POWER AUTHORITY OF THE STATE OF NEW YORK

ANNUAL ENVIRONMENTAL OPERATING REPORT

PART B: RADIOLOGICAL REPORT

JANUARY 1, 1978 - DECEMBER 31, 1978

JAMES A. FITZPATRICK NUCLEAR POWER PLANT

FACILITY OPERATING LICENSE DPR-59

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I.

INTRODUCTION

I-A INTRODUCTION

The Power Authority of the State of New York (PASNY) is the owner and licensee of the James A. FitzPatrick Nuclear Power Plant (JAFNPP) which is located on the eastern portion of the Nine Mile Point promontory approximately one-half mile due east of the Niagara Mohawk Power Corporation (NMPC) Nine Mile Point Nuclear Station (NMPNPS). The NMPNPS unit #1 is located on the most western portion of the site and is a boiling water reactor with a design capacity of 610 MWe. The NMPNPS has been in commerical operation since the fall of 1969. Located between the JAFNPP and NMPNPS, Nine Mile Point unit #2 is under construction. NMPNPS unit #2 will have generation capacity of 1100 MWe and is expected to be completed in 1984. The JAFNPP is a boiling water reactor with a power output of 820 MWe (net). Initial fuel loading of the reactor core was completed in November of 1974. Initial criticality was achieved in late November, 1974.

The site is located on the southern shore of Lake Ontario in Oswego County, New York, approximately seven miles northeast of the city of Oswego, New York. Syracuse, New York is the largest metropolitan center in the area and is located forty miles to the south of the site. The area consists of partially wooded land and shoreline. The land adjacent to the site is used mainly for recreational and residential purposes. For many miles to the west, east and south the county is characterized by rolling terrain rising gently up from the lake, composed mainly of glacial deposits. Approximately 34 percent of the land area in Oswego County is devoted to farming.

The Radiological Environmental Monitoring Program for the Fitz-Patrick Plant is a site program with responsibility for the program shared by the Power Authority and Niagara Mohawk. Identical Technical Specifications for radiological monitoring of the environment allows for joint sampling and analysis. Data generated by the program is shared by the two facilities with review and publication of the data undertaken through each organization.

This report is submitted in accordance with Section 5.6.1 of Appendix B, to DPR-59, Docket 50-333. Environmental reports of this nature have been compiled and submitted in semi-annual and annual reports since 1974. This report contains data from samples representing the period from January 1, 1978 to December 31, 1978.

I-B PROGRAM OBJECTIVES

The objectives of the Radiological Environmental Monitoring Program are as follows:

1. To determine and evaluate the effects of plant operation on the environs and to verify the effectiveness of the controls on radioactive material sources.

2. To monitor and evaluate natural radiation levels in the environs of the JAFNPP site.

3. To meet the requirements of applicable federal regulatory guides and limits.

4. To provide information by which the general public can evaluate the environmental aspects of nuclear power using data which is factual and unbiased.

II.

Program Implementation and Design

II PROGRAM IMPLEMENTATION AND DESIGN

To achieve the objectives listed in Section I-B, sampling and analysis are performed as outlined in Tables 1 and 2 in Section IV.

The sample collections for the radiological program are performed by two groups. Texas Instruments Incorporated, Ecological Services Branch (TIES) performs much of the environmental sampling. TIES is presently performing the Nine Mile Point Aquatic Ecology Study at the site which is required by Section 4.1, Appendix B of DPR-59. The staff required by TIES to perform this study is used to perform the terrestrial sampling required for the site radiological monitoring program. In-plant and remaining terrestrial sampling is performed jointly by the JAFNPP and NMPNPS staffs.

1. SAMPLE COLLECTION METHODOLOGY

A. Lake Water (surface water)

The two indicator stations are the respective inlet canals at JAFNPP and NMPNPS. These samples are composited using continuously running pumps which discharge into large holding tanks.

The control station sample is collected from the city of Oswego water intake. The sample is drawn from the intake prior to treatment and is composited in a large sample bottle.

Quarterly composite samples are made up from proportional aliquotes of monthly samples.

B. Air Particulate/Iodine

The air particulate glass fiber filters are approximately two inches in diameter and are placed in sample holders in the intake line of a vacuum sampler. Directly down stream from the particulate filter is a 2 x 1 inch charcoal cartridge used to absorb airborne radioiodine. The samplers run continuously and the charcoal cartridges and particulate filters are changed on a weekly basis.

The particulate filters are composited on a monthly basis by location (off-site, on-site) after being counted for gross beta activity.

The air sampling stations are located in two rings surrounding the site. The on site locations ring the terrestrial area around the plants inside the site boundary.

B. Air Particulate/Iodine (Continued)

The on-site sampling network is composed of 9 stations. The off-site air monitoring locations range 6 to 17 miles from the site and is composed of 6 stations. Air monitoring locations are shown on Figures VIII-1, VIII-1A and VIII-2.

C. Milk

Milk samples are collected in polyethylene bottles from the bulk storage tank at each sampled farm. Before the sample is drawn the tank contents are agitated from 3 to 5 minutes to assure a homogenous mixture of milk and butterfat. Two gallons are collected during the first week of each month from each of the five farms. An additional one gallon is collected from each farm at mid-month to make up the second half of the monthly composite. The complete composite is made up from one gallon collected during the first week of the month and one gallon from the mid-month collection. The samples are frozen and shipped to the analytical contractor within 24 hours of collection in insulated shipping containers. The milk sampling locations are found on Figure VIII-4.

d. Meat, Poultry and Eggs

Semi-annually one kilogram of meat is collected from locations within a 10 mile radius of the site. Weekly phone calls are made to the local slaughter houses to determine availability of slaughtered live stock from within the sampling area. Whenever possible meat samples are collected from locations previously used.

Semi-annually one kilogram of poultry and one kilogram of eggs are collected from each of three locations within a 10 mile radius of the site. Attempts are made to collect poultry and eggs at the same time as the meat samples. The poultry and eggs are frozen and shipped in insulated containers. Whenever possible samples are obtained from previously sampled farms (see Figure VIII-3).

F. Human Food Crops

Human food crops are collected during the late summer harvest season at locations previously sampled, if available. One kilogram each, of the two types of fruits and/or vegetables from each of the three locations within a ten mile radius of the site are collected. The types of fruits and vegetables sampled depends on what is locally available at the time of collection. Attempts are made to collect at least one broadleaf type vegetable from each location. The fruits and vegetables are chilled prior to shipping and shipped fresh in insulated containers (see Figure VIII-3).

G. Soil Samples

Soil samples are required once every three years. No samples were collected during 1978. Soil samples will be collected again during the 1980 sample season.

H. Fish Samples

Available fish species are removed from the Nine Mile Point Aquatic Ecology Study monitoring collections during the spring and fall collection periods. Samples are collected from a combination of the four on-site sample transects and one off-site sample transect (see Figure VIII-1). Available species are selected under the following guidelines:

1. 0.5 to 1 kilogram of edible portion only of a maximum of 5 species per location.

2. Samples composed of more than one kilogram of single species from the same location are divided into samples of 1 kilogram each prior to shipping. A maximum of three samples per species per location are used. Weight of samples are the edible portions only.

Selected fish samples are frozen immediately after collection and segregated by species and location. Samples are shipped frozen within two weeks in insulated containers.

I. Gammarus

Gammarus (fresh water shrimp) samples are collected by TIES personnel during the spring and fall season from two on-site locations and from one off-site location. A 0.5 m Tucker Trawl (333 μ) 1.0 m Hensen Net (571 μ), boxtraps and artificial substrates are used to collect samples. The Gammarus samples are removed from the sampling gear, frozen and shipped to the analytical contractor in insulated shipping containers.

J. Mollusks

During the spring and fall seasons at two on-site and one off-site location benthic samples are collected. The mollusks are collected by divers and sorted. The tissue is removed from the shell, frozen and shipped for analysis in insulated containers.

K. Bottom Sediments

One kilogram of bottom sediment sample is collected at two on-site locations and one off-site location. Samples are collected at the same time and location as the mollusk samples, where possible, by a diver. The samples are placed in plastic bags, sealed and shipped for analysis in insulated containers.

L. Periphyton

Peripyhton samples are collected in the spring and fall season from two on-site locations and one off-site location. Periphyton is collected from natural and/or artificial substrates (plexiglass slides). The periphyton is scraped from the substrates into vials, labeled, frozen and shipped in insulated containers for off-site analysis.

M. TLD (direct radiation)

Thermoluminescent dosimeters (TLDs) are used to measure direct radiation in the JAF/NMP-1 environment. The TLD stations are placed around the site using a three zone division. The first group of TLDs are located within the site boundary and are called "on-site" TLDs. The second set of TLDs are called "site boundary" stations and are located at approximately the site perimeter. The third division of TLD stations are the "off-site" stations, located at the off-site air monitoring stations.

Each TLD set is made up of 2 $CaSO_4$ dosimeters (2 chips per dosimeter), sealed in a polyethylene package to insure dosimeter integrity. The TLD packages are further protected by placement in plexiglass "birdhouses", or by tape sealing to supporting surfaces. The dosimeters are collected, replaced and evaluated on a quarterly basis.

2. ANALYSIS PERFORMED

The environmental radiological surveillance sample analysis is performed by Radiation Management Corporation (RMC) except for the particulate samples and iodine cartridges which are counted on site. These two sample media are counted on site to facilitate the compositing of the air particulate filters after gross beta analysis and the timely analysis of charcoal cartridge for Iodine-131.

Other environmental radiological analyses are also performed by RMC. Tables 1 and 2 in section III list the media and the associated analyses.

3. CHANGES IN THE PROGRAM

A. In April of 1978 the Analytical Contractor for the site environmental surveillance program was changed from the Eberline Instrument Corporation, Midwest Facility, West Chicago, Illinois (EIC), to the Radiation Management Corporation, Philadelphia, Pennsylvania.

B. A fifth milk sampling location was added to the 1978 sampling program to serve as a control location. This farm, designated as location number 13 in this report is located approximately 22 miles south-southwest of the site. The sampling station is considered outside the influence of the plant.

C. Surface water samples for the first six months of the 1978 program were analyzed on site in the plant radiochemistry lab. Starting with July, 1978, surface water samples were sent off site for analysis. RMC now performs the analysis as listed in Table 1 Section III. The change in analytical labs resulted in an increase in sensitivity and eliminated possible in-plant background interference.

D. Air particulate composite samples prior to July 1978 were analyzed on site in the plant radiochemistry laboratory. The July 1978 air particulate composite sample and subsequent samples were analyzed off site by RMC. RMC now performs gamma spectral analysis of air particulate composites. As in item C above, the change in analytical laboratories resulted in an increase in sensitivity and eliminated possible in-plant background interference.

e. The milk sample station designated as location number 4 (see Figure VIII-4) is new for the 1978 sampling season. One of the farms used in previous sampling seasons declined to participate in the sampling program for 1978. This replacement sampling station was found prior to the beginning of the 1978 grazing season and is located approximately 7 miles east-southeast of the site.

III.

Sample Summaries

SAMPLE SUMMARIES

Environmental sample data is summarized by the following methods:

1. All sample data is summarized in table form. The tables are titled "Environmental Sample Statistical Analysis" and use the following format:

    1. Sample medium
    2. Type of analysis performed
    3. Number of analyses performed
    4. Range of detectable levels. The data column is labeled "lower limits of detection". This wording is not intended to indicate that inclusive data is based on 4.66 sigma of background.
    5. Mean value of the data, based on positive measured values. (1)
    6. Standard Deviation, based on positive measured values. (The standard deviations represent the variability of measured results for different samples rather than single sample uncertainty). (1)
    7. Maximum and Minimum values
    8. Range of the data, calculated by subtracting the minimum value from the maximum value.

2. Tables are provided for selected sample media and contain data summaries based on quarterly mean values. These tables are titled "Environmental Sample Summary."

(1) Only positive measured values are used in statistical calculations. The use of MDLs in these calculations would result in the means being biased high and the standard deviations being biased low.

MEDIUM OR PATHWAY SAMPLED (UNITS)	ENVIRONMENTAL SAMPLE STATISTICAL ANALYSIS							
	TYPE OF ANALYSIS PERFORMED AND ISOTOPE	NUMBER OF ANALYSIS PERFORMED	LOWER LIMITS OF DETECTION (RANGE)	MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE	RANGE
LAKE PERIPHYTON pCi/g (wet)	GAMMA ISOTOPIC							
	CONTROL							
	Be-7	2	-	0.220	0.180	0.350	0.090	0.260
	K-40	2	-	1.950	0.350	2.20	1.700	0.500
	Mn-54	2	0.007	0.011	A	0.011	0.011	0.000
	Co-60	2	0.010	0.013	A	0.013	0.013	0.000
	Zr-95	2	0.020	0.012	A	0.012	0.012	0.000
	Nb-95	2	0.004	0.019	A	0.019	0.019	0.000
	Ru-106	2	0.070	0.090	A	0.090	0.090	0.000
	Cs-137	2	-	0.040	0.030	0.063	0.023	0.040
	Ce-144	2	-	0.120	0.020	0.130	0.100	0.030
	Ra-226	2	0.020	0.071	A	0.071	0.071	0.000
	Th-232	2	0.030	0.040	A	0.040	0.040	0.000
	Cs-134	2	0.004-0.007	<MDL	-	-	-	-
	INDICATOR							
	Be-7	5	-	0.620	0.690	1.800	0.070	1.730
	K-40	5	-	1.620	0.750	2.700	1.00	1.700
	Mn-54	5	0.006-0.030	0.008	A	0.008	0.008	0.000
	Co-60	5	0.005-0.030	0.050	0.040	0.100	0.030	0.070
	Zr-95	5	0.060	0.020	0.010	0.030	0.010	0.020
	Nb-95	5	-	0.04	0.03	0.09	0.02	0.07
	Ru-106	5	0.10-0.04	0.06	0.03	0.09	0.04	0.05

A - ONLY ONE POSITIVE VALUE, NO STATISTICS POSSIBLE

MEDIUM OR PATHWAY SAMPLED (UNITS)	ENVIRONMENTAL SAMPLE STATISTICAL ANALYSIS							
	TYPE OF ANALYSIS PERFORMED AND ISOTOPE	NUMBER OF ANALYSIS PERFORMED	LOWER LIMITS OF DETECTION (RANGE)	MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE	RANGE
LAKE PERIPHYTON pCi/g (wet) (continued)	Cs-137	5	0.006	0.11	0.006	0.19	0.05	0.14
	Ce-144	5	0.070	0.36	0.50	1.10	0.09	1.01
	Ra-226	5	0.009-0.070	0.03	0.01	0.04	0.02	.02
	Th-232	5	0.02-0.060	0.03	A	0.03	0.03	0.00
	Cs-134	5	0.005-0.010	0.011	A	0.01	0.01	0.00
LAKE MOLLUSK pCi/g (wet)	GAMMA ISOTOPIC CONTROL							
	Be-7	2	0.07-0.10	<MDL	-	-	-	-
	K-40	2	0.20-0.30	<MDL	-	-	-	-
	Mn-54	2	0.02	<MDL	-	-	-	-
	Co-60	2	0.02	<MDL	-	-	-	-
	Ra-226	2	-	0.08	A	0.08	0.08	0.00
	Th-232	2	0.08	0.07	A	0.07	0.07	0.00
	Cs-137	2	0.01	<MDL	-	-	-	-
	Cs-134	2	0.01-0.02	<MDL	-	-	-	-
	INDICATOR							
	Be-7	4	0.09-0.10	0.20	A	0.20	0.20	0.00
	K-40	4	0.2-0.40	0.60	A	0.60	0.60	0.00
	Mn-54	4	0.03-0.05	0.73	0.93	1.10	0.35	0.75
	Co-60	4	0.03-0.04	0.14	0.11	0.22	0.06	0.16
	Ra-226	4	0.06	0.19	0.06	0.23	0.12	0.11
	Th-232	4	0.07-0.10	<MDL	-	-	-	-

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MEDIUM OR PATHWAY SAMPLED (UNITS)	ENVIRONMENTAL SAMPLE STATISTICAL ANALYSIS							
	TYPE OF ANALYSIS PERFORMED AND ISOTOPE	NUMBER OF ANALYSIS PERFORMED	LOWER LIMITS OF DETECTION (RANGE)	MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE	RANGE
LAKE MOLLUSK pCi/g (wet)	GAMMA ISOTOPIC CONTROL (cont.)							
	Cs-137	2	0.01	<MDL	-	-	-	-
	Cs-134	2	0.01-0.02	<MDL	-	-	-	-
	INDICATOR							
	Be-7	4	0.09-0.10	0.20	A	0.20	0.20	0.00
	K-40	4	0.2-0.40	0.60	A	0.60	0.60	0.00
	Mn-54	4	0.03-0.05	0.73	0.93	1.10	0.35	0.75
	Co-60	4	0.03-0.04	0.14	0.11	0.22	0.06	0.16
	Ra-226	4	0.06	0.19	0.06	0.23	0.12	0.11
	Th-232	4	0.07-0.10	<MDL	-	-	-	-
LAKE MOLLUSK pCi/g (wet)	Sr-89, Sr-90 CONTROL							
	Sr-89	2	0.02	0.02	A	0.02	0.02	0.00
	Sr-90	2	-	0.14	0.02	0.15	0.12	0.03
LAKE MOLLUSK pCi/g (wet)	INDICATOR							
	Sr-89	4	0.02-0.03	0.05	0.03	0.07	0.03	0.04
	Sr-90	4	-	0.14	0.03	0.18	0.10	0.08

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MEDIUM OR PATHWAY SAMPLED (UNITS)	ENVIRONMENTAL SAMPLE STATISTICAL ANALYSIS							
	TYPE OF ANALYSIS PERFORMED AND ISOTOPE	NUMBER OF ANALYSIS PERFORMED	LOWER LIMITS OF DETECTION (RANGE)	MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE	RANGE
LAKE BOTTOM SEDIMENT pCi/g (dry)	GAMMA ISOTOPIC r-90 CONTROL							
	K-40	2	-	12.00	1.41	13.00	11.00	2.00
	Co-60	2	0.06-0.07	<MDL	-	-	-	-
	Ru-103	2	0.03	<MDL	-	-	-	-
	Sb-125	2	0.01	0.10	A	0.10	0.10	0.00
	Cs-134	2	0.05	<MDL	-	-	-	-
	Cs-137	2	-	0.61	0.15	0.71	0.50	0.21
	Bala-140	2	0.05-0.06	<MDL	-	-	-	-
	Ra-226	2	-	0.97	0.04	1.00	0.94	0.06
	Th-232	2	-	0.85	0.07	0.90	0.80	0.10
	Sr-90	2	-	0.05	0.01	0.04	0.06	0.02
LAKE BOTTOM SEDIMENT pCi/g (dry)	GAMMA ISOTOPIC INDICATOR							
	K-40	4	-	13.25	2.22	15.00	10.00	5.00
	Co-60	4	-	0.65	0.59	1.50	0.18	1.32
	Ru-103	4	0.03-0.04	0.04	A	0.04	0.04	0.00
	Sb-125	4	0.10	<MDL	-	-	-	-
	Cs-134	4	0.05-0.06	0.30	A	0.30	0.30	0.00
	Cs-137	4	-	0.99	0.80	2.10	0.24	1.86
	Bala-140	4	0.08-0.06	0.09	A	0.09	0.09	0.00
	Ra-226	4	-	0.46	0.14	0.62	0.30	0.32
	Th-232	4	-	0.53	0.15	0.70	0.40	0.30
	Sr-90	4	0.01-0.02	0.015	A	0.015	0.015	0.00

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MEDIUM OR PATHWAY SAMPLED (UNITS)	ENVIRONMENTAL SAMPLE STATISTICAL ANALYSIS							
	TYPE OF ANALYSIS PERFORMED AND ISOTOPE	NUMBER OF ANALYSIS PERFORMED	LOWER LIMITS OF DETECTION (RANGE)	MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE	RANGE
LAKE GAMMARUS pCi/g (wet)	GAMMA ISOTOPIC Sr-89, Sr-90							
	CONTROL							
	Be-7	2	0.20	0.05	A	0.05	0.05	0.00
	K-40	2	0.40	0.80	A	0.80	0.80	0.00
	Mn-54	2	0.005-0.02	<MDL	-	-	-	-
	Cs-137	2	0.02	0.028	A	0.028	0.028	0.00
	Ce-144	2	0.10	0.03	A	0.03	0.03	0.00
	Ra-226	2	0.05	0.027	A	0.027	0.027	0.00
	Sr-89	2	0.03-0.07	< MDL	-	-	-	-
	Sr-90	2	-	0.14	0.01	0.14	0.13	0.01
	INDICATOR							
	Be-7	4	0.70-0.70	0.09	A	0.09	0.09	0.00
	K-40	4	0.10-0.20	1.05	0.49	1.40	0.70	0.70
	Mr-54	4	0.009-0.05	0.10	A	0.10	0.10	0.00
	Cs-137	4	0.07-0.08	0.05	0.00	0.05	0.05	0.00
	Ce-144	4	0.20-0.70	0.08	A	0.08	0.08	0.00
	Ra-226	4	0.03-0.20	<MDL	-	-	-	-
	Sr-89	4	0.04-0.2	<MDL	-	-	-	-
	Sr-90	4	-	0.17	0.04	0.21	0.13	0.18

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MEDIUM OR PATHWAY SAMPLED (UNITS)	ENVIRONMENTAL SAMPLE STATISTICAL ANALYSIS							
	TYPE OF ANALYSIS PERFORMED AND ISOTOPE	NUMBER OF ANALYSIS PERFORMED	LOWER LIMITS OF DETECTION (RANGE)	MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE	RANGE
LAKE FISH pCi/g (wet)	GAMMA ISOTOPIC Sr-89, Sr-90 CONTROL							
	K-40	9	-	2.94	1.11	5.70	1.90	3.80
	Mn-54	9	0.01-0.03	<MDL	-	-	-	-
	Cs-137	9	0.02	0.09	0.05	0.20	0.04	0.16
	Ce-141	9	0.01-0.03	<MDL	-	-	-	-
	Ce-144	9	0.06-0.10	0.11	A	0.11	0.11	0.00
	Sr-89	9	0.005-0.02	<MDL	-	-	-	-
	Sr-90	9	0.003-0.005	0.01	0.004	0.015	0.004	0.01
	INDICATOR							
	K-40	19	-	2.06	0.49	2.90	1.10	1.80
	Mn-54	19	0.009-0.02	0.02	A	0.020	0.020	0.00
	Cs-137	19	0.02	0.08	0.02	0.10	0.03	0.07
	Ce-141	19	0.006-0.03	0.03	A	0.030	0.030	0.00
	Ce-144	19	0.04-0.10	<MDL	-	-	-	-
	Sr-89	19	0.006-0.01	0.010	0.001	0.015	0.014	0.001
	Sr-90	19	0.003-0.006	0.013	0.006	0.025	0.004	0.021
LAKE WATER ANALYSIS pCi/l	GROSS BETA CONTROL	12	9.10	3.55	1.58	6.10	0.50	5.60
	INDICATOR	24	9.40-9.50	4.53	2.62	11.10	0.60	10.50

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MEDIUM OR PATHWAY SAMPLED (UNITS)	ENVIRONMENTAL SAMPLE STATISTICAL ANALYSIS							
	TYPE OF ANALYSIS PERFORMED AND ISOTOPE	NUMBER OF ANALYSIS PERFORMED	LOWER LIMITS OF DETECTION (RANGE)	MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE	RANGE
LAKE WATER ANALYSIS pCi/l	TRITIUM							
	CONTROL	4	None	303.75	127.51	490.00	215.00	275.00
	INDICATOR	8	None	389.38	119.94	560.00	253.00	307.00
	Sr-89							
	CONTROL	4	0.90-5.00	<MDL	-	-	-	-
	INDICATOR	8	0.90-5.00	0.70	0.10	0.80	0.60	0.20
	Sr-90							
	CONTROL	4	2.00	0.90	0.10	1.00	0.80	0.20
	INDICATOR	8	2.00	0.80	0.30	1.10	0.40	0.70
LAKE WATER ANALYSIS pCi/l	GAMMA ISOTOPIC CONTROL							
	Co-60	12	0.60-3.20	14.53	8.38	24.10	8.50	15.60
	Fe-59	12	0.70-19.90	<MDL	-	-	-	-
	Mn-54	12	0.30-3.00	5.40	2.83	7.40	3.40	4.00
	Co-58	12	0.30-7.90	12.20	A	12.20	12.20	0.00
	Nb-95	12	0.30-8.30	<MDL	-	-	-	-
	Cs-137	12	0.40-9.80	<MDL	-	-	-	-
	Cs-134	12	0.30-8.70	<MDL	-	-	-	-
	Cr-51	12	3.00-51.20	<MDL	-	-	-	-
	Ce-141	12	0.40-8.60	<MDL	-	-	-	-
	Bala-140	12	0.60-26.10	21.60	A	21.60	21.60	0.00
	Zn-65	12	3.00-17.90	<MDL	-	-	-	-

A - ONLY ONE POSITIVE VALUE, NO STATISTICS POSSIBLE

MEDIUM OR PATHWAY SAMPLED (UNITS)	ENVIRONMENTAL SAMPLE STATISTICAL ANALYSIS							
	TYPE OF ANALYSIS PERFORMED AND ISOTOPE	NUMBER OF ANALYSIS PERFORMED	LOWER LIMITS OF DETECTION (RANGE)	MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE	RANGE
LAKE WATER ANALYSIS pCi/l	GAMMA ISOTOPIC CONTROL (cont.)							
	I-133	12	1.00-6.00	<MDL	-	-	-	-
	INDICATOR							
	Co-60	24	0.50-3.20	19.10	9.08	33.00	4.00	29.0
	Fe-59	24	0.70-16.50	<MDL	-	-	-	-
	Mn-54	24	0.40-12.10	5.38	3.81	9.00	0.60	8.40
	Co-58	24	0.40-7.90	8.60	6.65	13.30	3.90	9.40
	Nb-95	24	0.40-11.50	<MDL	-	-	-	-
	Cs-137	24	0.50-8.20	3.55	1.34	4.50	2.60	1.90
	Cs-134	24	0.40-6.60	<MDL	-	-	-	-
	Cr-51	24	3.00-46.30	<MDL	-	-	-	-
	Ce-141	24	0.60-6.90	9.00	A	9.00	9.00	0.00
	Bala-140	24	0.70-23.60	22.80	A	22.80	22.80	0.00
	Zn-65	24	2.00-17.30	19.50	A	19.50	19.50	0.00
	I-133	24	1.00-6.00	3.40	A	3.40	3.40	0.00
AIRBORNE PARTICULATE ANALYSIS pCi/m^3	GROSS BETA ACTIVITY CONTROL	315	None	0.14	0.13	0.66	0.01	0.65
	INDICATOR	466	None	0.10	0.09	0.34	0.01	0.33

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MEDIUM OR PATHWAY SAMPLED (UNITS)	ENVIRONMENTAL SAMPLE STATISTICAL ANALYSIS							
	TYPE OF ANALYSIS PERFORMED AND ISOTOPE	NUMBER OF ANALYSIS PERFORMED	LOWER LIMITS OF DETECTION (RANGE)	MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE	RANGE
AIRBORNE PARTICULATE ANALYSIS pCi/m^3 $X10^{-3}$	GAMMA ISOTOPIC CONTROL							
	Co-60	12	0.500	1.73	2.15	5.60	0.03	5.57
	Fe-59	12	0.275-0.627	<MDL	-	-	-	-
	Mn-54	12	0.30-0.40	0.99	1.07	2.64	0.06	2.58
	Co-58	12	0.11-0.41	0.89	0.03	0.91	0.87	0.04
	Nb-95	12	0.20-0.40	2.39	0.814	3.81	1.32	2.49
	Zr-95	12	0.40-0.60	1.05	0.45	1.65	0.47	1.18
	Cs-137	12	None	1.83	1.07	4.20	0.75	3.45
	Cs-134	12	0.11-0.40	0.34	A	0.34	0.34	0.00
	Cr-51	12	0.85-3.00	0.91	A	0.91	0.91	0.00
	Ce-144	12	None	8.78	7.95	24.00	3.20	20.80
	Bala-140	12	0.16-1.03	4.68	4.31	7.73	1.63	6.10
	I-131	12	0.16-0.21	2.50	A	2.50	2.50	0.00
	INDICATOR							
	I-131	12	0.16-0.25	4.60	A	4.60	4.60	0.00
	Co-60	12	None	2.25	4.38	15.30	0.32	14.98
	Fe-59	12	0.19-0.59	<MDL	-	-	-	-
	Mn-54	12	0.30	0.68	0.70	2.45	0.21	2.24
	Co-58	12	0.10-0.23	0.31	0.26	0.69	0.08	0.61
	Nb-95	12	0.10-0.20	0.87	0.53	1.56	0.24	1.32
	Zr-95	12	0.20-0.30	0.97	0.49	1.56	0.43	1.13
	Cs-137	12	None	1.60	1.04	3.31	0.30	3.01
	Cs-134	12	0.10-0.21	<MDL	-	-	-	-
	Cr-51	12	0.70-1.72	<MDL	-	-	-	-
	Ce-144	6	None	5.18	5.28	15.0	1.50	13.50
	Bala-140	12	0.10-0.80	2.27	2.07	4.49	0.41	4.08

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MEDIUM OR PATHWAY SAMPLED (UNITS)	ENVIRONMENTAL SAMPLE STATISTICAL ANALYSIS							
	TYPE OF ANALYSIS PERFORMED AND ISOTOPE	NUMBER OF ANALYSIS PERFORMED	LOWER LIMITS OF DETECTION (RANGE)	MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE	RANGE
AIRBORNE IODINE ANALYSIS pCi/m^3	GAMMA ANALYSIS IODINE -131							
	CONTROL	315	0.02-0.20	0.03	0.01	0.04	0.03	0.01
	INDICATOR	468	0.01-0.17	0.04	0.02	0.07	0.02	0.05
ENVIRONMENTAL TLD READINGS mrem/qtr.	TOTAL DOSE PER QUARTER OFF SITE							
	First Quarter	6	-	10.33	1.51	12.00	8.00	4.00
	Second Quarter	5	-	11.00	0.71	12.00	10.00	2.00
	Third Quarter	7	-	10.14	1.95	13.00	7.00	6.00
	Fourth Quarter	7	-	11.57	1.51	14.00	10.00	4.00
	SITE BOUNDRY							
	First Quarter	5	-	11.00	2.35	14.00	9.00	5.00
	Second Quarter	5	-	11.60	0.55	12.00	11.00	1.00
	Third Quarter	5	-	10.40	0.89	11.00	9.00	2.00
	Fourth Quarter	5	-	11.60	1.14	13.00	10.00	3.00

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MEDIUM OR PATHWAY SAMPLED (UNITS)	ENVIRONMENTAL SAMPLE STATISTICAL ANALYSIS							
	TYPE OF ANALYSIS PERFORMED AND ISOTOPE	NUMBER OF ANALYSIS PERFORMED	LOWER LIMITS OF DETECTION (RANGE)	MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE	RANGE
CONTINUOUS RADIATION MONITORS mr/hr (average monthly value).	DOSE RATE LOCATION							
	OFF-SITE							
	C	12	-	0.029	0.006	0.040	0.020	0.022
	ON-SITE							
	D-1	12	-	0.029	0.007	0.043	0.020	0.023
	D-2	12	-	0.022	0.005	0.030	0.015	0.015
	E	12	-	0.020	0.002	0.022	0.016	0.006
	F	12	-	0.016	0.002	0.020	0.014	0.006
	G	12	-	0.040	0.007	0.047	0.020	0.027
	H	12	-	0.026	0.003	0.031	0.021	0.010
	I	12	-	0.016	0.003	0.020	0.013	0.007
	J	12	-	0.019	0.004	0.030	0.013	0.017
	K	12	-	0.018	0.003	0.025	0.015	0.010
MILK ANALYSIS pCi/l	IODINE-131 LOCATION							
	No. 1	7	0.10-0.20	<MDL	-	-	-	-
	No. 2	7	0.10-0.20	<MDL	-	-	-	-
	No. 3	7	0.20-0.30	<MDL	-	-	-	-
	No. 4	7	0.20-0.30	0.19	A	0.19	0.19	0.00
	No. 5 (control)	7	0.10-0.20	<MDL	-	-	-	-

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MEDIUM OR PATHWAY SAMPLED (UNITS)	ENVIRONMENTAL SAMPLE STATISTICAL ANALYSIS							
	TYPE OF ANALYSIS PERFORMED AND ISOTOPE	NUMBER OF ANALYSIS PERFORMED	LOWER LIMITS OF DETECTION (RANGE)	MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE	RANGE
MILK ANALYSIS pCi/l	GAMMA ISOTOPIC Sr-90 LOCATION							
	No. 1	7	-	6.27	1.03	7.40	4.70	2.70
	No. 2	7	-	5.16	1.25	7.30	3.40	3.90
	No. 3	7	-	4.67	1.84	8.10	2.50	5.60
	No. 4	7	-	7.60	1.70	10.00	5.20	4.80
	No. 5 (control)	7	-	5.89	2.04	9.00	3.00	6.00
MILK ANALYSIS pCi/l	GAMMA ISOTOPIC LOCATION							
	No. 1							
	K-40	7	-	1422.86	308.21	1900.00	960.00	940.00
	Cs-137	7	-	11.60	8.74	30.00	3.50	26.50
	No. 2							
	K-40	7	-	1371.43	298.41	1600.00	800.00	800.00
	Cs-137	7	-	6.99	2.57	12.00	3.70	8.30
	No. 3							
	K-40	7	-	1347.14	241.99	1600.00	930.00	670.00
	Cs-137	7	-	5.70	2.26	9.70	3.40	6.30
	No. 4							
	K-40	7	-	1478.57	336.47	1900.00	950.00	950.00
	Cs-137	7	-	15.46	8.28	33.00	9.20	23.80

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MEDIUM OR PATHWAY SAMPLED (UNITS)	ENVIRONMENTAL SAMPLE STATISTICAL ANALYSIS							
	TYPE OF ANALYSIS PERFORMED AND ISOTOPE	NUMBER OF ANALYSIS PERFORMED	LOWER LIMITS OF DETECTION (RANGE)	MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE	RANGE
MILK ANALYSIS pCi/l	GAMMA ISOTOPIC LOCATION (cont.)							
	No. 5							
	K-40 (control)	7	-	1284.29	221.50	1600.00	990.00	610.00
	Cs-137	7	-	5.83	1.98	7.80	2.40	5.40
MEAT & POULTRY pCi/g (wet)	GAMMA ISOTOPIC INDICATOR							
	Be-7	10	0.03-0.04	<MDL	-	-	-	-
	K-40	10	-	2.10	0.46	2.80	1.50	1.3
	Mn-54	10	0.03-0.04	<MDL	-	-	-	-
	Sb-125	10	0.008-0.01	0.01	A	0.01	0.01	0.00
	Cs-137	10	0.004-0.005	0.021	0.011	0.040	0.013	0.027
	Ra-226	10	0.006-0.01	0.013	A	0.013	0.013	0.00
CHICKEN EGGS pCi/g (wet)	GAMMA ISOTOPIC INDICATOR							
	Be-7	4	0.03-0.04	<MDL	-	-	-	-
	K-40	4	-	1.08	0.32	1.40	0.72	0.68
	Mn-54	4	0.03-0.04	<MDL	-	-	-	-
	Sb-125	4	0.009-0.01	<MDL	-	-	-	-
	Cs-137	4	0.04-0.05	<MDL	-	-	-	-
	Ra-226	4	0.008-0.01	<MDL	-	-	-	-

