .2	< 1	< .08	.49 ± .02
	THYROID	504768		< 60				
	SOFT TISSUE	*T4768	2.8 ± .2		2.7 ± .3	< .3		
	MUSCLE	*M4768	1.6 ± .1		1.9 ± .2	< .2		
	ANNUAL MEAN							
	BONE		3.2 ± 3.0		1.9 ±.9	2.2 ± 1.7	.1 ± .1	.9 ± .8
	SOFT TISSUE		3 ± 2		3.0 ± 2.1	.4 ± .6		
	THYROID			26 ± 39				
	MUSCLE		2.9 ± 1.5		2.2 ±.5	.8 ± .8		

NOTE:(A) I-131 RESULTS IN PCI/THYROID

FIGURE IV.1.1

GROSS BETA RADIOACTIVITY IN AIR PARTICULATE SAMPLES
FOR GROUP I - STATIONS 1A, 1B, & 2
AND GROUP III - STATIONS 12A & 12D

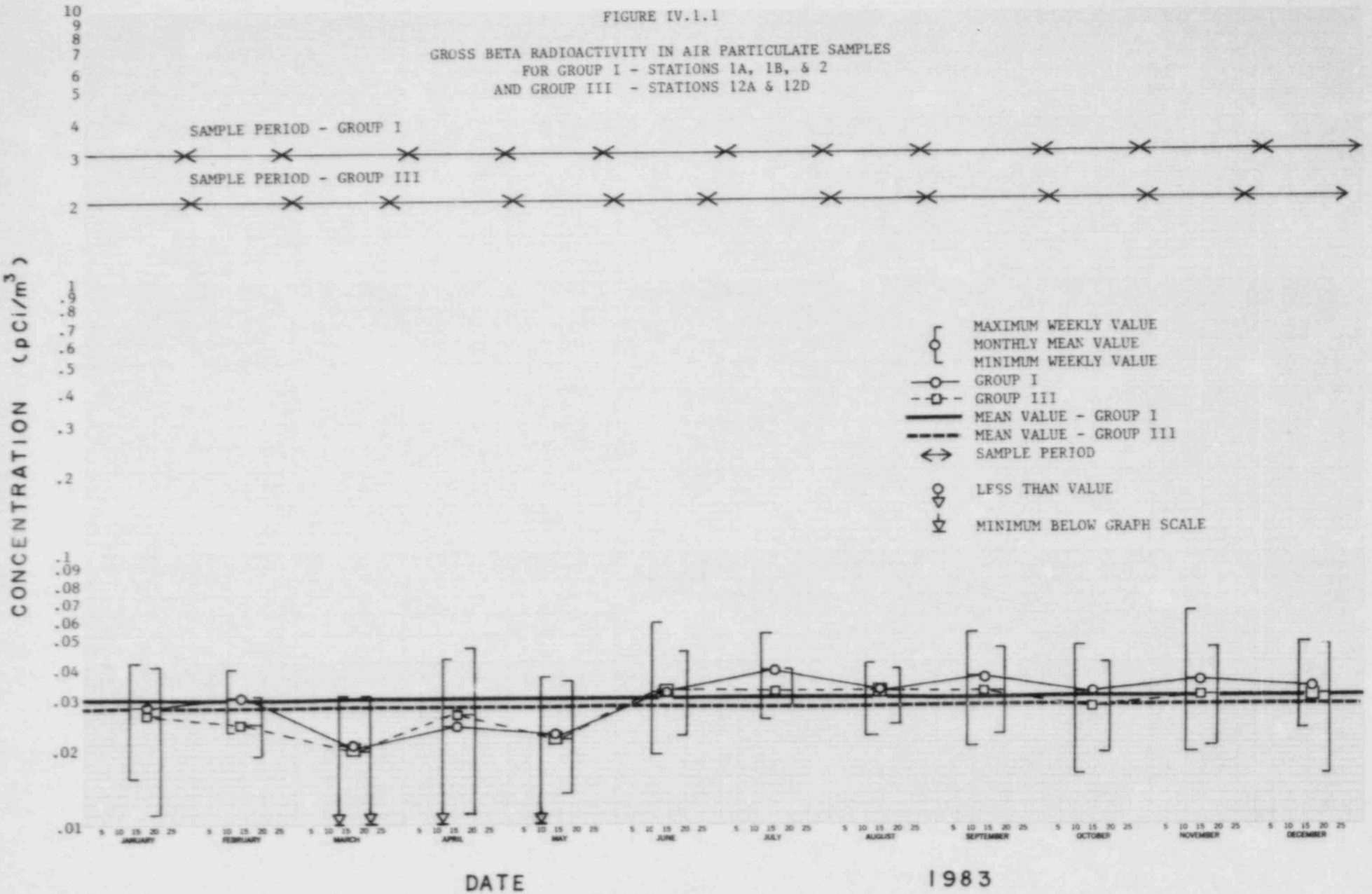


FIGURE IV.1.2

GROSS BETA RADIOACTIVITY IN AIR PARTICULATE SAMPLES
FOR GROUP II - STATIONS 3A, 4A, 4B, 5, 6B, 14,
15, 17, 31, 32, 33A & 38 and GROUP III -
STATIONS 12A and 12D

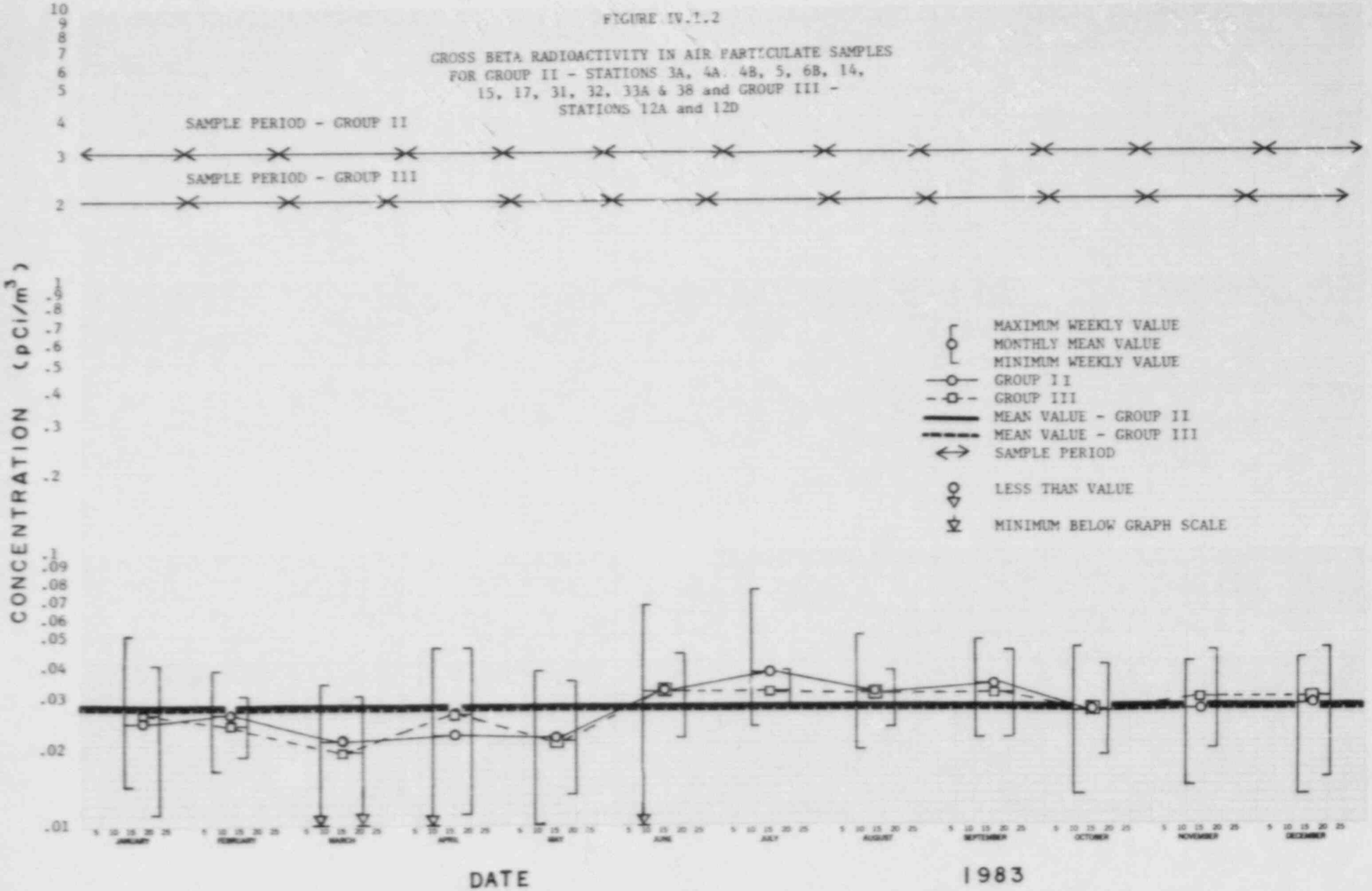
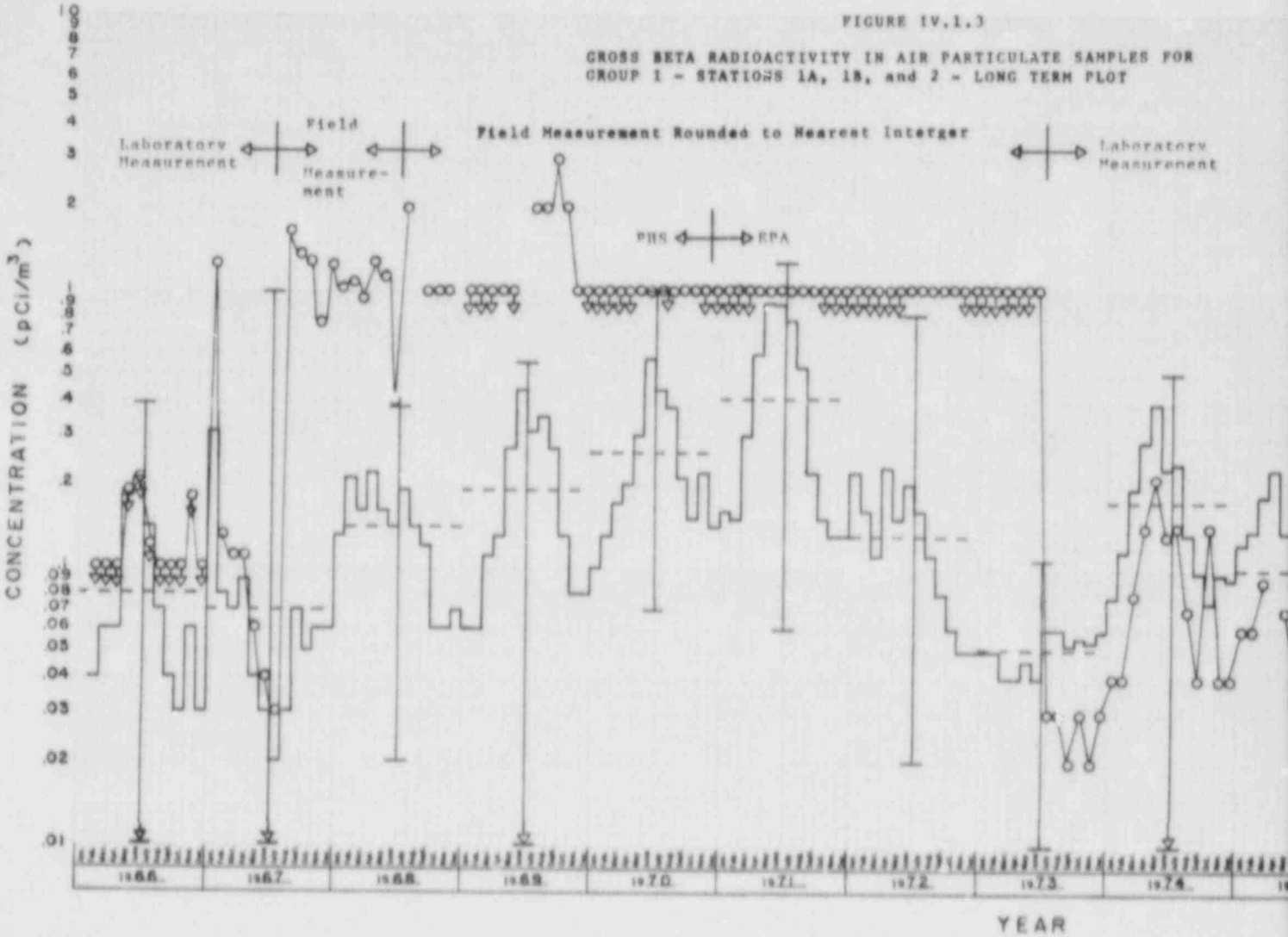


FIGURE IV.1.3

GROSS BETA RADIOACTIVITY IN AIR PARTICULATE SAMPLES FOR GROUP 1 - STATIONS 1A, 1B, and 2 - LONG TERM PLOT



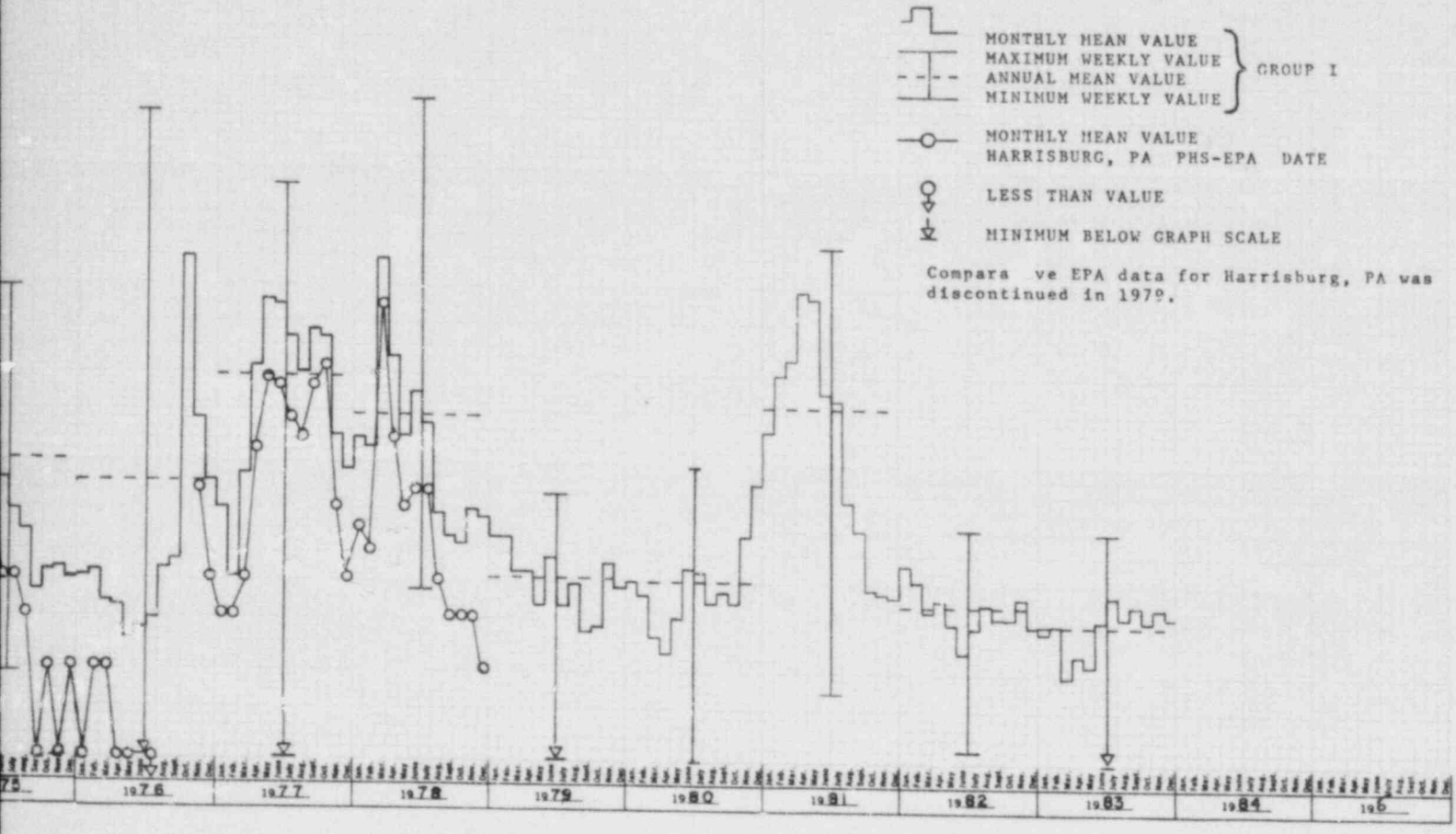
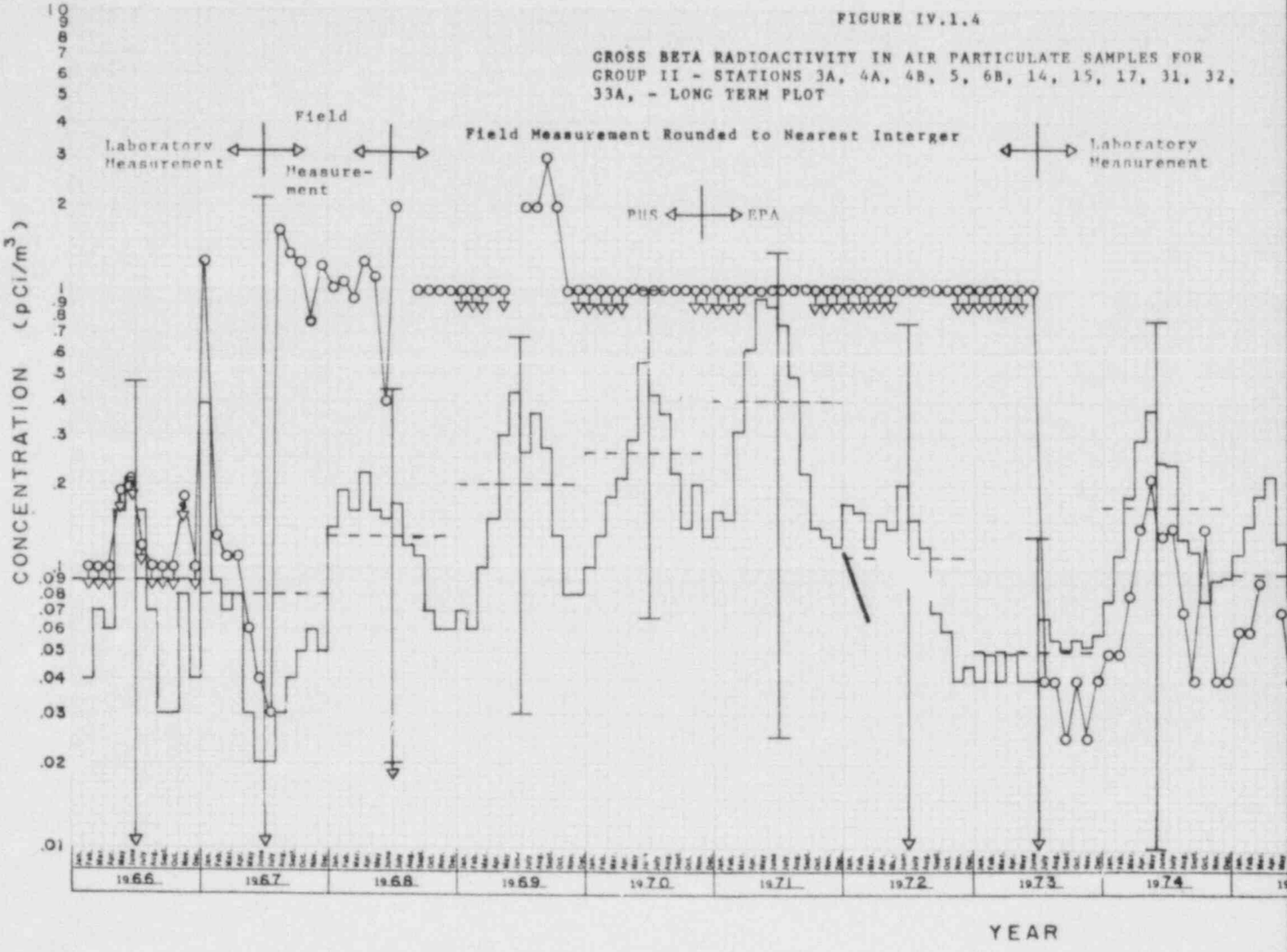