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MEDIUM OR PATHWAY SAMPLED (UNITS)	ENVIRONMENTAL SAMPLE STATISTICAL ANALYSIS							
	TYPE OF ANALYSIS PERFORMED AND ISOTOPE	NUMBER OF ANALYSIS PERFORMED	LOWER LIMITS OF DETECTION (RANGE)	MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE	RANGE
PRODUCE pCi/g (wet)	GAMMA ISOTOPIC							
	K-40	9	None	2.21	1.39	4.80	0.80	4.0
	Mn-54	9	0.003-0.01	0.011	A	0.011	0.011	0.000
	Sb-125	9	0.007-0.04	<MDL	-	-	-	-
	Cs-137	9	0.003-0.01	0.01	A	0.01	0.01	0.00
	Ra-226	9	0.006-0.03	<MDL	-	-	-	-
	Be-7	9	0.02-0.10	0.07	A	0.07	0.07	0.00
	I-131	9	0.003-10.00	<MDL	-	-	-	-

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ENVIRONMENTAL SAMPLE SUMMARY

Medium/Sample	Location	Nuclide	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Water		pCi/l				
Monthly Composite	NMP Inlet	Co-60	16.0	< 8.1	<1.2	<2.3
		Fe-59	<14.6	<13.9	<2.2	<2.7
		Mn-54	< 7.0	< 1.0	<1.1	<1.0
		Co-58	< 1.3	< 7.5	<1.1	<1.0
		Nb-95	< 6.3	< 6.3	<1.1	<1.0
		Zr-95	<11.5	<10.5	<1.6	<1.7
		Cs-137	< 4.6	< 7.5	<1.2	<1.3
		Cs-134	< 6.4	< 5.7	<1.5	<1.3
		Cr-51	<43.7	<41.0	<7.7	<7.3
		Ce-141	< 7.6	< 6.4	<1.5	<1.0
		Ba-La-140	<21.8	<22.4	<1.6	<2.0
		Gross Beta	< 7.5	3.6	2.5	<2.0
	JAF Inlet	Co-60	11.2	<17.7	<1.5	<1.3
		Fe-59	<12.7	<13.6	<1.9	<2.7
		Mn-54	1.4	< 3.8	<0.8	<1.0
		Co-58	< 1.3	< 9.4	<0.8	<1.0
		Nb-95	< 6.4	< 6.2	<1.1	<1.0
		Zr-95	<10.8	<10.9	<1.5	<1.7
		Cs-137	< 7.4	< 7.1	<1.2	<2.0
		Cs-134	< 5.8	< 6.0	<1.5	<3.0
		Cr-51	<42.1	<43.8	<7.0	<9.7
		Ce-141	< 6.3	< 6.5	<1.5	<1.7
		Ba-La-140	<21.5	<21.8	<1.6	<2.0
		Gross Beta	< 8.4	7.5	2.1	3.1

ENVIRONMENTAL SAMPLE SUMMARY

Medium/Sample	Location	Nuclide	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Water (Cont.)		pCi/l				
Monthly Composite	Raw City Water	Co-60	14.5	< 1.1	<1.5	<2.0
		Fe-59	<16.9	<13.7	<2.2	<2.7
		Mn-54	0.0	< 4.6	<0.8	<1.3
		Co-58	< 2.6	< 6.7	<0.8	<1.0
		Nb-95	< 6.9	< 6.3	<1.1	<1.0
		Zr-95	<11.1	<11.7	<1.5	<2.0
		Cs-137	< 8.2	< 7.1	<1.1	<1.3
		Cs-134	< 7.0	< 5.9	<1.4	<1.3
		Cr-51	<45.0	<42.5	<7.7	<8.7
		Ce-141	< 7.1	< 6.5	<1.1	<1.7
		Ba-La-140	<23.7	<22.2	<1.9	<2.0
		Gross Beta	< 6.5	4.4	2.3	2.8

ENVIRONMENTAL SAMPLE SUMMARY

Medium/Sample	Location	Nuclide	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Airborne		pCi/m^3				
Particulate Filters	On-Sites	Gross Beta				
	D_1		0.11	0.18	0.14	0.03
	D_2		0.10	0.16	0.13	0.04
	E		0.10	0.17	0.08	0.03
	F		0.11	0.18	0.14	0.05
	G		0.10	0.16	0.14	0.05
	H		0.07	0.15	0.12	0.02
	I		0.06	0.12	0.11	0.03
	J		0.07	0.12	0.09	0.02
	K		0.04	0.10	0.10	0.02
	Off-Sites					
	C		0.11	0.27	0.16	0.05
	D_1		0.10	0.23	0.16	0.05
	D_2		0.09	0.26	0.18	0.05
	E		0.11	0.26	0.17	0.06
	F		0.10	0.25	0.21	0.05
	G		0.09	0.25	0.14	0.04

ENVIRONMENTAL SAMPLE SUMMARY

Medium/Sample	Location	Nuclide	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Airborne						
Charcoal Cartridge	On-Sites	I-131 pCi/m^3				
	D_1		<0.04	<0.03	<0.04	<0.04
	D_2		<0.05	<0.04	<0.04	<0.04
	E		<0.05	<0.03	<0.04	<0.03
	F		<0.05	<0.03	<0.04	<0.03
	G		<0.05	<0.04	<0.04	<0.03
	H		<0.05	<0.02	<0.03	<0.02
	I		<0.03	<0.02	<0.02	<0.01
	J		<0.03	<0.02	<0.02	<0.02
	K		<0.03	<0.02	<0.02	<0.01
	Off-Sites					
	C		<0.04	<0.03	<0.04	<0.03
	D_1		<0.06	<0.04	<0.04	<0.03
	D_2		<0.04	<0.03	<0.04	<0.03
	E		<0.03	<0.03	<0.04	<0.03
	F		<0.06	<0.04	<0.05	<0.03
	G		<0.05	<0.03	<0.04	<0.04

ENVIRONMENTAL SAMPLE SUMMARY

Medium/Sample	Location	Nuclide	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Airborne		pCi/m^3				
Particulate Composite	On-Site	Co-60	5.9E-03	9.0E-04	6.1E-04	8.6E-04
		Fe-59	<4.0E-04	<3.6E-04	<3.0E-04	<3.0E-04
		Mn-54	1.3E-03	4.0E-04	<2.6E-04	4.4E-04
		Co-58	<3.9E-04	<3.4E-05	<1.3E-04	<1.4E-04
		Nb-95	2.3E-03	2.2E-03	<2.1E-04	<1.0E-04
		Zr-95	1.0E-03	9.4E-04	<2.0E-04	<2.0E-04
		Cs-137	1.6E-03	2.8E-03	<1.7E-03	3.6E-04
		Cs-134	<1.8E-03	<1.8E-04	<1.7E-04	<1.6E-04
		Cr-51	<1.3E-03	<1.4E-03	<9.3E-04	<8.0E-04
		Ce-141	<3.7E-04	<5.9E-04	<1.0E-04	<1.6E-04
		Ba-La-140	<1.9E-03	<1.0E-03	<2.0E-04	<1.6E-04
		I-131	<9.3E-04	<1.1E-04	<1.0E-04	<1.6E-04
		Ce-144	ND	ND	8.8E-03	1.6E-03
		Be-7	ND	ND	2.4E-02	2.7E-02
		Ru-106	ND	ND	<4.3E-03	<1.0E-03
		Sb-125	ND	ND	8.2E-04	<3.7E-04

ND = Not Detected/No MDL

ENVIRONMENTAL SAMPLE SUMMARY

Medium/Sample	Location	Nuclide	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Airborne		pCi/m^3				
Particulate Composite	Off-Site	Co-60	3.5E-03	6.8E-04	<1.0E-03	1.0E-03
		Fe-59	<5.7E-04	<2.8E-04	<4.3E-04	<4.3E-04
		Mn-54	1.5E-03	7.2E-04	<4.0E-04	<4.7E-04
		Co-58	<7.3E-03	<1.5E-04	<2.7E-04	<1.7E-04
		Nb-95	2.9E-03	1.9E-03	<3.7E-04	<2.7E-04
		Zr-95	1.4E-03	7.3E-04	<6.0E-04	<4.3E-04
		Cs-137	1.2E-03	2.6E-04	2.5E-03	1.1E-03
		Cs-134	<2.7E-04	<2.0E-04	<3.3E-04	<3.0E-04
		Cr-51	<2.1E-03	<6.2E-04	<2.3E-03	<2.0E-03
		Ce-141	<6.5E-04	<4.7E-04	<3.7E-04	<3.7E-04
		BaLa-140	<3.2E-03	6.7E-04	<4.3E-04	<4.7E-04
		I-131	<1.7E-03	<1.9E-04	<2.3E-04	<2.0E-04
		Ce-144	ND	ND	2.9E-03	4.1E-03
		Be-7	ND	ND	3.2E-02	7.0E-02
		Ru-106	ND	ND	<5.1E-03	<3.0E-03
		Sb-125	ND	ND	<1.2E-03	<8.3E-04

ND = Not Detected/No MDL

ENVIRONMENTAL SAMPLE SUMMARY

Medium/Sample	Location	Nuclide	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Direct Radiation						
Continuous Monitors (GM)	On-Sites	mrem/qtr				
	D_1		51.8	72.1	55.2	77.3
	D_2		47.5	56.8	50.8	37.5
	E		36.7	45.9	44.2	44.2
	F		36.7	32.8	35.3	33.1
	G		84.2	96.1	94.9	72.9
	H		49.7	59.0	61.9	59.6
	I		30.2	34.9	35.3	37.5
	J		30.2	41.5	44.2	48.6
	K		36.7	39.3	39.7	39.7
	Off-Site					
	C		67.0	80.8	57.4	48.6
TLDs	Off-Site	mrem/qtr	10	11	10	12
	Site Boundary	mrem/qtr	11	12	10	12
	On-Site	mrem/qtr	48	50	41	49

ENVIRONMENTAL SAMPLE SUMMARY

Medium/Sample	Location	Map #*	Nuclide pCi/l	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Ingestion	1	16	I-131	NS	<0.2	<0.2	<0.2
			K-40		960.0	1500.0	1500.0
			Cs-137		10.0	17.9	5.9
			Sr-90		6.3	7.1	5.5
	2	4	I-131	NS	<0.1	<0.2	<0.2
			K-40		800.0	1470.0	1470.0
			Cs-137		5.5	9.0	5.5
			Sr-90		5.0	5.3	5.1
	3	14	I-131	NS	<0.2	<0.2	<0.2
			K-40		1700.0	1340.0	1430.0
			Cs-137		3.9	7.6	4.4
			Sr-90		4.5	5.8	3.5
	4	25	I-131	NS	<0.2	<0.2	<0.2
			K-40		950.0	1500.0	1630.0
			Cs-137		12.0	14.3	17.7
			Sr-90		10.0	7.1	7.3
	5	13	I-131	NS	<0.2	<0.2	<0.2
			K-40		1200.0	1230.0	1360.0
			Cs-137		7.8	7.0	4.0
			Sr-90		7.6	6.9	4.3

NS = Not Samples (not in grazing season)

*Figure 4

IV.

Analytical Results

TABLE 1

SAMPLE COLLECTION AND ANALYSIS

SITE RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

A. LAKE PROGRAM[1]

MEDIA	ANALYSIS	FREQUENCY[4]	LOCATION[2]	
1. Fish	GeLi, ^{89}Sr & ^{90}Sr	2/yr	2 onsite	1 offsite
2. Mollusks	GeLi, ^{89}Sr & ^{90}Sr	2/yr	2 onsite	1 offsite
3. Gammarus	GeLi, ^{89}Sr & ^{90}Sr	2/yr	2 onsite	1 offsite
4. Bottom Sediments	GeLi, ^{90}Sr	2/yr	2 onsite	1 offsite
5. Periphyton	GeLi	2/yr	2 onsite	1 offsite
6. Lake Water	GB, GSA or GeLi ^{3}H, ^{89}Sr, ^{90}Sr	M Comp. Qtr. Comp.	3[3]	

Notes:

(1) Program continued for at least three years after the startup of James A. Fitzpatrick Nuclear Power Plant.
(2) Onsite locations samples collected in the vicinity of discharges, offsite samples collected at a distance of at least five miles from site.
(3) The three lake water samples to include Nine Mile Point Unit 1 intake water, James A. FitzPatrick intake water, and Oswego City water.
(4) Samples of items 1 through 5 collected in spring and fall when available.

TABLE 2

SAMPLE COLLECTION AND ANALYSIS

SITE RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

B. LAND PROGRAM(1)

MEDIA	ANALYSIS	FREQUENCY	NO. OF LOCATIONS	LOCATIONS	
1. Air Particulates	GB GSA	W M Comp.(6)	At least 10	9 onsite	6 offsite
2. Soil	GSA, ^{90}Sr	Every 3 years	15	9 onsite	6 offsite
3. TLD	Gamma Dose	Qtr.	20	14 onsite	6 offsite
4. Radiation Monitors	Gamma Dose	C	10	9 onsite	1 offsite
5. Airborne - I^{131}	GSA	W	At least 10	9 onsite	6 offsite
6. Milk	I GSA, ^{90}Sr	M M Comp.	4(7)	(8)	
7. Human Food Crops	GSA, ^{131}I	A	3	(8)	
8. Meat, Poultry, Eggs	GSA Edible Portion	SA	3	(8)	

Notes: (Cont.)

(6) Onsite samples counted together, offsite counted together, any high count samples counted separately.
(7) Frequency applied only during grazing season.
(8) Samples to be collected from farms within a 10-mile radius having the highest potential concentrations of radionuclides.

Abbreviations:

M Comp. - Monthly composite of weekly or bi-weekly samples
GB - Gross beta analysis
GeLi - Gamma spectral analysis on a GeLi system (quantitative)
GSA - Gamma spectral analysis on a NaI system (quantitative)

A - Annually
W - Weekly
M - Monthly
C - Continuous
BW - Bi-weekly (alternate wks.)
Qtr. - Quarterly
SA - Semiannually

TABLE 3

CONCENTRATIONS OF GAMMA EMITTERS IN PERIPHYTON SAMPLES

Results in Units of pCi/g(wet) ± 2 sigma

COLLECTION SITE	NUCLIDES FOUND	6-27-78 to 6-28-78	8-23-78
Off-Site 00	Be-7	0.09±0.07	0.35±0.06
	K-40	1.7±0.3	2.2±0.2
	Mn-54	<0.007	0.011±0.007
	Co-60	<0.01	0.013±0.005
	Zr-95	<0.02	0.012±0.009
	Nb-95	0.019±0.009	<0.004
	Ru-106	<0.07	0.09±0.05
	Cs-137	0.023±0.009	0.063±0.009
	Ce-144	0.10±0.06	0.13±0.05
	Ra-226	<0.02	0.071±0.009
	Th-232	<0.03	0.04±0.03
JAF 03	Be-7	0.07±0.04	0.33±0.05
	K-40	1.1±0.2	2.7±0.3
	Mn-54	<0.006	0.008±0.005
	Co-60	<0.005	0.030±0.006
	Zr-95	0.019±0.009	0.014±0.005
	Nb-95	0.017±0.007	0.034±0.008
	Ru-106	<0.04	0.06±0.04
	Cs-137	<0.006	0.072±0.007
	Ce-144	0.09±0.03	0.12±0.02
	Ra-226	<0.009	0.024±0.007
NMPP 02	Be-7	0.3±0.1	0.59±0.06
	K-40	1.2±0.3	2.1±0.2
	Co-60	0.03±0.01	0.10±0.01
	Zr-95	0.03±0.02	0.010±0.008
	Nb-95	0.04±0.02	0.028±0.008
	Ru-106	<0.1	0.09±0.05
	Cs-134	<0.01	0.011±0.005
	Cs-137	0.05±0.02	0.12±0.01
	Ce-144	<0.07	0.11±0.03
	Ra-226	<0.03	0.042±0.008
	Th-232	<0.05	0.03±0.02
NMPW 01	Be-7	1.8±0.4	*
	K-40	1.0±0.6	
	Nb-95	0.09±0.04	
	Ru-103	0.04±0.04	
	Cs-137	0.19±0.05	
	Ce-144	1.1±0.3	

* No Sample Required.

TABLE 4

CONCENTRATIONS OF Sr-90 AND GAMMA EMITTERS IN SEDIMENT SAMPLES

Results in Units of pCi/g(dry) ± 2 sigma

COLLECTION SITE	COLLECTION DATE	Sr-90	GAMMA EMITTERS K-40	Co-60	Ru-103	Sb-125	Cs-134	Cs-137	BaLa-140	Ra-226	Th-232
Off-site 00	6-27-78	0.061±0.008	11±1	<0.06	<0.03	0.1±0.1	<0.05	0.71±0.09	<0.05	1.0±0.1	0.9±0.2
	10-02-78	0.04±0.01	13±2	<0.07	<0.03	<0.1	<0.05	0.50±0.08	<0.06	0.94±0.09	0.8±0.2
JAF 03	6-29-78	0.015±0.005	15±2	1.5±0.2	0.04±0.04	<0.1	0.30±0.07	2.1±0.2	<0.08	0.3±0.8	0.4±0.2
NMPP 02	6-27-78	<0.02	14±1	0.36±0.06	<0.03	<0.1	<0.06	0.63±0.09	0.09±0.09	0.5±0.2	0.7±0.2
	10-02-78	<0.02	14±2	0.55±0.08	<0.04	<0.1	<0.05	1.0±0.1	<0.06	0.62±0.09	0.6±0.2
NMPW 01	10-02-78	<0.01	10±1	0.18±0.05	<0.04	<0.1	<0.05	0.24±0.08	<0.06	0.4±0.1	0.4±0.2

TABLE 5

CONCENTRATIONS OF GAMMA EMITTERS, Sr-89 AND -90 IN MOLLUSK SAMPLES

Results in Units of pCi/g(wet) ± 2 sigma

COLLECTION SITE	COLLECTION DATE	GAMMA EMITTERS							
		Sr-89	Sr-90	Be-7	K-40	Mn-54	Co-60	Ra-226	Th-232
Off-site 00	6-27-78 to 6-30-78	<0.02	0.12±0.01	<0.07	<0.2	<0.02	<0.02	0.08±0.02	0.07±0.04
	10-02-78	0.02±0.02	0.150±0.009	<0.1	<0.3	<0.02	<0.02	0.21±0.04	<0.08
NMPP 02	6-27-78 to 6-29-78	<0.03	0.14±0.01	0.2±0.1	<0.3	0.35±0.04	<0.04	0.12±0.04	<0.08
	10-02-78 to 10-06-78	0.03±0.02	0.18±0.01	<0.1	<0.2	1.1±0.1	0.22±0.03	0.23±0.05	<0.07
NMPW 01	6-27-78 to 6-29-78	<0.02	0.097±0.008	<0.1	0.6±0.4	<0.05	0.06±0.03	<0.06	<0.1
	10-02-78	0.07±0.02	0.14±0.01	<0.09	<0.4	<0.03	<0.03	0.22±0.04	<0.08

TABLE 6

CONCENTRATIONS OF GAMMA EMITTERS, Sr-89 AND Sr-90 IN GAMMARUS SAMPLES

Results in Units of pCi/g(wet) ± 2 sigma

COLLECTION SITE	COLLECTION DATE	GAMMA EMITTERS Sr-89	Sr-90	Be-7	K-40	Mn-54	Cs-137	Ce-144	Ra-226
Off-site 00	6-20-78 to 6-27-78	<0.07	0.14±0.03	<0.2	<0.4	<0.02	<0.02	<0.1	<0.05
	8-10-78 to 8-17-78	<0.03	0.13±0.01	0.05±0.03	0.8±0.1	<0.005	0.028±0.009	0.03±0.02	0.027±0.009
JAF 03	6-20-78 to 6-27-78	<0.2	0.14±0.05	<0.4	<1.0	<0.05	<0.07	<0.3	<0.2
	8-10-78 to 8-17-78	<0.04	0.19±0.01	0.09±0.08	0.7±0.2	<0.009	0.05±0.02	0.08±0.05	<0.03
NMPP 02	6-20-78 to 6-27-78	<0.2	0.13±0.06	<0.7	<2.0	0.1±0.1	<0.08	<0.7	<0.2
	8-10-78 to 8-17-78	<0.1	0.21±0.03	<0.2	1.4±0.7	<0.03	0.05±0.04	<0.2	<0.07

TABLE 7

CONCENTRATIONS OF STRONTIUM-89 AND -90, GAMMA EMITTERS IN FISH SAMPLES

Results in Units of pCi/g(wet) ± 2 sigma

SAMPLE DATE	SAMPLE TYPE	Sr-89	Sr-90	K-40	Mn-54	Cs-137	Ce-141	Ce-144
				FITZPATRICK - 03				
5-18-78	#1 White Perch	<0.01	0.010±0.004	1.6±0.4	<0.01	0.10±0.03	<0.02	<0.1
	#2 White Perch	<0.009	0.018±0.004	1.7±0.5	<0.01	0.09±0.02	<0.01	<0.05
	Salvelinus	<0.008	<0.004	2.3±0.5	<0.009	0.05±0.02	<0.01	<0.05
	Rainbow Smelt	<0.006	0.012±0.003	1.6±0.5	<0.02	0.03±0.02	<0.03	<0.1
	Brown Trout	<0.007	<0.004	1.8±0.5	<0.02	0.09±0.03	<0.02	<0.1
10-04-78	Smallmouth Bass	<0.01	0.013±0.004	2.6±0.4	<0.01	0.08±0.02	<0.009	<0.04
to	#1 Rainbow Smelt	0.014±0.007	0.009±0.004	2.3±0.4	<0.01	0.04±0.02	<0.009	<0.04
10-05-78	#2 Rainbow Smelt	<0.008	0.008±0.003	1.9±0.4	<0.01	<0.02	<0.01	<0.06
	Yellow Perch	<0.01	0.025±0.004	2.7±0.5	<0.02	0.10±0.03	<0.01	<0.07
10-05-78	#1 Brown Trout	0.015±0.006	<0.005	2.2±0.5	<0.01	0.07±0.02	<0.01	<0.05
	#2 Brown Trout	<0.009	0.004±0.003	2.9±0.6	<0.01	0.07±0.03	<0.02	<0.07
				NINE MILE POINT - 02				
5-18-78	#1 White Perch	<0.007	0.021±0.003	1.5±0.5	<0.01	0.10±0.03	<0.02	<0.09
	#2 White Perch	<0.006	0.013±0.003	1.6±0.4	<0.01	0.09±0.03	<0.01	<0.05
	Salvelinus	<0.006	<0.003	2.6±0.6	<0.02	0.05±0.04	0.03±0.03	<0.1
5-22-78	Rainbow Smelt	<0.01	0.014±0.005	1.1±0.3	<0.01	<0.02	<0.02	<0.09
10-04-78	#1 Salvelinus	<0.01	<0.006	1.9±0.5	<0.02	0.07±0.02	<0.01	<0.04
	#2 Salvelinus	<0.01	0.005±0.004	2.3±0.6	<0.01	0.07±0.03	<0.02	<0.09
10-04-78	Smallmouth Bass	<0.01	0.016±0.004	2.6±0.6	<0.02	0.10±0.04	<0.02	<0.09
to	Yellow Perch	<0.01	0.015±0.005	2.1±0.4	0.02±0.01	0.08±0.02	<0.006	<0.04
10-05-78								
				OFFSITE - 00				
5-18-78	#1 White Perch	<0.005	<0.003	2.4±0.5	<0.02	0.06±0.03	<0.02	<0.08
	#2 White Perch	<0.005	0.012±0.002	3.1±0.6	<0.01	0.08±0.02	<0.01	<0.06
	Yellow Perch	<0.006	0.008±0.003	3.0±0.7	<0.01	0.10±0.04	<0.03	<0.1
	Northern Pike	<0.006	0.015±0.003	2.3±0.4	<0.01	0.04±0.02	<0.01	<0.07
	Brown Trout	<0.006	<0.003	5.7±1.2	<0.03	0.20±0.06	<0.03	<0.09
10-04-78	#1 Chinook Salmon	<0.01	<0.005	3.1±0.5	<0.01	0.07±0.02	<0.01	<0.04
	#2 Chinook Salmon	<0.01	0.004±0.003	2.6±0.6	<0.02	0.10±0.03	<0.02	0.11±0.09
10-04-78	White Perch	<0.02	0.012±0.005	2.4±0.6	<0.02	<0.02	<0.02	<0.08
to	Yellow Perch	<0.007	0.008±0.003	1.9±0.4	<0.01	0.04±0.02	<0.01	<0.06
10-05-78								

TABLE 8A

LAKE WATER SAMPLES

MONTHLY COMPOSITE
GROSS BETA
pCi/l

Date	NMP-1	JAF	OSWP
1/78	< 9.5	<9.4	<9.1
2/78	7.1±0.8	7.8±0.8	4.6±0.7
3/78	5.9±0.5	8.0±0.6	5.8±0.5
4/78	5.7±0.6	7.3±0.8	6.1±0.6
5/78	7.4±0.6	11.1±0.7	4.3±0.6
6/78	2.8±0.8	4.1±0.8	2.9±0.7
7/78	2.7±0.6	2.8±0.6	3.4±0.7
8/78	3.6±0.7	2.9±0.6	3.0±0.7
9/78	1.2±0.5	0.6±0.5	0.5±0.5
10/78	2.4±0.6	2.8±0.7	2.7±0.7
11/78	3.5±0.7	3.3±0.7	2.8±0.6
12/78	3.3±0.6	3.3±0.6	2.9±0.6

TABLE 8B

LAKE WATER SAMPLES

QUARTERLY COMPOSITE
pCi/l

Location	Date	H-3	Sr-89	Sr-90
NMP-1	1st qtr/78	390±120	<5.0	<2.0
JAF	1st qtr/78	560±120	<5.0	<2.0
OSWP	1st qtr/78	490±120	<5.0	<2.0
NMP-1	2nd qtr/78	314±160	<1.1	1.0±0.4
JAF	2nd qtr/78	560±140	<1.2	1.1±0.5
OSWP	2nd qtr/78	282±160	<1.1	1.0±0.4
NMP	3rd qtr/78	256±86	0.8±0.4	0.4±0.3
JAF	3rd qtr/78	377±87	0.6±0.5	0.6±0.3
OSWP	3rd qtr/78	288±85	<0.8	0.8±0.3
NMP-1	4th qtr/78	253±170	<0.9	1.1±0.3
JAF	4th qtr/78	405±170	0.7±0.6	0.6±0.3
OSWP	4th qtr/78	215±170	<0.9	0.9±0.3

TABLE 9
MONTHLY WATER COMPOSITES
GAMMA ACTIVITY
pCi/l

ISOTOPE	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
NINE MILE POINT UNIT I INLET												
Co-60	0.0±18.0	20.0±19.6	23.1±18.6	17.2±17.9	4.0±18.1	< 3.2*	<0.6	< 1.0	< 2.0	<2.0	< 2.0	< 3.0
Fe-59	<14.0	<16.5	<13.3	<15.2	<12.2	<14.2	<0.7	< 3.0	< 3.0	<3.0	< 3.0	< 2.0
Mn-54	0.0± 9.9	<12.1	9.0±11.7	0.0± 9.6	0.0± 9.7	< 3.0*	<0.4	< 2.0	< 1.0	<1.0	< 1.0	< 1.0
Co-58	0.0± 5.7	< 3.8	0.0± 6.8	< 7.9	< 7.3	< 7.26	<0.4	< 2.0	< 1.0	<1.0	< 1.0	< 1.0
Nb-95	< 5.6	< 7.3	< 6.1	< 6.1	< 6.6	< 6.2	<0.4	< 2.0	< 1.0	<1.0	< 1.0	< 1.0
Zr-95	<11.1	<12.0	<11.3	<10.9	<10.5	<10.2	<0.7	< 2.0	< 2.0	<2.0	< 2.0	< 1.0
Cs-137	< 6.8	4.5± 5.5	2.6± 6.6	< 7.5	< 7.8	< 7.2	<0.5	< 2.0	< 1.0	<2.0	< 1.0	< 1.0
Cs-134	< 6.3	< 6.6	< 6.4	< 5.6	< 5.9	< 5.5	<0.4	< 2.0	< 2.0	<1.0	< 1.0	< 2.0
Cr-51	<39.7	<45.2	<46.3	<40.5	<41.5	<40.9	<3.0	<10.0	<10.0	<7.0	< 8.0	< 7.0
Ce-141	9.0± 2.1	< 6.9	< 6.8	< 6.5	< 6.4	< 6.4	<0.6	< 2.0	< 2.0	<1.0	< 1.0	< 1.0
BaLa-140	<20.6	<23.6	<21.2	<21.8	<22.5	22.8± 2.6	<0.7	< 2.0	< 2.0	<2.0	< 2.0	< 2.0
JAMES A. FITZPATRCK INLET												
Co-60	0.0±18.2	22.0±19.7	11.5±18.1	17.0±17.9	33.0±18.7	< 3.2*	<0.5	< 2.0	< 2.0	<2.0	< 2.0	< 1.0
Fe-59	< 9.9	<15.8	<14.4	<13.5	<13.3	<14.0	<0.7	< 3.0	< 2.0	<3.0	< 3.0	< 2.0
Mn-54	0.0± 9.9	0.0±11.0	4.1±11.4	7.8± 9.7	0.6± 9.7	< 3.0*	<0.4	< 1.0	< 1.0	<1.0	< 1.0	< 1.0
Co-58	0.0± 5.7	3.9± 7.7	0.0± 6.2	13.3± 2.8	< 7.2	< 7.8	<0.4	< 1.0	< 1.0	<1.0	< 1.0	< 1.0
Nb-95	< 6.7	< 6.5	< 6.1	< 6.5	< 6.2	< 5.9	<0.4	< 2.0	< 1.0	<1.0	< 1.0	< 1.0
Zr-95	<10.5	<11.3	<10.6	< 9.8	<11.4	<11.5	<0.6	< 2.0	< 2.0	<2.0	< 2.0	< 1.0
Cs-137	< 7.1	< 8.2	< 7.0	< 6.5	< 7.4	< 7.3	<0.5	< 2.0	< 1.0	<2.0	< 2.0	< 2.0
Cs-134	< 5.3	< 6.1	< 6.1	< 5.9	< 6.1	< 6.1	<0.5	< 2.0	< 2.0	<1.0	< 1.0	< 1.0
Cr-151	<43.9	<42.8	<39.6	<43.3	<42.9	<45.3	<3.0	<10.0	< 8.0	<9.0	<10.0	<10.0
Ce-141	< 6.5	< 6.3	< 6.2	< 6.6	< 6.5	< 6.5	<0.6	< 2.0	< 2.0	<2.0	< 2.0	< 1.0
BaLa-140	<21.5	<22.4	<19.7	<22.8	<20.1	<22.4	<0.8	< 2.0	< 2.0	<2.0	< 2.0	< 2.0
RAW CITY WATER												
Co-60	8.5±18.8	11.0±21.5	24.1±18.5	0.0±17.1	0.0±17.5	< 3.2*	<0.6	< 2.0	< 2.0	<2.0	< 2.0	< 2.0
Fe-59	<14.4	<19.9	<16.5	<13.3	<14.4	<13.3	<0.7	< 3.0	< 3.0	<3.0	< 3.0	< 2.0
Mn-54	0.0±14.4	0.0±12.3	0.0±11.2	7.4± 9.9	3.4±10.1	< 3.0*	<0.3	< 1.0	< 1.0	<2.0	< 1.0	< 1.0
Co-58	< 7.9	0.0± 7.5	0.0± 6.3	12.2± 2.8	0.0± 5.1	< 7.8	<0.3	< 1.0	< 1.0	<1.0	< 1.0	< 1.0
Nb-95	< 5.9	< 8.3	< 6.4	< 6.4	< 6.6	< 5.9	<0.3	< 2.0	< 1.0	<1.0	< 1.0	< 1.0
Zr-95	<10.1	<12.8	<10.5	<10.6	<12.5	<12.1	<0.6	< 2.0	< 2.0	<2.0	< 2.0	< 2.0
Cs-137	< 7.5	< 9.8	< 7.4	< 7.4	< 7.1	< 6.9	<0.4	< 2.0	< 1.0	<1.0	< 2.0	< 1.0
Cs-134	< 5.9	< 8.7	< 6.5	< 6.1	< 5.4	< 6.3	<0.3	< 2.0	< 2.0	<1.0	< 2.0	< 1.0
Cr-51	<41.2	<51.2	<42.5	<45.0	<43.9	<38.5	<3.0	<10.0	<10.0	<9.0	<10.0	< 7.0
Ce-141	< 6.2	< 8.6	< 6.4	< 6.5	< 6.5	< 6.6	<0.4	< 2.0	< 2.0	<2.0	< 2.0	< 1.0
BaLa-140	<22.4	<26.1	<22.6	<22.3	21.6± 3.4	<21.4	<0.6	< 3.0	< 2.0	<2.0	< 2.0	< 2.0

*Reanalyzed. Results decay corrected.