FIGURE IV.1.4

GROSS BETA RADIOACTIVITY IN AIR PARTICULATE SAMPLES FOR GROUP II - STATIONS 3A, 4A, 4B, 5, 6B, 14, 15, 17, 31, 32, 33A, - LONG TERM PLOT



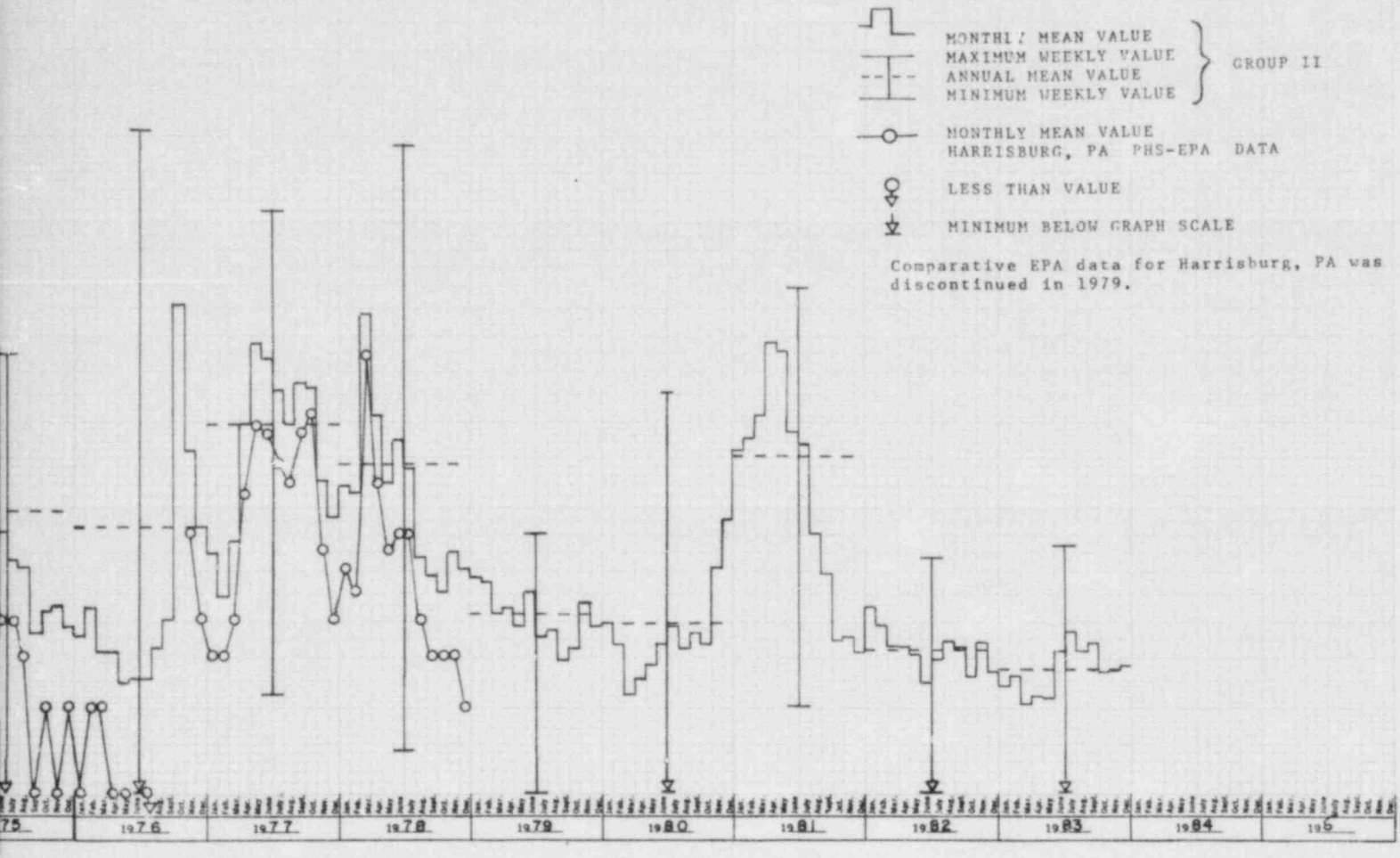
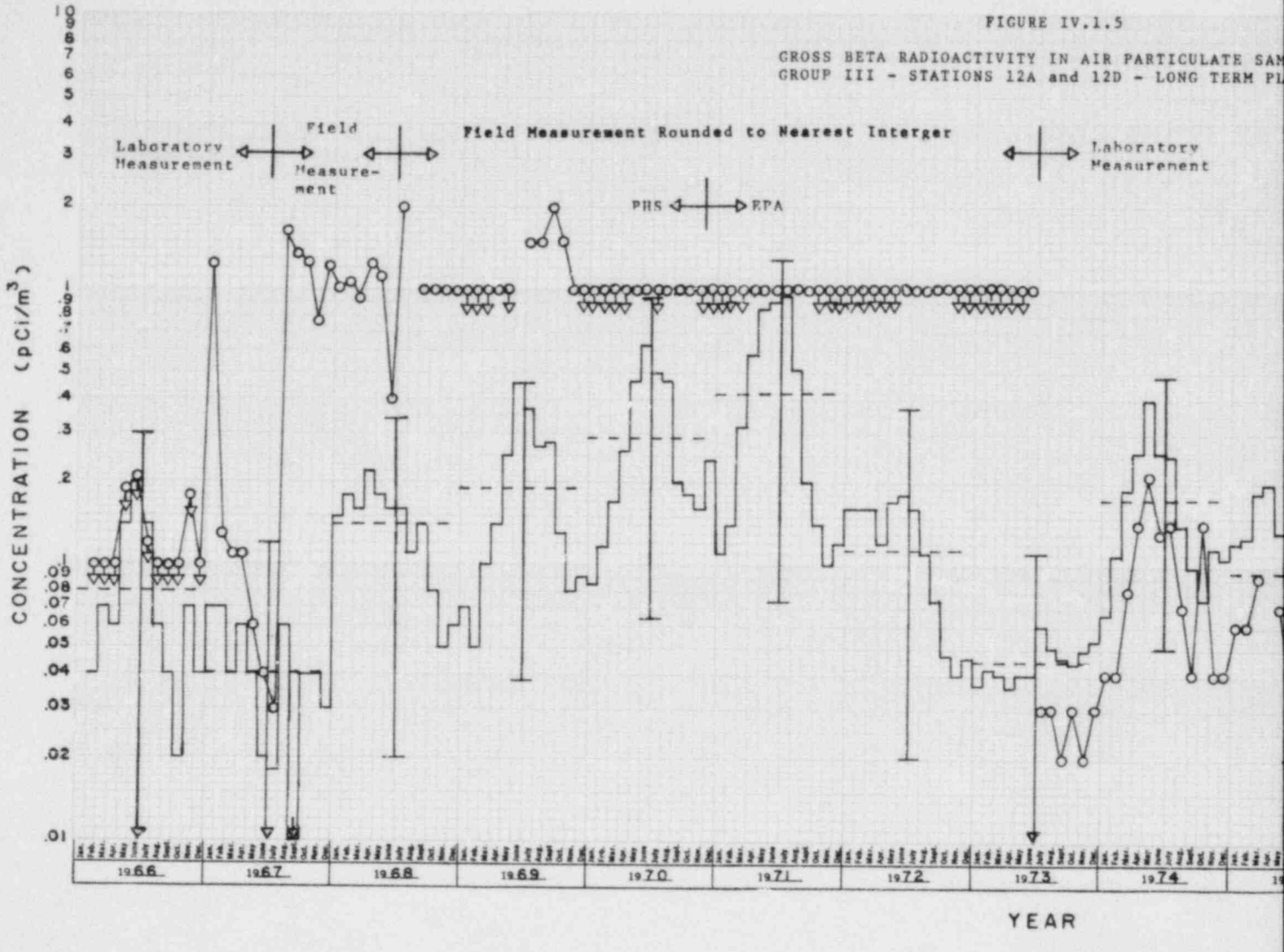


FIGURE IV.1.5

GROSS BETA RADIOACTIVITY IN AIR PARTICULATE SAM
GROUP III - STATIONS 12A and 12D - LONG TERM PL



PLES FOR
OT

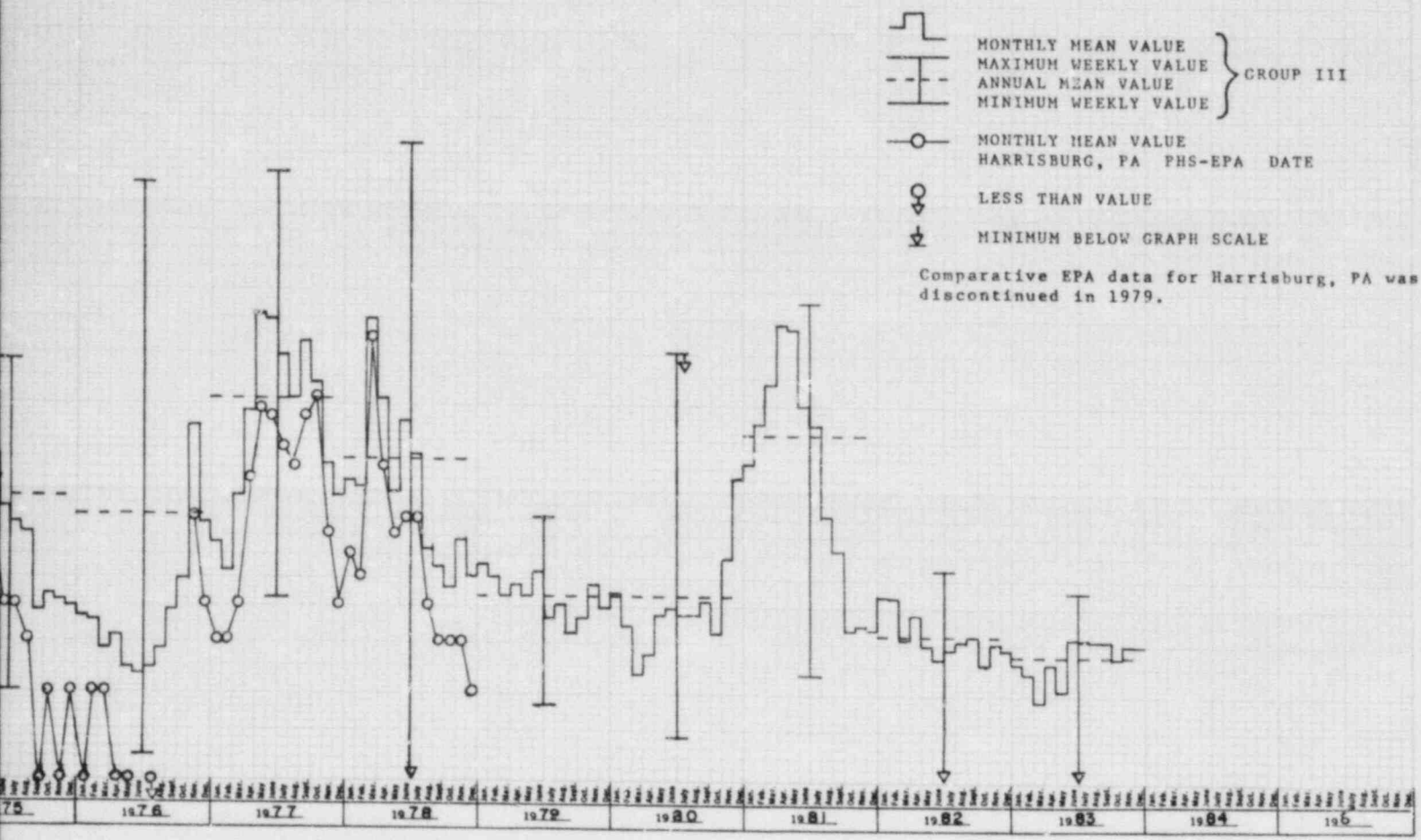


FIGURE IV.3.1

MONTHLY MEAN CONCENTRATION OF GROSS BETA
RADIOACTIVITY IN UNITS 2 AND 3 INTAKE
AND DISCHARGE WATER SAMPLES
SOLUBLE FRACTION

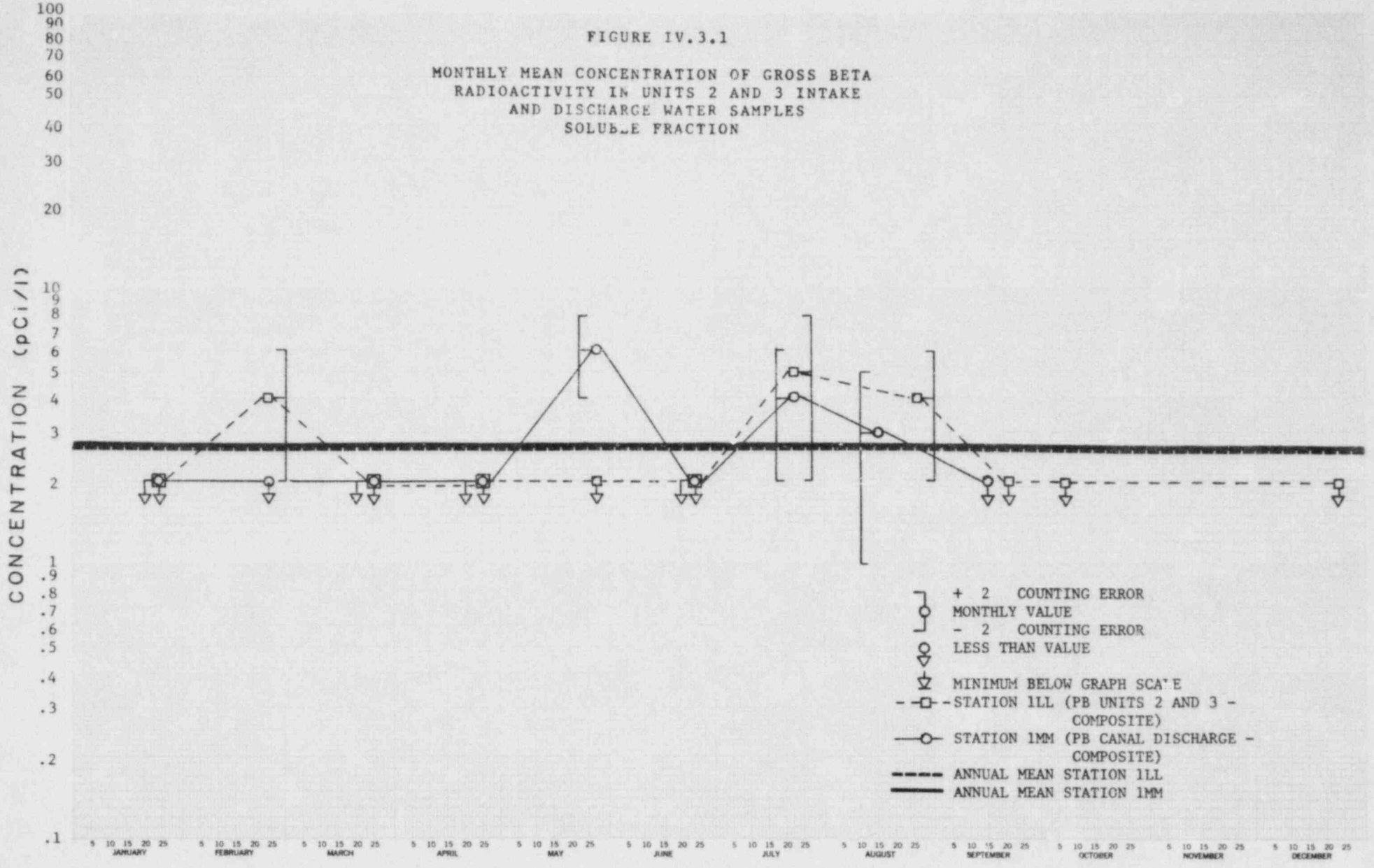


FIGURE IV.3.2

MONTHLY MEAN CONCENTRATION OF GROSS BETA
RADIOACTIVITY IN UNITS 2 AND 3 INTAKE
AND DISCHARGE WATER SAMPLES
INSOLUBLE FRACTION

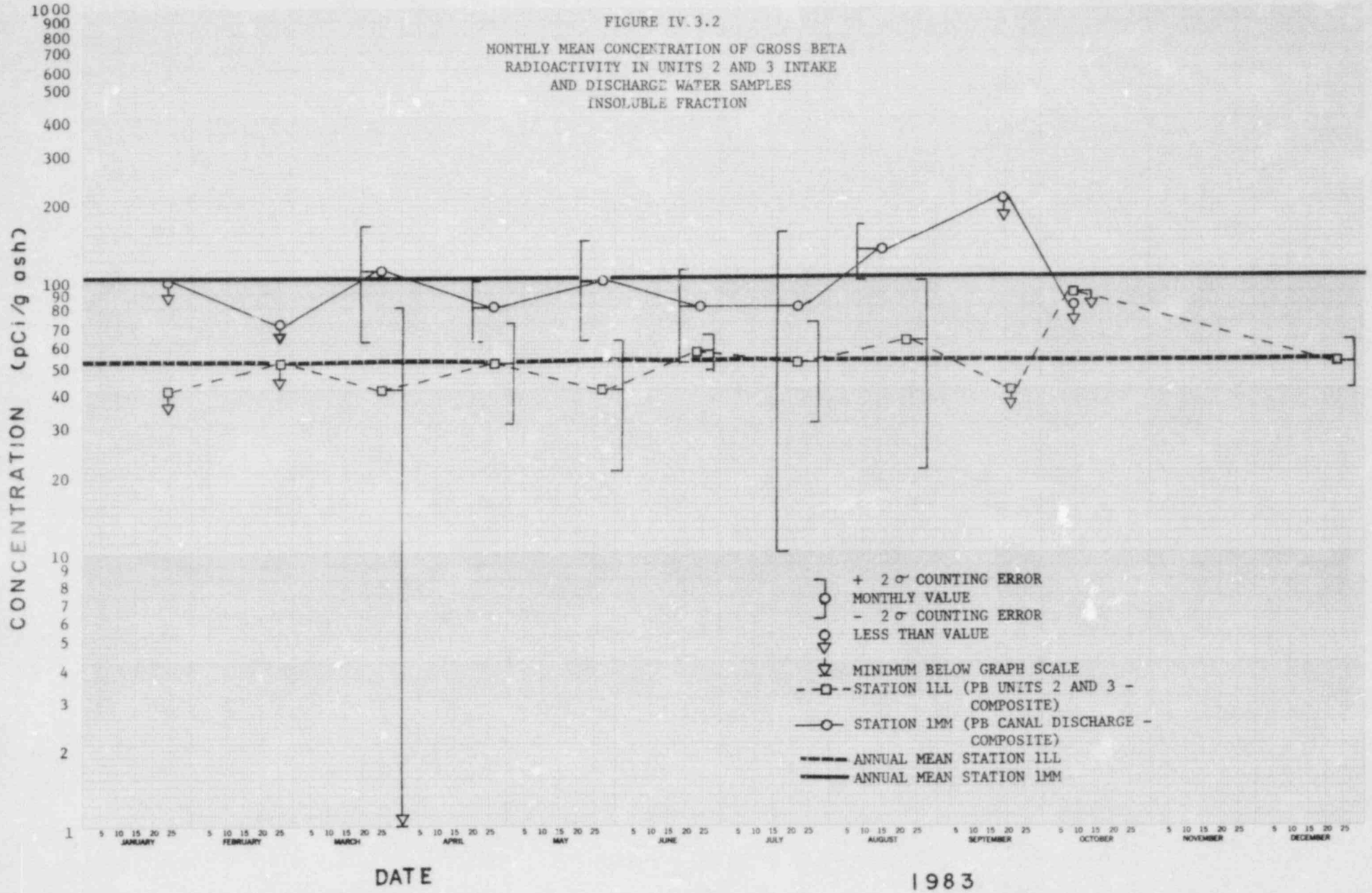


FIGURE IV.3.3

MONTHLY MEAN CONCENTRATION OF GROSS BETA
RADIOACTIVITY IN COMPOSITE SURFACE WATER
SAMPLES CONOWINGO DAM STATION 4L
AND HOLTWOOD DAM STATION 6I
SOLUBLE FRACTION

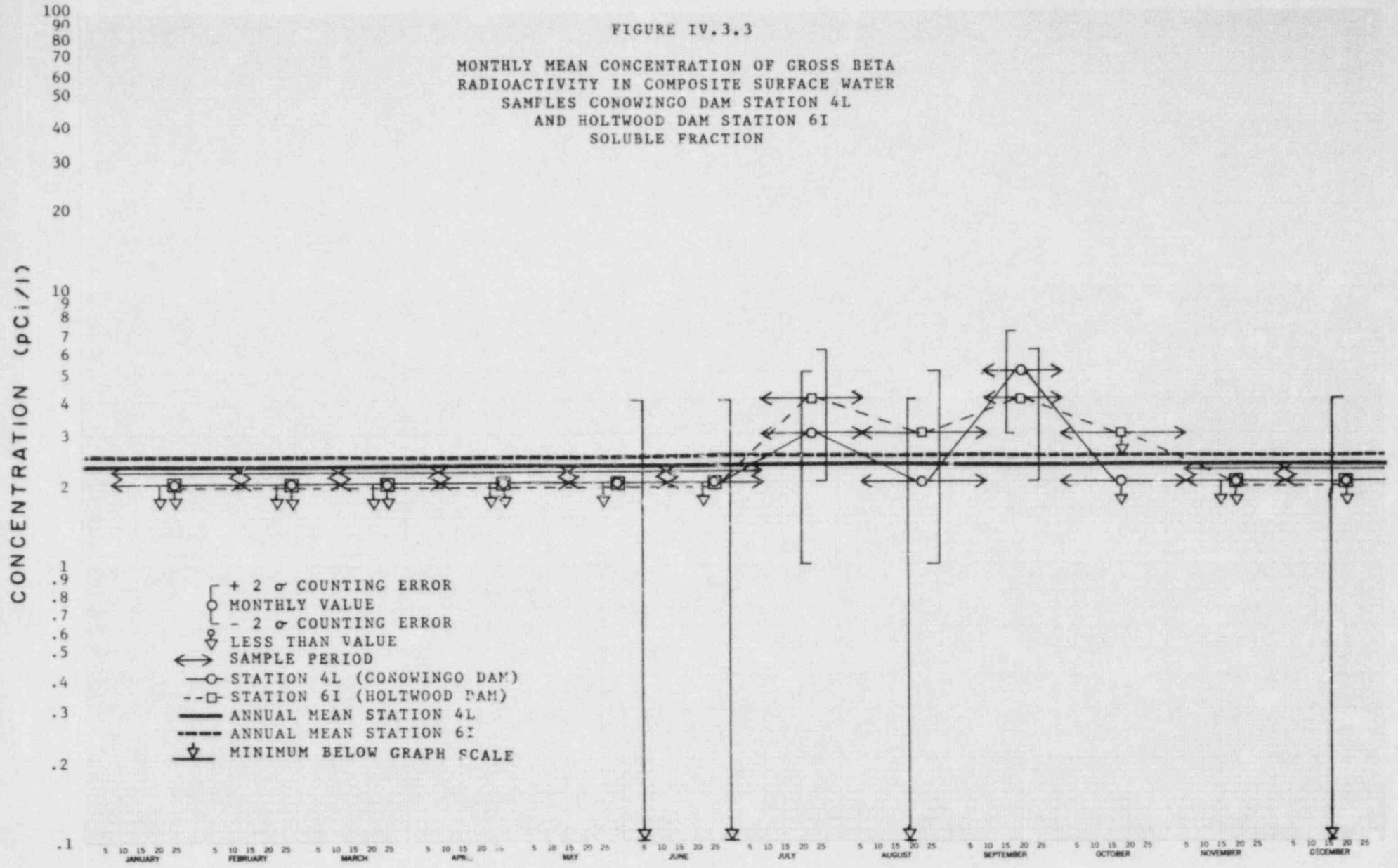


FIGURE IV.3.4

MONTHLY MEAN CONCENTRATION OF GROSS BETA RADIOACTIVITY IN COMPOSITE SURFACE WATER SAMPLES CONOWINGO DAM STATION 4L AND HOLTWOOD DAM STATION 6I INSOLUBLE FRACTION

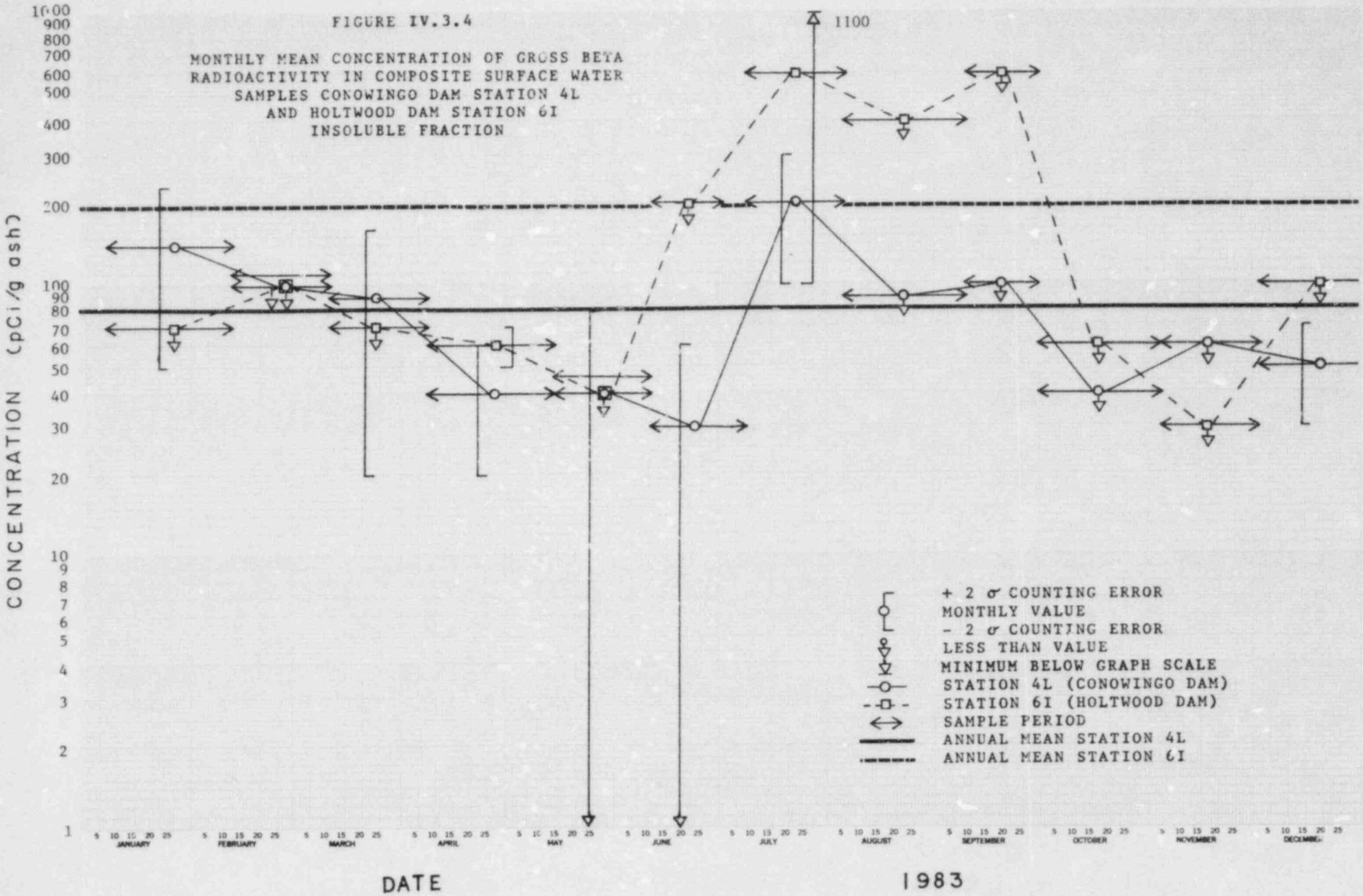
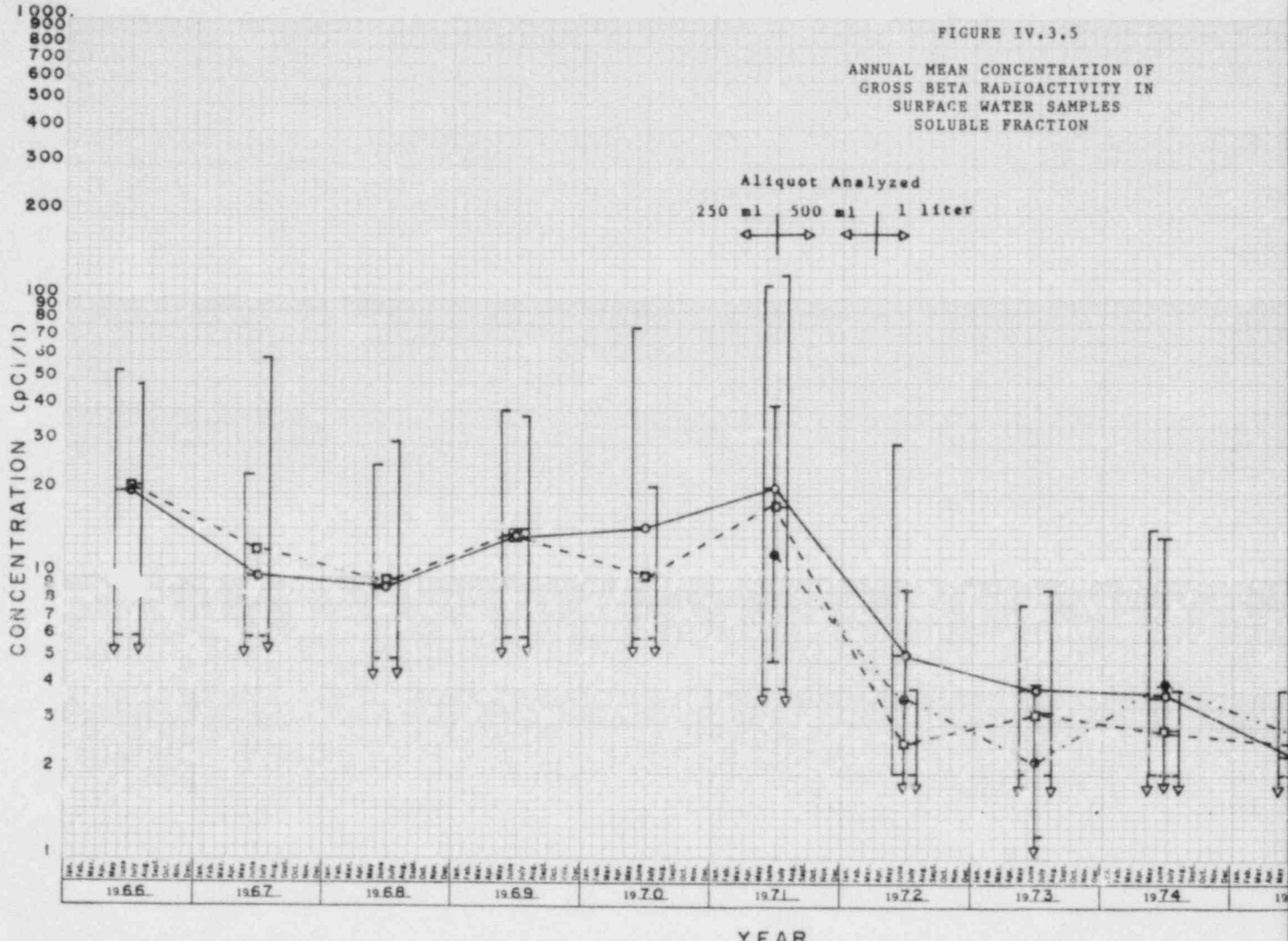