TABLE 10
NMP - JAF SITE
ENVIRONMENTAL AIRBORNE PARTICULATE SAMPLES - OFF SITE STATIONS
GROSS BETA ACTIVITY $pCi/m^3 \pm 2\sigma$

Date Collected	LOCATION C	D_1	D_2	E	F	G
1-1-78	0.09 ± 0.01	0.12 ± 0.01	0.11 ± 0.01	0.09 ± 0.01	0.08 ± 0.01	0.09 ± 0.01
1-11-78	0.07 ± 0.01	0.08 ± 0.01	0.09 ± 0.01	0.08 ± 0.01	0.08 ± 0.01	0.09 ± 0.01
1-17-78	0.14 ± 0.01	0.13 ± 0.02	0.12 ± 0.01	0.12 ± 0.01	0.09 ± 0.01	0.08 ± 0.01
1-24-78	0.16 ± 0.01	0.15 ± 0.01	0.12 ± 0.01	0.13 ± 0.01	0.17 ± 0.01	0.15 ± 0.01
1-31-78	0.07 ± 0.01	0.06 ± 0.01	0.06 ± 0.01	0.06 ± 0.01	0.06 ± 0.01	0.06 ± 0.01
2-7-78	0.07 ± 0.01	0.06 ± 0.01	0.06 ± 0.01	0.06 ± 0.01	0.06 ± 0.01	0.07 ± 0.01
2-14-78	0.07 ± 0.01	0.06 ± 0.01	0.04 ± 0.01	0.06 ± 0.01	0.06 ± 0.01	0.08 ± 0.01
2-22-78	0.07 ± 0.01	0.07 ± 0.01	0.05 ± 0.01	0.07 ± 0.01	0.14 ± 0.01	0.08 ± 0.01
2-28-78	0.08 ± 0.01	0.09 ± 0.01	0.05 ± 0.01	0.08 ± 0.01	0.07 ± 0.01	0.08 ± 0.01
3-7-78	0.12 ± 0.01	0.12 ± 0.01	0.11 ± 0.01	0.12 ± 0.01	0.12 ± 0.01	0.12 ± 0.01
3-14-78	0.12 ± 0.01	0.09 ± 0.01	0.06 ± 0.01	0.10 ± 0.01	0.08 ± 0.01	0.09 ± 0.01
3-21-78	0.16 ± 0.01	0.11 ± 0.01	0.11 ± 0.01	0.16 ± 0.01	0.11 ± 0.01	0.12 ± 0.01
3-28-78	0.22 ± 0.01	0.22 ± 0.01	0.24 ± 0.01	0.26 ± 0.01	0.25 ± 0.01	0.12 ± 0.01
4-4-78	0.30 ± 0.01	0.28 ± 0.01	0.30 ± 0.01	0.30 ± 0.01	0.30 ± 0.01	0.33 ± 0.01
4-11-78	0.21 ± 0.01	0.20 ± 0.01	TV Interference Test	0.22 ± 0.01	0.20 ± 0.01	0.23 ± 0.01
4-18-78	0.38 ± 0.01	0.23 ± 0.01	0.35 ± 0.01	0.32 ± 0.01	0.32 ± 0.01	0.28 ± 0.01
4-25-78	0.53 ± 0.02	0.37 ± 0.02	0.51 ± 0.02	0.44 ± 0.01	0.44 ± 0.02	0.43 ± 0.02
5-2-78	0.32 ± 0.01	0.27 ± 0.01	0.31 ± 0.01	0.30 ± 0.01	0.27 ± 0.01	0.29 ± 0.01
5-9-78	0.08 ± 0.01	0.08 ± 0.01	0.08 ± 0.01	0.08 ± 0.01	0.06 ± 0.01	0.06 ± 0.01
5-16-78	0.20 ± 0.01	0.13 ± 0.01	0.11 ± 0.01	0.11 ± 0.01	0.11 ± 0.01	0.13 ± 0.01
5-23-78	0.18 ± 0.01	0.16 ± 0.01	0.20 ± 0.01	0.21 ± 0.01	0.21 ± 0.01	0.21 ± 0.01
5-31-78	0.32 ± 0.01	0.28 ± 0.01	0.27 ± 0.01	0.30 ± 0.01	0.25 ± 0.01	0.27 ± 0.01
6-6-78	0.19 ± 0.01	0.19 ± 0.01	0.19 ± 0.01	0.22 ± 0.01	0.21 ± 0.01	0.18 ± 0.01
6-13-78	0.14 ± 0.01	0.15 ± 0.01	0.14 ± 0.01	0.11 ± 0.01	0.09 ± 0.01	0.13 ± 0.01
6-20-78	0.21 ± 0.01	0.20 ± 0.01	0.16 ± 0.01	0.16 ± 0.01	0.19 ± 0.01	0.18 ± 0.01
6-26-78	0.48 ± 0.02	0.46 ± 0.01	0.45 ± 0.01	0.60 ± 0.01	0.66 ± 0.02	0.48 ± 0.02

TABLE 10(Cont.)
NMP - JAF SITE
ENVIRONMENTAL AIRBORNE PARTICULATE SAMPLES - OFF SITE STATIONS
GROSS BETA ACTIVITY $pCi/m^3 \pm 2\sigma$

Date Collected	LOCATION C	D_1	D_2	E	F	G
7-5-78	0.22 ± 0.01	0.26 ± 0.01	0.23 ± 0.01	0.29 ± 0.01	0.32 ± 0.01	0.22 ± 0.01
7-11-78	0.21 ± 0.01	0.24 ± 0.01	0.17 ± 0.01	0.20 ± 0.01	0.20 ± 0.01	0.15 ± 0.01
7-18-78	0.24 ± 0.01	0.24 ± 0.01	0.31 ± 0.01	0.32 ± 0.01	0.30 ± 0.01	0.23 ± 0.01
7-25-78	0.22 ± 0.01	0.22 ± 0.01	0.36 ± 0.01	0.22 ± 0.01	0.22 ± 0.01	0.18 ± 0.01
8-1-78	0.10 ± 0.01	*	0.10 ± 0.01	0.09 ± 0.01	0.11 ± 0.01	0.10 ± 0.01
8-8-78	0.14 ± 0.01	0.14 ± 0.01	0.16 ± 0.01	0.13 ± 0.01	0.16 ± 0.01	0.14 ± 0.01
8-15-78	0.27 ± 0.01	0.20 ± 0.01	0.27 ± 0.01	0.32 ± 0.01	0.46 ± 0.01	0.24 ± 0.01
8-22-78	0.18 ± 0.01	0.18 ± 0.01	0.24 ± 0.01	0.22 ± 0.01	0.32 ± 0.01	0.18 ± 0.01
8-29-78	0.07 ± 0.01	0.08 ± 0.01	0.09 ± 0.01	0.08 ± 0.01	0.08 ± 0.01	0.09 ± 0.01
9-6-78	0.12 ± 0.01	0.15 ± 0.01	0.20 ± 0.01	0.19 ± 0.01	0.24 ± 0.01	0.11 ± 0.01
9-12-78	0.07 ± 0.01	0.07 ± 0.01	0.08 ± 0.01	0.08 ± 0.01	0.09 ± 0.01	0.07 ± 0.01
9-19-78	*	0.04 ± 0.01	0.05 ± 0.01	0.04 ± 0.01	0.04 ± 0.01	0.05 ± 0.01
9-26-78	0.10 ± 0.01	0.13 ± 0.01	0.14 ± 0.01	0.03 ± 0.01	0.15 ± 0.01	0.10 ± 0.01
10-3-78	0.06 ± 0.01	0.05 ± 0.01	0.04 ± 0.01	0.05 ± 0.01	0.04 ± 0.01	0.04 ± 0.01
10-11-78	0.04 ± 0.01	0.02 ± 0.01	0.02 ± 0.01	0.02 ± 0.01	0.02 ± 0.01	0.02 ± 0.01
10-17-78	0.11 ± 0.01	0.12 ± 0.01	0.15 ± 0.01	0.12 ± 0.01	0.15 ± 0.01	0.08 ± 0.01
10-24-78	0.06 ± 0.01	0.04 ± 0.01	0.01 ± 0.01	0.04 ± 0.01	0.04 ± 0.01	0.03 ± 0.01
10-31-78	0.05 ± 0.01	0.05 ± 0.01	0.06 ± 0.01	0.09 ± 0.01	0.08 ± 0.01	0106 ± 0.01
11-7-78	0.10 ± 0.01	0.07 ± 0.01	0.10 ± 0.01	0.11 ± 0.01	0.10 ± 0.01	0.08 ± 0.01
11-14-78	0.04 ± 0.01	0.04 ± 0.01	0.04 ± 0.01	0.05 ± 0.01	0.04 ± 0.01	0.03 ± 0.01
11-21-78	0.03 ± 0.01	0.03 ± 0.01	0.03 ± 0.01	0.03 ± 0.01	0.02 ± 0.01	0.02 ± 0.01
11-29-78	0.02 ± 0.01	0.02 ± 0.01	0.02 ± 0.01	0.03 ± 0.01	0.02 ± 0.01	0.02 ± 0.01
12-05-78	0.06 ± 0.01	0.06 ± 0.01	0.07 ± 0.01	0.07 ± 0.01	0.06 ± 0.01	0.06 ± 0.01
12-12-78	0.04 ± 0.01	0.05 ± 0.01	0.04 ± 0.01	0.06 ± 0.01	0.05 ± 0.01	0.05 ± 0.01
12-19-78	0.03 ± 0.01	0.04 ± 0.01	0.04 ± 0.01	0.03 ± 0.01	0.03 ± 0.01	0.03 ± 0.01
12-27-78	0.05 ± 0.01	0.05 ± 0.01	0.05 ± 0.01	0.04 ± 0.01	0.04 ± 0.01	0.04 ± 0.01
1-4-79	0.03 ± 0.01	0.04 ± 0.01	0.04 ± 0.01	0.04 ± 0.01	0.03 ± 0.01	0.03 ± 0.01

*Pump inoperative

TABLE II
NMP - JAF SITE
ENVIRONMENTAL AIRBORNE PARTICULATE SAMPLES - ON SITE STATIONS
Gross Beta Activity - $pCi/m^3 \pm 2\sigma$

Date Collected	LOCATION								
	D_1	D_2	E	F	G	H	I	J	K
1-4-78	0.08 ± 0.01	0.08 ± 0.01	0.08 ± 0.01	0.09 ± 0.01	0.15 ± 0.01	0.06 ± 0.01	0.07 ± 0.01	0.12 ± 0.01	*
1-9-78	0.08 ± 0.01	0.07 ± 0.01	0.08 ± 0.01	0.09 ± 0.01	0.07 ± 0.01	0.10 ± 0.02	0.01 ± 0.01	0.01 ± 0.01	0.10 ± 0.01
1-16-78	0.11 ± 0.01	0.06 ± 0.01	0.08 ± 0.01	0.10 ± 0.01	0.10 ± 0.01	0.02 ± 0.01	0.06 ± 0.01	0.01 ± 0.01	0.08 ± 0.01
1-23-78	0.15 ± 0.01	0.14 ± 0.01	0.14 ± 0.01	0.16 ± 0.01	0.13 ± 0.01	0.11 ± 0.01	0.12 ± 0.01	0.13 ± 0.01	0.09 ± 0.01
1-30-78	0.07 ± 0.01	0.06 ± 0.01	0.07 ± 0.01	0.07 ± 0.01	0.06 ± 0.01	0.05 ± 0.01	0.06 ± 0.01	0.06 ± 0.01	0.06 ± 0.01
2-6-78	0.08 ± 0.01	0.07 ± 0.01	0.05 ± 0.01	0.08 ± 0.01	0.06 ± 0.01	0.10 ± 0.01	0.006 ± 0.01	0.07 ± 0.01	0.02 ± 0.01
2-13-78	0.07 ± 0.01	0.05 ± 0.01	0.07 ± 0.01	0.07 ± 0.01	0.05 ± 0.01	0.01 ± 0.01	0.07 ± 0.01	0.05 ± 0.01	0.01 ± 0.01
2-21-78	0.08 ± 0.01	0.09 ± 0.01	0.07 ± 0.01	0.07 ± 0.01	0.06 ± 0.01	0.06 ± 0.01	0.07 ± 0.01	0.06 ± 0.01	0.04 ± 0.01
2-27-78	0.08 ± 0.01	0.07 ± 0.01	0.08 ± 0.01	0.07 ± 0.01	0.07 ± 0.01	0.03 ± 0.01	0.04 ± 0.01	0.07 ± 0.01	0.02 ± 0.01
3-6-78	0.13 ± 0.01	0.11 ± 0.01	0.10 ± 0.01	0.12 ± 0.01	0.11 ± 0.01	0.04 ± 0.01	0.05 ± 0.01	0.05 ± 0.01	0.09 ± 0.01
3-13-78	0.12 ± 0.01	0.11 ± 0.01	0.09 ± 0.001	0.2 ± 0.01	0.11 ± 0.01	0.10 ± 0.01	0.05 ± 0.01	0.09 ± 0.01	0.03 ± 0.01
3-20-78	0.12 ± 0.01	0.14 ± 0.01	0.10 ± 0.01	0.13 ± 0.01	0.12 ± 0.01	0.12 ± 0.01	0.10 ± 0.01	0.10 ± 0.01	0.03 ± 0.01
3-27-78	0.28 ± 0.01	0.28 ± 0.01	0.24 ± 0.01	0.31 ± 0.01	0.18 ± 0.01	0.12 ± 0.01	0.08 ± 0.01	0.12 ± 0.01	0.03 ± 0.01
4-3-78	0.23 ± 0.01	0.19 ± 0.01	0.21 ± 0.01	0.25 ± 0.01	0.23 ± 0.01	0.18 ± 0.01	0.15 ± 0.01	0.15 ± 0.01	0.03 ± 0.01
4-10-78	0.15 ± 0.01	0.13 ± 0.01	0.11 ± 0.01	0.13 ± 0.01	0.13 ± 0.01	0.10 ± 0.01	0.11 ± 0.01	0.03 ± 0.01	0.02 ± 0.01
4-17-78	0.21 ± 0.01	0.17 ± 0.01	0.19 ± 0.01	0.22 ± 0.01	0.20 ± 0.01	0.18 ± 0.01	*	0.03 ± 0.01	0.17 ± 0.01
4-24-78	0.25 ± 0.01	0.23 ± 0.01	0.26 ± 0.01	0.25 ± 0.01	0.22 ± 0.01	0.16 ± 0.01	0.23 ± 0.01	0.21 ± 0.01	0.23 ± 0.01
5-1-78	0.27 ± 0.01	0.26 ± 0.01	0.26 ± 0.01	0.26 ± 0.01	0.26 ± 0.01	0.21 ± 0.01	0.26 ± 0.01	0.24 ± 0.01	0.16 ± 0.01
5-8-78	0.07 ± 0.01	0.08 ± 0.01	0.08 ± 0.01	0.08 ± 0.01	0.07 ± 0.01	0.08 ± 0.01	0.07 ± 0.01	0.02 ± 0.01	0.02 ± 0.01
5-15-78	0.12 ± 0.01	0.12 ± 0.01	0.14 ± 0.01	0.14 ± 0.01	0.12 ± 0.01	0.12 ± 0.01	0.11 ± 0.01	0.12 ± 0.01	0.04 ± 0.01
5-22-78	0.08 ± 0.01	0.07 ± 0.01	0.08 ± 0.01	0.08 ± 0.01	0.07 ± 0.01	0.07 ± 0.01	0.03 ± 0.01	0.06 ± 0.01	0.07 ± 0.07
5-29-78	0.22 ± 0.01	0.21 ± 0.01	0.21 ± 0.01	0.21 ± 0.01	0.21 ± 0.01	0.19 ± 0.01	0.21 ± 0.01	0.23 ± 0.01	0.24 ± 0.01
6-5-78	0.17 ± 0.01	0.16 ± 0.01	0.17 ± 0.01	0.17 ± 0.01	0.16 ± 0.01	0.11 ± 0.01	0.16 ± 0.01	0.16 ± 0.01	0.14 ± 0.01
6-12-78	0.19 ± 0.01	0.21 ± 0.01	0.18 ± 0.01	0.17 ± 0.01	0.18 ± 0.01	0.18 ± 0.01	0.10 ± 0.01	0.15 ± 0.01	0.16 ± 0.01
6-19-78	0.18 ± 0.01	0.18 ± 0.01	0.17 ± 0.01	0.19 ± 0.01	0.17 ± 0.01	0.17 ± 0.01	0.14 ± 0.01	0.14 ± 0.01	0.02 ± 0.01
6-27-78	0.15 ± 0.01	0.13 ± 0.01	0.16 ± 0.01	0.16 ± 0.01	0.07 ± 0.01	0.16 ± 0.01	0.02 ± 0.01	0.06 ± 0.01	0.05 ± 0.01

TABLE 11 (Cont.)
NMP - JAF SITE
ENVIRONMENTAL AIRBORNE PARTICULATE SAMPLES - ON SITE STATIONS
Gross Beta Activity - $pCi/m^3 \pm 2\sigma$

Date Collected	LOCATION								
	D_1	D_2	E	F	G	H	I	J	K
7-3-78	0.12 ± 0.01	0.14 ± 0.01	0.13 ± 0.01	0.13 ± 0.01	0.01 ± 0.01	0.11 ± 0.01	0.04 ± 0.01	0.09 ± 0.01	0.09 ± 0.01
7-10-78	0.24 ± 0.01	0.25 ± 0.01	0.27 ± 0.01	0.24 ± 0.01	0.34 ± 0.01	0.23 ± 0.01	0.01 ± 0.01	0.09 ± 0.01	0.18 ± 0.01
7-17-78	0.18 ± 0.01	0.17 ± 0.01	0.19 ± 0.01	0.20 ± 0.01	0.07 ± 0.01	0.16 ± 0.01	0.17 ± 0.01	0.14 ± 0.01	0.16 ± 0.01
7-24-78	0.13 ± 0.01	0.14 ± 0.01	0.13 ± 0.01	0.14 ± 0.01	0.13 ± 0.01	0.14 ± 0.01	0.06 ± 0.01	0.09 ± 0.01	0.05 ± 0.01
7-31-78	0.11 ± 0.01	0.12 ± 0.01	0.14 ± 0.01	0.12 ± 0.01	0.12 ± 0.01	0.03 ± 0.01	0.11 ± 0.01	0.11 ± 0.01	0.05 ± 0.01
8-7-78	0.11 ± 0.01	0.11 ± 0.01	0.11 ± 0.01	0.12 ± 0.01	0.11 ± 0.01	0.12 ± 0.01	0.08 ± 0.01	0.10 ± 0.01	0.08 ± 0.01
8-14-78	0.28 ± 0.01	0.25 ± 0.01	0.27 ± 0.01	0.27 ± 0.01	0.31 ± 0.01	0.22 ± 0.01	0.28 ± 0.01	0.08 ± 0.01	0.18 ± 0.01
8-21-78	0.11 ± 0.01	0.10 ± 0.01	0.12 ± 0.01	0.10 ± 0.01	0.11 ± 0.01	0.11 ± 0.01	0.13 ± 0.01	0.11 ± 0.01	0.10 ± 0.01
8-28-78	0.10 ± 0.01	0.10 ± 0.01	0.10 ± 0.01	0.09 ± 0.01	0.11 ± 0.01	0.09 ± 0.01	0.09 ± 0.01	0.08 ± 0.01	0.08 ± 0.01
9-5-78	0.10 ± 0.01	0.07 ± 0.01	0.02 ± 0.01	0.10 ± 0.01	0.10 ± 0.01	0.04 ± 0.01	0.08 ± 0.01	0.06 ± 0.01	0.08 ± 0.01
9-11-78	0.15 ± 0.01	0.14 ± 0.01	0.14 ± 0.01	0.13 ± 0.01	0.18 ± 0.01	0.13 ± 0.01	0.14 ± 0.01	0.10 ± 0.01	0.12 ± 0.01
9-18-78	0.06 ± 0.01	0.05 ± 0.01	0.01 ± 0.01	0.06 ± 0.01	0.05 ± 0.01	0.05 ± 0.01	0.04 ± 0.01	0.02 ± 0.01	0.04 ± 0.01
9-25-78	0.04 ± 0.01	0.06 ± 0.01	0.02 ± 0.01	0.06 ± 0.01	0.08 ± 0.01	0.06 ± 0.01	0.04 ± 0.01	0.04 ± 0.01	0.05 ± 0.01
10-2-78	0.03 ± 0.01	0.05 ± 0.01	0.02 ± 0.01	0.05 ± 0.01	0.06 ± 0.01	0.02 ± 0.01	0.01 ± 0.01	0.03 ± 0.01	0.01 ± 0.01
10-10-78	0.01 ± 0.01	0.02 ± 0.01	0.01 ± 0.01	0.02 ± 0.01	0.02 ± 0.01	**	**	0.01 ± 0.01	0.01 ± 0.01
10-16-78	0.06 ± 0.01	0.09 ± 0.01	0.04 ± 0.01	0.11 ± 0.01	0.11 ± 0.01	**	**	0.05 ± 0.01	0.04 ± 0.01
10-23-78	0.05 ± 0.01	0.09 ± 0.01	0.04 ± 0.01	0.10 ± 0.01	0.11 ± 0.01	0.03 ± 0.01	0.06 ± 0.01	0.05 ± 0.01	0.01 ± 0.01
10-30-78	0.03 ± 0.01	0.05 ± 0.01	0.02 ± 0.01	0.05 ± 0.01	0.07 ± 0.01	0.03 ± 0.01	0.05 ± 0.01	0.03 ± 0.01	0.06 ± 0.01
11-6-78	0.06 ± 0.01	0.08 ± 0.01	0.05 ± 0.01	0.06 ± 0.01	0.09 ± 0.01	0.05 ± 0.01	0.04 ± 0.01	0.01 ± 0.01	0.06 ± 0.01
11-13-78	0.03 ± 0.01	0.04 ± 0.01	0.02 ± 0.01	0.04 ± 0.01	0.05 ± 0.01	0.01 ± 0.01	0.01 ± 0.01	0.01 ± 0.01	0.02 ± 0.01
11-20-78	0.02 ± 0.01	0.03 ± 0.01	0.01 ± 0.01	0.02 ± 0.01	0.03 ± 0.01	0.01 ± 0.01	0.03 ± 0.01	*	0.02 ± 0.01
11-28-78	0.01 ± 0.01	0.01 ± 0.01	0.01 ± 0.01	0.02 ± 0.01	0.02 ± 0.01	0.01 ± 0.01	0.01 ± 0.01	*	0.01 ± 0.01
12-4-78	0.01 ± 0.01	0.05 ± 0.01	0.02 ± 0.01	0.05 ± 0.01	0.04 ± 0.01	0.01 ± 0.01	0.05 ± 0.01	*	0.01 ± 0.01
12-12-78	0.03 ± 0.01	0.03 ± 0.01	0.02 ± 0.01	0.06 ± 0.01	0.03 ± 0.01	(*)	0.01 ± 0.01	0.01 ± 0.01	0.01 ± 0.01
12-18-78	0.03 ± 0.01	0.03 ± 0.01	0.04 ± 0.01	0.04 ± 0.01	0.04 ± 0.01	0.02 ± 0.01	0.04 ± 0.01	0.02 ± 0.01	0.01 ± 0.01
12-26-78	0.01 ± 0.01	0.04 ± 0.01	0.03 ± 0.01	0.04 ± 0.01	*	0.03 ± 0.01	0.01 ± 0.01	0.04 ± 0.01	0.01 ± 0.01
1-2-79	0.01 ± 0.01	0.04 ± 0.01	0.03 ± 0.01	0.03 ± 0.01	0.03 ± 0.01	0.01 ± 0.01	0.04 ± 0.01	0.01 ± 0.01	0.01 ± 0.01

* Pump inoperative ** Power Line Down (*) Lost Sample

TABLE 12
MONTHLY PARTICULATE COMPOSITES
Gamma Activity - pCi/m^3

ISOTOPE	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE
			ONSITE COMPOSITE			
Co-60	2.40 ± 0.17 E-03	1.53 ± 0.05 E-02	0.00 ± 4.32 E-04	1.88 ± 0.44 E-03	3.20 ± 2.43 E-04	4.90 ± 6.14 E-04
Fe-59	< 2.87 E-04	< 5.87 E-04	< 3.30 E-04	< 4.39 E-04	< 1.92 E-04	< 4.50 E-04
Mn-54	1.30 ± 0.11 E-03	2.45 ± 0.18 E-03	0.00 ± 2.60 E-04	5.50 ± 2.37 E-04	3.28 ± 1.34 E-04	3.15 ± 3.29 E-04
Co-58	2.64 ± 0.63 E-04	6.85 ± 1.12 E-04	< 2.30 E-04	< 2.20 E-04	0.00 ± 8.81 E-05	8.00 ± 17.8 E-05
Nb-95	1.42 ± 0.11 E-03	2.42 ± 0.16 E-03	3.04 ± 0.17 E-03	2.89 ± 0.17 E-03	1.82 ± 0.09 E-03	1.98 ± 0.16 E-03
Zr-95	4.30 ± 1.04 E-04	1.04 ± 0.17 E-03	1.54 ± 0.19 E-03	1.56 ± 0.20 E-03	7.09 ± 0.90 E-04	5.43 ± 1.76 E-04
Cs-137	1.03 ± 0.10 E-03	1.30 ± 0.14 E-03	2.37 ± 0.16 E-03	2.53 ± 0.17 E-03	2.51 ± 0.11 E-03	3.31 ± 0.20 E-03
Cs-134	< 1.34 E-04	< 2.03 E-04	< 1.95 E-04	< 2.12 E-04	< 1.00 E-04	< 2.13 E-04
Cr-51	< 9.79 E-04	< 1.45 E-03	< 1.48 E-03	< 1.60 E-03	< 8.14 E-04	< 1.72 E-03
Ce-141	< 1.46 E-04	< 1.94 E-04	7.62 ± 0.80 E-04	1.40 ± 0.11 E-03	< 1.15 E-04	< 2.61 E-04
BaLa-140	4.08 ± 0.48 E-04	< 7.42 E-04	4.49 ± 0.47 E-03	1.91 ± 0.37 E-03	< 3.81 E-04	< 7.98 E-04
I-131	< 1.26 E-04	< 1.70 E-04	2.50 ± 0.13 E-03	< 1.29 E-04	< 9.28 E-05	< 1.03 E-04
			OFFSITE COMPOSITE			
Co-60	4.95 ± 0.31 E-03	5.60 ± 0.38 E-03	0.00 ± 7.20 E-04	1.30 ± 0.33 E-03	4.40 ± 4.38 E-04	3.00 ± 2.74 E-04
Fe-59	< 4.00 E-04	< 6.27 E-04	< 6.72 E-04	< 2.75 E-04	< 3.33 E-04	< 2.19 E-04
Mn-54	1.98 ± 0.17 E-03	2.64 ± 0.23 E-03	0.00 ± 4.60 E-04	1.60 ± 0.19 E-03	3.80 ± 2.33 E-04	1.90 ± 15.2 E-04
Co-58	8.72 ± 1.22 E-04	9.13 ± 1.44 E-04	< 4.09 E-04	< 1.47 E-04	< 1.80 E-04	< 1.10 E-04
Nb-95	2.42 ± 0.18 E-03	2.48 ± 0.22 E-03	3.81 ± 1.24 E-03	2.02 ± 0.11 E-03	2.31 ± 0.14 E-03	1.32 ± 0.09 E-03
Zr-95	9.67 ± 1.80 E-04	1.50 ± 0.25 E-03	1.65 ± 0.28 E-03	1.03 ± 0.12 E-03	7.04 ± 1.30 E-04	4.66 ± 0.80 E-04
Cs-137	1.46 ± 0.15 E-03	1.28 ± 0.17 E-03	7.52 ± 2.46 E-04	1.89 ± 0.11 E-03	3.47 ± 0.17 E-03	2.37 ± 0.11 E-03
Cs-134	< 2.30 E-04	< 2.58 E-04	< 3.17 E-04	3.36 ± 0.70 E-04	< 1.67 E-04	< 1.07 E-04
Cr-51	< 1.50 E-03	< 1.99 E-03	< 2.87 E-03	9.05 ± 5.39 E-04	< 1.33 E-03	< 8.49 E-04
Ce-141	< 2.23 E-04	< 2.82 E-04	1.46 ± 0.14 E-03	1.09 ± 0.08 E-03	< 1.90 E-04	< 1.26 E-04
BaLa-140	< 7.72 E-04	< 1.03 E-03	7.73 ± 0.76 E-03	1.63 ± 0.27 E-03	< 1.59 E-04	< 2.14 E-04
I-131	< 1.87 E-04	< 2.51 E-04	4.60 ± 0.21 E-03	< 2.09 E-04	< 1.59 E-04	< 2.14 E-04

TABLE 12 (Cont.)
MONTHLY PARTICULATE COMPOSITES
Gamma Activity - pCi/m^3

ISOTOPE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBEF
			ONSITE COMPOSITE			
Co-60	4.8 ± 1.6 E-04	5.2 ± 1.9 E-04	8.3 ± 2.2 E-04	1.4 ± 0.2 E-03	5.7 ± 1.8 E-04	6.2 ± 2.4 E-04
Fe-59	<3.0 E-04	<3.0 E-04	<3.0 E-04	<3.0 E-04	<3.0 E-04	<3.0 E-04
Mn-54	2.1 ± 1.4 E-04	2.8 ± 1.8 E-04	<3.0 E-04	5.7 ± 1.9 E-04	3.7 ± 2.1 E-04	3.8 ± 2.1 E-04
Co-58	<1.0 E-04	<1.0 E-04	<2.0 E-04	2.2 ± 1.6 E-04	<1.0 E-04	<1.0 E-04
Nb-95	2.4 ± 1.5 E-04	<2.0 E-04	<2.0 E-04	<1.0 E-04	<1.0 E-04	<1.0 E-04
Zr-95	<5.0 E-04	<3.0 E-04	<2.0 E-04	<2.0 E-04	<2.0 E-04	<2.0 E-04
Cs-137	2.6 ± 0.3 E-03	1.6 ± 0.3 E-03	8.6 ± 2.8 E-04	3.0 ± 1.6 E-04	3.9 ± 1.9 E-04	3.8 ± 1.9 E-04
Cs-134	<1.0 E-04	<2.0 E-04	<2.0 E-04	<1.0 E-04	<2.0 E-04	<2.0 E-04
Cr-51	<8.0 E-04	<1.0 E-03	<1.0 E-03	<7.0 E-04	<9.0 E-04	<8.0 E-04
Ce-144	1.5 ± 0.2 E-02	7.0 ± 0.9 E-03	4.4 ± 0.8 E-03	1.6 ± 0.5 E-03	1.6 ± 0.6 E-03	1.5 ± 0.6 E-03
Ba-La-140	<2.0 E-04	<2.0 E-04	<2.0 E-04	<1.0 E-04	<2.0 E-04	<2.0 E-04
Be-7	2.0 ± 0.2 E-02	2.4 ± 0.3 E-02	2.8 ± 0.3 E-02	1.8 ± 0.2 E-02	3.2 ± 0.3 E-02	3.2 ± 0.3 E-02
Sb-125	1.2 ± 0.4 E-03	6.4 ± 4.5 E-04	6.2 ± 4.4 E-04	<3.0 E-04	<4.0 E-04	<4.0 E-04
Ru-106	7.4 ± 1.8 E-03	3.5 ± 1.7 E-03	<2.0 E-03	<1.0 E-03	<1.0 E-03	<1.0 E-03
			OFFSITE COMPOSITE			
Co-60	<5.0 E-04	<5.0 E-04	2.1 ± 0.6 E-03	1.4 ± 0.4 E-03	9.3 ± 4.8 E-04	8.1 ± 3.1 E-04
Fe-59	<3.0 E-04	<4.0 E-04	<6.0 E-04	<5.0 E-04	<5.0 E-04	<3.0 E-04
Mn-54	<3.0 E-04	<3.0 E-04	5.9 ± 4.8 E-04	7.0 ± 3.8 E-04	<4.0 E-04	<3.0 E-04
Co-58	<2.0 E-04	<2.0 E-04	<4.0 E-04	<3.0 E-04	<3.0 E-04	<2.0 E-04
Nb-95	<4.0 E-04	<3.0 E-04	<4.0 E-04	<2.0 E-04	<3.0 E-04	<3.0 E-04
Zr-95	<6.0 E-04	<6.0 E-04	<6.0 E-04	<5.0 E-04	<4.0 E-04	<4.0 E-04
Cs-137	4.2 ± 0.7 E-03	2.2 ± 0.7 E-03	1.2 ± 6.0 E-03	1.0 ± 0.4 E-03	1.3 ± 0.6 E-03	8.7 ± 4.3 E-04
Cs-134	<3.0 E-04	<3.0 E-04	<4.0 E-04	<3.0 E-04	<3.0 E-04	<3.0 E-04
Cr-51	<2.0 E-03	<2.0 E-03	<3.0 E-04	<2.0 E-03	<2.0 E-03	<2.0 E-03
Ce-144	2.4 ± 0.3 E-02	1.1 ± 0.3 E-02	5.3 ± 2.7 E-03	3.8 ± 1.7 E-03	3.2 ± 2.0 E-03	5.4 ± 2.2 E-03
BaLa-140	<4.0 E-04	<4.0 E-04	<5.0 E-04	<4.0 E-04	<5.0 E-04	<5.0 E-04
Be-7	2.9 ± 0.5 E-02	3.1 ± 0.6 E-02	3.5 ± 0.6 E-02	5.2 ± 0.6 E-02	7.8 ± 0.8 E-02	7.9 ± 0.8 E-02
Sb-125	1.7 ± 1.0 E-03	<1.0 E-03	<9.0 E-04	1.1 ± 1.0 E-03	<8.0 E-04	<6.0 E-04
Ru-106	8.3 ± 4.3 E-03	<4.0 E-03	<3.0 E-03	<3.0 E-03	<3.0 E-03	<3.0 E-03

TABLE 13
NMP-JAF SITE
ENVIRONMENTAL CHARCOAL CARTRIDGE ACTIVITY OFF-SITE STATIONS
I-131 $pCi/m^3 \pm 4.66\sigma$

Date Collected	Location C	D_1	D_2	E	F	G
1-6-78	0.00 ± 0.14	0.00 ± 0.20	0.00 ± 0.15	0.00 ± 0.13	0.00 ± 0.18	0.00 ± 0.18
1-11-78	0.00 ± 0.03	0.00 ± 0.07	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.06	0.00 ± 0.05
1-17-78	0.00 ± 0.06	0.00 ± 0.07	0.00 ± 0.04	0.00 ± 0.02	0.00 ± 0.05	0.00 ± 0.04
1-24-78	0.00 ± 0.05	0.00 ± 0.06	0.00 ± 0.04	0.00 ± 0.03	0.00 ± 0.06	0.00 ± 0.05
1-31-78	0.00 ± 0.04	0.00 ± 0.07	0.00 ± 0.04	0.00 ± 0.04	0.00 ± 0.06	0.00 ± 0.05
2-7-78	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.02	0.00 ± 0.04	0.00 ± 0.03
2-14-78	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.02	0.00 ± 0.04	0.00 ± 0.03
2-22-78	0.00 ± 0.02	0.00 ± 0.04	0.00 ± 0.03	0.00 ± 0.02	0.00 ± 0.04	0.00 ± 0.04
2-28-78	0.00 ± 0.02	0.00 ± 0.04	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.04	0.00 ± 0.03
3-7-78	0.00 ± 0.02	0.00 ± 0.05	0.00 ± 0.03	0.00 ± 0.02	0.00 ± 0.04	0.00 ± 0.03
3-15-78	0.00 ± 0.03	0.00 ± 0.04	0.00 ± 0.02	0.00 ± 0.02	0.00 ± 0.03	0.00 ± 0.03
3-21-78	0.00 ± 0.03	0.00 ± 0.04	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.05	0.00 ± 0.03
3-28-78	0.03 ± 0.01	0.04 ± 0.01	0.03 ± 0.01	0.03 ± 0.01	0.00 ± 0.05	0.00 ± 0.04
4-4-78	0.00 ± 0.03	0.00 ± 0.05	0.00 ± 0.04	0.00 ± 0.03	0.00 ± 0.05	0.00 ± 0.04
4-11-78	0.00 ± 0.03	0.00 ± 0.05	TV Interference Test	0.00 ± 0.02	0.00 ± 0.03	0.00 ± 0.03
4-18-78	0.00 ± 0.03	0.00 ± 0.04	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.05	0.00 ± 0.03
4-25-78	0.00 ± 0.03	0.00 ± 0.04	0.00 ± 0.03	0.00 ± 0.02	0.00 ± 0.04	0.00 ± 0.03
5-2-78	0.00 ± 0.03	0.00 ± 0.04	0.00 ± 0.02	0.00 ± 0.02	0.00 ± 0.03	0.00 ± 0.03
5-9-78	0.00 ± 0.02	0.00 ± 0.04	0.00 ± 0.03	0.00 ± 0.02	0.00 ± 0.04	0.00 ± 0.03
5-16-78	0.00 ± 0.03	0.00 ± 0.04	0.00 ± 0.03	0.00 ± 0.02	0.00 ± 0.04	0.00 ± 0.02
5-23-78	0.00 ± 0.03	0.00 ± 0.04	0.00 ± 0.02	0.00 ± 0.04	0.00 ± 0.03	0.00 ± 0.02
5-31-78	0.00 ± 0.02	0.00 ± 0.02	0.00 ± 0.02	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.02
6-6-78	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.05	0.00 ± 0.04
6-13-78	0.00 ± 0.04	0.00 ± 0.03	0.00 ± 0.02	0.00 ± 0.03	0.00 ± 0.04	0.00 ± 0.03
6-20-78	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.04	0.00 ± 0.03
6-26-78	0.00 ± 0.02	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.02