FIGURE IV.3.5

ANNUAL MEAN CONCENTRATION OF
GROSS BETA RADIOACTIVITY IN
SURFACE WATER SAMPLES
SOLUBLE FRACTION



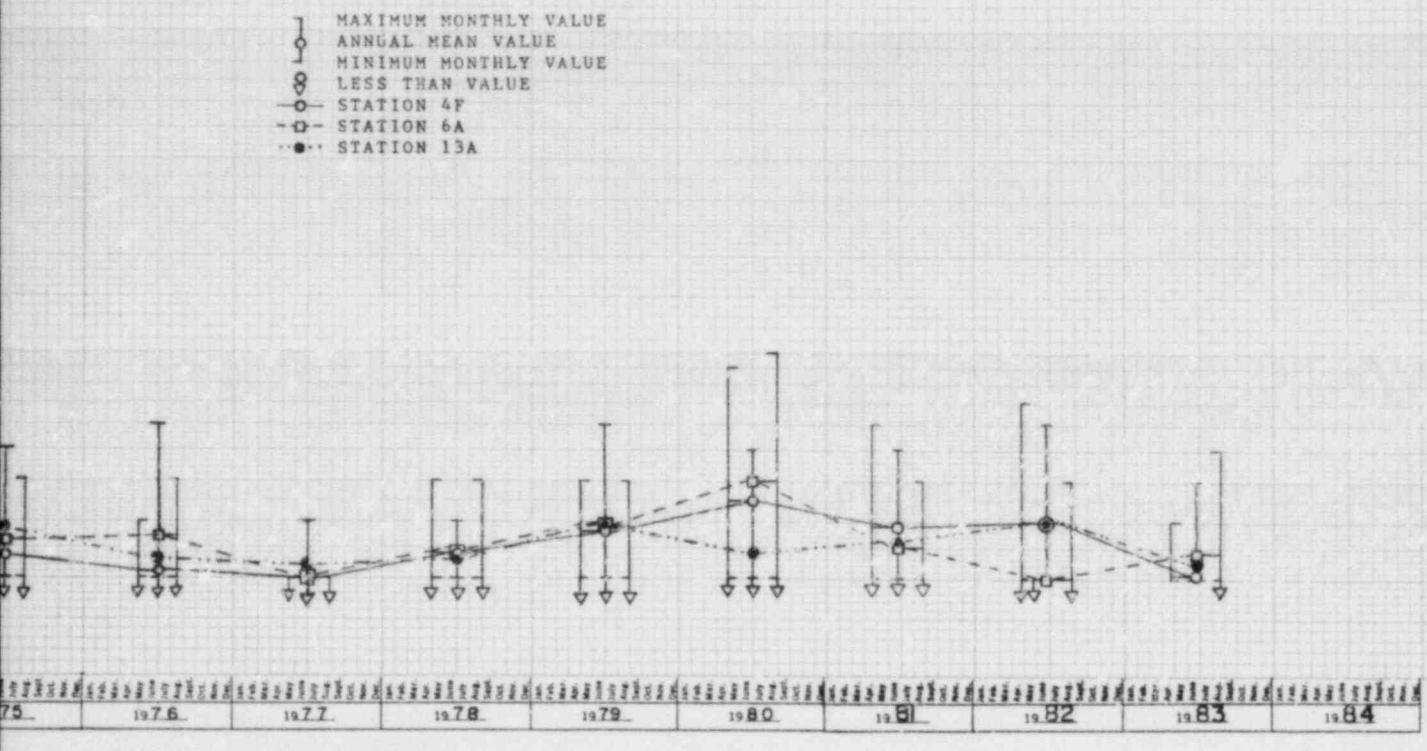


FIGURE IV.3.6

ANNUAL MEAN CONCENTRATION OF
GROSS BETA RADIOACTIVITY IN
SURFACE WATER SAMPLES
INSOLUBLE FRACTION

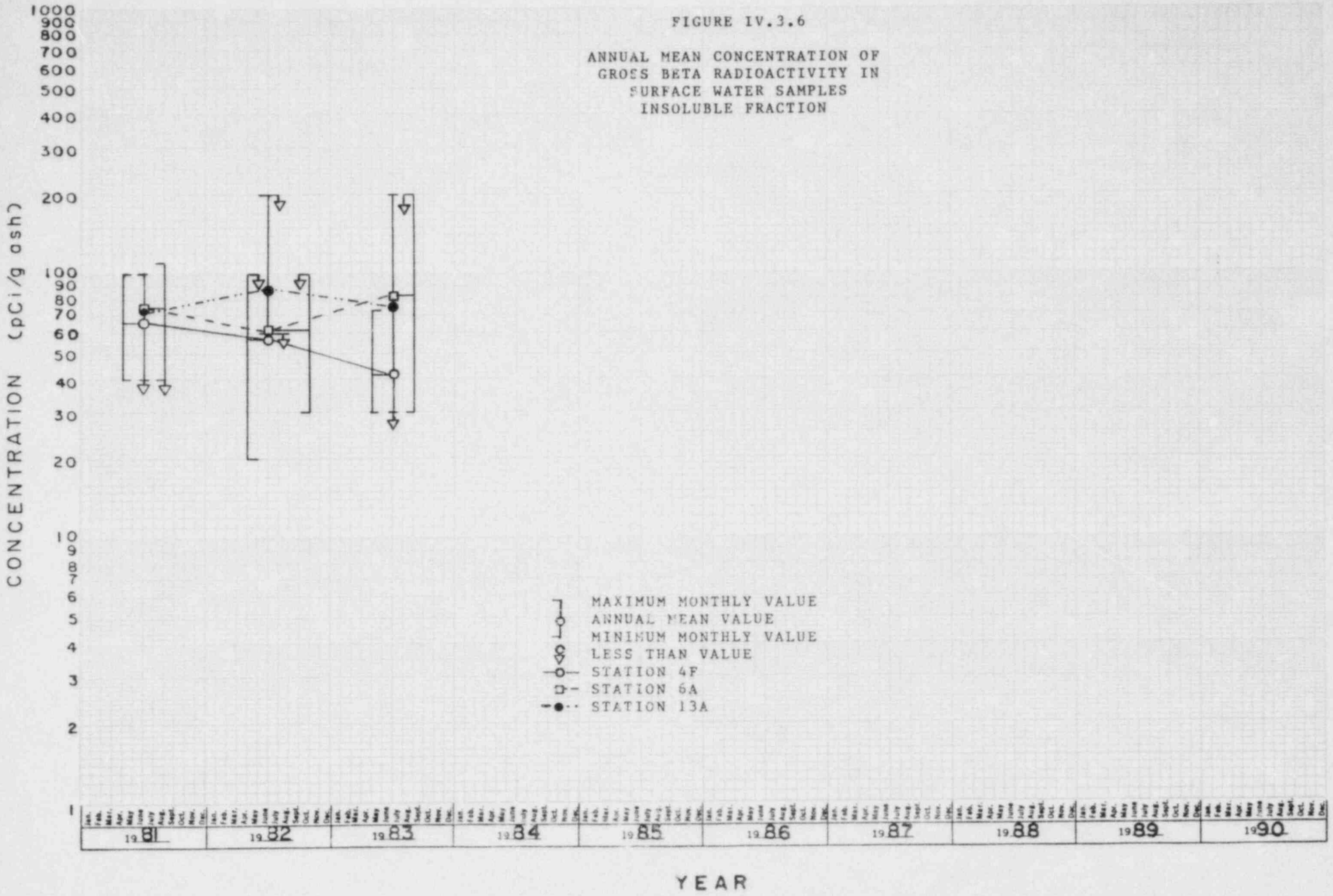
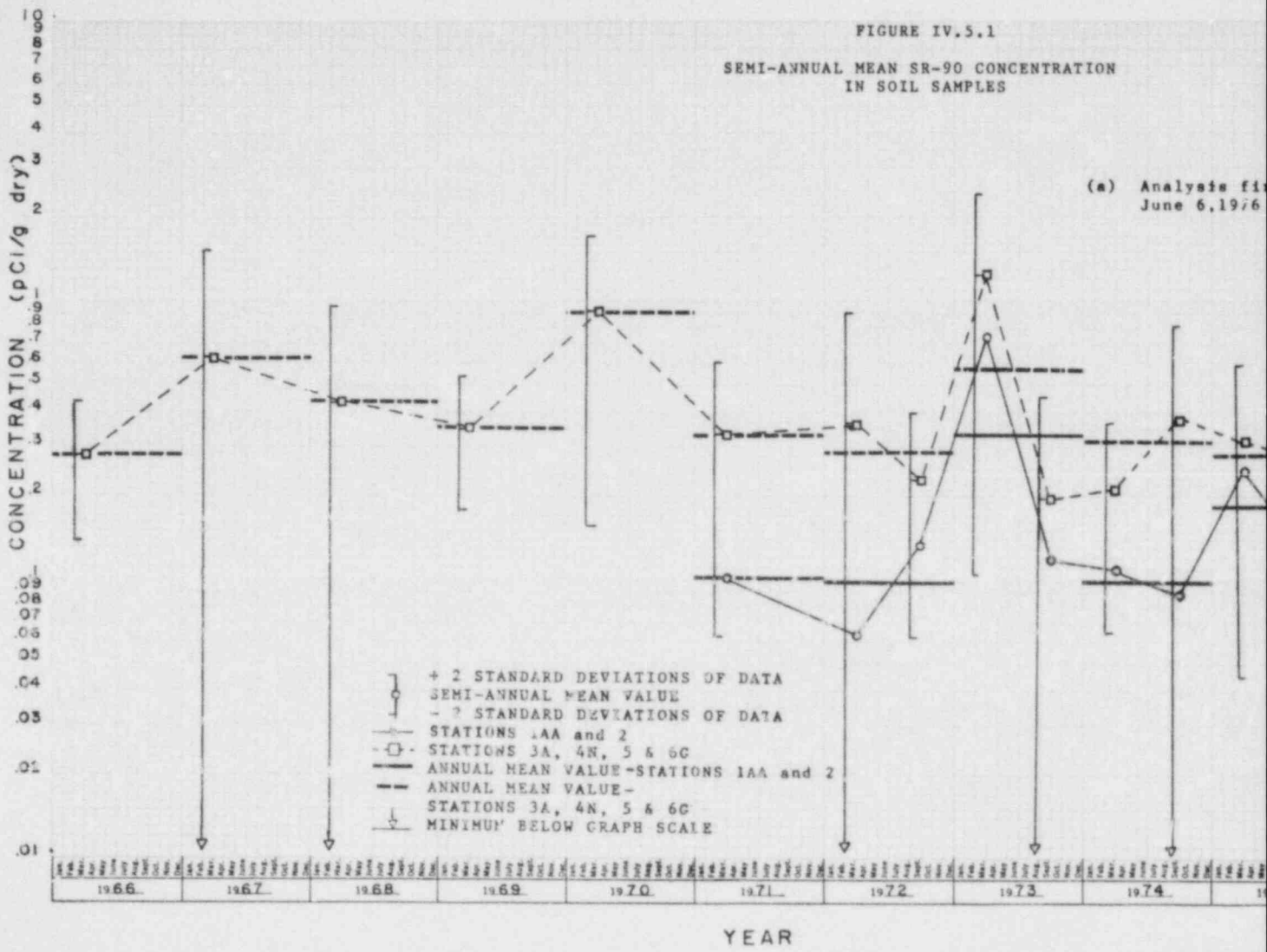


FIGURE IV.5.1

SEMI-ANNUAL MEAN SR-90 CONCENTRATION
IN SOIL SAMPLES

(a) Analysis fi
June 6,1976



st performed on
for Station 2.

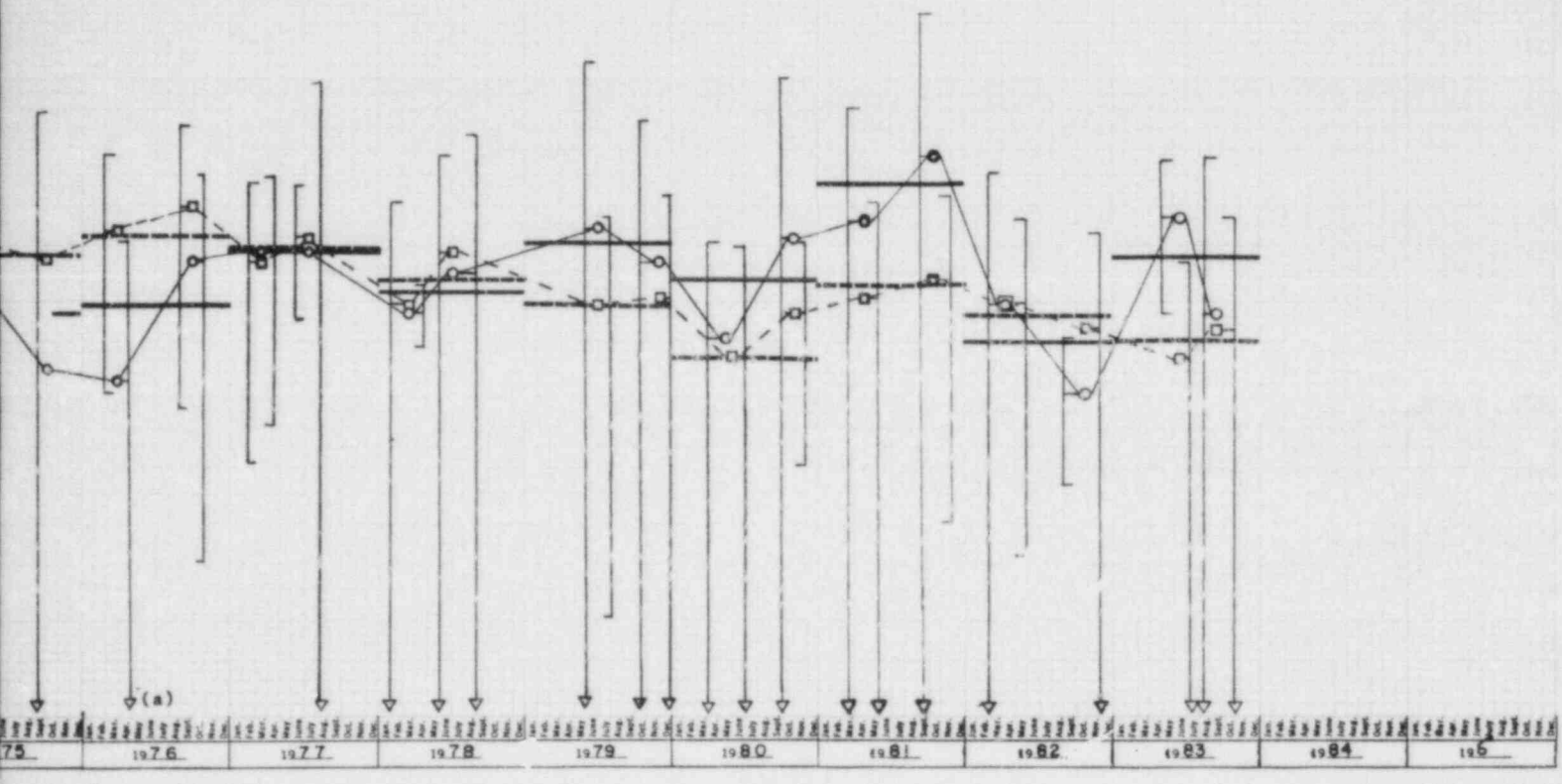
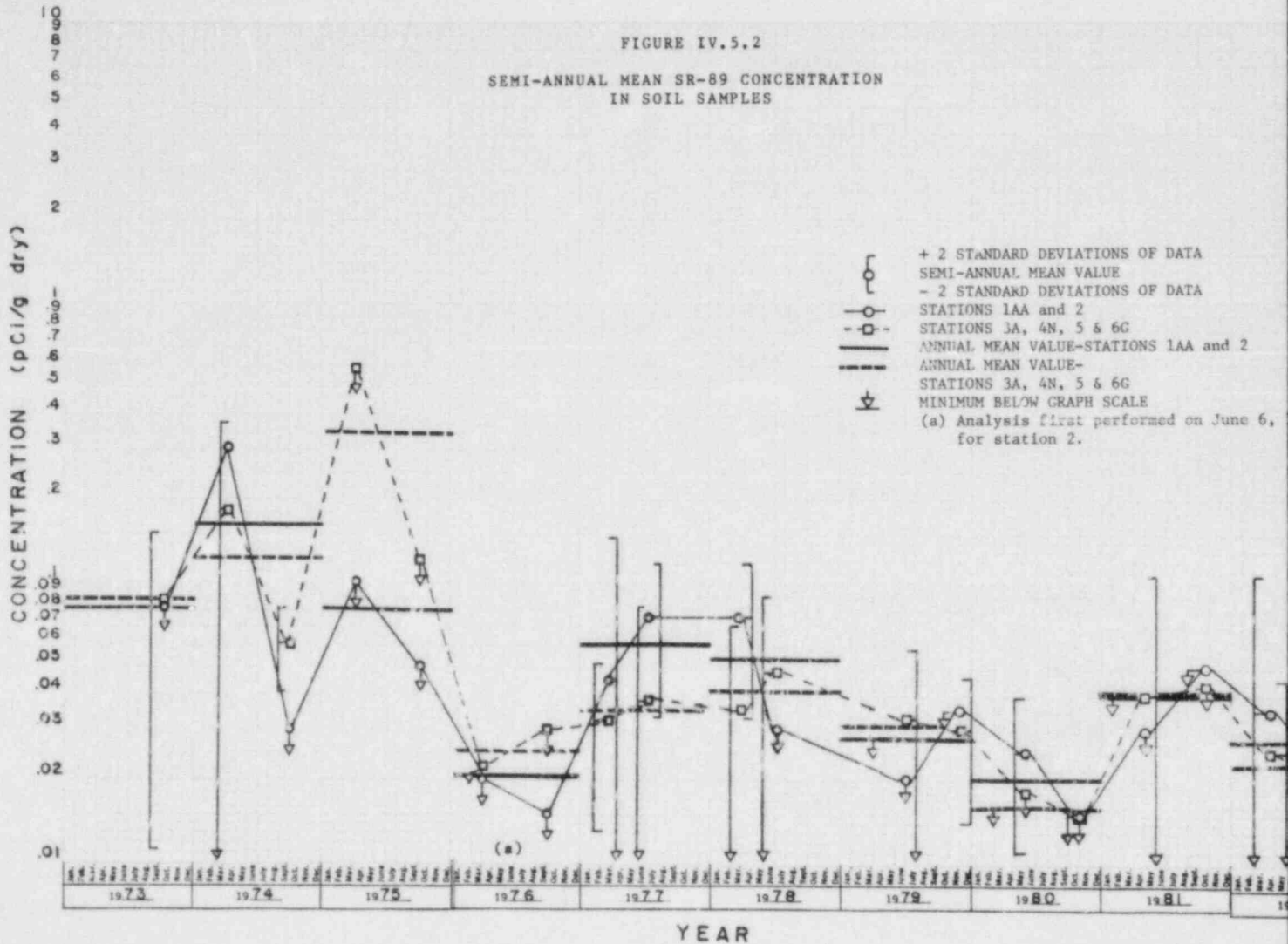
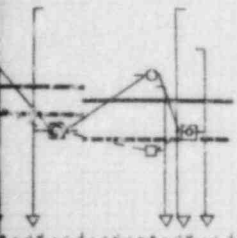


FIGURE IV.5.2

SEMI-ANNUAL MEAN SR-89 CONCENTRATION
IN SOIL SAMPLES



976



19.82 | 1983 | 1984 | 1985 | 19.__ | 19.__ | 19.__ | 19.__ | 19.__

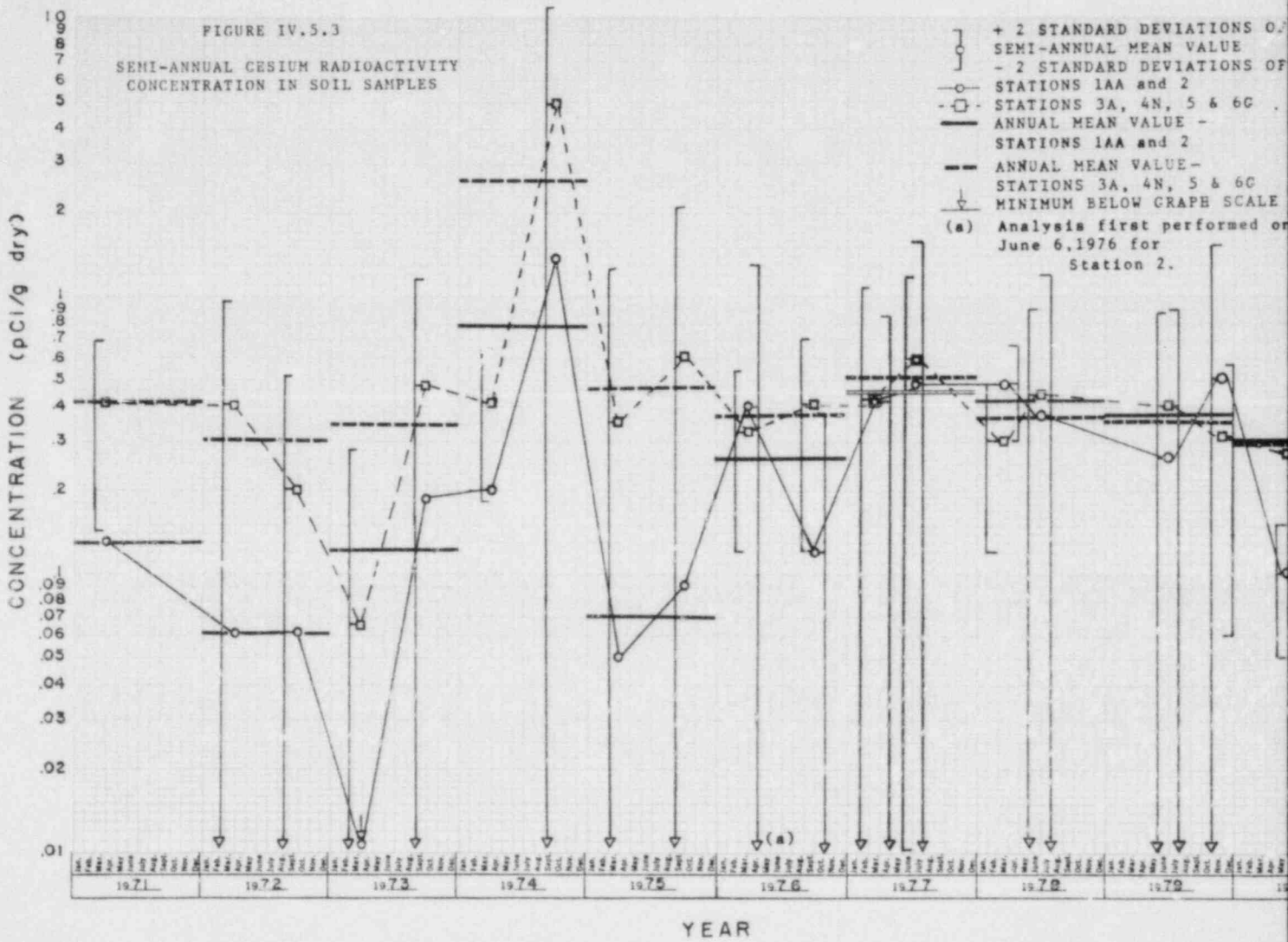
TI
APERTURE
CARD

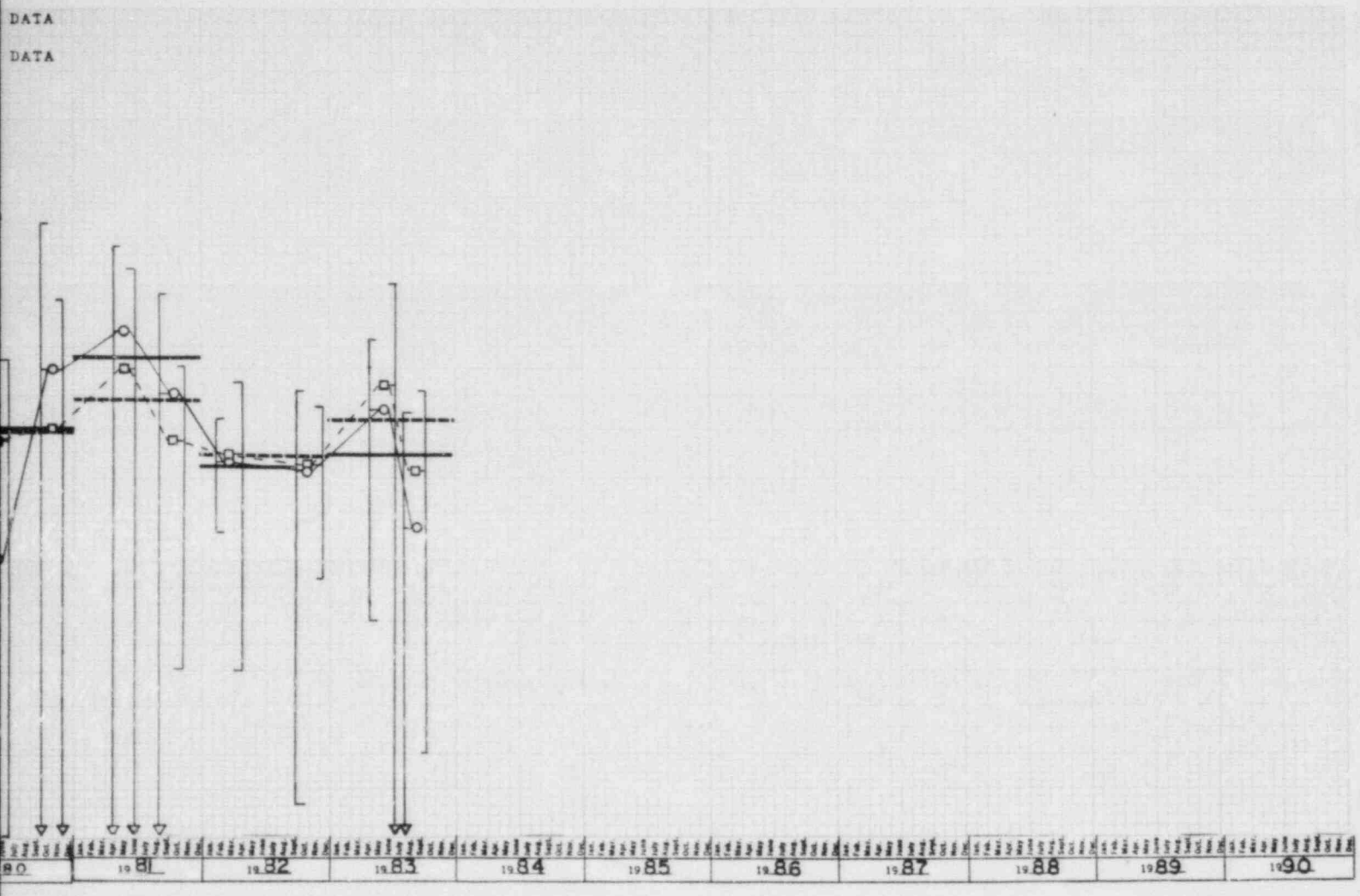
Also Available On
Aperture Card

8408240045-06

FIGURE IV.5.3

SEMI-ANNUAL CESIUM RADIOACTIVITY CONCENTRATION IN SOIL SAMPLES



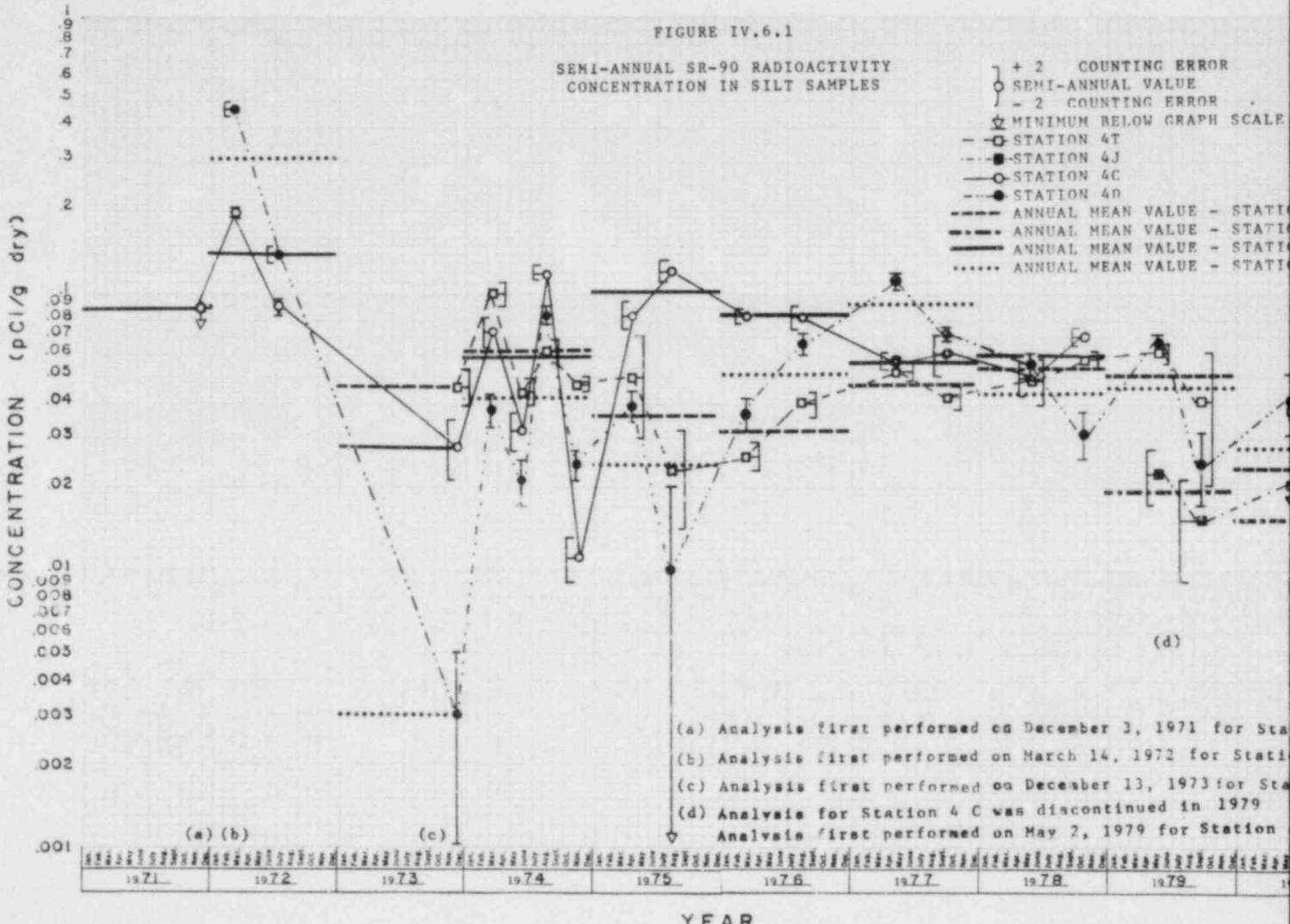


TI
APERTURE
CARD

Also Available On
Aperture Card

FIGURE IV.6.1

SEMI-ANNUAL SR-90 RADIOACTIVITY
CONCENTRATION IN SILT SAMPLES



(a) Analysis first performed on December 3, 1971 for Sta
(b) Analysis first performed on March 14, 1972 for Stati
(c) Analysis first performed on December 13, 1973 for Sta
(d) Analysis for Station 4 C was discontinued in 1979
Analysis first performed on May 2, 1979 for Station

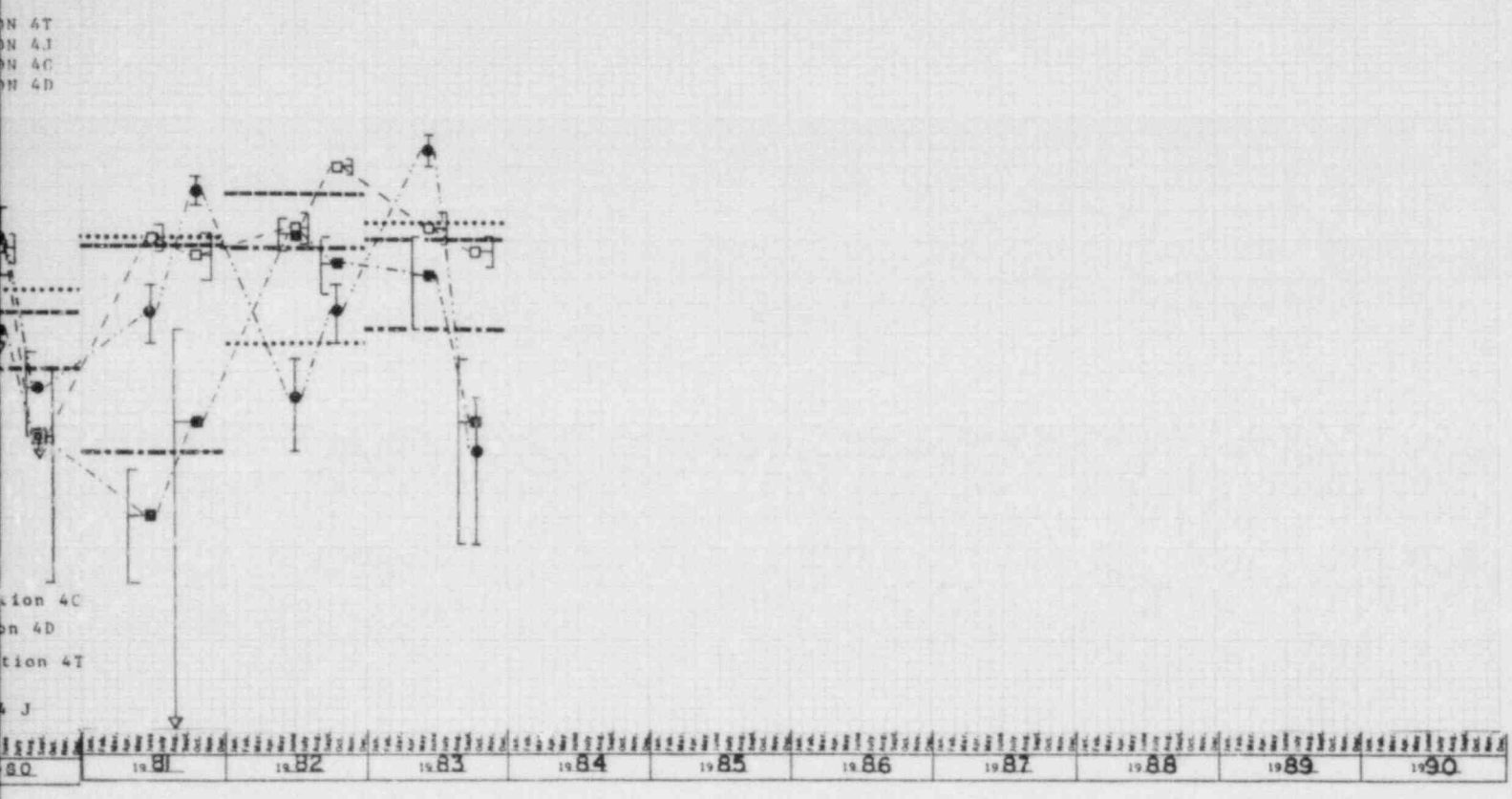
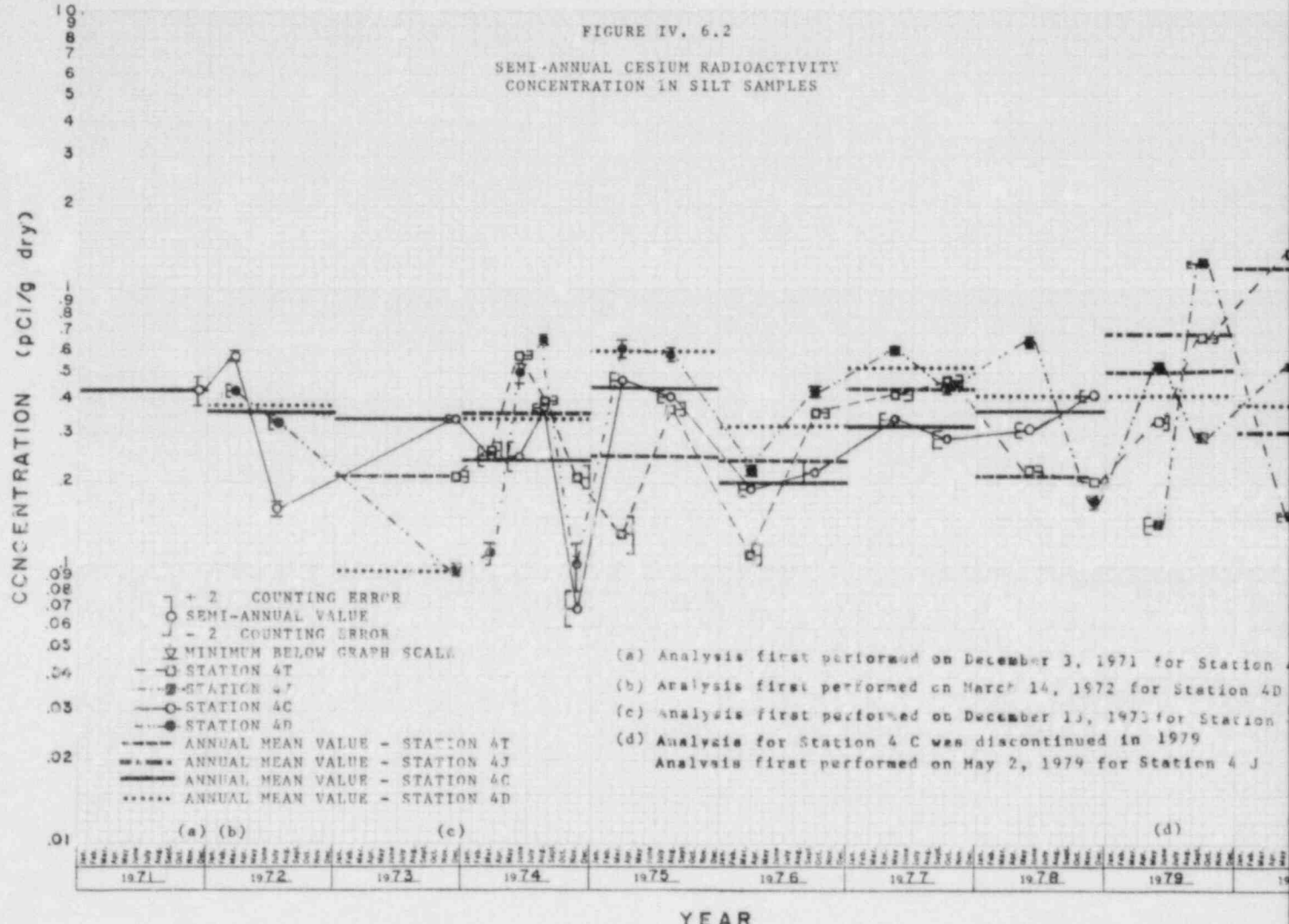


FIGURE IV. 6.2

SEMI-ANNUAL CESIUM RADIOACTIVITY
CONCENTRATION IN SILT SAMPLES



(a) Analysis first performed on December 3, 1971 for Station
(b) Analysis first performed on March 14, 1972 for Station 4D
(c) Analysis first performed on December 13, 1973 for Station
(d) Analysis for Station 4 C was discontinued in 1979
Analysis first performed on May 2, 1979 for Station 4 J

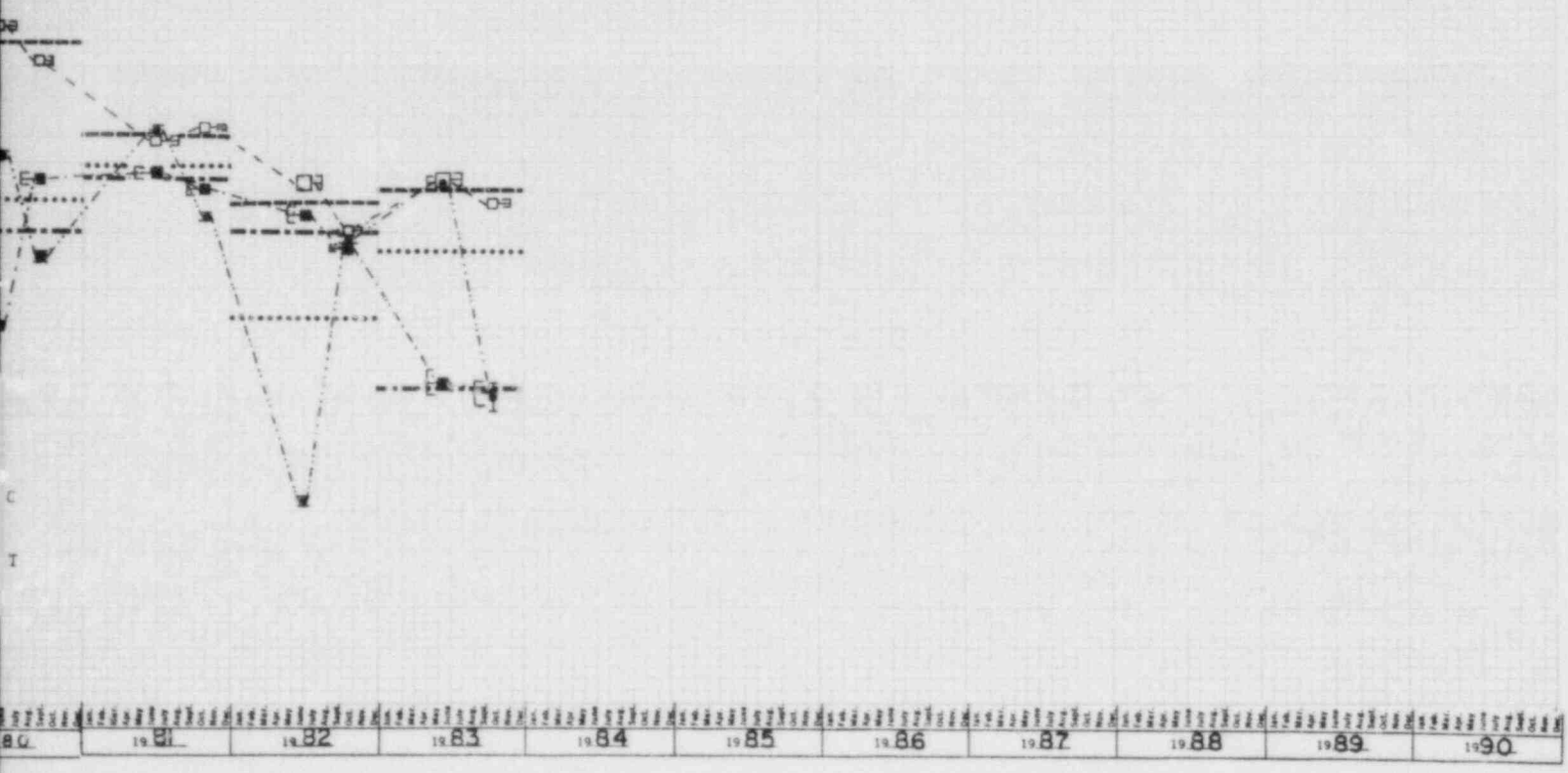
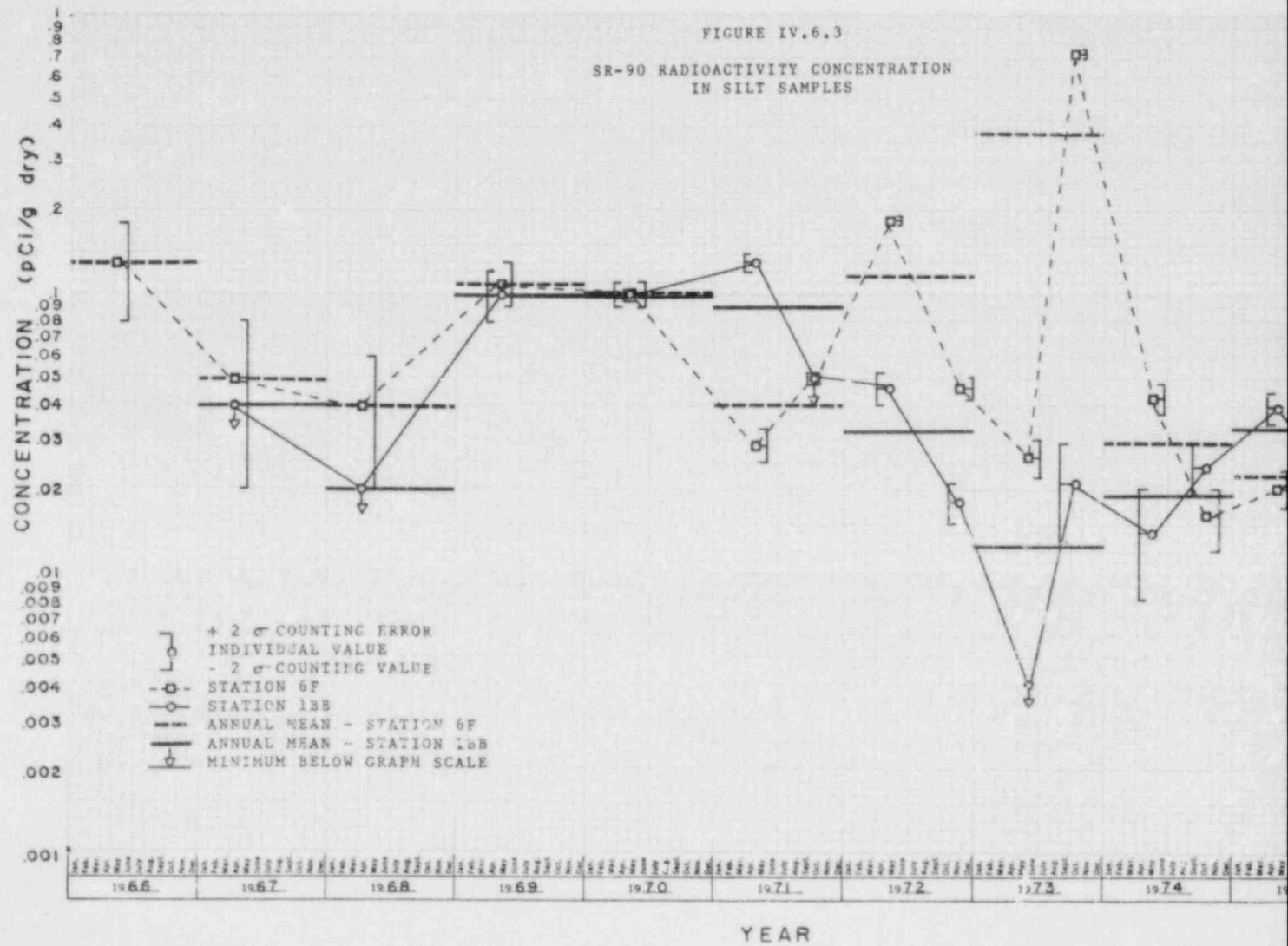