TABLE 13 (Cont.)
NMP-JAF SITE
ENVIRONMENTAL CHARCOAL CARTRIDGE ACTIVITY OFF-SITE STATIONS
I-131 $pCi/m^3 \pm 4.66\sigma$

Date Collected	Location C	D_1	D_2	E	F	G
7-5-78	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03
7-11-78	0.00 ± 0.03	0.00 ± 0.04	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03
7-18-78	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03
7-25-78	0.00 ± 0.03	0.00 ± 0.04	0.00 ± 0.03	0.00 ± 0.02	0.00 ± 0.03	0.00 ± 0.03
8-1-78	0.00 ± 0.03	*	0.00 ± 0.02	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03
8-8-78	0.00 ± 0.09	0.00 ± 0.08	0.00 ± 0.08	0.00 ± 0.09	0.00 ± 0.08	0.00 ± 0.09
8-15-78	0.00 ± 0.09	0.00 ± 0.08	0.00 ± 0.08	0.00 ± 0.10	0.00 ± 0.10	0.00 ± 0.09
8-22-78	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03
8-29-78	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.02	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03
9-6-78	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.04	0.00 ± 0.04	0.00 ± 0.03	0.00 ± 0.04
9-12-78	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.04	0.00 ± 0.03	0.00 ± 0.02
9-19-78	*	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03
9-26-78	0.00 ± 0.04	0.00 ± 0.04	0.00 ± 0.04	0.00 ± 0.03	0.00 ± 0.18	0.00 ± 0.04
10-3-78	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.04	0.00 ± 0.04	0.00 ± 0.04
10-11-78	0.00 ± 0.03	0.00 ± 0.02	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03
10-17-78	0.00 ± 0.03	0.00 ± 0.04	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.04
10-24-78	0.00 ± 0.04	0.00 ± 0.02	0.00 ± 0.02	0.00 ± 0.03	0.00 ± 0.04	0.00 ± 0.03
10-31-78	0.00 ± 0.04	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.04	0.00 ± 0.03
11-7-78	0.00 ± 0.02	0.00 ± 0.03	0.00 ± 0.02	0.00 ± 0.03	0.00 ± 0.04	0.00 ± 0.04
11-14-78	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.04	0.00 ± 0.03
11-21-78	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.04	0.00 ± 0.04
11-29-78	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.02	0.00 ± 0.04	0.00 ± 0.04
12-5-78	0.00 ± 0.03	0.00 ± 0.04	0.00 ± 0.04	0.00 ± 0.03	0.00 ± 0.05	0.00 ± 0.05
12-12-78	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03
12-19-78	0.00 ± 0.02	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.05
12-27-78	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03
1-4-79	0.00 ± 0.05	0.00 ± 0.04	0.00 ± 0.04	0.00 ± 0.04	0.00 ± 0.05	0.00 ± 0.06

*Pump inoperative

TABLE 14
NMP-JAF SITE
ENVIRONMENTAL CHARCOAL CARTRIDGE ACTIVITY ON-SITE STATIONS
I-131 $pCi/m^3 \pm 4.66\sigma$

Date Collected	Location D_1	D_2	E	F	G	H	I	J	K
1-4-78	0.00 ± 0.13	0.00 ± 0.15	0.00 ± 0.17	0.00 ± 0.13	0.00 ± 0.16	0.00 ± 0.16	0.00 ± 0.08	0.00 ± 0.11	0.00 ± 0.09
1-9-78	0.00 ± 0.05	0.00 ± 0.06	0.00 ± 0.06	0.00 ± 0.06	0.00 ± 0.07	0.00 ± 0.08	0.00 ± 0.03	0.00 ± 0.04	0.00 ± 0.03
1-16-78	0.00 ± 0.05	0.00 ± 0.05	0.00 ± 0.06	0.00 ± 0.04	0.00 ± 0.04	0.00 ± 0.05	0.00 ± 0.02	0.00 ± 0.03	0.00 ± 0.03
1-23-78	0.00 ± 0.05	0.00 ± 0.05	0.00 ± 0.04	0.00 ± 0.05	0.00 ± 0.06	0.00 ± 0.05	0.00 ± 0.03	0.00 ± 0.02	0.00 ± 0.03
1-30-78	0.00 ± 0.05	0.00 ± 0.07	0.00 ± 0.05	0.00 ± 0.05	0.00 ± 0.05	0.00 ± 0.05	0.00 ± 0.04	0.00 ± 0.03	0.00 ± 0.04
2-6-78	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.04	0.00 ± 0.03	0.00 ± 0.04	0.00 ± 0.03	0.00 ± 0.02	0.00 ± 0.02	0.00 ± 0.02
2-13-78	0.00 ± 0.02	0.00 ± 0.04	0.00 ± 0.04	0.00 ± 0.03	0.00 ± 0.04	0.00 ± 0.03	0.00 ± 0.02	0.00 ± 0.02	0.00 ± 0.02
2-21-78	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.04	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.02	0.00 ± 0.02	0.00 ± 0.02
2-27-78	0.00 ± 0.03	0.00 ± 0.04	0.00 ± 0.04	0.00 ± 0.03	0.00 ± 0.04	0.00 ± 0.03	0.00 ± 0.02	0.00 ± 0.02	0.00 ± 0.02
3-6-78	0.00 ± 0.03	0.00 ± 0.04	0.00 ± 0.05	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.04	0.00 ± 0.02	0.00 ± 0.03	0.00 ± 0.02
3-13-78	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.04	0.00 ± 0.04	0.00 ± 0.02	0.00 ± 0.02	0.00 ± 0.02
3-20-78	0.00 ± 0.03	0.00 ± 0.04	0.00 ± 0.04	0.00 ± 0.04	0.00 ± 0.05	0.00 ± 0.03	0.00 ± 0.02	0.00 ± 0.02	0.00 ± 0.02
3-27-78	0.04 ± 0.01	0.00 ± 0.04	0.04 ± 0.01	0.00 ± 0.05	0.00 ± 0.05	0.06 ± 0.01	0.04 ± 0.01	0.03 ± 0.01	0.03 ± 0.01
4-3-78	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.04	0.00 ± 0.03	0.00 ± 0.05	0.00 ± 0.05	0.00 ± 0.03	0.00 ± 0.02	0.00 ± 0.03
4-10-78	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.04	0.00 ± 0.03	0.00 ± 0.02	0.00 ± 0.02	0.00 ± 0.02
4-17-78	0.00 ± 0.04	0.00 ± 0.04	0.00 ± 0.04	0.00 ± 0.04	0.00 ± 0.05	0.00 ± 0.01	*	0.00 ± 0.02	0.00 ± 0.02
4-24-78	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.04	0.00 ± 0.03	0.00 ± 0.04	0.00 ± 0.02	0.00 ± 0.01	0.00 ± 0.02	0.00 ± 0.03
5-1-78	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.04	0.00 ± 0.03	0.00 ± 0.04	0.00 ± 0.03	0.00 ± 0.02	0.00 ± 0.02	0.00 ± 0.03
5-8-78	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.04	0.00 ± 0.04	0.00 ± 0.04	0.00 ± 0.02	0.00 ± 0.01	0.00 ± 0.02	0.00 ± 0.02
5-15-78	0.00 ± 0.03	0.00 ± 0.04	0.00 ± 0.04	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.01	0.00 ± 0.02	0.00 ± 0.01
5-22-78	0.00 ± 0.03	0.00 ± 0.04	0.00 ± 0.03	0.00 ± 0.02	0.00 ± 0.03	0.00 ± 0.02	0.00 ± 0.01	0.00 ± 0.02	0.00 ± 0.01
5-29-78	0.00 ± 0.03	0.00 ± 0.04	0.00 ± 0.04	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.02	0.00 ± 0.03	0.00 ± 0.02
6-5-78	0.00 ± 0.03	0.00 ± 0.04	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.02	0.00 ± 0.01	0.00 ± 0.02	0.00 ± 0.01
6-12-78	0.00 ± 0.03	0.00 ± 0.04	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.02	0.00 ± 0.02	0.00 ± 0.01	0.00 ± 0.01	0.00 ± 0.02
6-19-78	0.00 ± 0.03	0.00 ± 0.05	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.02	0.00 ± 0.01	0.00 ± 0.02	0.00 ± 0.02
6-27-78	0.00 ± 0.02	0.00 ± 0.05	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03	0.07 ± 0.01	0.00 ± 0.02	0.00 ± 0.01	0.00 ± 0.02

TABLE 14(Cont.)
NMP-JAF SITE
ENVIRONMENTAL CHARCOAL CARTRIDGE ACTIVITY ON-SITE STATIONS
I-131 pCi/m^3 ± 4.66σ

Date Collected	Location D_1	D_2	E	F	G	H	I	J	K
7-3-78	0.00 ± 0.03	0.00 ± 0.04	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.02	0.00 ± 0.02	0.00 ± 0.01	0.00 ± 0.01	0.00 ± 0.01
7-10-78	0.00 ± 0.02	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.02	0.00 ± 0.01	0.00 ± 0.02	0.00 ± 0.01
7-17-78	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.04	0.00 ± 0.03	0.00 ± 0.02	0.00 ± 0.02	0.00 ± 0.02	0.00 ± 0.02
7-24-78	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.01	0.00 ± 0.02	0.00 ± 0.02
7-31-78	0.00 ± 0.02	0.00 ± 0.04	0.00 ± 0.04	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.02	0.00 ± 0.01	0.00 ± 0.01	0.00 ± 0.01
8-7-78	0.00 ± 0.09	0.00 ± 0.09	0.00 ± 0.09	0.00 ± 0.08	0.00 ± 0.09	0.00 ± 0.08	0.00 ± 0.06	0.00 ± 0.04	0.00 ± 0.04
8-14-78	0.00 ± 0.09	0.00 ± 0.09	0.00 ± 0.09	0.00 ± 0.09	0.00 ± 0.08	0.00 ± 0.06	0.00 ± 0.04	0.00 ± 0.04	0.00 ± 0.04
8-21-78	0.00 ± 0.03	0.00 ± 0.04	0.00 ± 0.04	0.00 ± 0.04	0.00 ± 0.03	0.00 ± 0.02	0.00 ± 0.02	0.00 ± 0.02	0.00 ± 0.01
8-28-78	0.00 ± 0.03	0.00 ± 0.04	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.02	0.00 ± 0.02	0.00 ± 0.01	0.00 ± 0.01	0.00 ± 0.01
9-5-78	0.00 ± 0.04	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.02	0.00 ± 0.01	0.00 ± 0.01	0.00 ± 0.01
9-11-78	0.00 ± 0.03	0.00 ± 0.04	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.02	0.00 ± 0.01	0.00 ± 0.02	0.00 ± 0.02
9-18-78	0.00 ± 0.03	0.00 ± 0.04	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.02	0.00 ± 0.02	0.00 ± 0.01	0.00 ± 0.01
9-25-78	0.00 ± 0.04	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03	0.02 ± 0.01	0.00 ± 0.02	0.00 ± 0.02
10-2-78	0.00 ± 0.03	0.00 ± 0.04	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.02	0.00 ± 0.02	0.00 ± 0.04	0.00 ± 0.02
10-10-78	0.00 ± 0.02	0.00 ± 0.04	(*)	0.00 ± 0.03	0.00 ± 0.03	**	**	0.00 ± 0.01	0.00 ± 0.01
10-16-78	0.00 ± 0.03	0.00 ± 0.04	0.00 ± 0.03	0.00 ± 0.03	0.04 ± 0.01	**	**	0.00 ± 0.01	0.00 ± 0.02
10-23-78	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.05	0.00 ± 0.04	0.00 ± 0.03	0.00 ± 0.01	0.00 ± 0.01	0.00 ± 0.01	0.00 ± 0.02
10-30-78	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.02	0.00 ± 0.03	0.00 ± 0.01	0.00 ± 0.01	0.00 ± 0.01	0.00 ± 0.01
11-6-78	0.00 ± 0.04	0.00 ± 0.04	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.01	0.00 ± 0.01	0.00 ± 0.02	0.00 ± 0.01
11-13-78	0.00 ± 0.03	0.00 ± 0.04	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.04	0.00 ± 0.02	0.00 ± 0.02	0.00 ± 0.01	0.00 ± 0.01
11-20-78	0.00 ± 0.03	0.00 ± 0.04	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.01	0.00 ± 0.01	*	0.00 ± 0.01
11-28-78	0.00 ± 0.03	0.00 ± 0.04	0.00 ± 0.04	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.02	0.00 ± 0.01	*	0.00 ± 0.01
12-4-78	0.00 ± 0.05	0.00 ± 0.04	0.00 ± 0.04	0.00 ± 0.04	0.00 ± 0.04	0.00 ± 0.03	0.00 ± 0.02	*	0.00 ± 0.02
12-11-78	0.00 ± 0.04	0.00 ± 0.05	0.00 ± 0.04	0.00 ± 0.04	0.00 ± 0.04	0.00 ± 0.03	0.00 ± 0.02	0.00 ± 0.02	0.00 ± 0.01
12-18-78	0.00 ± 0.05	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.02	0.00 ± 0.01	0.00 ± 0.02	0.00 ± 0.01
12-26-78	0.00 ± 0.04	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03	*	0.00 ± 0.02	0.00 ± 0.01	0.00 ± 0.02	0.00 ± 0.01
1-2-79	0.00 ± 0.04	0.00 ± 0.04	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.03	0.00 ± 0.01	0.00 ± 0.02	0.00 ± 0.01

*Pump inoperative ** Power Lines Down (*) Lost Sample

TABLE 15
ENVIRONMENTAL TLD READINGS
Net Dose in mRem ± 2σ

TLD NO.	LOCATION	QUARTER 1st	2nd	3rd	4th
3	D1 On Site	Missing	27± 3	23± 3	21± 2
4	D2 On Site	14± 4	Missing	12± 2	14± 2
5	E On Site	13± 3	14± 2	12± 2	Missing
6	F On Site	12± 3	12± 2	10± 1	12± 1
7	G On Site	9± 3	10± 1	11± 2	11± 1
8	C Off Site	12± 3	Missing	13± 2	14± 1
9	D1 Off Site	10± 3	Missing	12± 1	11± 1
10	D2 Off Site	10± 3	11± 2	9± 2	12± 1
11	E Off Site	10± 3	11± 4	7± 1	10± 1
12	F Off Site	Missing	11± 3	10± 2	11± 1
13	G Off Site	8± 2	10± 1	10± 2	10± 1
14	SW Oswego	12± 3	12± 2	10± 1	13± 1
15	Pole 66, W. Bound	9± 2	11± 3	9± 1	10± 2
16	Pole 51, W. Bound	14± 4	12± 3	11± 2	12± 1
17	Prog. Cen. E. Yard	13± 3	13± 2	12± 2	13± 2
18	Prog. Cen. Picnic	11± 3	13± 2	10± 2	12± 2
19	Pole 9, E. Bound	13± 3	12± 2	11± 3	12± 1
20	JAF Shore, W. Bound	25±12	Missing	Missing	Missing
21	Pole 67, E. Bound	10± 3	12± 2	11± 3	13± 2
22	Pole 53, E. Bound	9± 4	11± 1	10± 1	11± 1
23	H On-Site	14± 3	16± 2	15± 1	15± 1
24	I On-Site	10± 3	13± 2	11± 2	12± 1
25	J On-Site	10± 2	12± 2	11± 2	13± 2
26	K On-Site	10± 2	Missing	12± 2	12± 2
27	Light Pole(N) JAF	146±31	157±30	56± 5	51± 4
28	Light Pole(E) JAF	Missing	37± 4	131±12	201±12
29	N. Fence (E) JAF	36± 7	52± 6	84± 6	96±15
30	N. Fence (MW) JAF	61±11	60± 7	32± 4	107±13
31	N. Fence (MW) NMP	38± 7	50± 5	40± 7	37± 2
32	N. Fence (W) NMP	26± 4	35± 4	25± 4	25± 2
33	NMP/JAF, Twin Pole (W) of JAF W. Fence	24± 4	28± 3	24± 3	25± 2
34	N of Unit 2 on Lake	16± 3	16± 2	14± 2	16± 2
35	E of Unit 2 on Stor. Bldg.	Missing	14± 2	Missing	13± 2
36	Pole Tower, FNM-13	13± 4	12± 2	9± 1	12± 1
37	Pole Tower, FNM-14	15± 3	17± 2	14± 1	17± 1
38	SE End of Shop on Fence	19± 3	22± 2	17± 2	18± 1
39	NMP-1 ME Gate	516±101	387±40	345±59	371±19
40	NE Gate, NMP-1	52± 7	127±10	62± 5	44± 1
41	Paint Shop NMP-2	24± 6	35± 4	28± 3	24± 2
42	Turb. Track Bay NMP-2	73±21	Missing	59± 6	Missing

TABLE 16

CONTINOUS RADIATION MONITORS* (GM)
mr/hr
1st HALF

LOCATION	PERIOD	mR/hr MIN.	MAX.	AVE.
C Off-Site	January	0.019	0.042	0.031
	February	0.022	0.042	0.030
	March	0.021	0.048	0.031
	April	0.024	0.050	0.035
	May	0.028	0.055	0.042
	June	0.018	0.052	0.035
D_1 On-Site	January	0.019	0.050	0.026
	February	0.011	0.042	0.023
	March	0.010	0.067	0.024
	April	0.014	0.042	0.030
	May	0.010	0.051	0.025
	June	0.022	0.065	0.043
D_2 On-Site	January	0.012	0.028	0.018
	February	0.010	0.032	0.021
	March	0.018	0.055	0.028
	April	0.015	0.040	0.030
	May	0.015	0.030	0.022
	June	0.016	0.033	0.025
E On-Site	January	0.012	0.023	0.016
	February	0.013	0.027	0.018
	March	0.013	0.024	0.018
	April	0.014	0.029	0.021
	May	0.015	0.030	0.022
	June	0.012	0.040	0.020
F On-Site	January	0.012	0.031	0.020
	February	0.010	0.024	0.018
	March	0.010	0.020	0.014
	April	0.010	0.022	0.014
	May	0.010	0.028	0.014
	June	0.010	0.025	0.018

*Detectors are 'bugged' to insure onscale readings.

TABLE 16 (Cont.)

CONTINOUS RADIATION MONITORS* (GM)
mr/hr
1st HALF

		mR/hr		
LOCATION	PERIOD	MIN.	MAX.	AVE.
G On-Site	January	0.025	0.050	0.040
	February	0.027	0.048	0.036
	March	0.028	0.062	0.040
	April	0.029	0.080	0.040
	May	0.029	0.065	0.047
	June	0.026	0.065	0.046
H On-Site	January	0.016	0.032	0.024
	February	0.015	0.032	0.023
	March	0.019	0.035	0.021
	April	0.017	0.038	0.024
	May	0.016	0.035	0.025
	June	0.018	0.045	0.031
I On-Site	January	0.010	0.018	0.013
	February	0.010	0.040	0.015
	March	0.010	0.025	0.014
	April	0.010	0.022	0.014
	May	0.010	0.023	0.015
	June	0.010	0.030	0.020
J On-Site	January	0.010	0.021	0.013
	February	0.010	0.015	0.013
	March	0.010	0.030	0.017
	April	0.010	0.028	0.018
	May	0.012	0.030	0.021
	June	0.012	0.030	0.018
K On-Site	January	0.011	0.025	0.015
	February	0.011	0.025	0.018
	March	0.011	0.032	0.019
	April	0.012	0.032	0.017
	May	0.010	0.029	0.019
	June	0.010	0.028	0.019

TABLE 16 (Cont.)

CONTINOUS RADIATION MONITORS* (GM)
mr/hr
2nd HALF

		mR/hr		
LOCATION	PERIOD	MIN.	MAX.	AVE.
C Off-Site	July	0.018	0.035	0.025
	August	0.018	0.032	0.025
	September	0.016	0.040	0.028
	October	0.015	0.030	0.025
	November	0.015	0.025	0.020
	December	0.012	0.030	0.020
D_1 On-Site	July	0.015	0.065	0.020
	August	0.018	0.060	0.025
	September	0.010	0.040	0.030
	October	0.020	0.500	0.035
	November	0.015	0.070	0.030
	December	0.028	0.075	0.040
D_2 On-Site	July	0.015	0.025	0.020
	August	0.015	0.045	0.020
	September	0.010	0.050	0.030
	October	0.015	0.025	0.018
	November	0.015	0.028	0.018
	December	0.010	0.030	0.015
E On-Site	July	0.015	0.030	0.020
	August	0.015	0.028	0.020
	September	0.010	0.030	0.020
	October	0.010	0.030	0.020
	November	0.010	0.030	0.020
	December	0.015	0.040	0.020
F On-Site	July	0.010	0.028	0.018
	August	0.010	0.025	0.015
	September	0.010	0.030	0.015
	October	0.010	0.030	0.015
	November	0.012	0.025	0.015
	December	0.010	0.050	0.015

*Detectors are 'bugged' to insure onscale readings.

TABLE 16 (Cont.)

CONTINOUS RADIATION MONITORS* (GM)
mr/hr
2nd HALF

		mR/hr		
LOCATION	PERIOD	MIN.	MAX.	AVE.
G On-Site	July	0.025	0.075	0.045
	August	0.030	0.070	0.045
	September	0.030	0.050	0.040
	October	0.025	0.050	0.040
	November	0.028	0.200	0.040
	December	0.010	0.050	0.020
H On-Site	July	0.020	0.050	0.030
	August	0.015	0.040	0.030
	September	0.010	0.035	0.025
	October	0.015	0.035	0.025
	November	0.018	0.035	0.025
	December	0.018	0.045	0.030
I On-Site	July	0.010	0.025	0.018
	August	0.010	0.050	0.015
	September	0.010	0.020	0.015
	October	0.010	0.030	0.018
	November	0.020	0.020	0.020
	December	0.010	0.022	0.013
J On-Site	July	0.015	0.035	0.020
	August	0.015	0.030	0.020
	September	0.010	0.040	0.020
	October	0.010	0.045	0.030
	November	0.015	0.025	0.020
	December	0.012	0.023	0.017
K On-Site	July	0.012	0.030	0.020
	August	0.010	0.030	0.015
	September	0.010	0.035	0.020
	October	0.010	0.035	0.025
	November	0.010	0.025	0.015
	December	0.010	0.020	0.015

TABLE 17

CONCENTRATIONS OF IODINE-131 IN MILK

Results in Units of pCi/l ± 2 sigma

STATION*	6-05-78	7-04-78	8-01-78	9-08-78	10-02-78	11-02-78	12-04-78
4	<0.1	<0.2	<0.1	<0.2	<0.2	<0.2	<0.2
13	<0.1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
14	<0.2	<0.2	<0.3	<0.2	<0.2	<0.2	<0.3
16	<0.2	<0.2	<0.1	<0.2	<0.2	<0.2	<0.2
25	<0.2	<0.2	<0.2	<0.3	0.19±0.07	<0.2	<0.2

*See Env. Sample Summary for Cross Reference to prior years sample locations.

TABLE 18

CONCENTRATIONS OF GAMMA EMITTERS AND STRONTIUM-90 IN MILK

Results in Units of pCi/l ± 2 sigma

STATION	NUCLIDES	6-05-78 to 6-19-78	7-04-78 to 7-17-78	8-01-78 to 8-14-78	9-08-78 to 9-18-78	10-02-78 to 10-16-78	11-02-78 to 11-13-78	12-04-78 to 12-18-78
4	K-40	800±80*	1300±130	1500±150	1600±160	1600±160	1200±120	1600±160
	Cs-137	5.5±2.2	7.2±2.3	7.7±3.8	12±4	6.8±3.2	3.7±2.1	6.0±3.0
	Sr-90	5.0±1.3	4.8±1.2	4.8±0.9	6.2±1.5	7.3±1.5	4.6±0.9	3.4±0.7
13	K-40	1200±120	1100±110	1200±120	1400±140	1600±160	990±99	1500±150
	Cs-137	7.8±2.3	6.3±2.1	7.8±3.1	6.8±3.7	5.5±2.8	2.4±1.9	4.2±3.2
	Sr-90	7.6±1.0	6.6±0.9	5.1±1.1	9.0±2.3	5.7±1.0	4.2±1.3	3.0±0.6
14	K-40	1100±110*	930±93	1500±150	1600±160	1500±150	1400±140	1400±140
	Cs-137	3.9±2.0	5.3±2.1	7.8±3.4	9.7±3.6	4.5±2.8	5.3±2.3	3.4±2.8
	Sr-90	4.5±0.9	8.1±1.2	3.8±1.0	5.5±2.1	5.1±1.5	2.5±1.2	3.2±0.8
16	K-40	960±96	1200±120	1400±140	1900±190	1600±160	1300±130	1600±160
	Cs-137	10±2	14±3	9.6±3.6	30±6	6.9±3.7	3.5±2.0	7.2±2.8
	Sr-90	6.3±0.9	7.3±1.0	6.5±1.1	7.4±2.5	6.6±1.1	4.7±1.2	5.1±0.7
25	K-40	950±95	1300±130	1400±140	1800±180	1700±170	1300±130	1900±190
	Cs-137	12±3	17±3	16±5	10±4	11±4	9.2±2.9	33±6
	Sr-90	10±1	8.1±1.0	5.5±1.4	7.8±1.4	8.1±1.3	8.5±2.1	5.?±1.1

TABLE 19

MILCH ANIMAL CENSUS
SPRING 1978

TOWN	NO. ON MAP	MILCH ANIMALS
New Haven	1	33C
	4	52C
	5	22C
	21	40C
	35	17G
Mexico	2	0
	7	20C
	8	45C
	9	**
	12	19C
	14	60C
	15	45C
	20	1G
	22	35C
	23	36C
	24	45C
	26	40C
	27	1C
	28	0
	29	6C
	30	*
	33	0
	36	0
	37	31C
Richland	18	55C
Lycoming	25	16C
Hannibal	13	22C
Oswego	3	*
	6	**
	10	4C
	11	26C
	16	38C
	17	0
	19	*
	31	1C
	32	20C
	34	0

C = Cows
G = Goats
* = Would Not Cooperate
** = Numerous attempts were made to contact this person; all unsuccessful.

TABLE 19 (Cont.)

MILCH ANIMAL CENSUS
SUMMER 1978

TOWN	NO. ON MAP	MILCH ANIMALS
New Haven	1	33C
	4	52C
	5	23C
	21	30C
	35	17G
Mexico	2	0
	7	24C
	8	48C
	9	**
	12	19C
	14	60C
	15	42C
	20	1C
	22	31C
	23	37C
	24	45C
	26	34C
	27	1C
	28	0
	29	3C
	30	*
	33	0
	36	0
	37	35C
Richland	18	**
Lycoming	25	16C
Hannibal	13	26C
Oswego	3	*
	6	*
	10	3C
	11	29C
	16	30C
	17	0
	19	*
	31	1C
	32	20C
	34	0

C = Cows
G = Goats
* = Would Not Cooperate
** = Numerous attempts were made to contact this person; all unsuccessful.

TABLE 20

CONCENTRATIONS OF GAMMA EMITTERS IN VARIOUS FOOD PRODUCTS

Results in Units of pCi/g(wet) ± 2 sigma

SAMPLE	SAMPLE DATE	DESCRIPTION	Be-7	K-40	Mn-54	Sb-125	Cs-137	Ra-226
N	5-10-78	Beef	<0.04	1.5±0.2	<0.004	<0.01	0.040±0.008	<0.01
F	5-14-78	Chicken	<0.04	2.5±0.3	<0.004	<0.01	0.014±0.007	<0.01
A	5-17-78	Beef	<0.03	1.7±0.2	<0.004	<0.01	0.014±0.006	<0.008
K	5-17-78	Chicken	<0.03	1.9±0.2	<0.003	<0.008	<0.004	<0.009
K	5-17-78	Eggs	<0.03	0.72±0.12	<0.004	<0.009	<0.004	<0.01
O	5-18-78	Chicken	<0.04	2.0±0.2	<0.004	<0.01	0.013±0.008	<0.01
O	5-18-78	Eggs	<0.04	1.4±0.2	<0.004	<0.01	<0.005	<0.01
L	5-24-78	Eggs	<0.03	0.9±0.1	<0.003	<0.009	<0.004	<0.008
O	5-25-78	Goat	<0.03	2.0±0.2	<0.003	0.01±0.01	0.033±0.005	<0.006
D	8-21-78	Green Beans	0.07±0.06	4.8±0.5	<0.006	<0.01	<0.008	<0.01
D	8-21-78	Zucchini Squash	<0.04	1.1±0.2	<0.004	<0.01	<0.005	<0.01
G	8-21-78	Pears	<0.04	0.8±0.1	0.011±0.008	<0.01	<0.006	<0.02
G	8-21-78	Tomatoes	<0.04	1.7±0.2	<0.005	<0.01	<0.005	<0.01
C	8-24-78	Broccoli	<0.03	2.3±0.2	<0.004	<0.01	<0.005	<0.009
C	8-24-78	Cabbage	<0.02	1.5±0.2	<0.003	<0.007	<0.003	<0.006
E	9-13-78	Cabbage	<0.09	3.9±0.5	<0.01	<0.03	<0.01	<0.03
G	9-14-78	Pears	<0.1	1.0±0.4	<0.01	<0.04	<0.01	<0.03
I	9-15-78	Tomatoes	<0.09	2.8±0.4	<0.01	<0.03	0.01±0.01	<0.03
F	11-15-78	Chicken	<0.03	2.8±0.3	<0.004	<0.01	<0.005	0.013±0.008
H	11-15-78	Pork	<0.03	2.3±0.2	<0.004	<0.01	0.020±0.009	<0.009
J	11-15-78	Pork	<0.03	1.6±0.2	<0.003	<0.009	0.014±0.005	<0.008
K	11-15-78	Chicken	<0.03	2.7±0.3	<0.003	<0.01	<0.004	<0.01
K	11-15-78	Eggs	<0.03	1.3±0.1	<0.004	<0.01	<0.005	<0.009

TABLE 20 (cont.)

CONCENTRATIONS OF GAMMA EMITTERS IN VARIOUS FOOD PRODUCTS

Results in Units of pCi/g(wet) ± 2 sigma

SAMPLE	SAMPLE DATE	DESCRIPTION	Be-7	K-40	Mn-54	Sb-125	Cs-137	Ra-226
O	11-15-78	Chicken	<0.05	2.5±0.3	<0.005	<0.01	0.01±0.01	<0.01
O	11-15-78	Eggs	<0.03	1.0±0.1	<0.003	<0.009	0.006±0.004	<0.008
B	11-16-78	Beef	<0.03	2.4±0.2	<0.003	<0.01	0.016±0.006	0.02±0.01
M	11-20-78	Eggs	<0.03	1.1±0.1	<0.004	<0.01	<0.004	<0.01

V.

Results Statistics and Histograms

RESULTS STATISTICS AND HISTOGRAMS

The 1977 environmental sample data is presented in Section V in table format with associated histograms.

A. Special Considerations

1) Only measured values were used in histogram and statistical calculations.

2) Histograms and associated data were generated only for sample medium or sample locations with sufficient data points for adequate graphic depiction (i.e. >5 data points).

B. Format

1) Basic statistics - the following statistics are reported with each histogram:

a) Number of data points used in developing the histogram.

b) Mean or "average" of all data points used for each histogram.

c) Standard Deviation of the data used for each histogram.

d) Variance of the data used for each histogram.

e) Minimum and Maximum values.

f) Range of the data for each histogram.

g) Class width used in generating the histogram

2) The HISTOGRAMS presented in this section are a graphic display of frequency distribtuion, with equal intervals of values marked on a horizontal axis. The frequency of each interval is indicated by a rectangular bar plotted on a vertical axis.

CELL STATISTICS for each histogram are shown by class number, lower bound, upper bound, frequency of occurrence and relative frequency in percent.