FIGURE IV.6.3

SR-90 RADIOACTIVITY CONCENTRATION
IN SILT SAMPLES



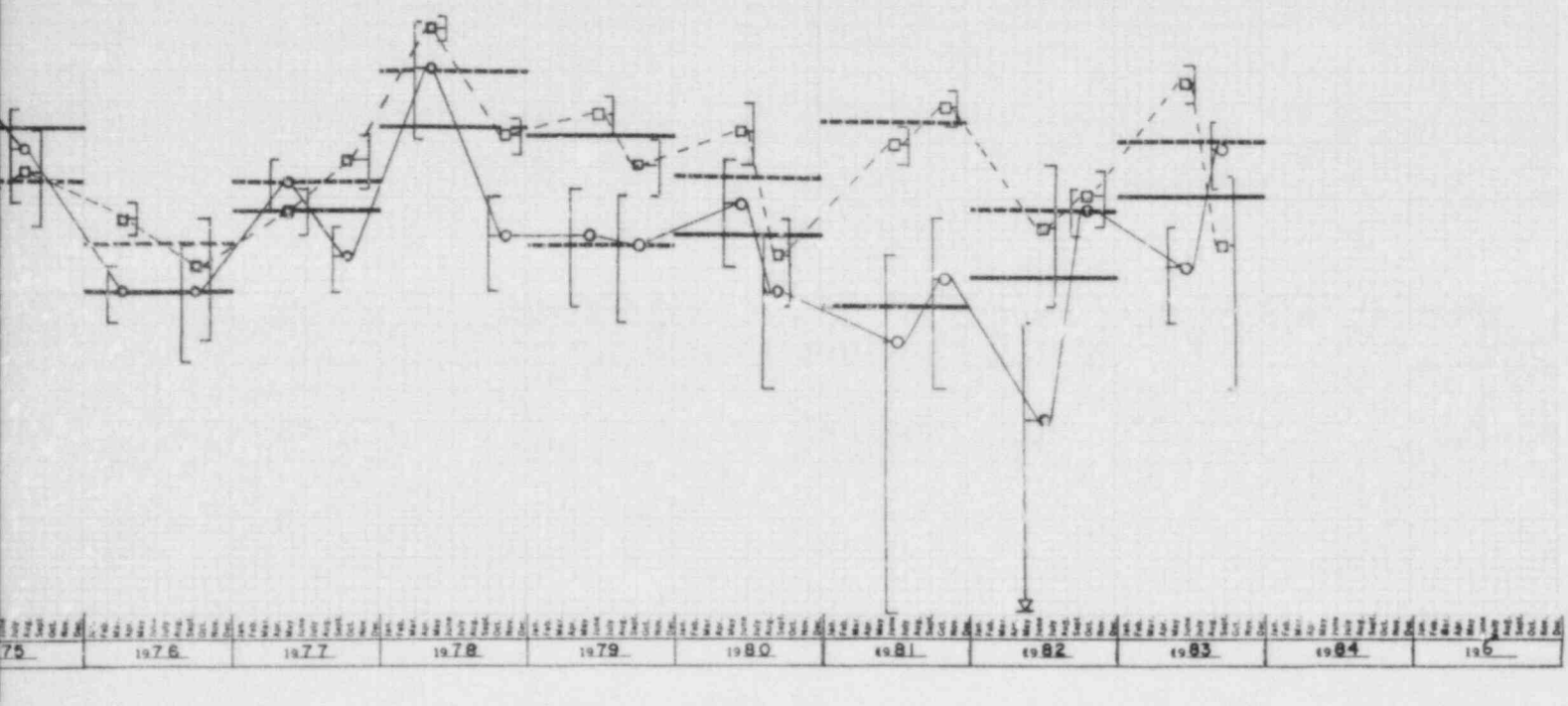
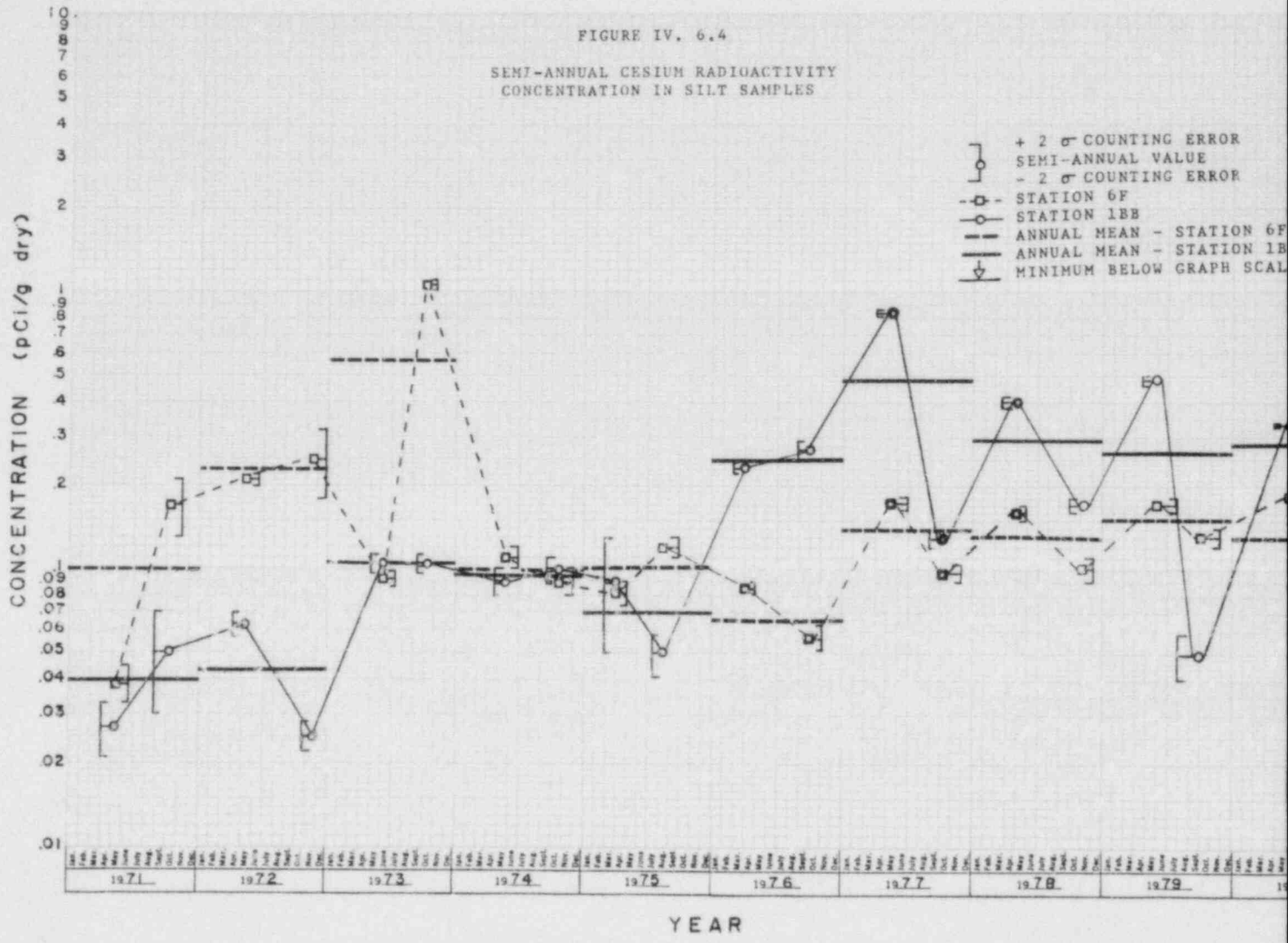


FIGURE IV. 6.4

SEMI-ANNUAL CESIUM RADIOACTIVITY
CONCENTRATION IN SILT SAMPLES



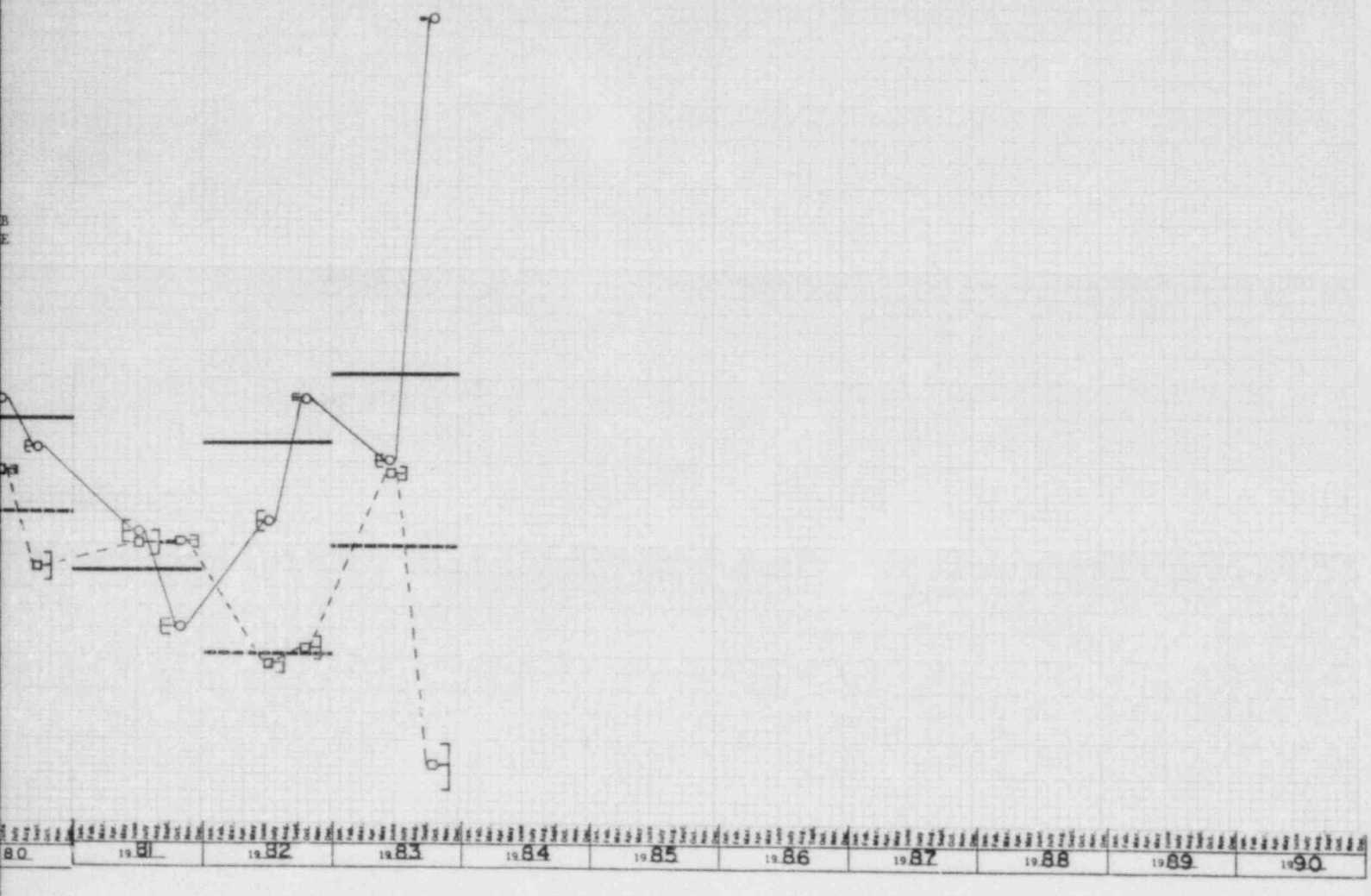
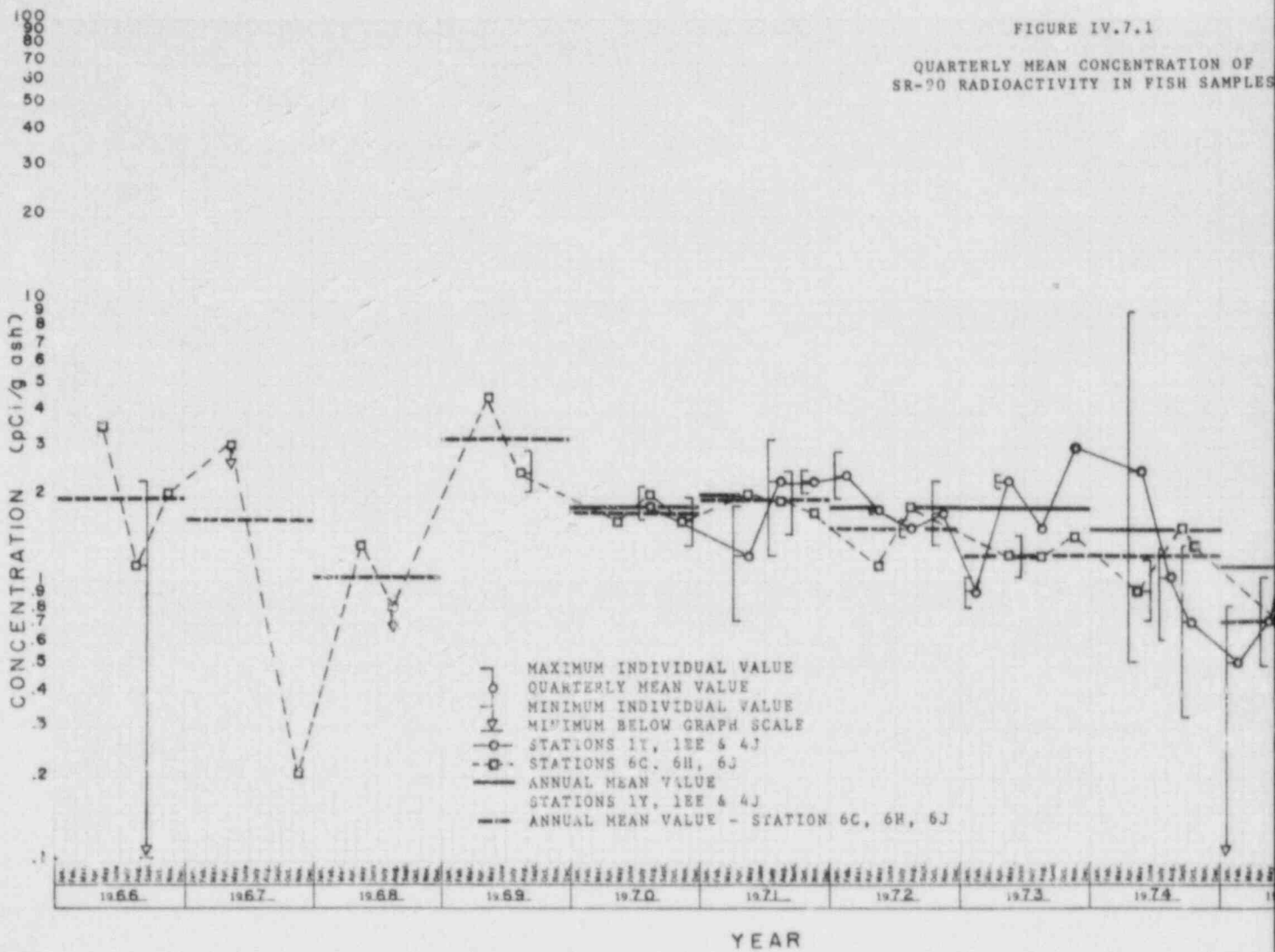


FIGURE IV.7.1

QUARTERLY MEAN CONCENTRATION OF
SR-90 RADIOACTIVITY IN FISH SAMPLES



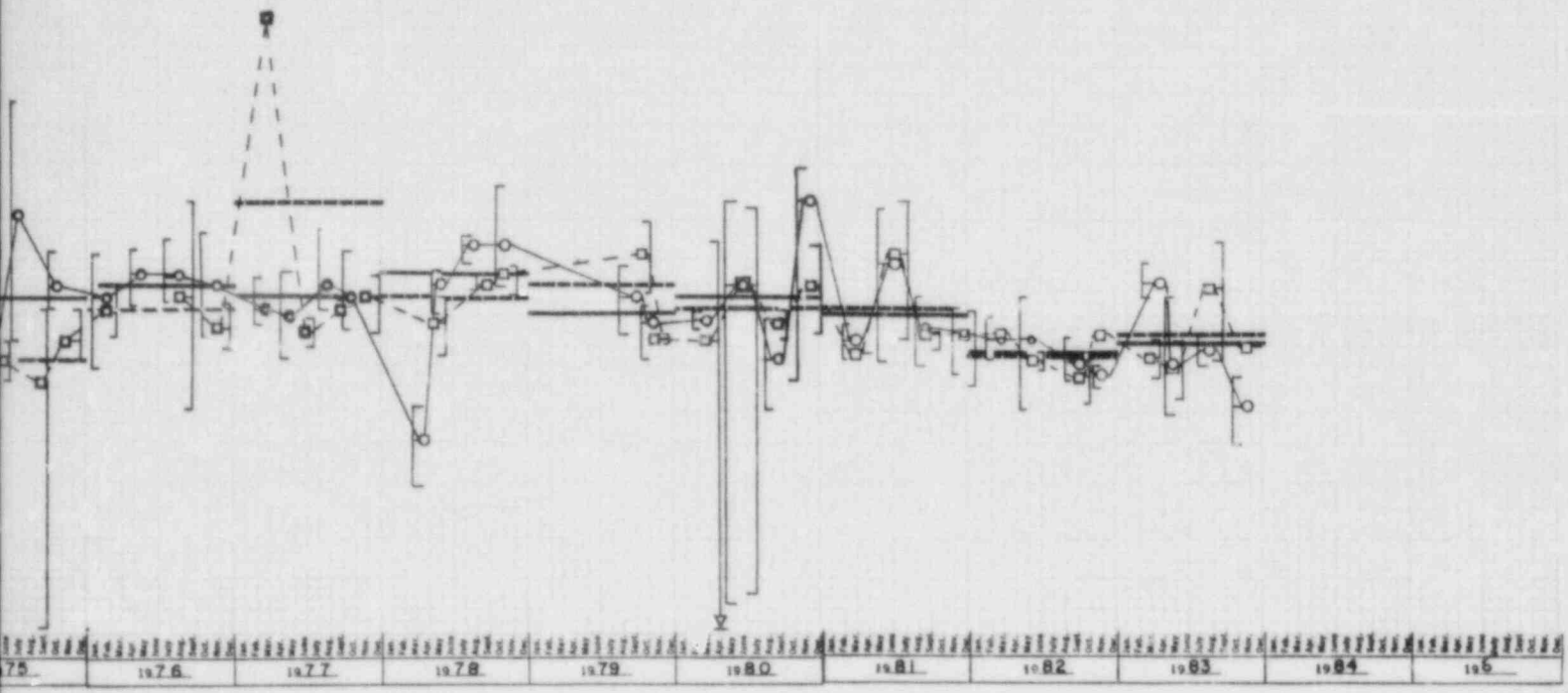
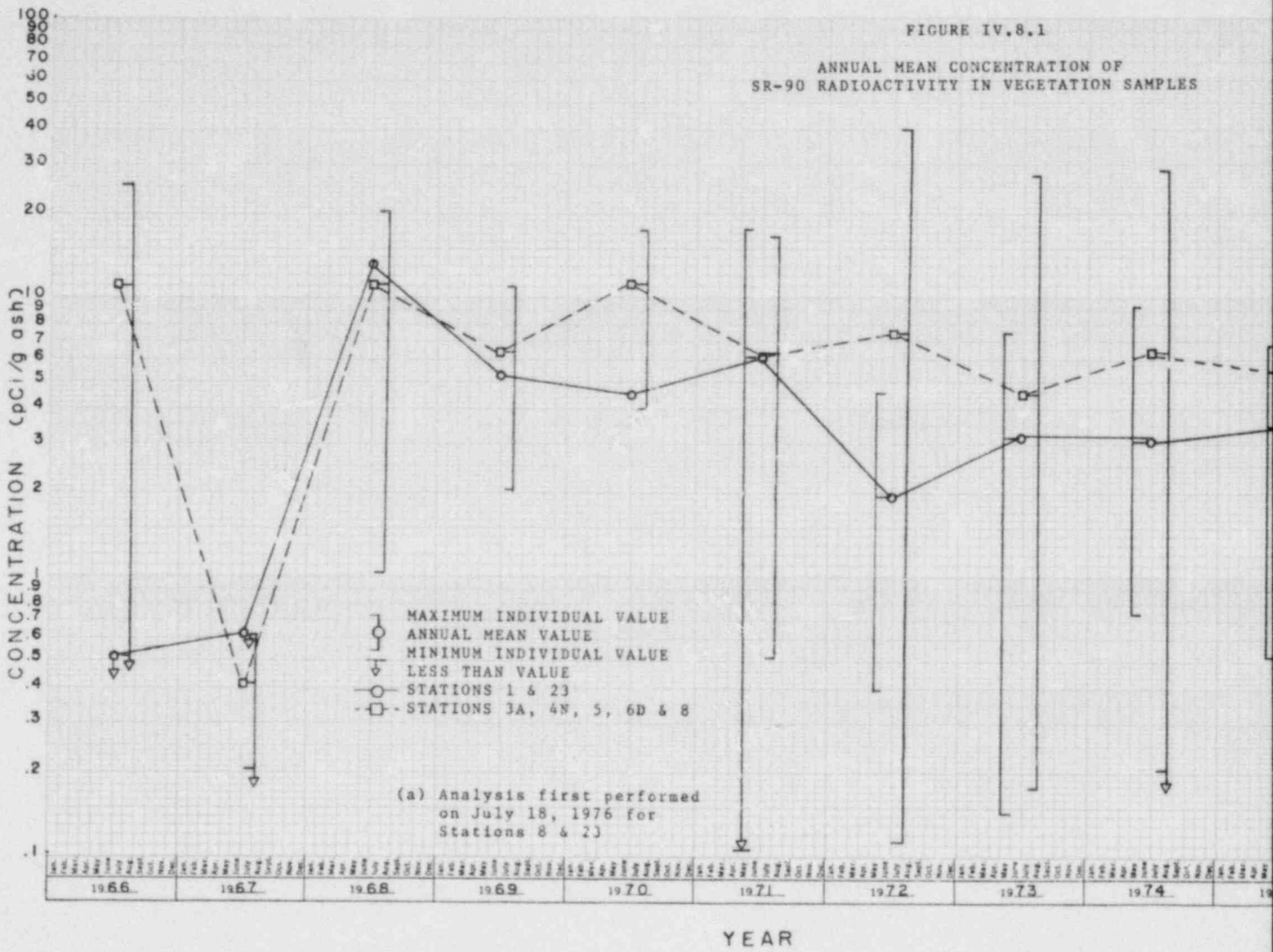


FIGURE IV.8.1

ANNUAL MEAN CONCENTRATION OF
SR-90 RADIOACTIVITY IN VEGETATION SAMPLES



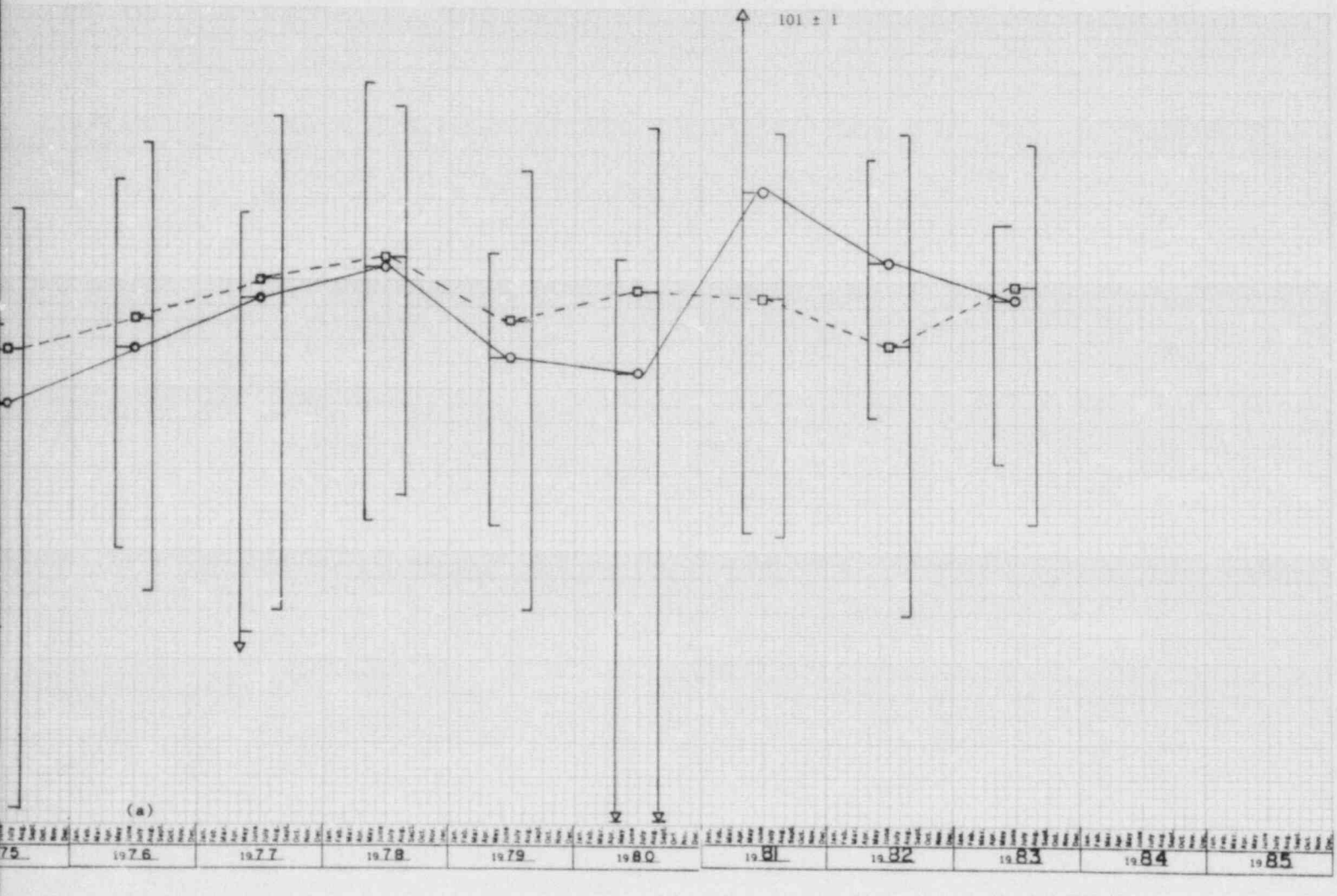
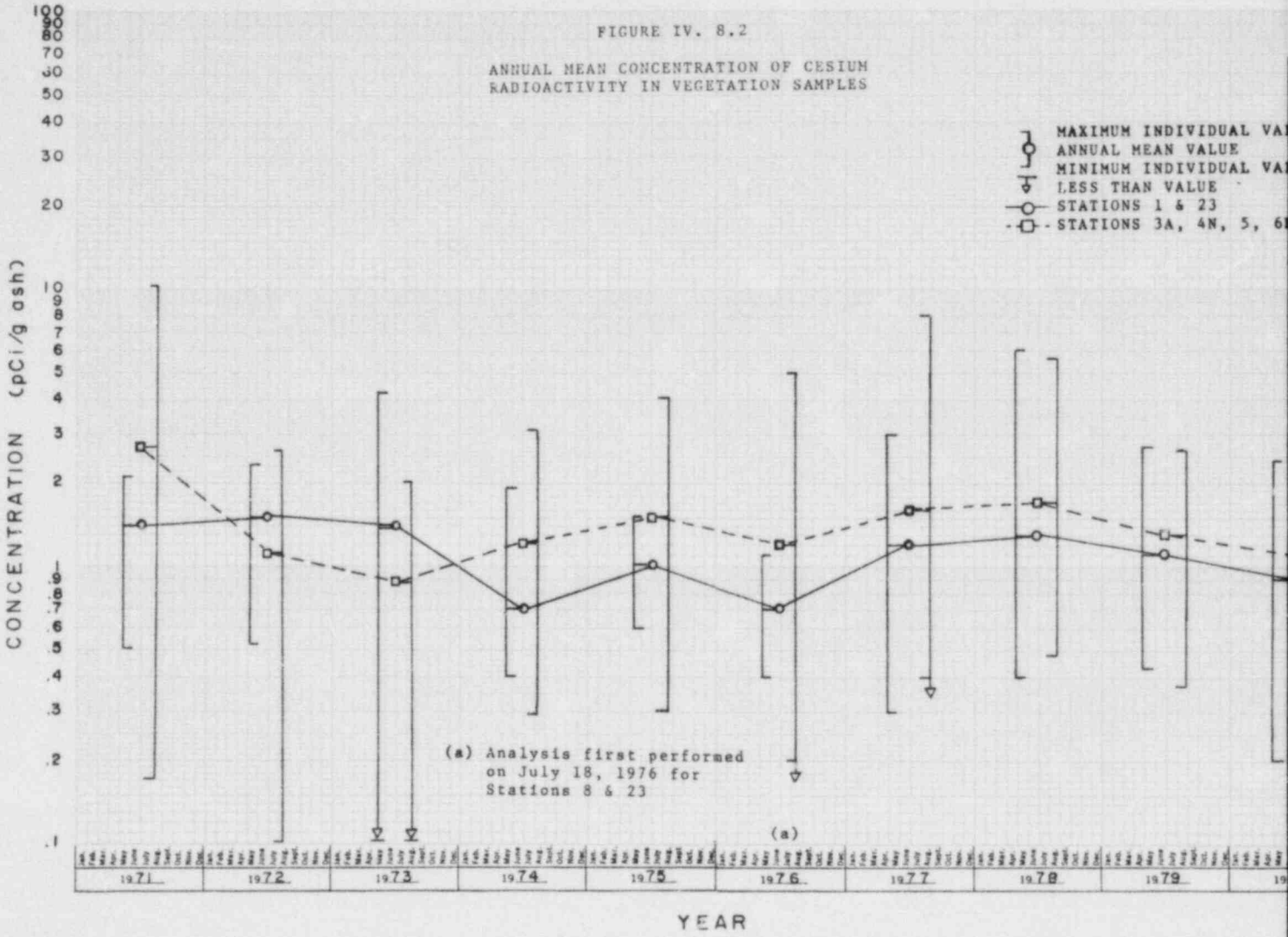


FIGURE IV. 8.2

ANNUAL MEAN CONCENTRATION OF CESIUM
RADIOACTIVITY IN VEGETATION SAMPLES



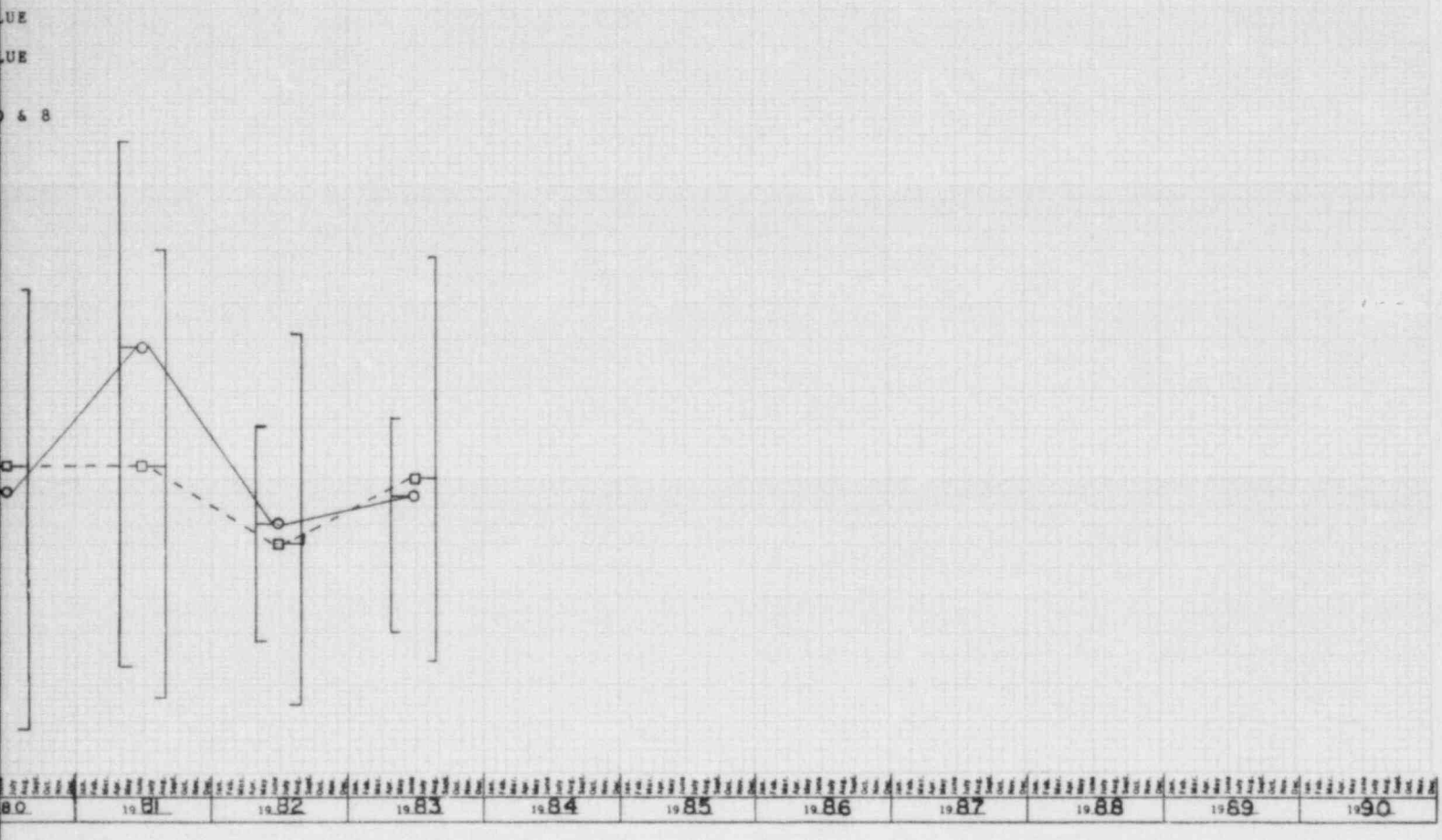
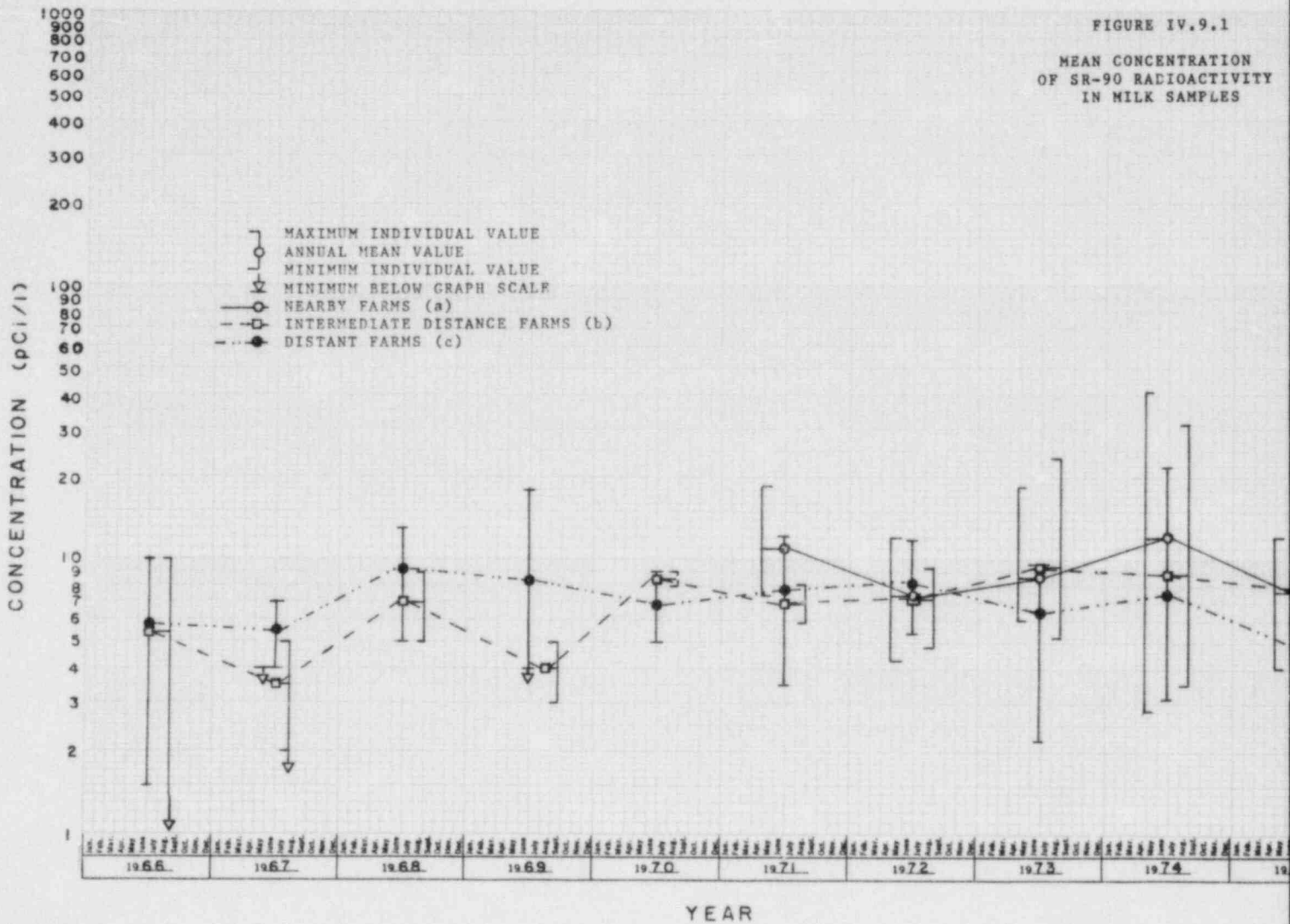


FIGURE IV.9.1

MEAN CONCENTRATION
OF SR-90 RADIOACTIVITY
IN MILK SAMPLES



(a) Farms F, G, H, I, and J (Prior to 1974)
Farms F, G, H, and J (1st and 2nd Quarters 1974)
Farms G, H, and J (1974 through 1979)
Farms G, J, and O (All later periods)

(b) Farms D and K (Prior to 1974)
Farms D, K, L, M, and N (1974)
Farms D, K, L, M, and N (1st, 2nd, and 3rd Quarters 1975)
Farms D, M, and N (4th Quarter 1975)
Farms D, L, M, and N (1976)

(c) Farms A, B, and C (Prior to October 1975)
Farms A, B, C, and E (4th Quarter 1975 and 1976)