ENVIRONMENTAL SAMPLE STATISTICAL DATA

TABLE 3

LAKE PERIPHYTON

GAMMA ISOTOPIC pCi/g wet
Be-7
INDICATOR STATION

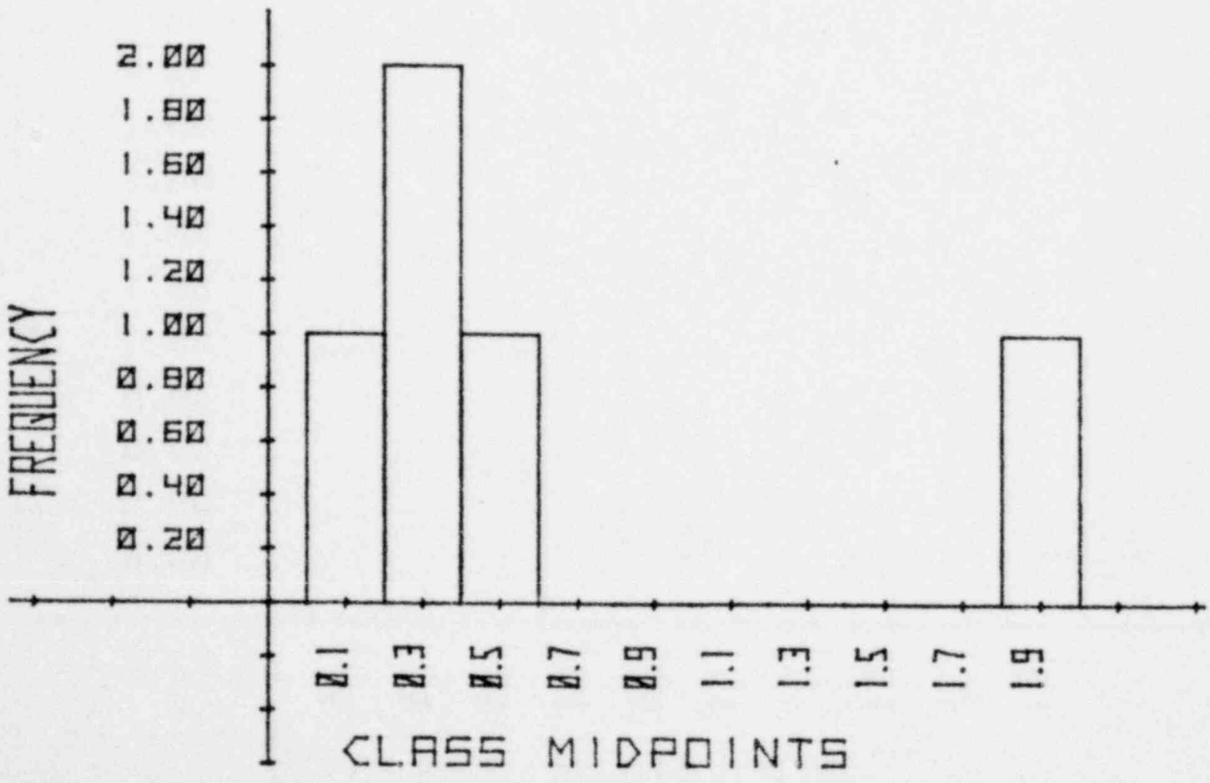
SAMPLE STATISTICS
****

NUMBER OF SAMPLES	5.00	MINIMUM VALUE	0.07
STANDARD DEV.	0.69	RANGE	1.73
MEAN VALUE	0.62	MAXIMUM VALUE	1.80
VARIANCE	0.47	CLASS WIDTH	0.20

HISTOGRAM

CLASS NO.	LOWER B.	UPPER B.	FREQUENCY	REL.FREQ.%
1	0.0	0.2	1.0	20
2	0.2	0.4	2.0	40
3	0.4	0.6	1.0	20
4	0.6	0.8	0.0	0
5	0.8	1.0	0.0	0
6	1.0	1.2	0.0	0
7	1.2	1.4	0.0	0
8	1.4	1.6	0.0	0
9	1.6	1.8	0.0	0
10	1.8	2.0	1.0	20

PLOT OF HISTOGRAM



ENVIRONMENTAL SAMPLE STATISTICAL DATA

TABLE 3

LAKE PERIPHYTON

GAMMA ISOTOPIC pCi/g wet
K-40
INDICATOR STATION

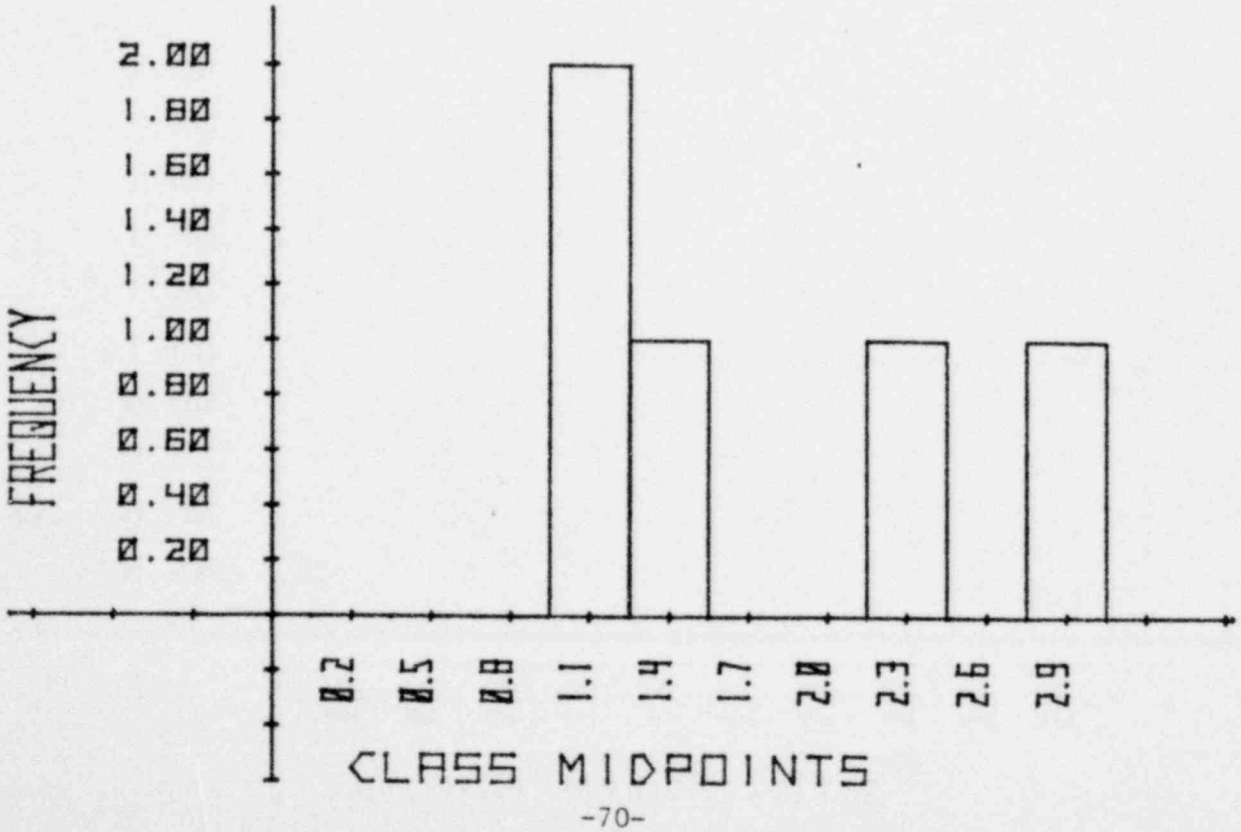
SAMPLE STATISTICS
****

NUMBER OF SAMPLES	5.00	MINIMUM VALUE	1.00
STANDARD DEV.	0.75	RANGE	1.70
MEAN VALUE	1.62	MAXIMUM VALUE	2.70
VARIANCE	0.56	CLASS WIDTH	0.30

HISTOGRAM

CLASS NO.	LOWER B.	UPPER B.	FREQUENCY	REL.FREQ.%
1	0.0	0.3	0.0	0
2	0.3	0.6	0.0	0
3	0.6	0.9	0.0	0
4	0.9	1.2	2.0	40
5	1.2	1.5	1.0	20
6	1.5	1.8	0.0	0
7	1.8	2.1	0.0	0
8	2.1	2.4	1.0	20
9	2.4	2.7	0.0	0
10	2.7	3.0	1.0	20

PLOT OF HISTOGRAM



ENVIRONMENTAL SAMPLE STATISTICAL DATA

TABLE 3

LAKE PERIPHYTON

GAMMA ISOTOPIC pCi/g wet
Nb-95
INDICATOR STATION

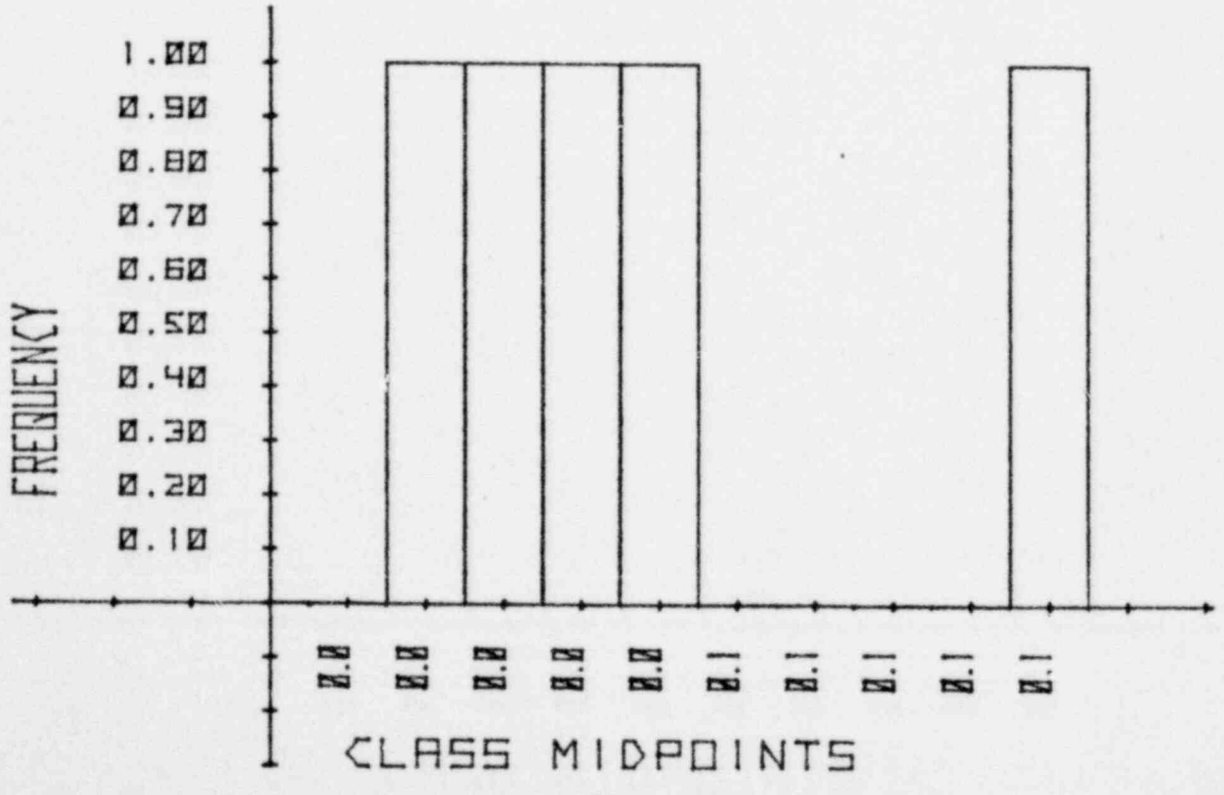
SAMPLE STATISTICS
****

NUMBER OF SAMPLES	5.00	MINIMUM VALUE	0.02
STANDARD DEV.	0.03	RANGE	0.07
MEAN VALUE	0.04	MAXIMUM VALUE	0.09
VARIANCE	0.00	CLASS WIDTH	0.01

HISTOGRAM

CLASS NO.	LOWER B.	UPPER B.	FREQUENCY	REL.FREQ.%
1	0.0	0.0	0.0	0
2	0.0	0.0	1.0	20
3	0.0	0.0	1.0	20
4	0.0	0.0	1.0	20
5	0.0	0.1	1.0	20
6	0.1	0.1	0.0	0
7	0.1	0.1	0.0	0
8	0.1	0.1	0.0	0
9	0.1	0.1	0.0	0
10	0.1	0.1	1.0	20

PLOT OF HISTOGRAM



ENVIRONMENTAL SAMPLE STATISTICAL DATA

TABLE 7

LAKE FISH

GAMMA ISOTOPIC pCi/g wet
K-40
CONTROL STATION

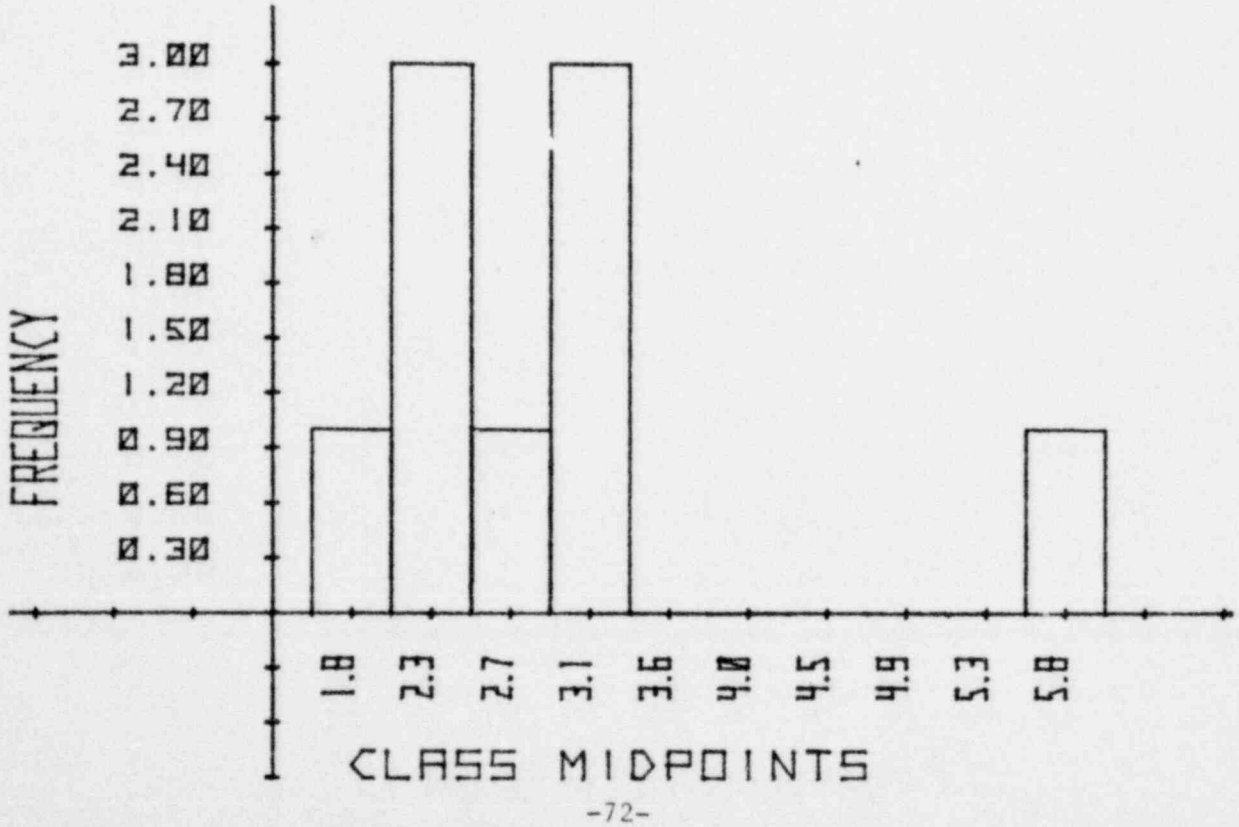
SAMPLE STATISTICS
****

NUMBER OF SAMPLES	9.00	MINIMUM VALUE	1.90
STANDARD DEV.	1.11	RANGE	3.80
MEAN VALUE	2.94	MAXIMUM VALUE	5.70
VARIANCE	1.23	CLASS WIDTH	0.44

HISTOGRAM

CLASS NO.	LOWER B.	UPPER B.	FREQUENCY	REL.FREQ.%
1	1.6	2.0	1.0	11
2	2.0	2.5	3.0	33
3	2.5	2.9	1.0	11
4	2.9	3.4	3.0	33
5	3.4	3.8	0.0	0
6	3.8	4.2	0.0	0
7	4.2	4.7	0.0	0
8	4.7	5.1	0.0	0
9	5.1	5.6	0.0	0
10	5.6	6.0	1.0	11

PLOT OF HISTOGRAM



ENVIRONMENTAL SAMPLE STATISTICAL DATA

TABLE 7

LAKE FISH

GAMMA ISOTOPIC pCi/g wet
K-40
INDICATOR STATION

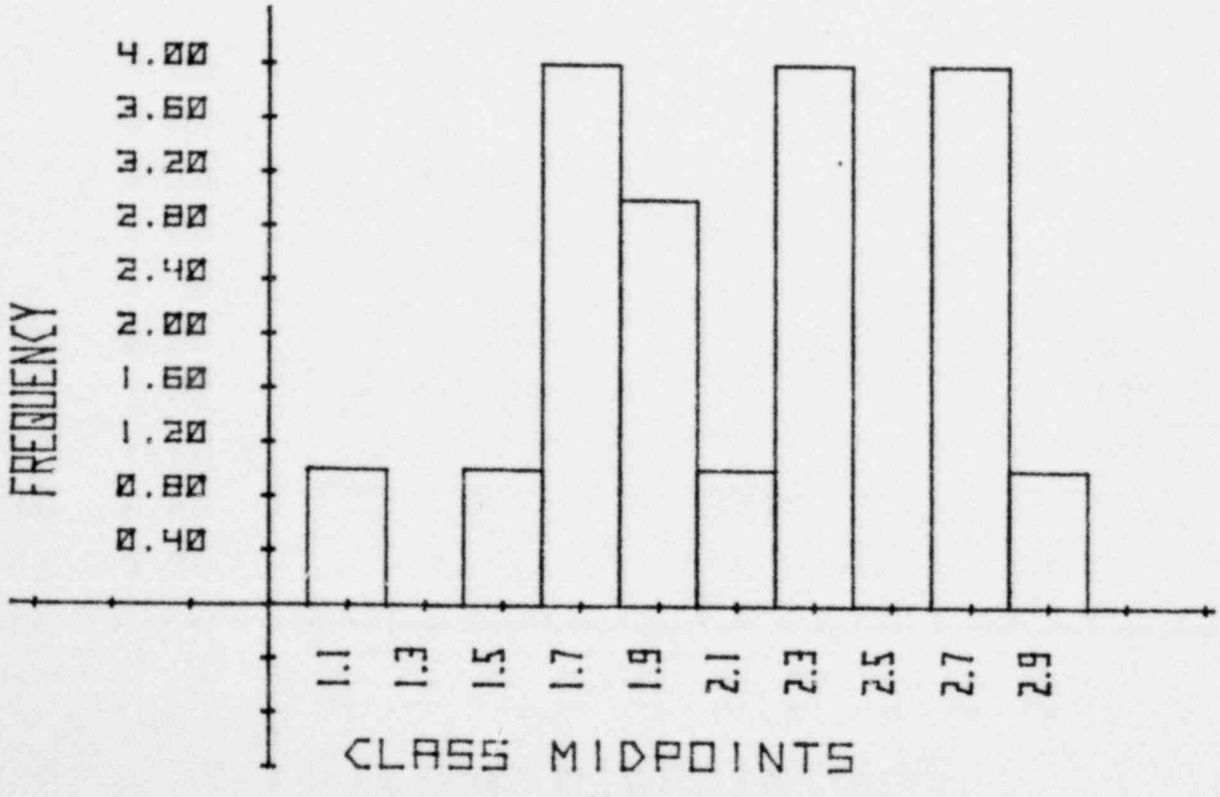
SAMPLE STATISTICS
****

NUMBER OF SAMPLES	19.00	MINIMUM VALUE	1.10
STANDARD DEV.	0.49	RANGE	1.80
MEAN VALUE	2.07	MAXIMUM VALUE	2.90
VARIANCE	0.24	CLASS WIDTH	0.20

HISTOGRAM

CLASS NO.	LOWER B.	UPPER B.	FREQUENCY	REL.FREQ.%
1	1.0	1.2	1.0	5
2	1.2	1.4	0.0	0
3	1.4	1.6	1.0	5
4	1.6	1.8	4.0	21
5	1.8	2.0	3.0	16
6	2.0	2.2	1.0	5
7	2.2	2.4	4.0	21
8	2.4	2.6	0.0	0
9	2.6	2.8	4.0	21
10	2.8	3.0	1.0	5

PLOT OF HISTOGRAM



ENVIRONMENTAL SAMPLE STATISTICAL DATA

TABLE 7

LAKE FISH

GAMMA ISOTOPIC pCi/g wet
Sr-90
CONTROL STATION

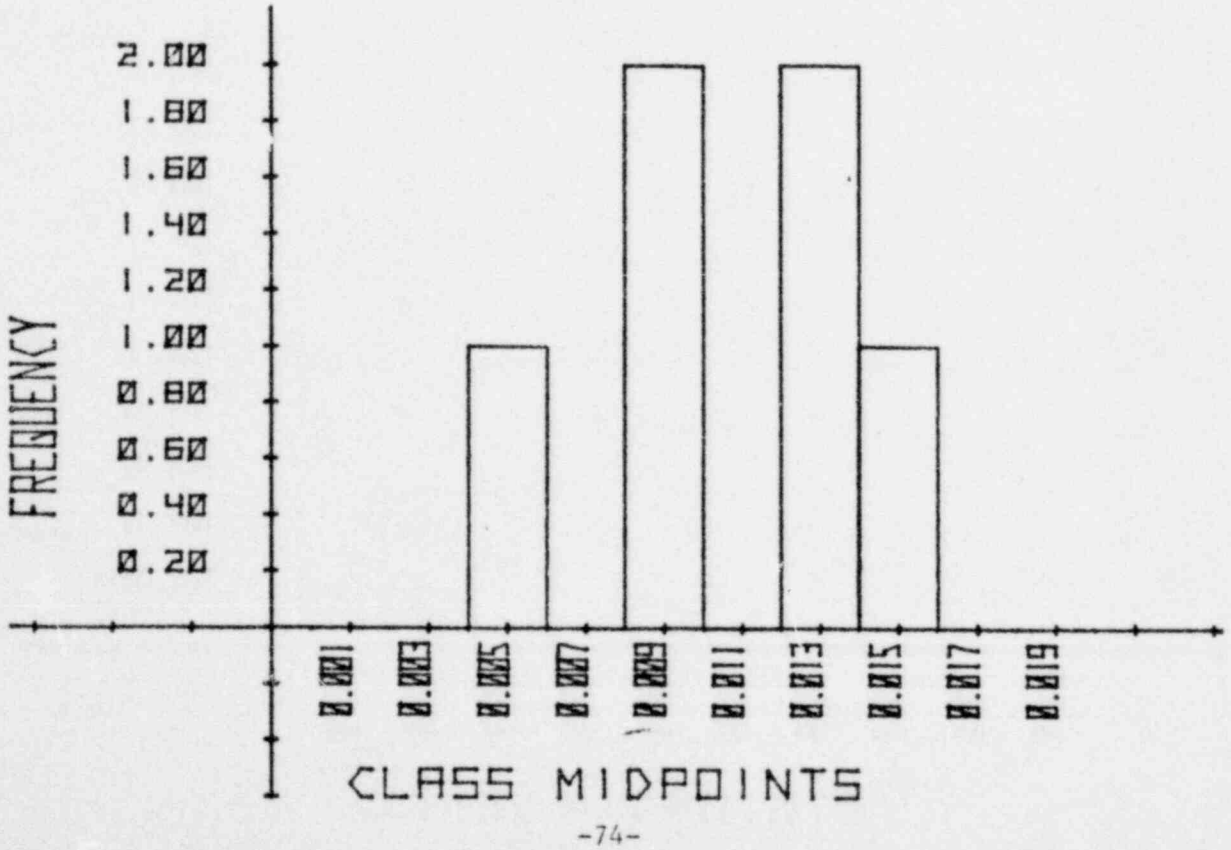
SAMPLE STATISTICS
****

NUMBER OF SAMPLES	6.000	MINIMUM VALUE	0.004
STANDARD DEV.	0.004	RANGE	0.011
MEAN VALUE	0.010	MAXIMUM VALUE	0.015
VARIANCE	0.000	CLASS WIDTH	0.002

HISTOGRAM

CLASS NO.	LOWER B.	UPPER B.	FREQUENCY	REL.FREQ.%
1	0.000	0.002	0.000	0
2	0.002	0.004	0.000	0
3	0.004	0.006	1.000	17
4	0.006	0.008	0.000	0
5	0.008	0.010	2.000	33
6	0.010	0.012	0.000	0
7	0.012	0.014	2.000	33
8	0.014	0.016	1.000	17
9	0.016	0.018	0.000	0
10	0.018	0.020	0.000	0

PLOT OF HISTOGRAM



ENVIRONMENTAL SAMPLE STATISTICAL DATA

TABLE 7

LAKE FISH

GAMMA ISOTOPIC pCi/g wet
Sr-90
INDICATOR STATION

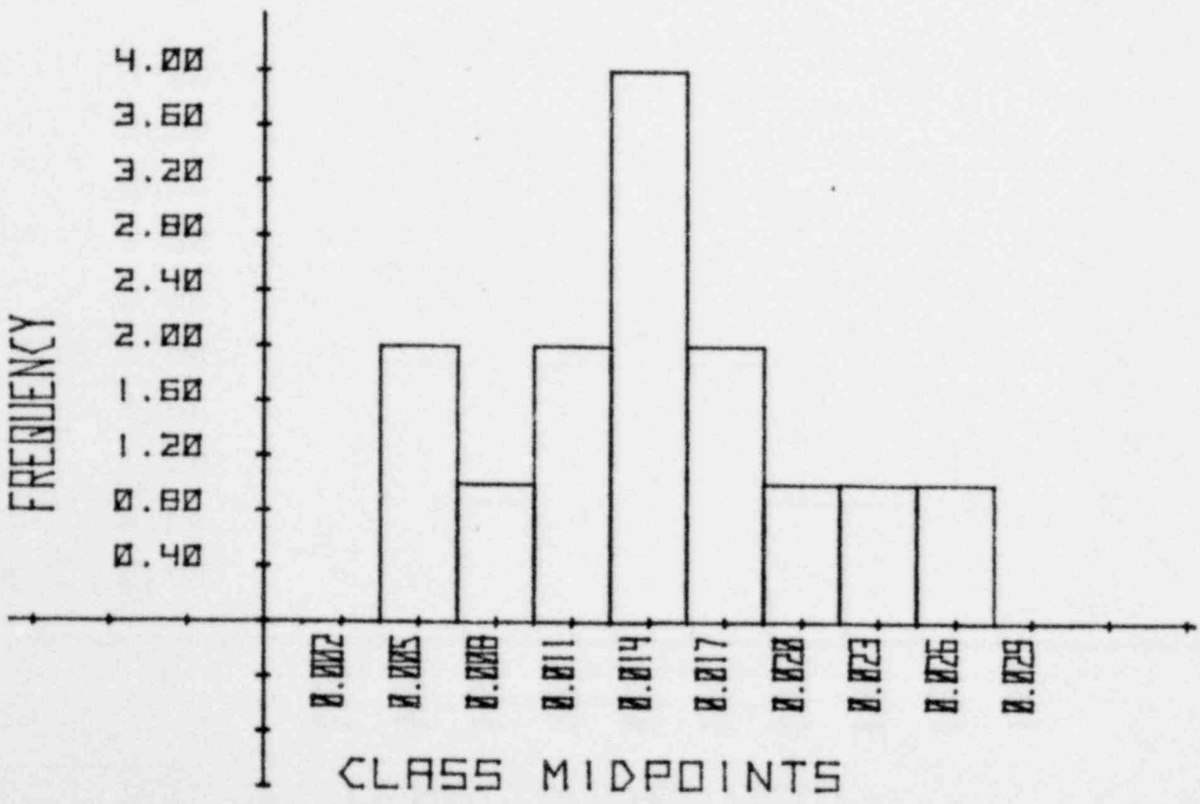
SAMPLE STATISTICS
****

NUMBER OF SAMPLES	14.000	MINIMUM VALUE	0.004
STANDARD DEV.	0.006	RANGE	0.021
MEAN VALUE	0.013	MAXIMUM VALUE	0.025
VARIANCE	0.000	CLASS WIDTH	0.003

HISTOGRAM

CLASS NO.	LOWER B.	UPPER B.	FREQUENCY	REL.FREQ.%
1	0.000	0.003	0.000	0
2	0.003	0.006	2.000	14
3	0.006	0.009	1.000	7
4	0.009	0.012	2.000	14
5	0.012	0.015	4.000	29
6	0.015	0.018	2.000	14
7	0.018	0.021	1.000	7
8	0.021	0.024	1.000	7
9	0.024	0.027	1.000	7
10	0.027	0.030	0.000	0

PLOT OF HISTOGRAM



ENVIRONMENTAL SAMPLE STATISTICAL DATA

TABLE 7

LAKE FISH

GAMMA ISOTOPIC pCi/g wet
Cs-137
CONTROL STATION

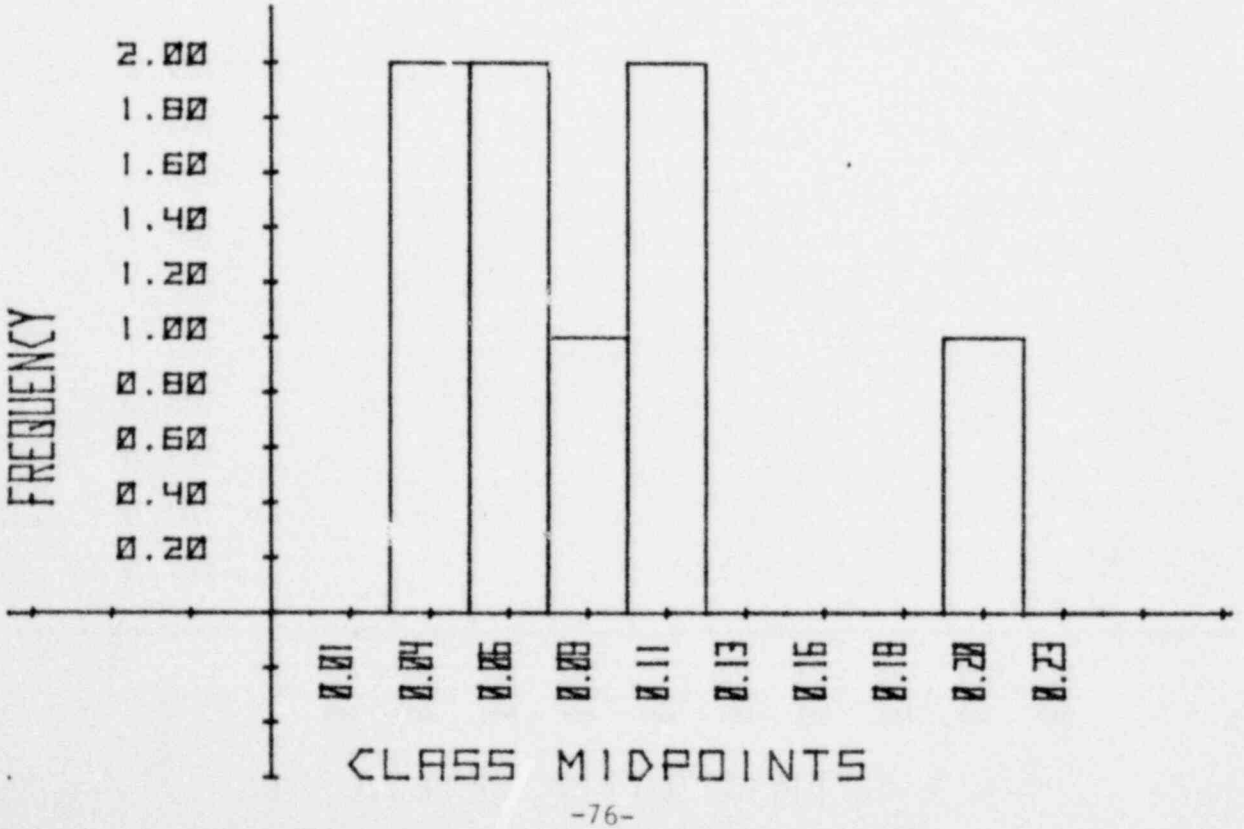
SAMPLE STATISTICS
****

NUMBER OF SAMPLES	8.00	MINIMUM VALUE	0.04
STANDARD DEV.	0.05	RANGE	0.16
MEAN VALUE	0.09	MAXIMUM VALUE	0.20
VARIANCE	0.00	CLASS WIDTH	0.02

HISTOGRAM

CLASS NO.	LOWER B.	UPPER B.	FREQUENCY	REL.FREQ.%
1	0.0	0.0	0.0	0
2	0.0	0.0	2.0	25
3	0.0	0.1	2.0	25
4	0.1	0.1	1.0	13
5	0.1	0.1	2.0	25
6	0.1	0.1	0.0	0
7	0.1	0.2	0.0	0
8	0.2	0.2	0.0	0
9	0.2	0.2	1.0	13
10	0.2	0.2	0.0	0

PLOT OF HISTOGRAM



ENVIRONMENTAL SAMPLE STATISTICAL DATA

TABLE 7

LAKE FISH

GAMMA ISOTOPIC pCi/g wet
Cs-137
INDICATOR STATION

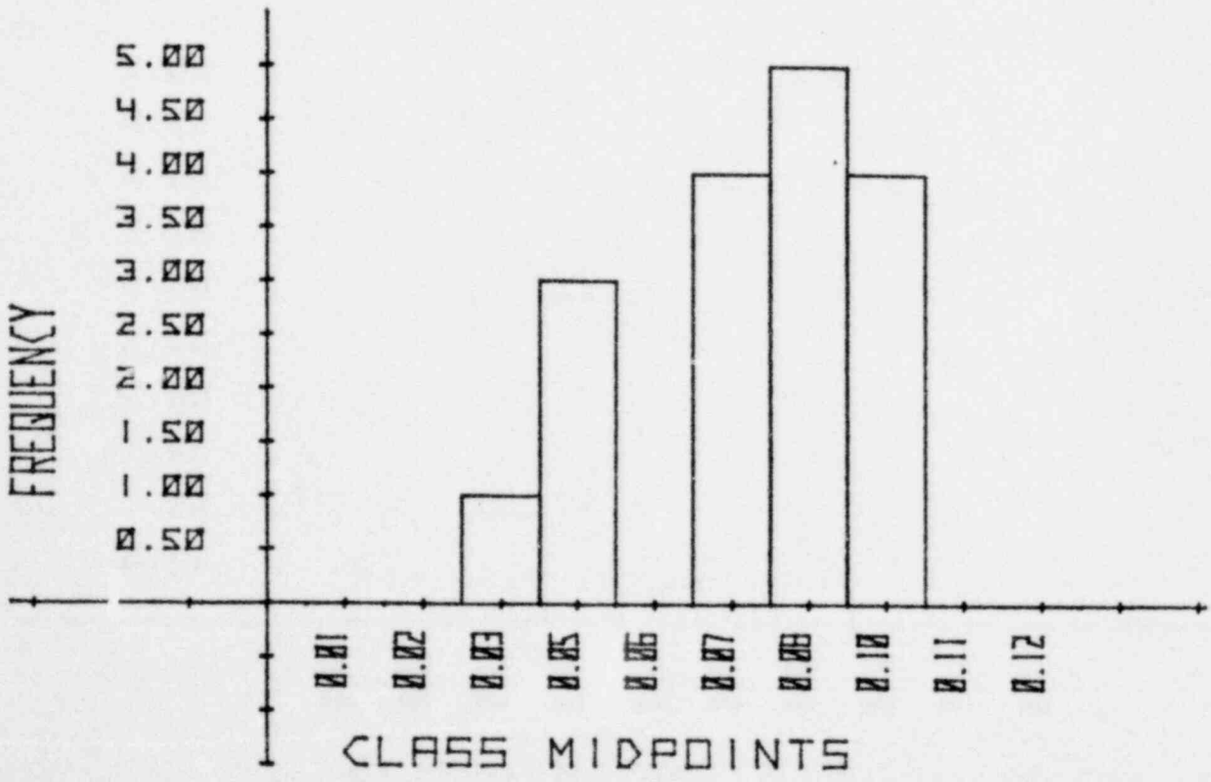
SAMPLE STATISTICS
****

NUMBER OF SAMPLES	17.00	MINIMUM VALUE	0.03
STANDARD DEV.	0.02	RANGE	0.07
MEAN VALUE	0.08	MAXIMUM VALUE	0.10
VARIANCE	0.00	CLASS WIDTH	0.01

HISTOGRAM

CLASS NO.	LOWER B.	UPPER B.	FREQUENCY	REL.FREQ.%
1	0.0	0.0	0.0	0
2	0.0	0.0	0.0	0
3	0.0	0.0	1.0	6
4	0.0	0.1	3.0	18
5	0.1	0.1	0.0	0
6	0.1	0.1	4.0	24
7	0.1	0.1	5.0	29
8	0.1	0.1	4.0	24
9	0.1	0.1	0.0	0
10	0.1	0.1	0.0	0

PLOT OF HISTOGRAM



ENVIPONMENTAL SAMPLE STATISTICAL DATA

TABLE 8A

LAKE WATER MONTHLY COMPOSITE

GROSS BETA pCi/l
BETA
CONTROL STATION

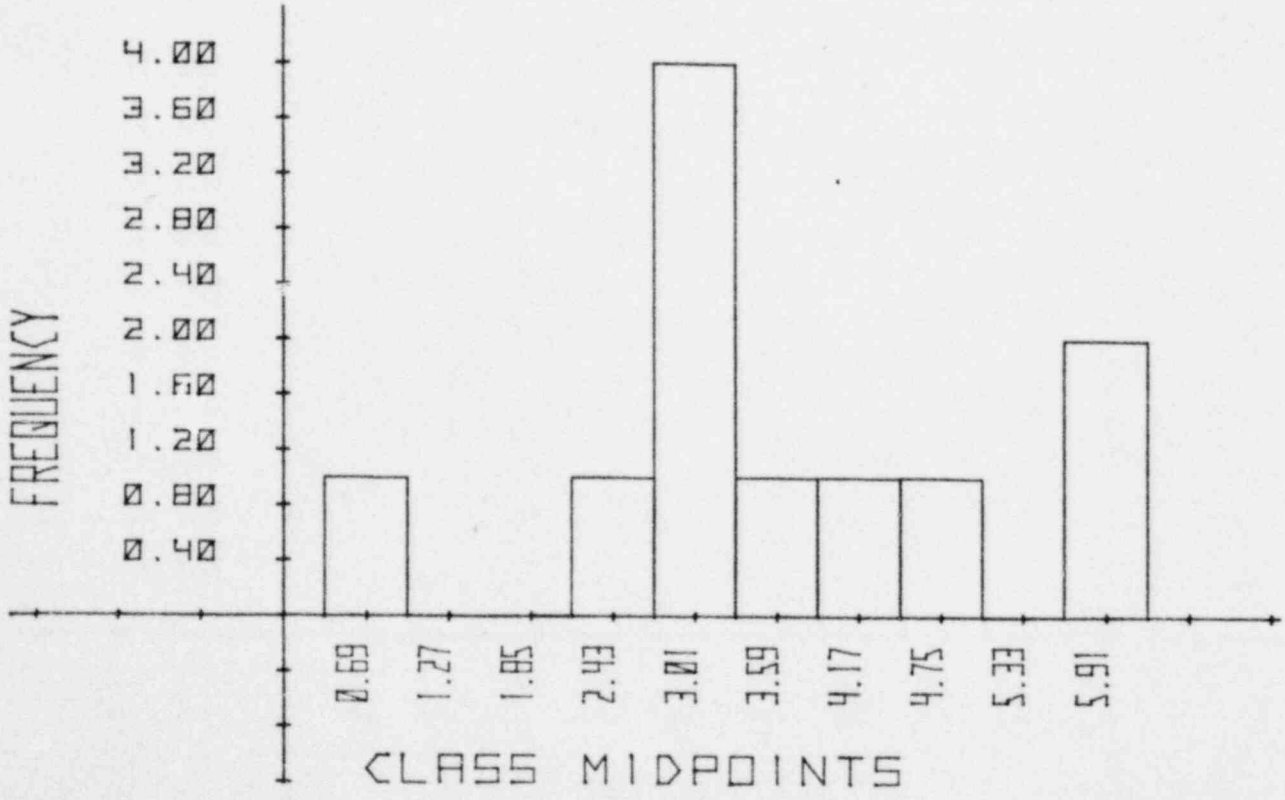
SAMPLE STATISTICS
****

NUMBER OF SAMPLES	11.000	MINIMUM VALUE	0.500
STANDARD DEV.	1.581	RANGE	5.600
MEAN VALUE	3.545	MAXIMUM VALUE	6.100
VARIANCE	2.499	CLASS WIDTH	0.580

HISTOGRAM

CLASS NO.	LOWER B.	UPPER B.	FREQUENCY	REL.FREQ.%
1	0.400	0.980	1.0	9
2	0.980	1.560	0.0	0
3	1.560	2.140	0.0	0
4	2.140	2.720	1.0	9
5	2.720	3.300	4.0	36
6	3.300	3.880	1.0	9
7	3.880	4.460	1.0	9
8	4.460	5.040	1.0	9
9	5.040	5.620	0.0	0
10	5.620	6.200	2.0	18

PLOT OF HISTOGRAM



ENVIRONMENTAL SAMPLE STATISTICAL DATA

TABLE 8A

LAKE WATER MONTHLY COMPOSITE

GROSS BETA pCi/l
BETA
INDICATOR STATION

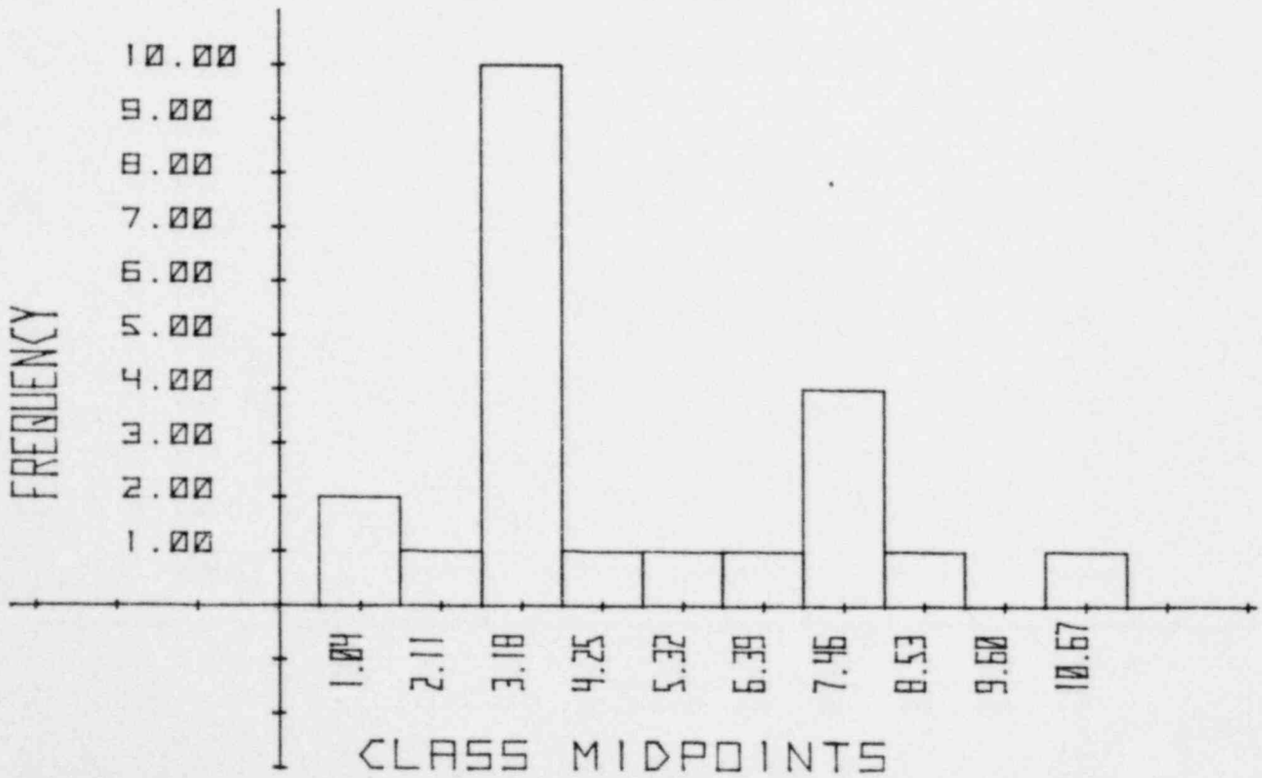
SAMPLE STATISTICS
****

NUMBER OF SAMPLES	22.000	MINIMUM VALUE	0.600
STANDARD DEV.	2.622	RANGE	10.500
MEAN VALUE	4.527	MAXIMUM VALUE	11.100
VARIANCE	6.874	CLASS WIDTH	1.070

HISTOGRAM

CLASS NO.	LOWER B.	UPPER B.	FREQUENCY	REL.FREQ.%
1	0.500	1.570	2.0	9
2	1.570	2.640	1.0	5
3	2.640	3.710	10.0	45
4	3.710	4.780	1.0	5
5	4.780	5.850	1.0	5
6	5.850	6.920	1.0	5
7	6.920	7.990	4.0	18
8	7.990	9.060	1.0	5
9	9.060	10.130	0.0	0
10	10.130	11.200	1.0	5

PLOT OF HISTOGRAM



ENVIRONMENTAL SAMPLE STATISTICAL DATA

TABLE 8B

LAKE WATER QUARTERLY COMPOSITE

STRONTIUM pCi/l
Sr-90
INDICATOR STATION

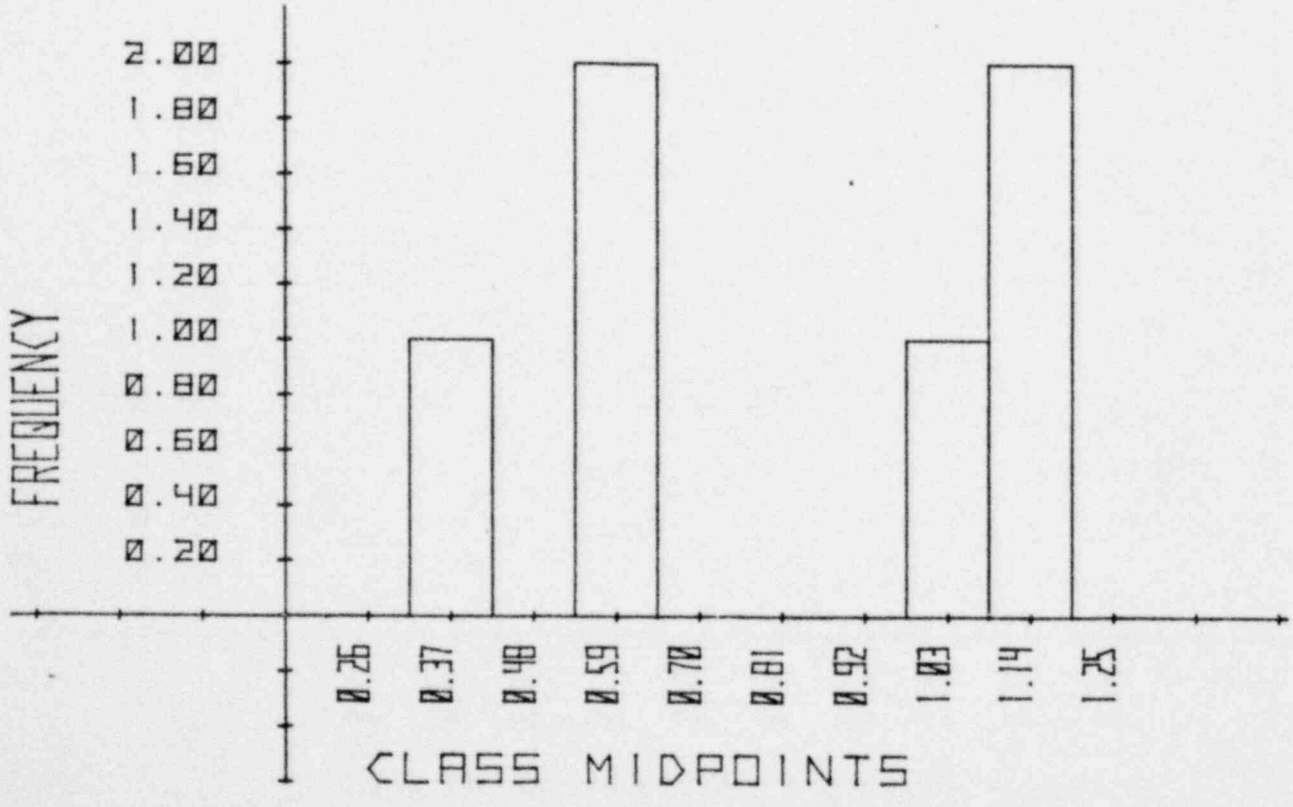
SAMPLE STATISTICS
****

NUMBER OF SAMPLES	6.000	MINIMUM VALUE	0.400
STANDARD DEV.	0.303	RANGE	0.700
MEAN VALUE	0.800	MAXIMUM VALUE	1.100
VARIANCE	0.092	CLASS WIDTH	0.110

HISTOGRAM

CLASS NO.	LOWER B.	UPPER B.	FREQUENCY	REL.FREQ.%
1	0.200	0.310	0.0	0
2	0.310	0.420	1.0	17
3	0.420	0.530	0.0	0
4	0.530	0.640	2.0	33
5	0.640	0.750	0.0	0
6	0.750	0.860	0.0	0
7	0.860	0.970	0.0	0
8	0.970	1.080	1.0	17
9	1.080	1.190	2.0	33
10	1.190	1.300	0.0	0

PLOT OF HISTOGRAM



ENVIRONMENTAL SAMPLE STATISTICAL DATA

TABLE 8B

LAKE WATER QUARTERLY COMPOSITE

TRITIUM pCi/l
H-3
CONTROL STATION

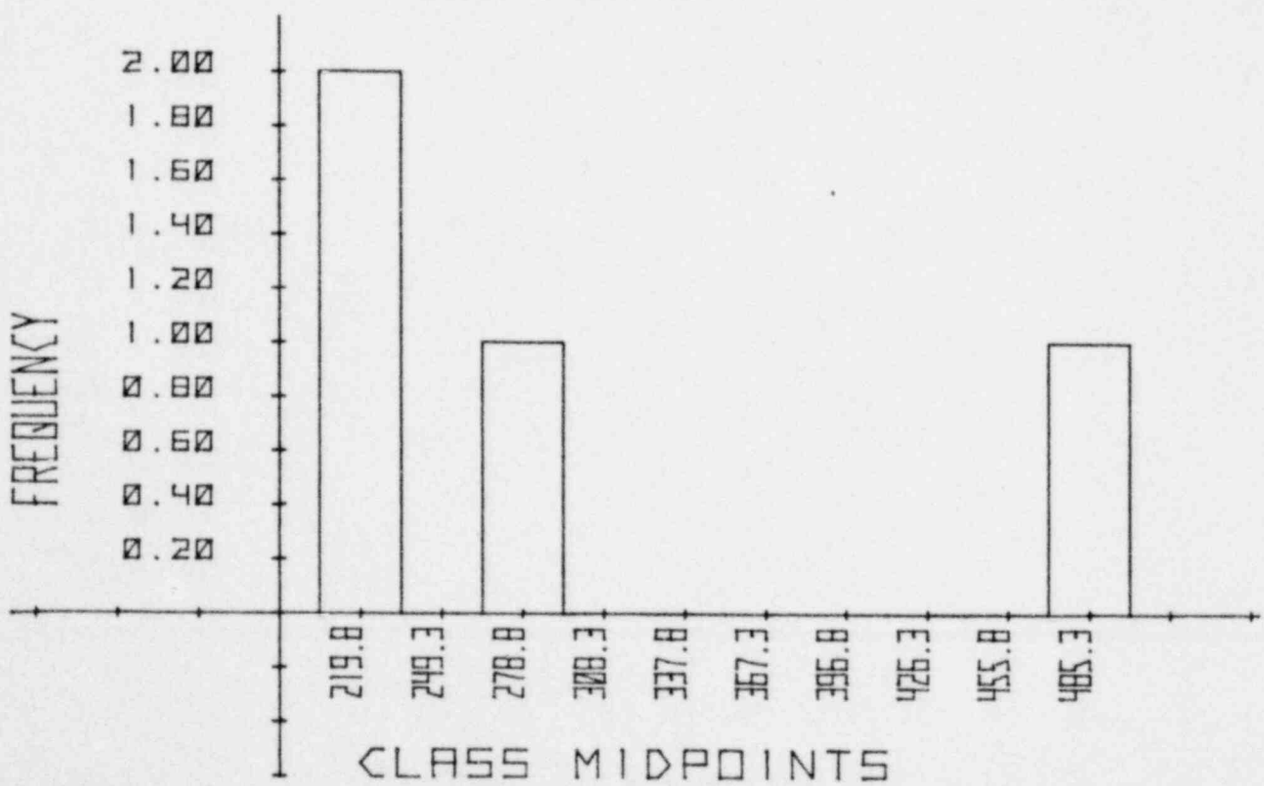
SAMPLE STATISTICS
****

NUMBER OF SAMPLES	4.000	MINIMUM VALUE	215.000
STANDARD DEV.	127.510	RANGE	275.000
MEAN VALUE	303.750	MAXIMUM VALUE	490.000
VARIANCE	$$$$$$$$	CLASS WIDTH	29.500

HISTOGRAM

CLASS NO.	LOWER B.	UPPER B.	FREQUENCY	REL.FREQ.%
1	205.000	234.500	2.0	50
2	234.500	264.000	0.0	0
3	264.000	293.500	1.0	25
4	293.500	323.000	0.0	0
5	323.000	352.500	0.0	0
6	352.500	382.000	0.0	0
7	382.000	411.500	0.0	0
8	411.500	441.000	0.0	0
9	441.000	470.500	0.0	0
10	470.500	500.000	1.0	25

PLOT OF HISTOGRAM



ENVIRONMENTAL SAMPLE STATISTICAL DATA

TABLE 8B

LAKE WATER QUARTERLY COMPOSITE

TRITIUM pCi/l
H-3
INDICATOR STATION

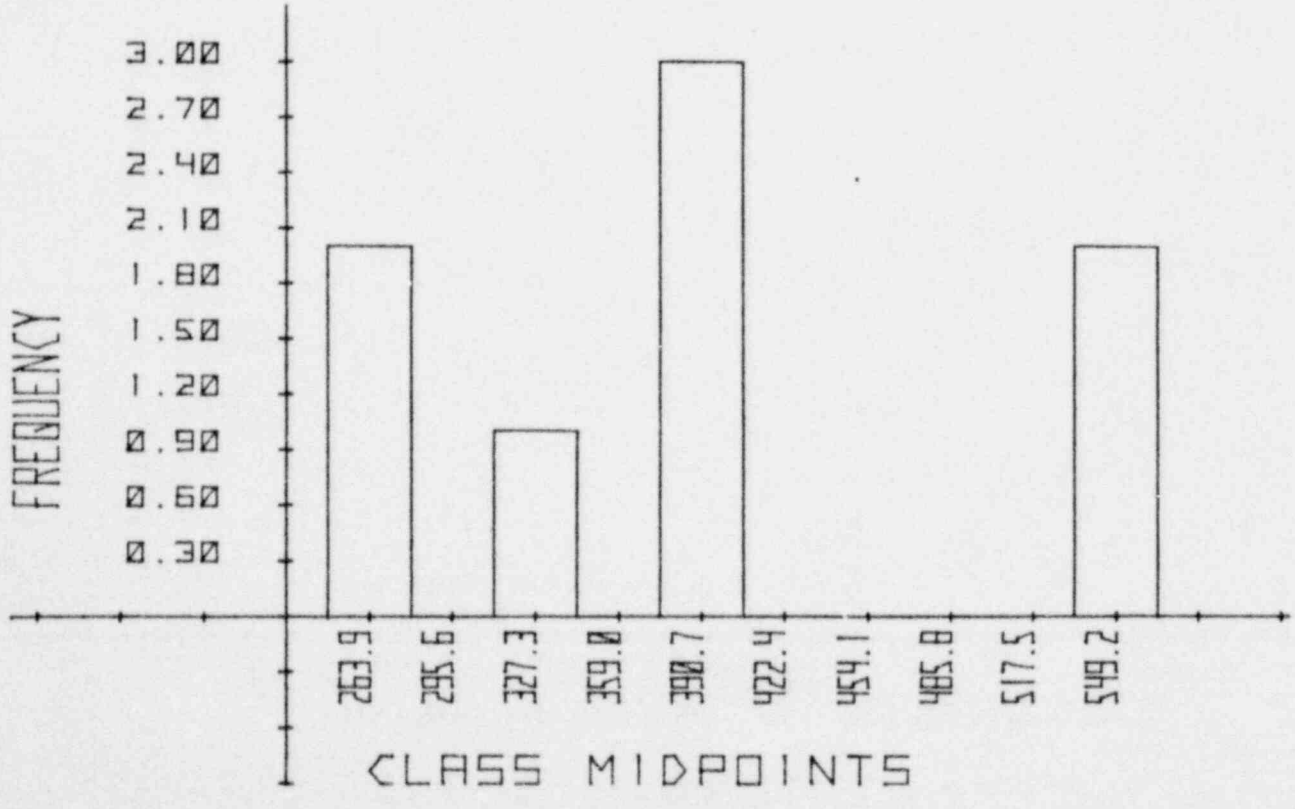
SAMPLE STATISTICS
****

NUMBER OF SAMPLES	8.000	MINIMUM VALUE	253.000
STANDARD DEV.	119.936	RANGE	307.000
MEAN VALUE	389.375	MAXIMUM VALUE	560.000
VARIANCE	$$$$$$$$	CLASS WIDTH	31.700

HISTOGRAM

CLASS NO.	LOWER B.	UPPER B.	FREQUENCY	REL.FREQ.%
1	248.000	279.700	2.0	25
2	279.700	311.400	0.0	0
3	311.400	343.100	1.0	13
4	343.100	374.800	0.0	0
5	374.800	406.500	3.0	38
6	406.500	438.200	0.0	0
7	438.200	469.900	0.0	0
8	469.900	501.600	0.0	0
9	501.600	533.300	0.0	0
10	533.300	565.000	2.0	25

PLOT OF HISTOGRAM



ENVIRONMENTAL SAMPLE STATISTICAL DATA

TABLE 9

LAKE WATER MONTHLY COMPOSITE

GAMMA ISOTOPIC pCi/l
Co-60
INDICATOR STATION

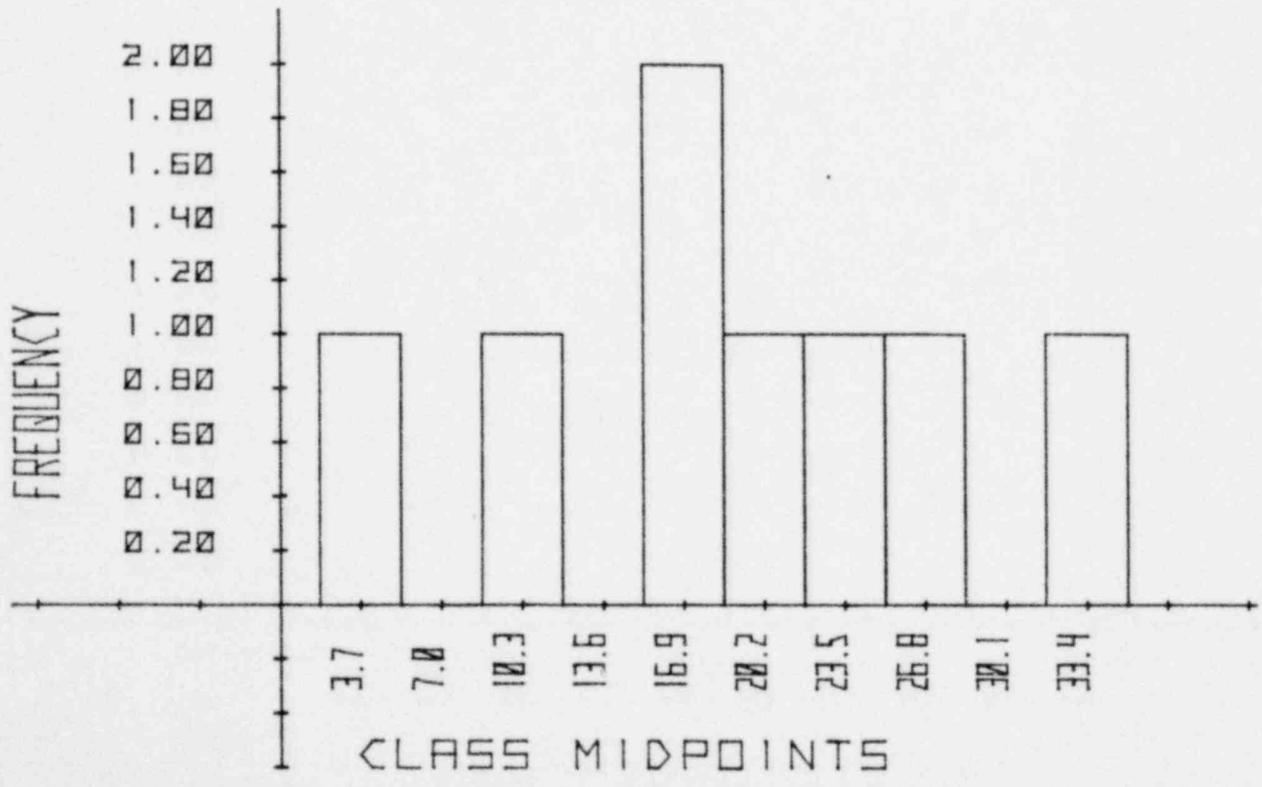
SAMPLE STATISTICS
****

NUMBER OF SAMPLES	8.000	MINIMUM VALUE	4.000
STANDARD DEV.	9.081	RANGE	29.000
MEAN VALUE	19.100	MAXIMUM VALUE	33.000
VARIANCE	82.460	CLASS WIDTH	3.300

HISTOGRAM

CLASS NO.	LOWER B.	UPPER B.	FREQUENCY	REL.FREQ.%
1	2.000	5.300	1.0	13
2	5.300	8.600	0.0	0
3	8.600	11.900	1.0	13
4	11.900	15.200	0.0	0
5	15.200	18.500	2.0	25
6	18.500	21.800	1.0	13
7	21.800	25.100	1.0	13
8	25.100	28.400	1.0	13
9	28.400	31.700	0.0	0
10	31.700	35.000	1.0	13

PLOT OF HISTOGRAM



ENVIRONMENTAL SAMPLE STATISTICAL DATA

TABLE 10

AIRBORNE PARTICULATE

GROSS BETA pCi/cubic meter
BETA
CONTROL STATION

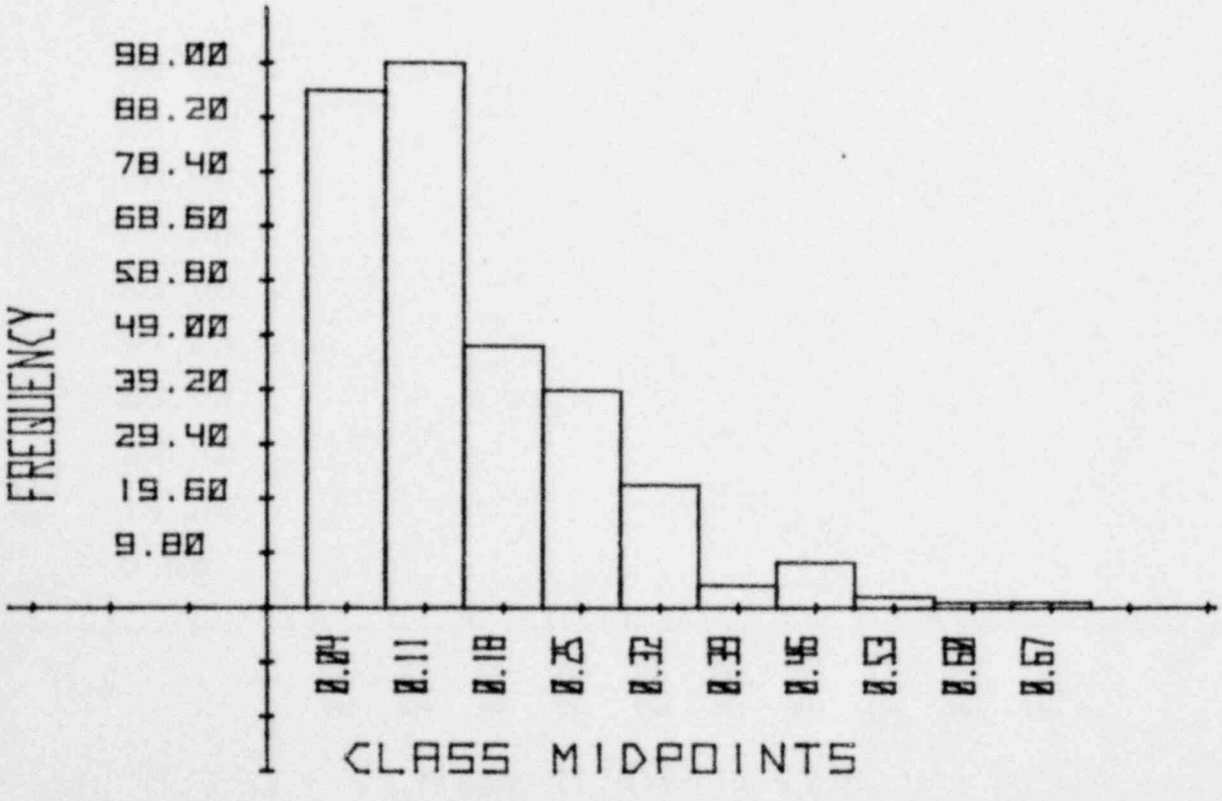
SAMPLE STATISTICS
****

NUMBER OF SAMPLES	315.000	MINIMUM VALUE	0.010
STANDARD DEV.	0.134	RANGE	0.650
MEAN VALUE	0.144	MAXIMUM VALUE	0.660
VARIANCE	0.018	CLASS WIDTH	0.070

HISTOGRAM

CLASS NO.	LOWER B.	UPPER B.	FREQUENCY	REL.FREQ.%
1	0.000	0.070	93.0	30
2	0.070	0.140	98.0	31
3	0.140	0.210	47.0	15
4	0.210	0.280	39.0	12
5	0.280	0.350	22.0	7
6	0.350	0.420	4.0	1
7	0.420	0.490	8.0	3
8	0.490	0.560	2.0	1
9	0.560	0.630	1.0	0
10	0.630	0.700	1.0	0

PLOT OF HISTOGRAM



ENVIRONMENTAL SAMPLE STATISTICAL DATA

TABLE 11

AIRBORNE PARTICULATE

GROSS BETA pCi/cubic meter
BETA
INDICATOR STATION

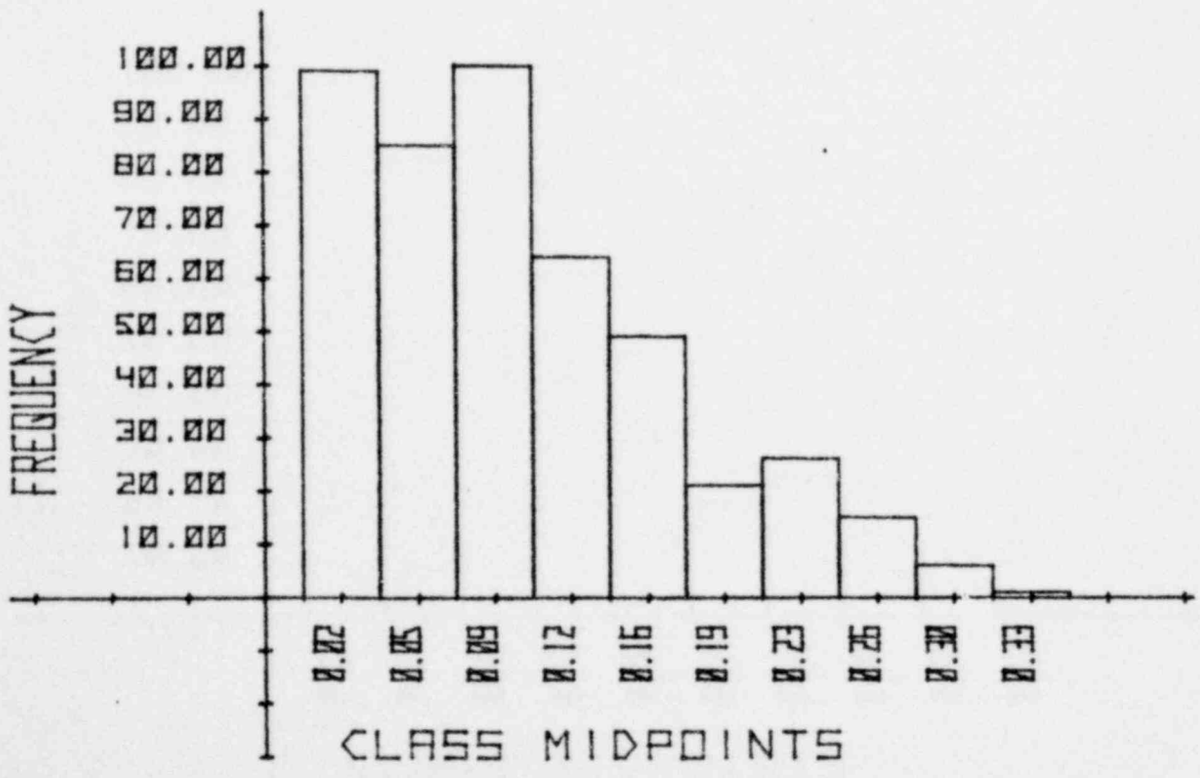
SAMPLE STATISTICS
****

NUMBER OF SAMPLES	651.000	MINIMUM VALUE	0.006
STANDARD DEV.	0.054	RANGE	0.334
MEAN VALUE	0.102	MAXIMUM VALUE	0.340
VARIANCE	0.003	CLASS WIDTH	0.035

HISTOGRAM

CLASS NO.	LOWER B.	UPPER B.	FREQUENCY	REL.FREQ.%
1	0.000	0.035	99.0	21
2	0.035	0.070	85.0	18
3	0.070	0.105	100.0	21
4	0.105	0.140	64.0	14
5	0.140	0.175	49.0	11
6	0.175	0.210	21.0	5
7	0.210	0.245	26.0	6
8	0.245	0.280	15.0	3
9	0.280	0.315	6.0	1
10	0.315	0.350	1.0	0

PLOT OF HISTOGRAM



ENVIRONMENTAL SAMPLE STATISTICAL DATA

TABLE 12

AIRBORNE PARTICULATE

GAMMA ISOTOPIC 10-3 pCi/cubic meter
Mn-54
CONTROL STATION

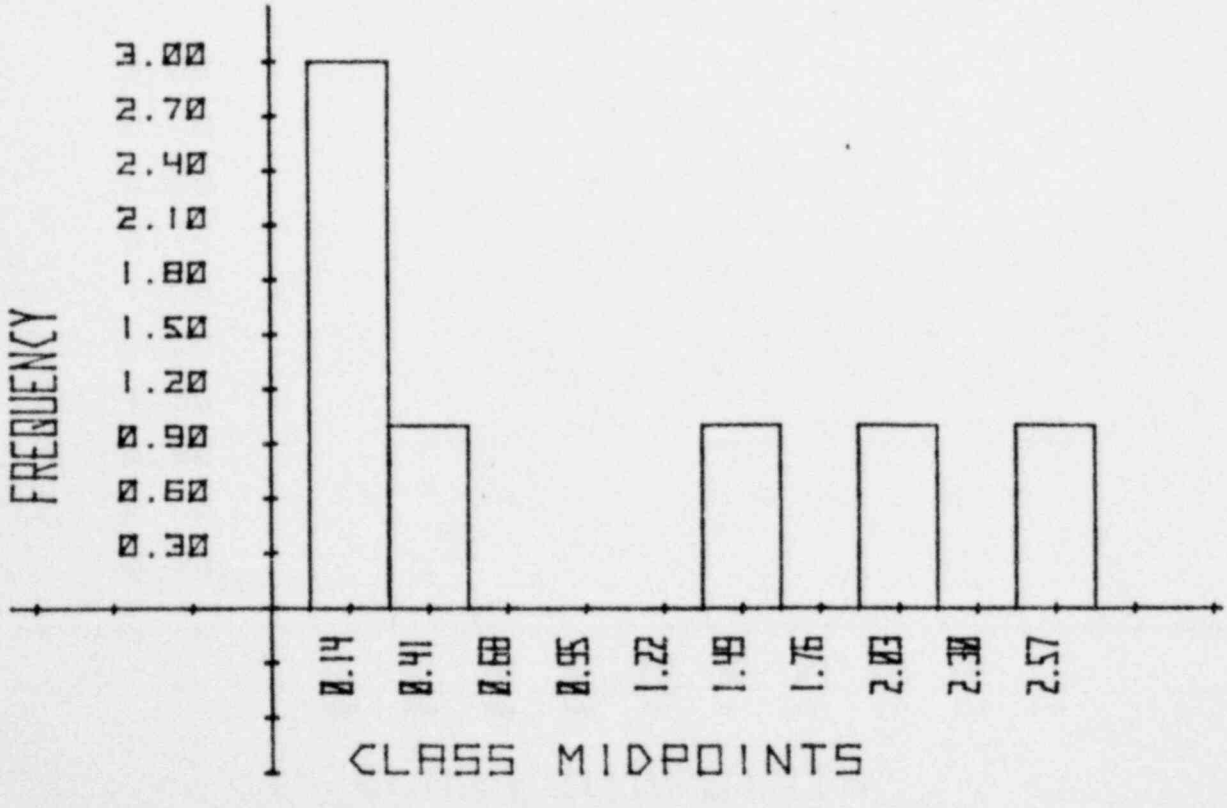
SAMPLE STATISTICS
****

NUMBER OF SAMPLES	7.000	MINIMUM VALUE	0.059
STANDARD DEV.	1.065	RANGE	2.581
MEAN VALUE	0.988	MAXIMUM VALUE	2.640
VARIANCE	1.133	CLASS WIDTH	0.270

HISTOGRAM

CLASS NO.	LOWER B.	UPPER B.	FREQUENCY	REL.FREQ.%
1	0.000	0.270	3.0	43
2	0.270	0.540	1.0	14
3	0.540	0.810	0.0	0
4	0.810	1.080	0.0	0
5	1.080	1.350	0.0	0
6	1.350	1.620	1.0	14
7	1.620	1.890	0.0	0
8	1.890	2.160	1.0	14
9	2.160	2.430	0.0	0
10	2.430	2.700	1.0	14