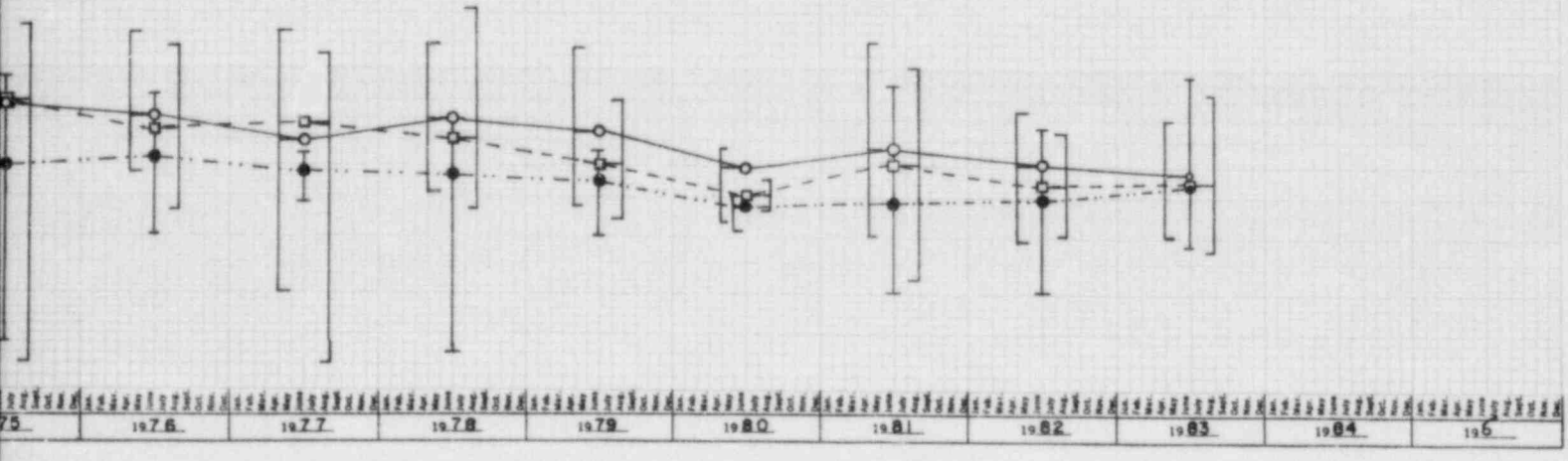
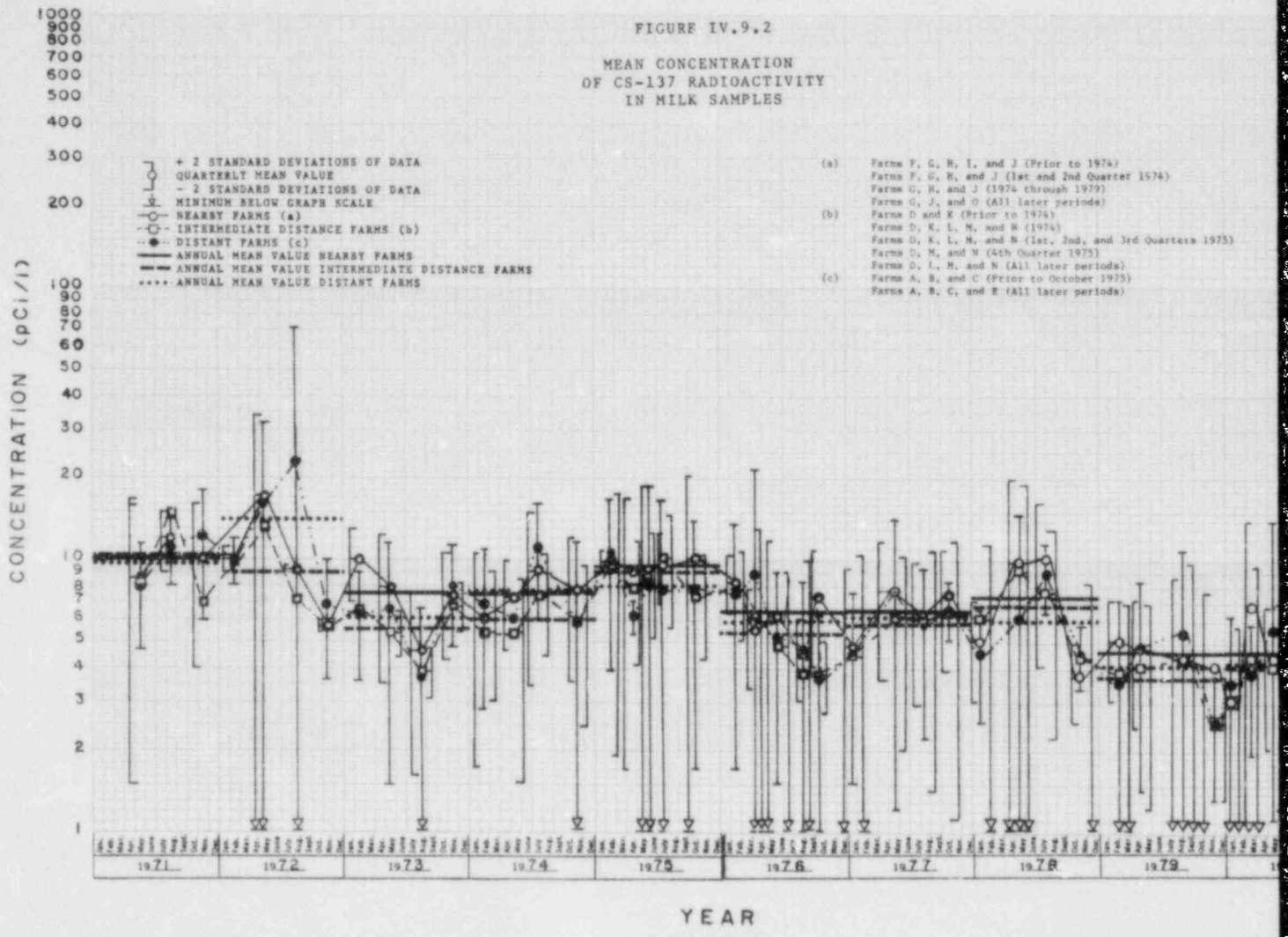
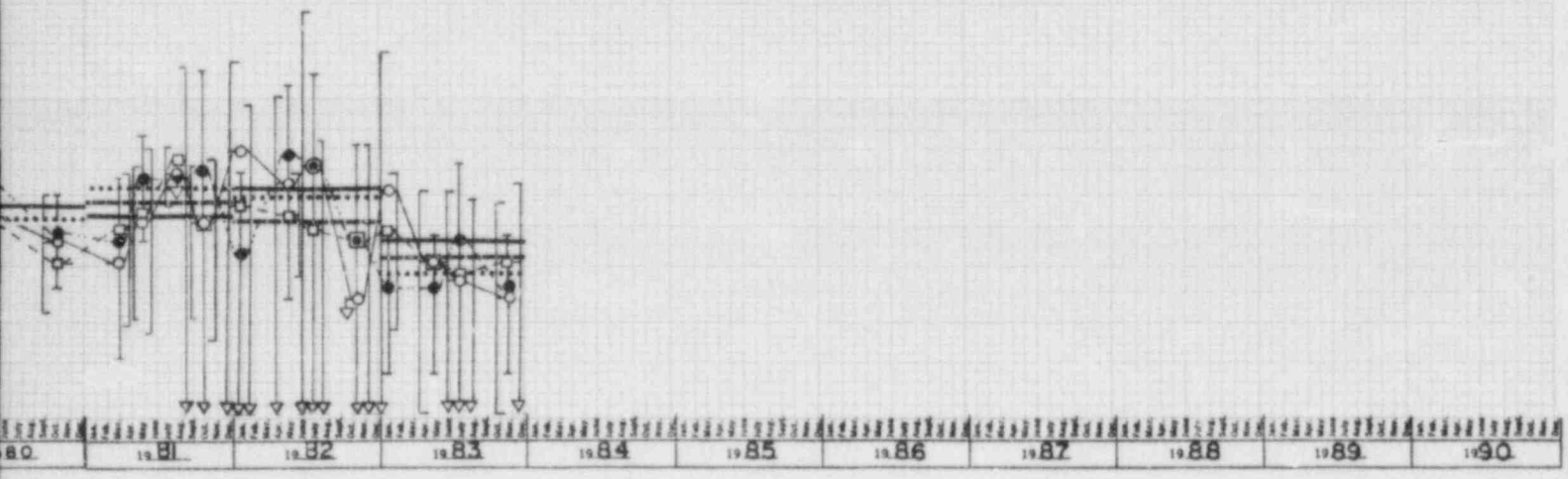


FIGURE IV.9.2

MEAN CONCENTRATION
OF CS-137 RADIOACTIVITY
IN MILK SAMPLES





Also Available On
Aperture Card

TI
APERTURE
CARD

8408240045-16

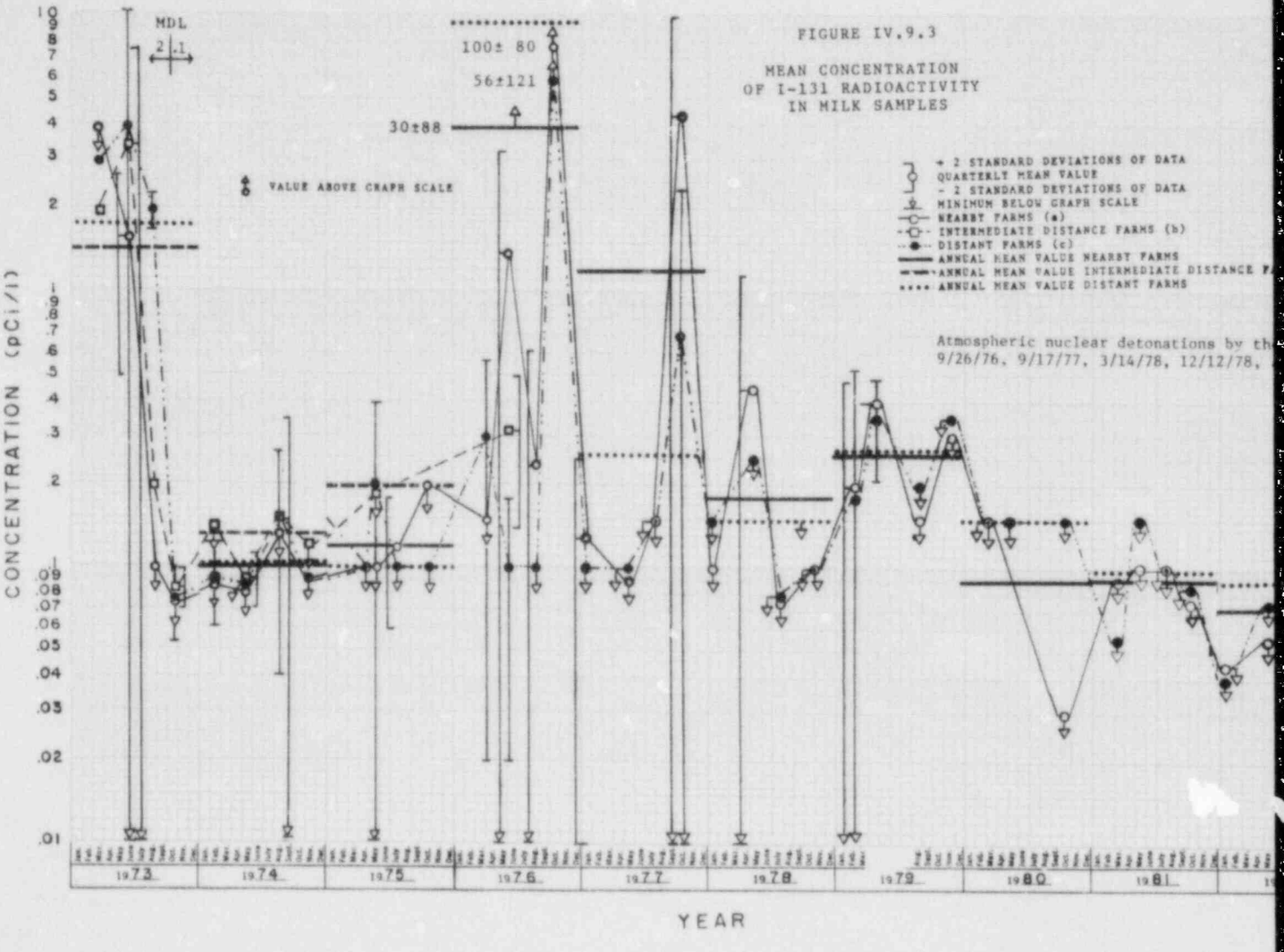


FIGURE IV.9.3

MEAN CONCENTRATION
OF I-131 RADIOACTIVITY
IN MILK SAMPLES

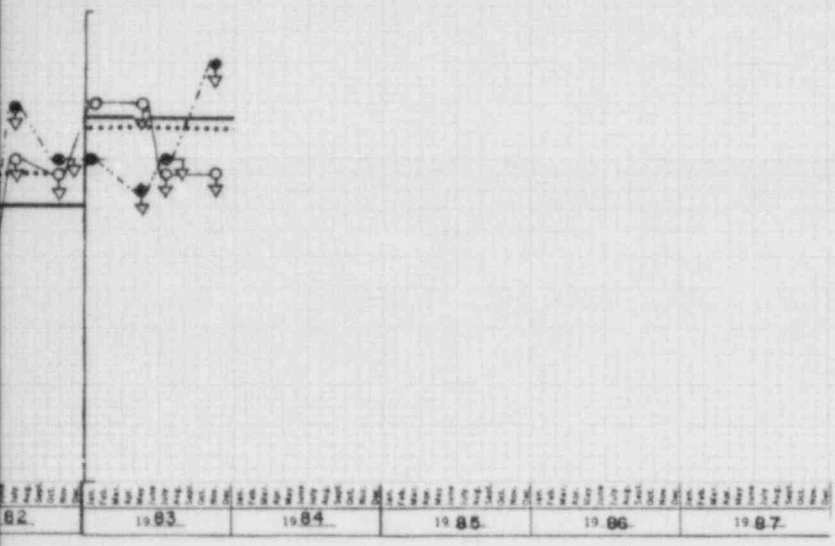
(a) Farms F, G, H, I, and J (Prior to 1974)
Farms G, H, and J (3rd and 4th Quarters 1974)
Farms G and J (April, July, and October 1975)
Farms G, H, and J (May 1975)
Farms G, H, and J (June 1976)
Farms G and J (All later periods)

(b) Farms D and K (Prior to 1974)
Farms D, K, L, M, and N (1974 and May 1975)
Farms D, L, M, and N (June 1976)

(c) Farms A, B, and C (1973 and 1974)
Farms A and C (April, July and October 1975)
Farms A, B, and C (May 1975)
Farms A, B, C, and E (June 1976)
Farms A and C (All later periods)

ERMS

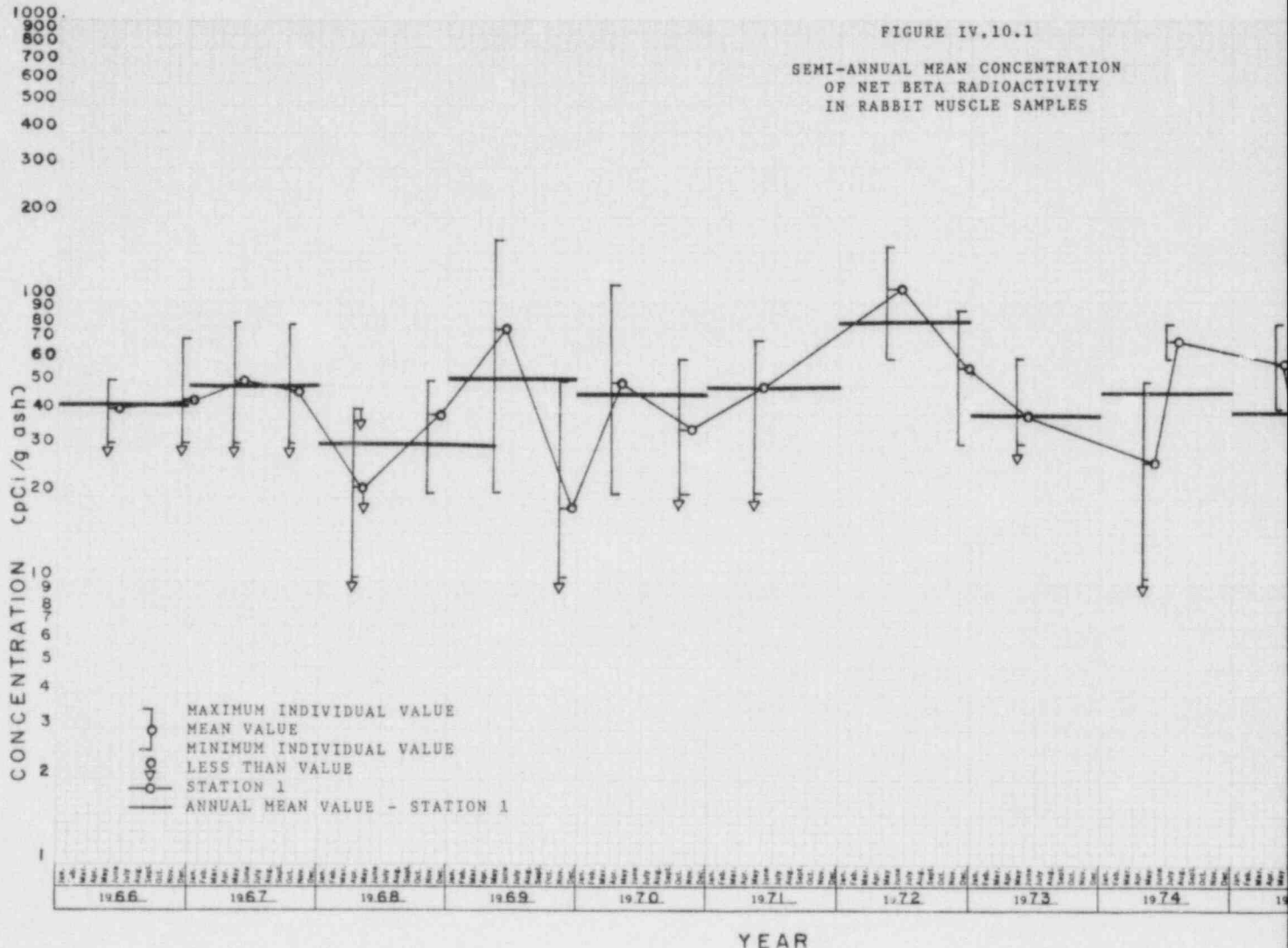
Peoples Republic of China on
and 10/15/80

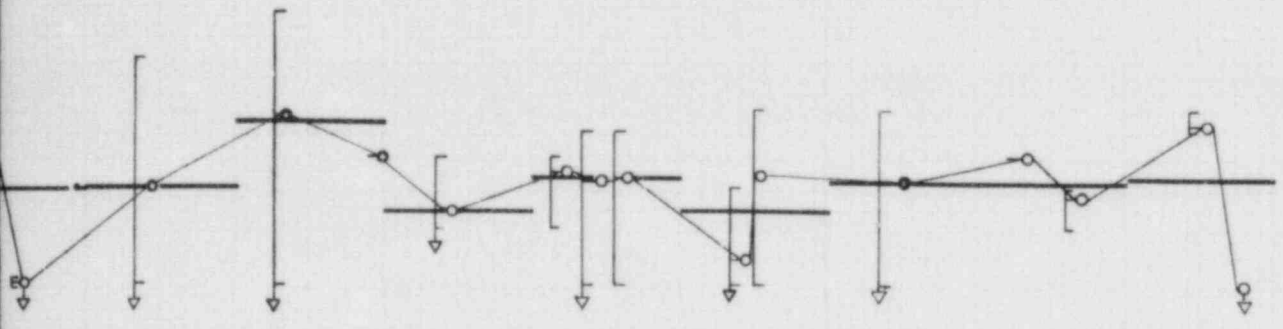


8408240045 -17

FIGURE IV.10.1

SEMI-ANNUAL MEAN CONCENTRATION
OF NET BETA RADIOACTIVITY
IN RABBIT MUSCLE SAMPLES





75	1976	1977	1978	1979	1980	1981	1982	1983	1984	19[illegible]

Also Available On
Aperture Card

TI
APERTURE
CARD

8408240045 -18

FIGURE IV.10.2

SEMI-ANNUAL MEAN CONCENTRATION
OF SR-90 RADIOACTIVITY
IN RABBIT BONE SAMPLES