PLOT OF HISTOGRAM



ENVIRONMENTAL SAMPLE STATISTICAL DATA

TABLE 12

MONTHLY PARTICULATE COMPOSITE

GAMMA ISOTOPIC 10-3 pCi/cubic meter
Mn-54
INDICATOR STATION

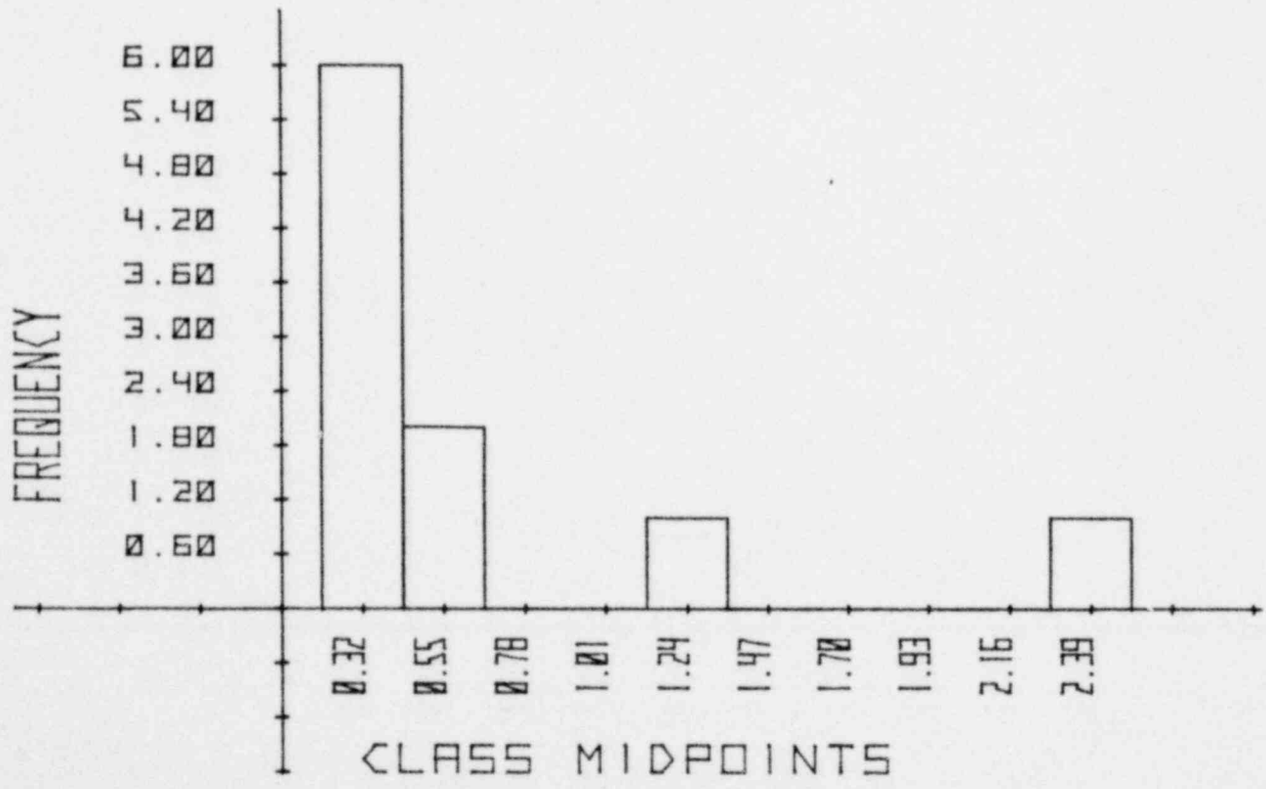
SAMPLE STATISTICS
****

NUMBER OF SAMPLES	10.000	MINIMUM VALUE	0.210
STANDARD DEV.	0.697	RANGE	2.240
MEAN VALUE	0.675	MAXIMUM VALUE	2.450
VARIANCE	0.486	CLASS WIDTH	0.230

HISTOGRAM

CLASS NO.	LOWER B.	UPPER B.	FREQUENCY	REL.FREQ.%
1	0.200	0.430	6.0	60
2	0.430	0.660	2.0	20
3	0.660	0.890	0.0	0
4	0.890	1.120	0.0	0
5	1.120	1.350	1.0	10
6	1.350	1.580	0.0	0
7	1.580	1.810	0.0	0
8	1.810	2.040	0.0	0
9	2.040	2.270	0.0	0
10	2.270	2.500	1.0	10

PLOT OF HISTOGRAM



ENVIRONMENTAL SAMPLE STATISTICAL DATA

TABLE 12

AIRBORNE PARTICULATE

GAMMA ISOTOPIC 10-3 pCi/cubic meter
Co-60
CONTROL STATION

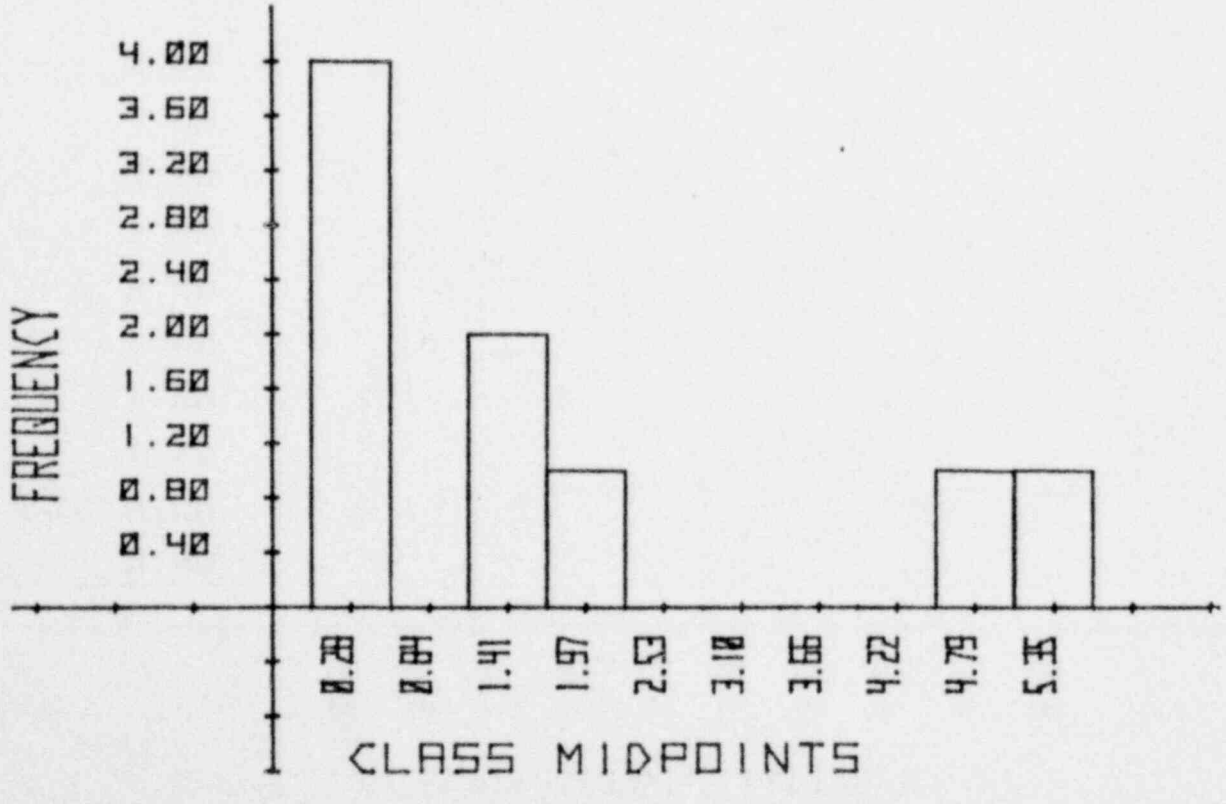
SAMPLE STATISTICS
****

NUMBER OF SAMPLES	9.000	MINIMUM VALUE	0.030
STANDARD DEV.	2.148	RANGE	5.570
MEAN VALUE	1.733	MAXIMUM VALUE	5.600
VARIANCE	4.613	CLASS WIDTH	0.563

HISTOGRAM

CLASS NO.	LOWER B.	UPPER B.	FREQUENCY	REL.FREQ.%
1	0.000	0.563	4.0	44
2	0.563	1.126	0.0	0
3	1.126	1.689	2.0	22
4	1.689	2.252	1.0	11
5	2.252	2.815	0.0	0
6	2.815	3.378	0.0	0
7	3.378	3.941	0.0	0
8	3.941	4.504.	0.0	0
9	4.504	5.067	1.0	11
10	5.067	5.630	1.0	11

PLOT OF HISTOGRAM



ENVIRONMENTAL SAMPLE STATISTICAL DATA

TABLE 12

MONTHLY PARTICULATE COMPOSITE

GAMMA ISOTOPIC 10-3 pCi/cubic meter
Co-60
INDICATOR STATION

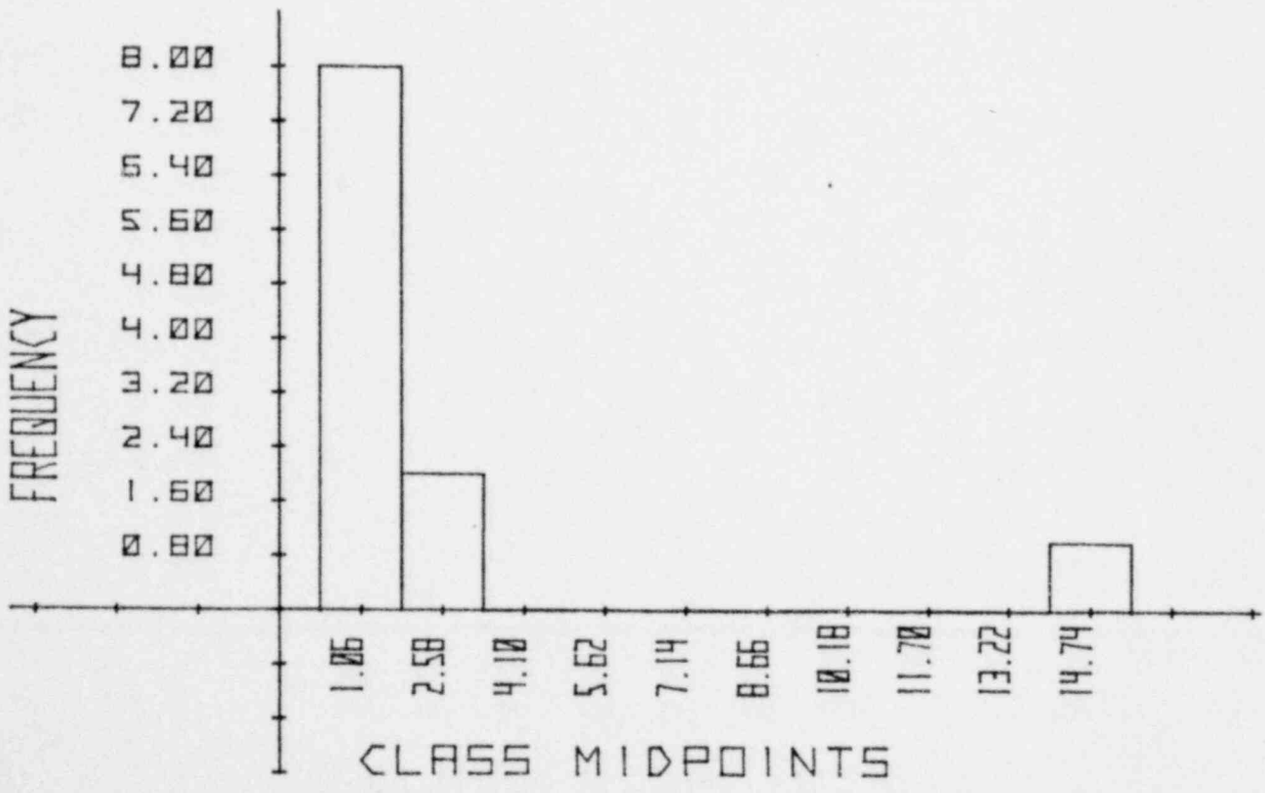
SAMPLE STATISTICS
****

NUMBER OF SAMPLES	11.000	MINIMUM VALUE	0.320
STANDARD DEV.	4.378	RANGE	14.980
MEAN VALUE	2.255	MAXIMUM VALUE	15.300
VARIANCE	19.163	CLASS WIDTH	1.520

HISTOGRAM

CLASS NO.	LOWER B.	UPPER B.	FREQUENCY	REL.FREQ.%
1	0.300	1.820	8.0	73
2	1.820	3.340	2.0	18
3	3.340	4.860	0.0	0
4	4.860	6.380	0.0	0
5	6.380	7.900	0.0	0
6	7.900	9.420	0.0	0
7	9.420	10.940	0.0	0
8	10.940	12.460	0.0	0
9	12.460	13.980	0.0	0
10	13.980	15.500	1.0	9

PLOT OF HISTOGRAM



ENVIRONMENTAL SAMPLE STATISTICAL DATA

TABLE 12

AIRBORNE PARTICULATE

GAMMA ISOTOPIC 10-3 pCi/cubic metet
Nb-95
CONTROL STATION

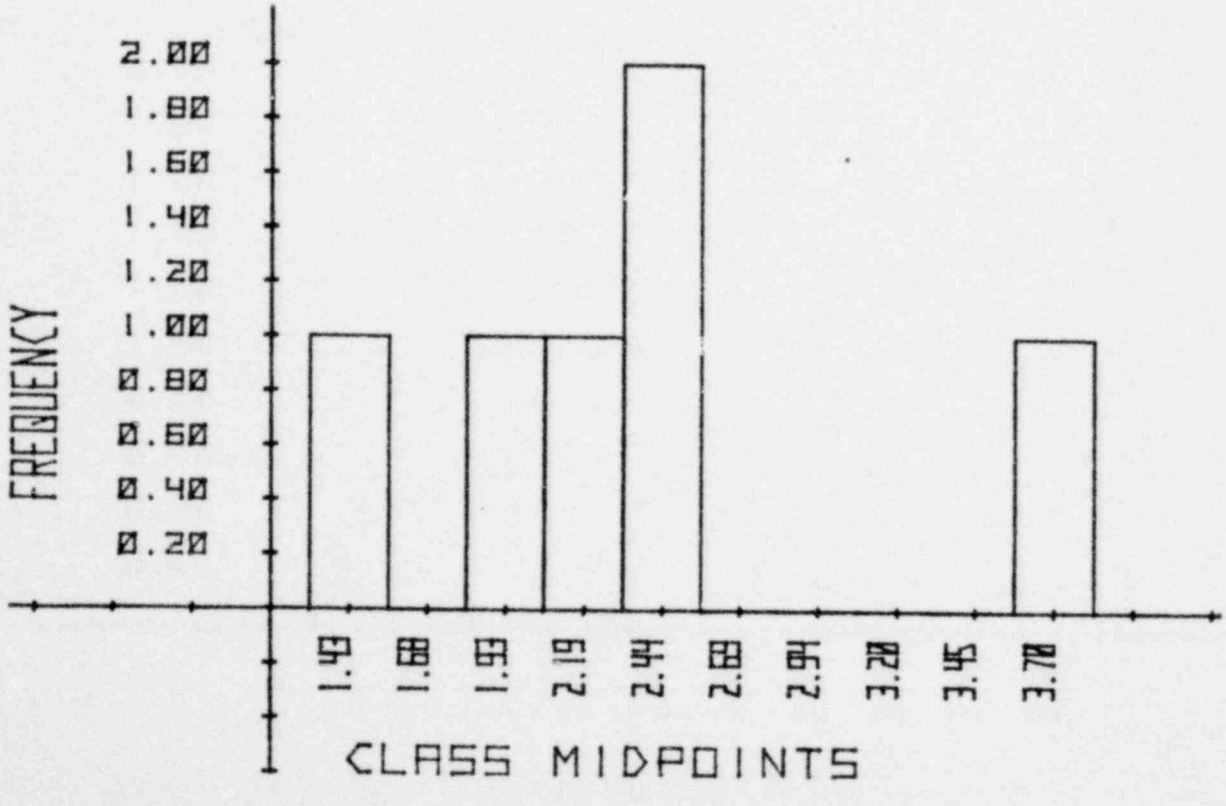
SAMPLE STATISTICS
****

NUMBER OF SAMPLES	6.000	MINIMUM VALUE	1.320
STANDARD DLV.	0.814	RANGE	2.490
MEAN VALUE	2.393	MAXIMUM VALUE	3.810
VARIANCE	0.663	CLASS WIDTH	0.253

HISTOGRAM

CLASS NO.	LOWER B.	UPPER B.	FREQUENCY	REL.FREQ.%
1	1.300	1.553	1.0	17
2	1.553	1.806	0.0	0
3	1.806	2.059	1.0	17
4	2.059	2.312	1.0	17
5	2.312	2.565	2.0	33
6	2.565	2.818	0.0	0
7	2.818	3.071	0.0	0
8	3.071	3.324	0.0	0
9	3.324	3.577	0.0	0
10	3.577	3.830	1.0	17

PLOT OF HISTOGRAM



ENVIRONMENTAL SAMPLE STATISTICAL DATA

TABLE 12

MONTHLY PARTICULATE COMPOSITE

GAMMA ISOTOPIC 10-3 pCi/cubic meter
Nb-95
INDICATOR STATION

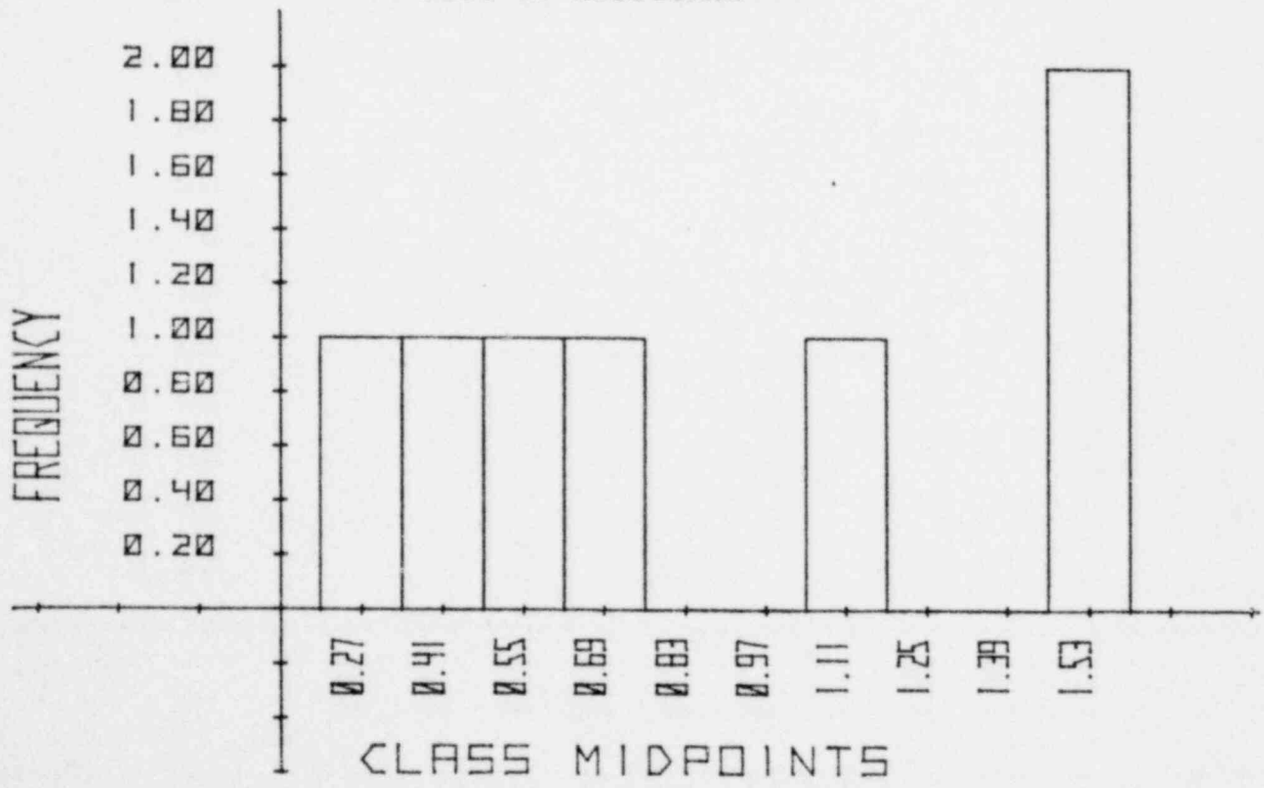
SAMPLE STATISTICS
****

NUMBER OF SAMPLES	7.000	MINIMUM VALUE	0.240
STANDARD DEV.	0.529	RANGE	1.320
MEAN VALUE	0.866	MAXIMUM VALUE	1.560
VARIANCE	0.280	CLASS WIDTH	0.140

HISTOGRAM

CLASS NO.	LOWER B.	UPPER B.	FREQUENCY	REL.FREQ.%
1	0.200	0.340	1.0	14
2	0.340	0.480	1.0	14
3	0.480	0.620	1.0	14
4	0.620	0.760	1.0	14
5	0.760	0.900	0.0	0
6	0.900	1.040	0.0	0
7	1.040	1.180	1.0	14
8	1.180	1.320	0.0	0
9	1.320	1.460	0.0	0
10	1.460	1.600	2.0	29

PLOT OF HISTOGRAM



ENVIRONMENTAL SAMPLE STATISTICAL DATA

TABLE 12

AIRBORNE PARTICULATE

GAMMA ISOTOPIC 10-3 pCi/cubic meter
Zr-95
CONTROL STATION

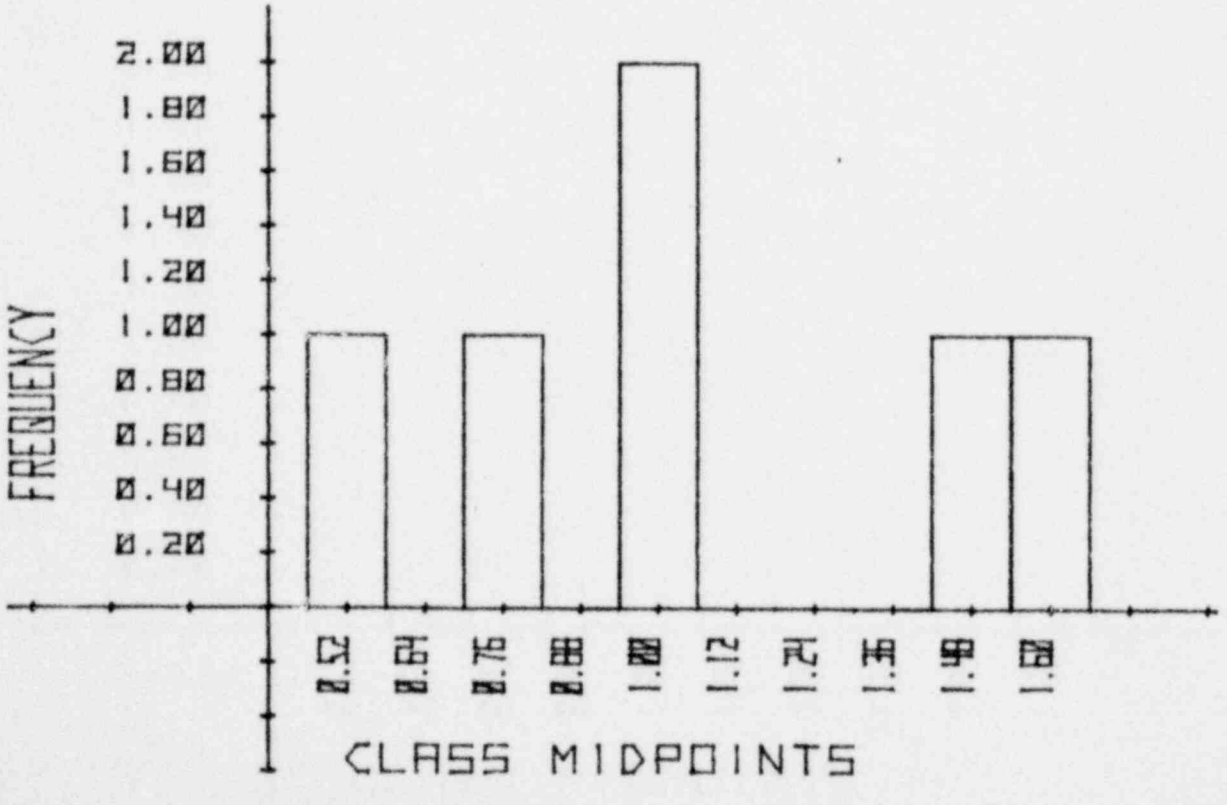
SAMPLE STATISTICS
****

NUMBER OF SAMPLES	6.000	MINIMUM VALUE	0.466
STANDARD DEV.	0.454	RANGE	1.184
MEAN VALUE	1.053	MAXIMUM VALUE	1.650
VARIANCE	0.206	CLASS WIDTH	0.120

HISTOGRAM

CLASS NO.	LOWER B.	UPPER B.	FREQUENCY	REL.FREQ.%
1	0.460	0.580	1.0	17
2	0.580	0.700	0.0	0
3	0.700	0.820	1.0	17
4	0.820	0.940	0.0	0
5	0.940	1.060	2.0	33
6	1.060	1.180	0.0	0
7	1.180	1.300	0.0	0
8	1.300	1.420	0.0	0
9	1.420	1.540	1.0	17
10	1.540	1.660	1.0	17

PLOT OF HISTOGRAM



ENVIRONMENTAL SAMPLE STATISTICAL DATA

TABLE 12

MONTHLY PARTICULATE COMPOSITE

GAMMA ISOTOPIC 10-3 pCi/cubic meter
Zr-95
INDICATOR STATION

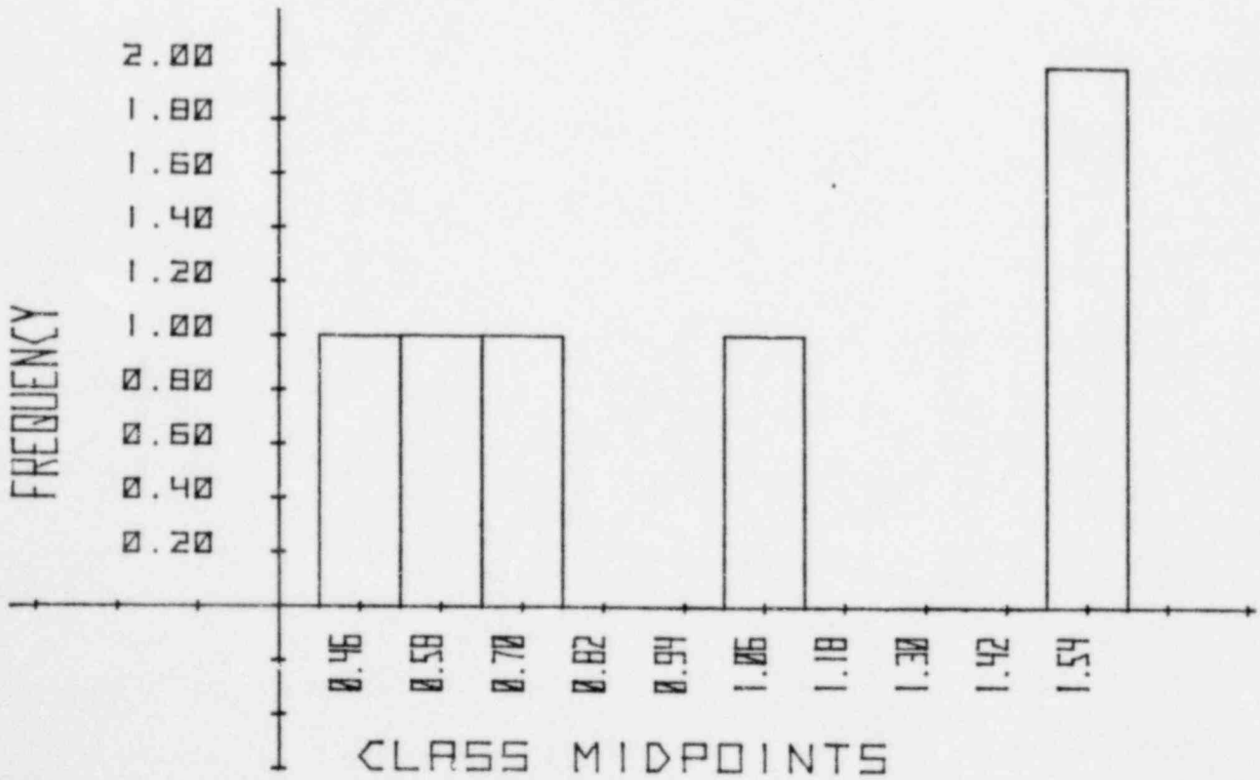
SAMPLE STATISTICS
****

NUMBER OF SAMPLES	6.000	MINIMUM VALUE	0.430
STANDARD DEV.	0.494	RANGE	1.130
MEAN VALUE	0.970	MAXIMUM VALUE	1.560
VARIANCE	0.244	CLASS WIDTH	0.120

HISTOGRAM

CLASS NO.	LOWER B.	UPPER B.	FREQUENCY	REL.FREQ.%
1	0.400	0.520	1.0	17
2	0.520	0.640	1.0	17
3	0.640	0.760	1.0	17
4	0.760	0.880	0.0	0
5	0.880	1.000	0.0	0
6	1.000	1.120	1.0	17
7	1.120	1.240	0.0	0
8	1.240	1.360	0.0	0
9	1.360	1.480	0.0	0
10	1.480	1.600	2.0	33

PLOT OF HISTOGRAM



ENVIRONMENTAL SAMPLE STATISTICAL DATA

TABLE 12

MONTHLY PARTICULATE COMPOSITE

GAMMA ISOTOPIC 10-3 pCi/cubic meter
Cs-137
CONTROL STATION

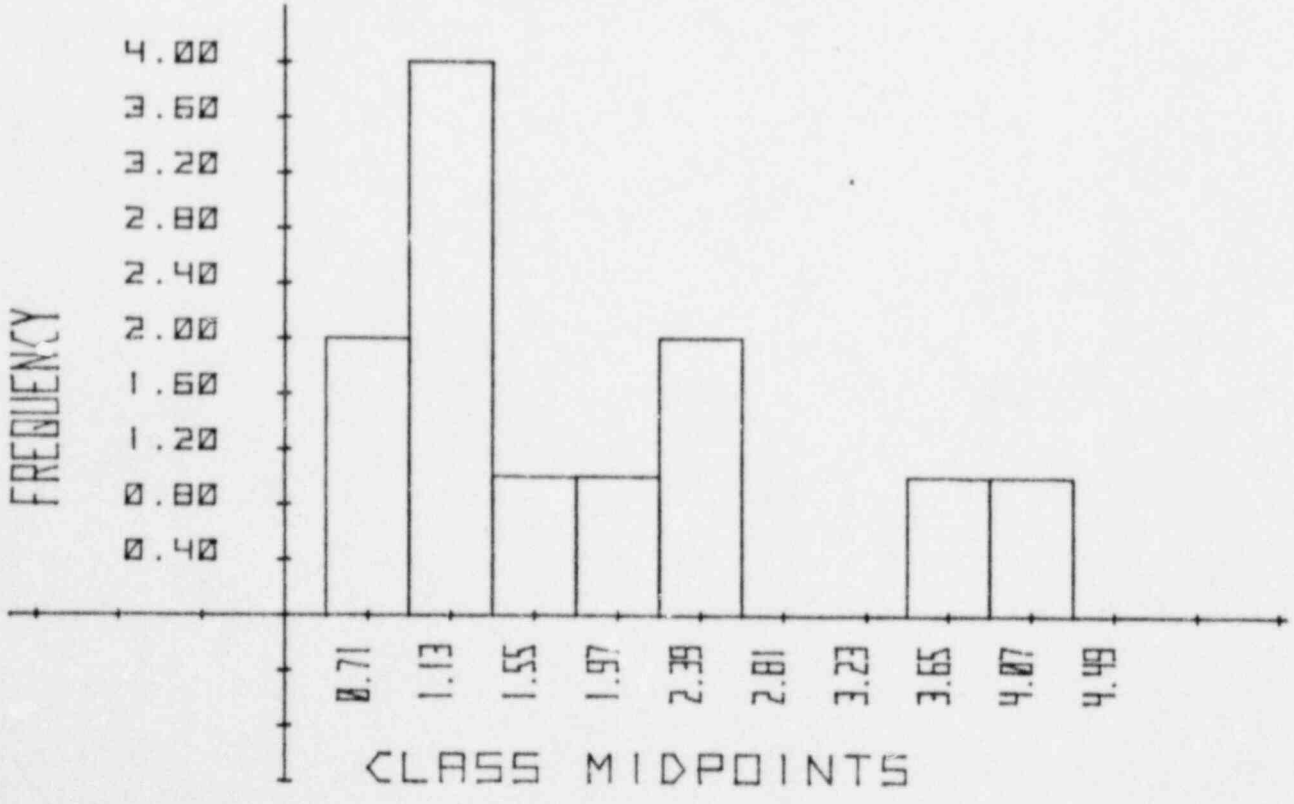
SAMPLE STATISTICS
****

NUMBER OF SAMPLES	12.000	MINIMUM VALUE	0.752
STANDARD DEV.	1.071	RANGE	3.448
MEAN VALUE	1.833	MAXIMUM VALUE	4.200
VARIANCE	1.148	CLASS WIDTH	0.420

HISTOGRAM

CLASS NO.	LOWER B.	UPPER B.	FREQUENCY	REL.FREQ.%
1	0.500	0.920	2.0	17
2	0.920	1.340	4.0	33
3	1.340	1.760	1.0	8
4	1.760	2.180	1.0	8
5	2.180	2.600	2.0	17
6	2.600	3.020	0.0	0
7	3.020	3.440	0.0	0
8	3.440	3.860	1.0	8
9	3.860	4.280	1.0	8
10	4.280	4.700	0.0	0

PLOT OF HISTOGRAM



ENVIRONMENTAL SAMPLE STATISTICAL DATA

TABLE 12

MONTHLY PARTICULATE COMPOSITE

GAMMA ISOTOPIC 10-3 pCi/cubic meter
Cs-137
INDICATOR STATION

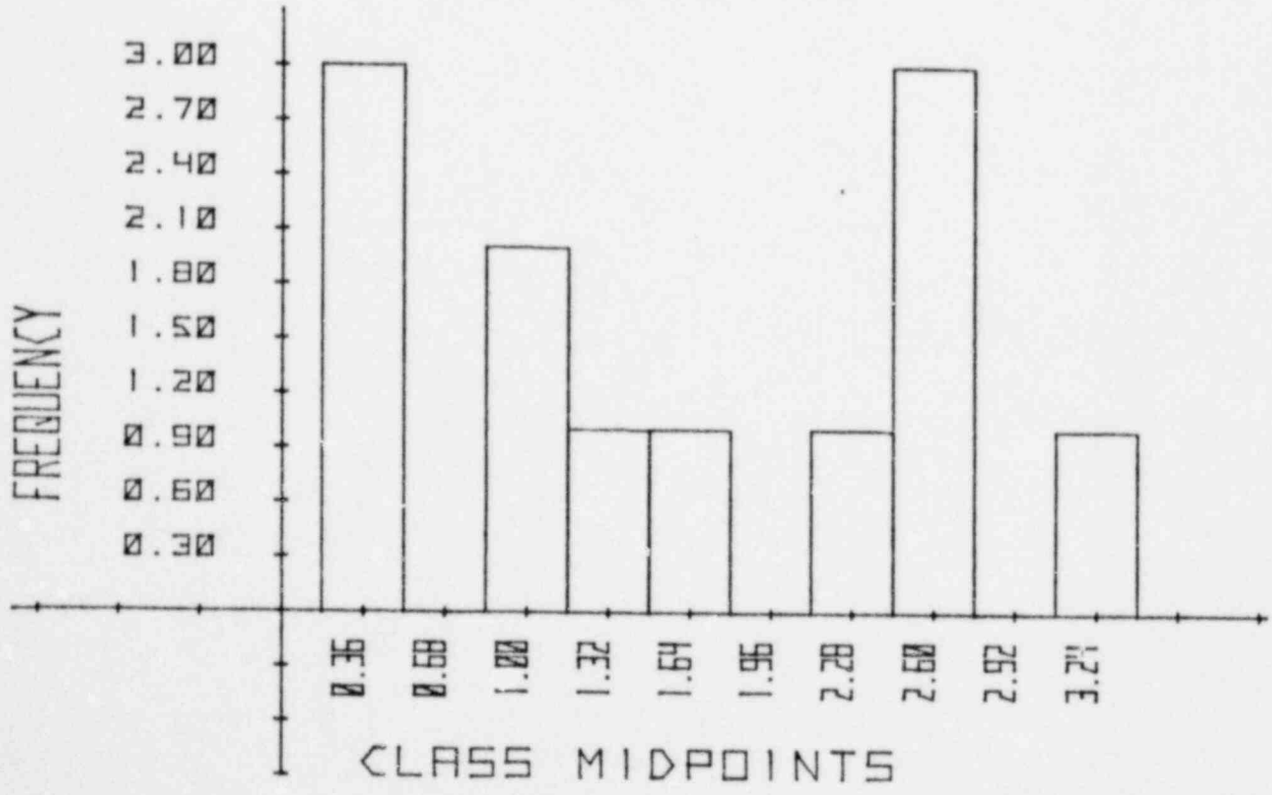
SAMPLE STATISTICS

NUMBER OF SAMPLES	12.000	MINIMUM VALUE	0.300
STANDARD DEV.	1.036	RANGE	3.010
MEAN VALUE	1.598	MAXIMUM VALUE	3.310
VARIANCE	1.074	CLASS WIDTH	0.320

HISTOGRAM

CLASS NO.	LOWER B.	UPPER B.	FFEQUENCY	REL.FREQ.%
1	0.200	0.520	3.0	25
2	0.520	0.840	0.0	0
3	0.840	1.160	2.0	17
4	1.160	1.480	1.0	8
5	1.480	1.800	1.0	8
6	1.800	2.120	0.0	0
7	2.120	2.440	1.0	8
8	2.440	2.760	3.0	25
9	2.760	3.080	0.0	0
10	3.080	3.400	1.0	8

PLOT OF HISTOGRAM



ENVIRONMENTAL SAMPLE STATISTICAL DATA

TABLE 12

MONTHLY PARTICULATE COMPOSITE

GAMMA ISOTOPIC 10-3 pCi/cubic meter
Ce-144
CONTROL STATION

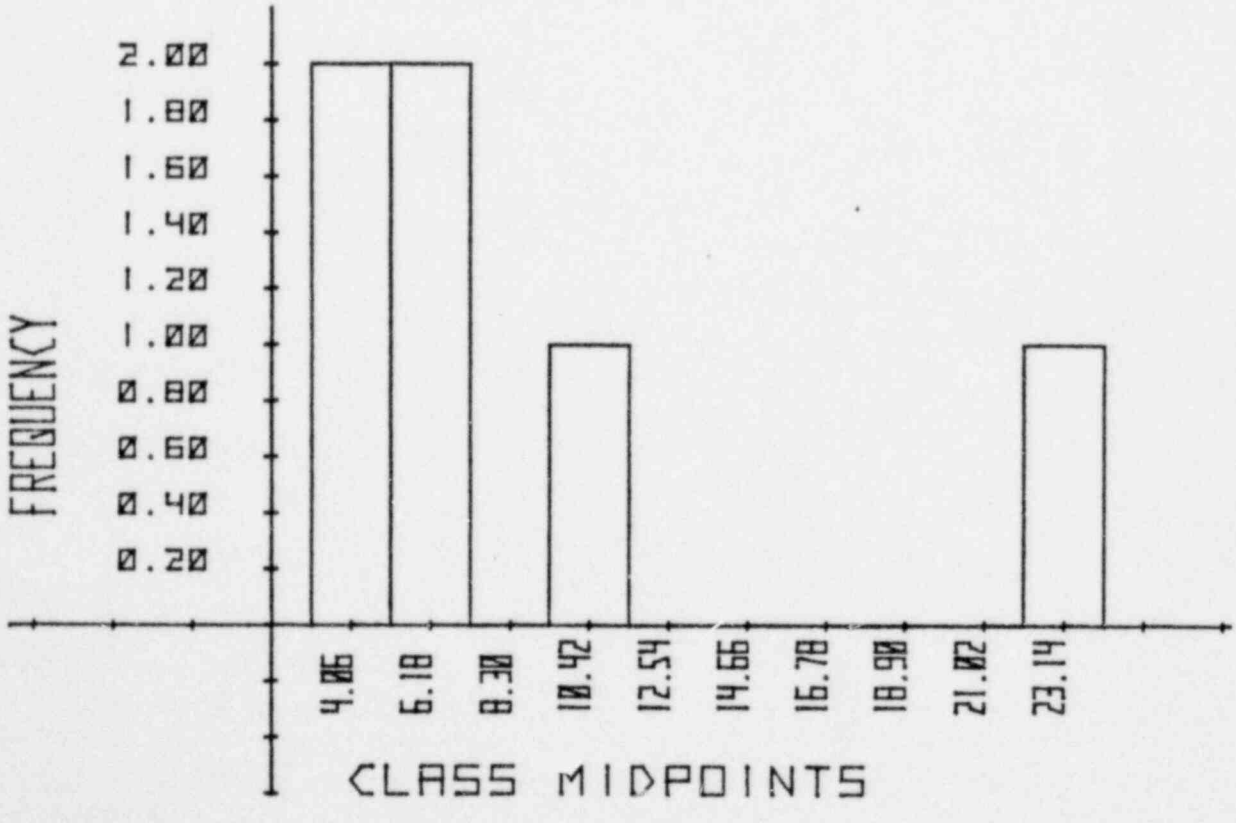
SAMPLE STATISTICS
****

NUMBER OF SAMPLES	6.000	MINIMUM VALUE	3.200
STANDARD DEV.	7.950	RANGE	20.800
MEAN VALUE	8.783	MAXIMUM VALUE	24.000
VARIANCE	63.210	CLASS WIDTH	2.120

HISTOGRAM

CLASS NO.	LOWER B.	UPPER B.	FREQUENCY	REL.FREQ.%
1	3.000	5.120	2.0	33
2	5.120	7.240	2.0	33
3	7.240	9.360	0.0	0
4	9.360	11.480	1.0	17
5	11.480	13.600	0.0	0
6	13.600	15.720	0.0	0
7	15.720	17.840	0.0	0
8	17.840	19.960	0.0	0
9	19.960	22.080	0.0	0
10	22.080	24.200	1.0	17

PLOT OF HISTOGRAM



ENVIRONMENTAL SAMPLE STATISTICAL DATA

TABLE 12

MONTHLY PARTICULATE COMPOSITE

GAMMA ISOTOPIC 10-3 pCi/cubic meter
Ce-144
INDICATOR STATION

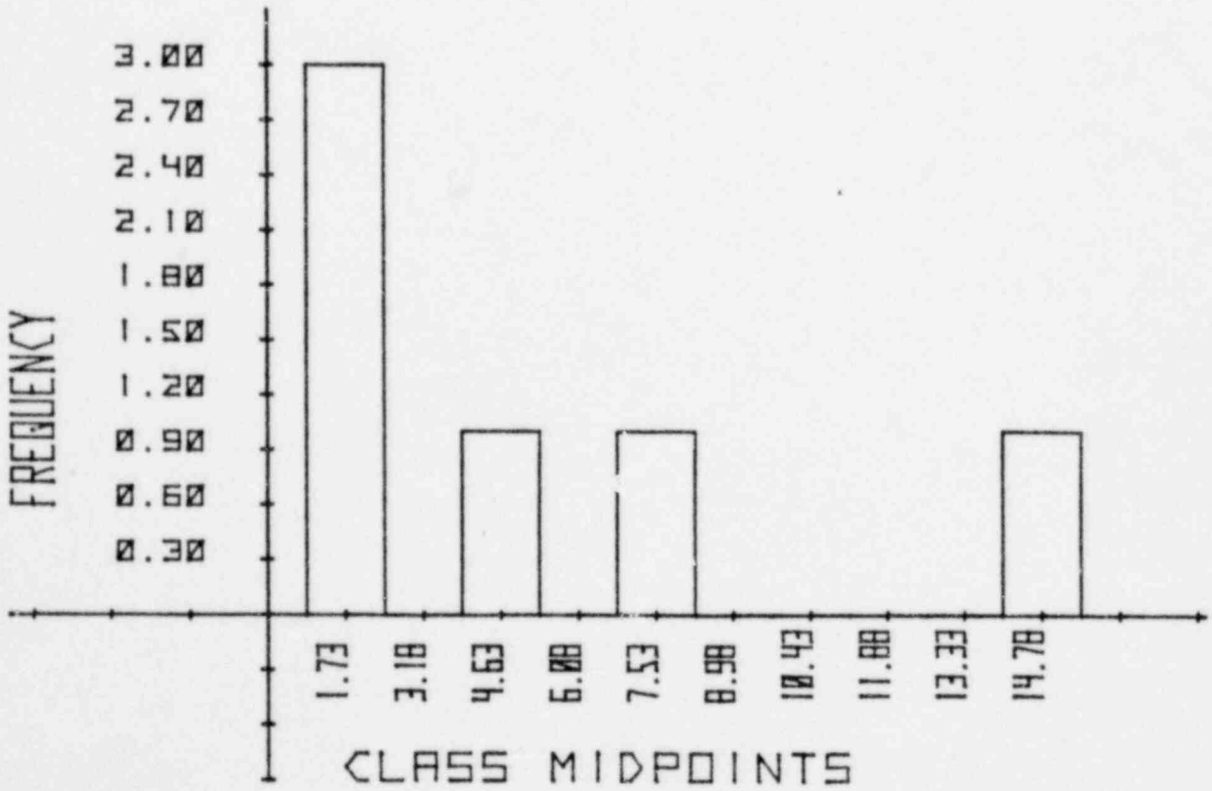
SAMPLE STATISTICS
****

NUMBER OF SAMPLES	6.000	MINIMUM VALUE	1.500
STANDARD DEV.	5.283	RANGE	13.500
MEAN VALUE	5.183	MAXIMUM VALUE	15.000
VARIANCE	27.906	CLASS WIDTH	1.450

HISTOGRAM

CLASS NO.	LOWER B.	UPPER B.	FREQUENCY	REL.FREQ.%
1	1.000	2.450	3.0	50
2	2.450	3.900	0.0	0
3	3.900	5.350	1.0	17
4	5.350	6.800	0.0	0
5	6.800	8.250	1.0	17
6	8.250	9.700	0.0	0
7	9.700	11.150	0.0	0
8	11.150	12.600	0.0	0
9	12.600	14.050	0.0	0
10	14.050	15.500	1.0	17

PLOT OF HISTOGRAM



ENVIRONMENTAL SAMPLE STATISTICAL DATA

TABLE 14

AIRBORNE IODINE

GAMMA ISOTOPIC pCi/cubic meter
I-131
INDICATOR STATION

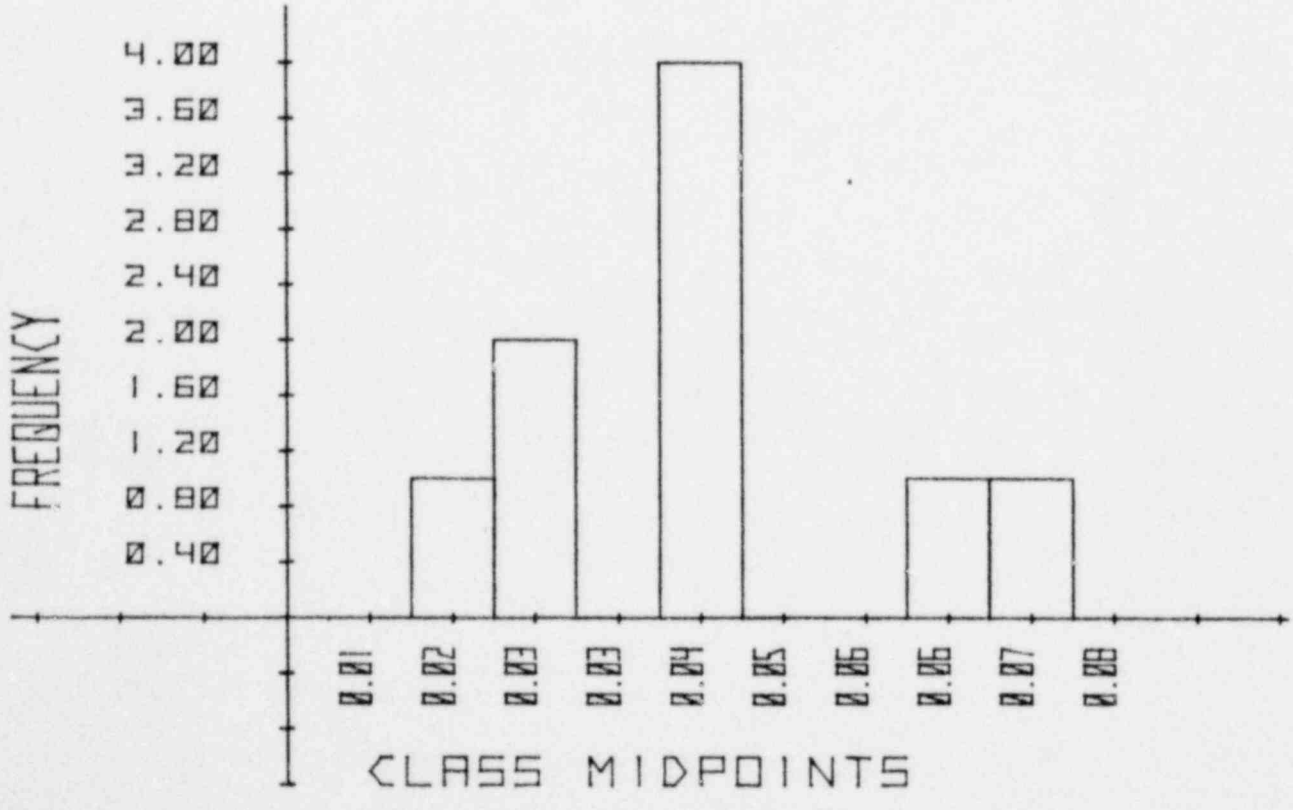
SAMPLE STATISTICS
****

NUMBER OF SAMPLES	9.000	MINIMUM VALUE	0.020
STANDARD DEV.	0.015	RANGE	0.050
MEAN VALUE	0.041	MAXIMUM VALUE	0.070
VARIANCE	0.000	CLASS WIDTH	0.007

HISTOGRAM

CLASS NO.	LOWER B.	UPPER B.	FREQUENCY	REL.FREQ.%
1	0.010	0.017	0.0	0
2	0.017	0.024	1.0	11
3	0.024	0.031	2.0	22
4	0.031	0.038	0.0	0
5	0.038	0.045	4.0	44
6	0.045	0.052	0.0	0
7	0.052	0.059	0.0	0
8	0.059	0.066	1.0	11
9	0.066	0.073	1.0	11
10	0.073	0.080	0.0	0

PLOT OF HISTOGRAM



ENVIRONMENTAL SAMPLE STATISTICAL DATA

TABLE 15

ENVIRONMENTAL TLD READINGS

TOTAL DOSE 1st Qtr. mRem/Qtr.
GAMMA
CONTROL STATION

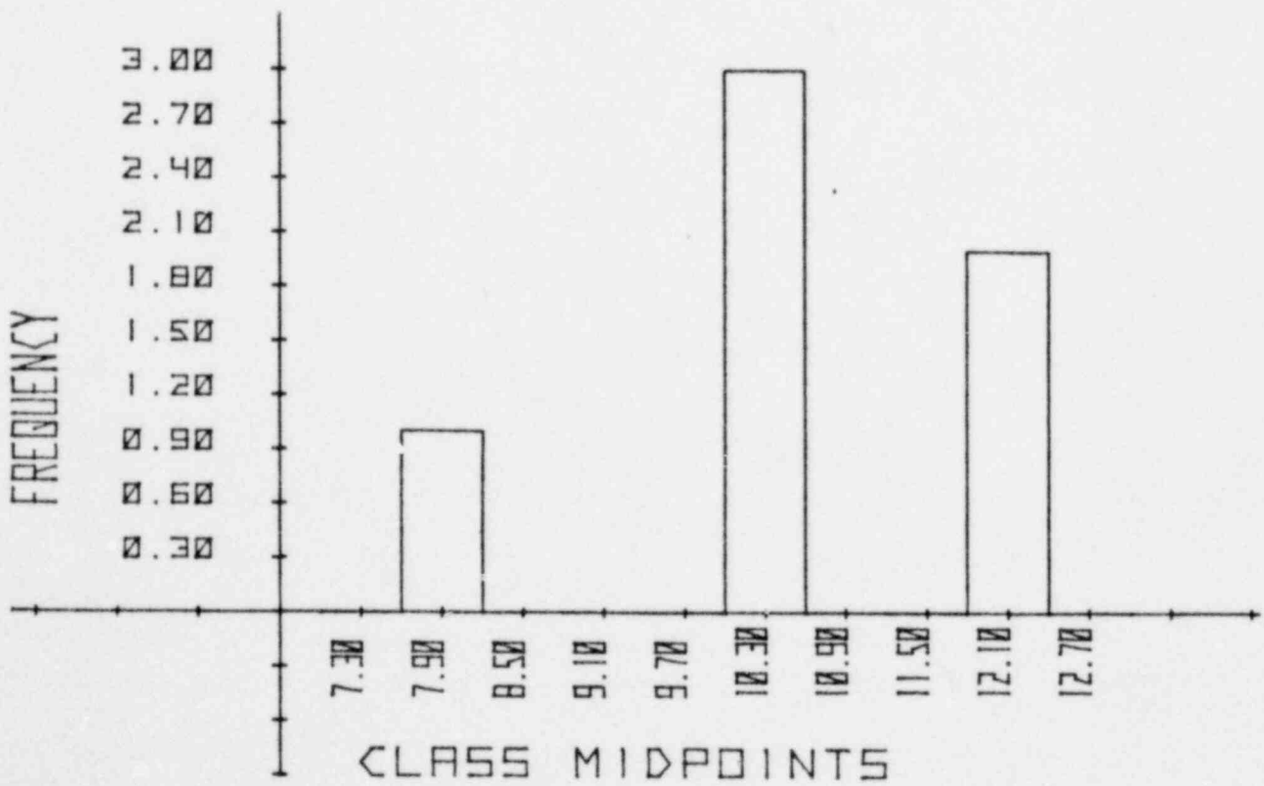
SAMPLE STATISTICS
****

NUMBER OF SAMPLES	6.000	MINIMUM VALUE	8.000
STANDARD DEV.	1.506	RANGE	4.000
MEAN VALUE	10.333	MAXIMUM VALUE	12.000
VARIANCE	2.267	CLASS WIDTH	0.600

HISTOGRAM

CLASS NO.	LOWER B.	UPPER B.	FREQUENCY	REL.FREQ.%
1	7.000	7.600	0.0	0
2	7.600	8.200	1.0	17
3	8.200	8.800	0.0	0
4	8.800	9.400	0.0	0
5	9.400	10.000	0.0	0
6	10.000	10.600	3.0	50
7	10.600	11.200	0.0	0
8	11.200	11.800	0.0	0
9	11.800	12.400	2.0	33
10	12.400	13.000	0.0	0

PLOT OF HISTOGRAM



ENVIRONMENTAL SAMPLE STATISTICAL DATA

TABLE 15

ENVIRONMENTAL TLD READINGS

TOTAL DOSE 2nd Qtr. mRem/Qtr.
GAMMA
CONTROL STATION

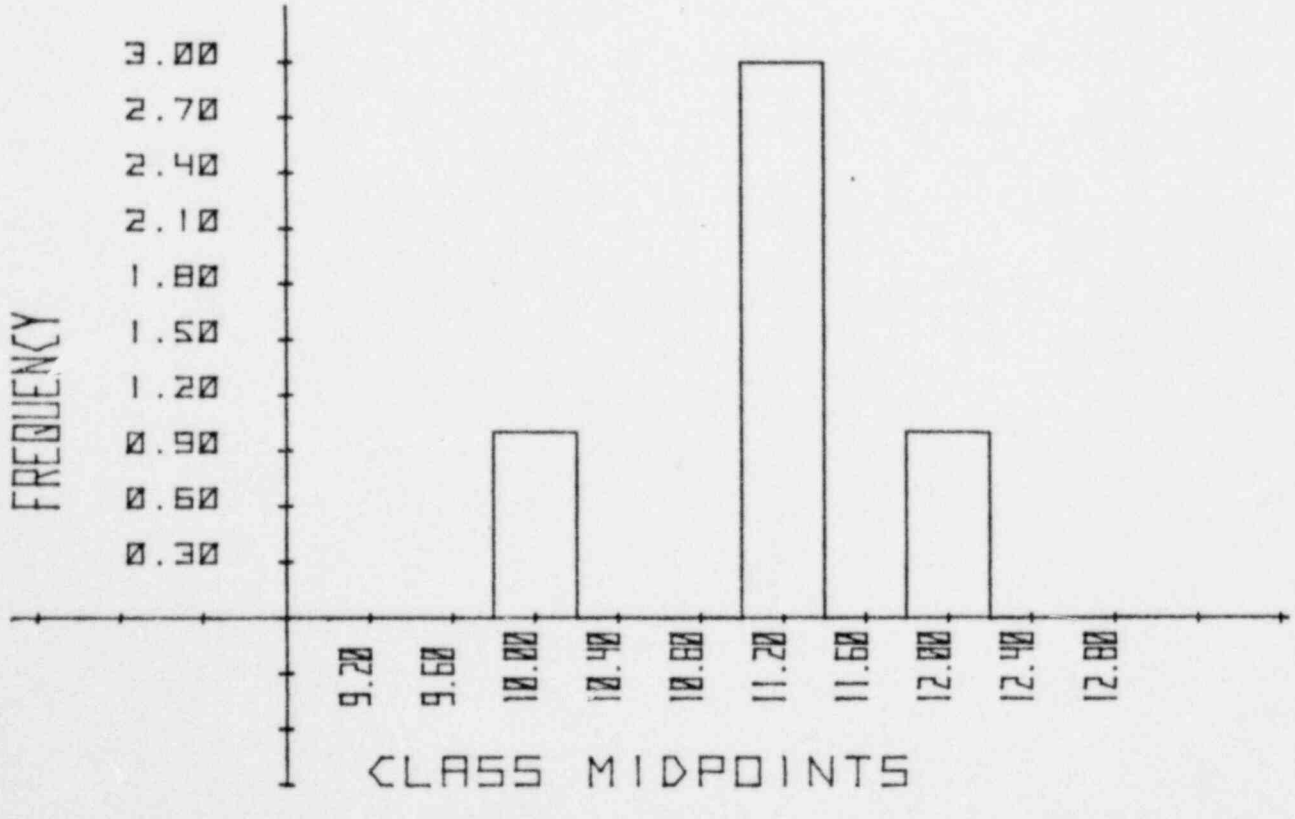
SAMPLE STATISTICS
****

NUMBER OF SAMPLES	5.000	MINIMUM VALUE	10.000
STANDARD DEV.	0.707	RANGE	2.000
MEAN VALUE	11.000	MAXIMUM VALUE	12.000
VARIANCE	0.500	CLASS WIDTH	0.400

HISTOGRAM

CLASS NO.	LOWER B.	UPPER B.	FREQUENCY	REL.FREQ.%
1	9.000	9.400	0.0	0
2	9.400	9.800	0.0	0
3	9.800	10.200	1.0	20
4	10.200	10.600	0.0	0
5	10.600	11.000	0.0	0
6	11.000	11.400	3.0	60
7	11.400	11.800	0.0	0
8	11.800	12.200	1.0	20
9	12.200	12.600	0.0	0
10	12.600	13.000	0.0	0

PLOT OF HISTOGRAM



ENVIRONMENTAL SAMPLE STATISTICAL DATA

TABLE 15

ENVIR MENTAL TLE READINGS

TOTAL DOSE 3rd Qtr. mRem/Qtr.
GAMMA
CONTROL STATION

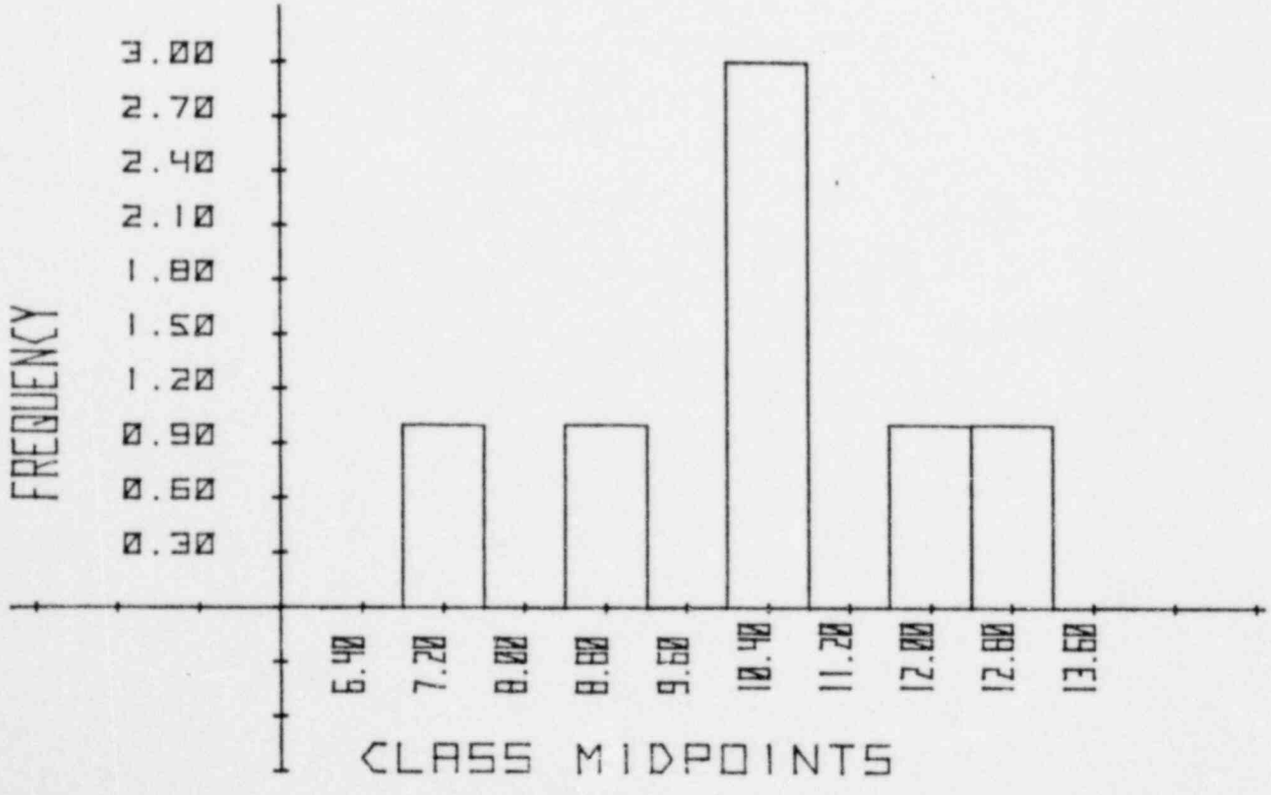
SAMPLE STATISTICS
****

NUMBER OF SAMPLES	7.000	MINIMUM VALUE	7.000
STANDARD DEV.	1.952	RANGE	6.000
MEAN VALUE	10.143	MAXIMUM VALUE	13.000
VARIANCE	3.810	CLASS WIDTH	0.800

HISTOGRAM

CLASS NO.	LOWER B.	UPPER B.	FREQUENCY	REL.FREQ.%
1	6.000	6.800	0.0	0
2	6.800	7.600	1.0	14
3	7.600	8.400	0.0	0
4	8.400	9.200	1.0	14
5	9.200	10.000	0.0	0
6	10.000	10.800	3.0	43
7	10.800	11.600	0.0	0
8	11.600	12.400	1.0	14
9	12.400	13.200	1.0	14
10	13.200	14.000	0.0	0

PLOT OF HISTOGRAM



ENVIRONMENTAL SAMPLE STATISTICAL DATA

TABLE 15

ENVIRONMENTAL TLD READINGS

TOTAL DOSE 4th Qtr. mRem/Qtr.
GAMMA
CONTROL STATION

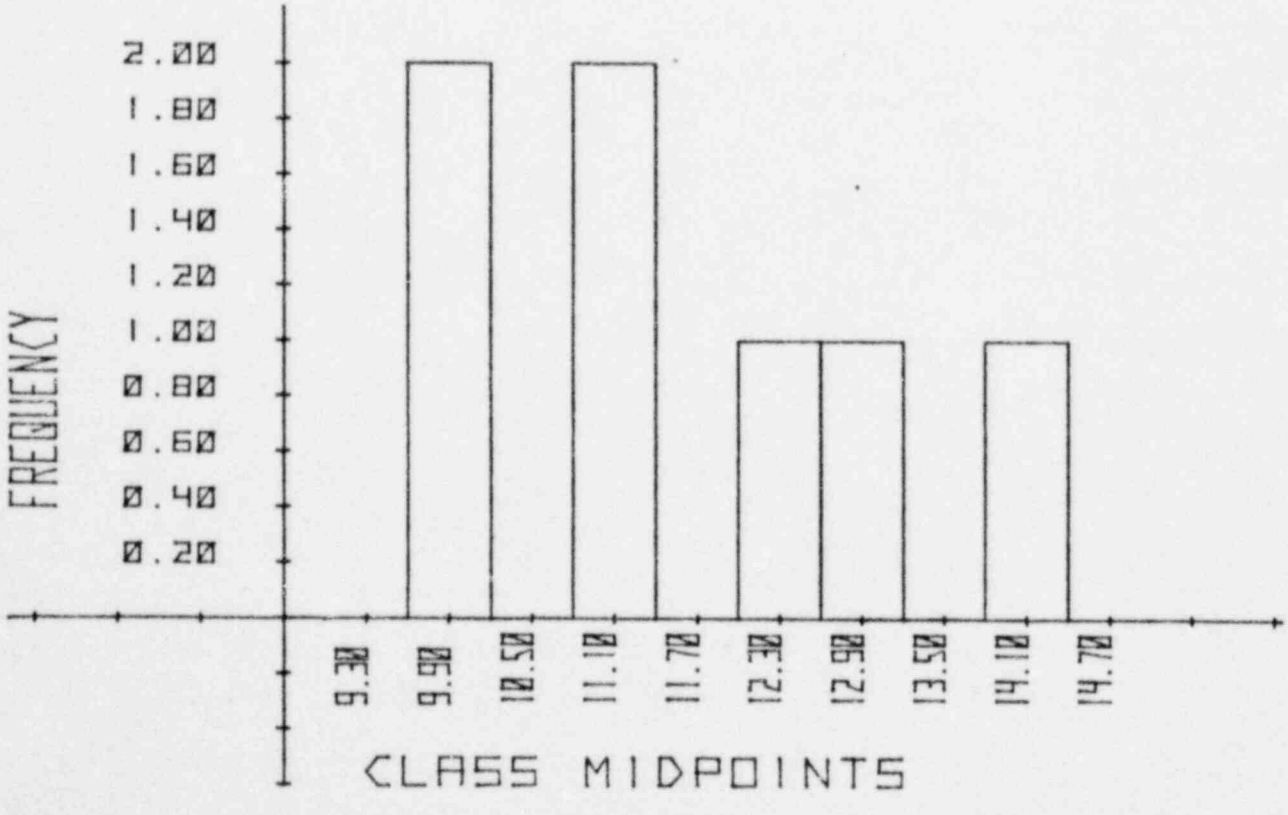
SAMPLE STATISTICS
****

NUMBER OF SAMPLES	7.000	MINIMUM VALUE	10.000
STANDARD DEV.	1.512	RANGE	4.000
MEAN VALUE	11.571	MAXIMUM VALUE	14.000
VARIANCE	2.286	CLASS WIDTH	0.600

HISTOGRAM

CLASS NO.	LOWER B.	UPPER B.	FREQUENCY	REL.FREQ.%
1	9.000	9.600	0.0	0
2	9.600	10.200	2.0	29
3	10.200	10.800	0.0	0
4	10.800	11.400	2.0	29
5	11.400	12.000	0.0	0
6	12.000	12.600	1.0	14
7	12.600	13.200	1.0	14
8	13.200	13.800	0.0	0
9	13.800	14.400	1.0	14
10	14.400	15.000	0.0	0

PLOT OF HISTOGRAM



ENVIRONMENTAL SAMPLE STATISTICAL DATA

TABLE 15

ENVIRONMENTAL TLD READINGS

TOTAL DOSE FOR YEAR mRem/Qtr.
GAMMA
CONTROL STATION

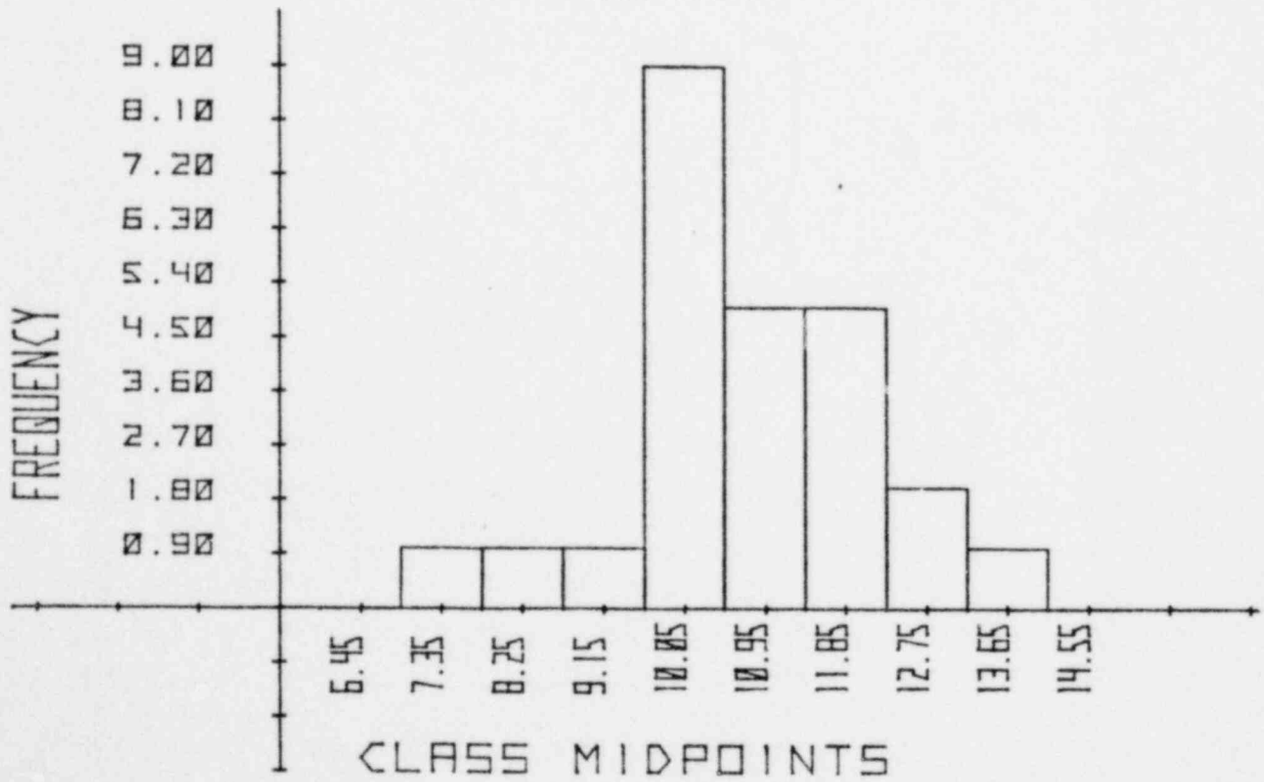
SAMPLE STATISTICS
****

NUMBER OF SAMPLES	25.000	MINIMUM VALUE	7.000
STANDARD DEV.	1.562	RANGE	7.000
MEAN VALUE	10.760	MAXIMUM VALUE	14.000
VARIANCE	2.440	CLASS WIDTH	0.900

HISTOGRAM

CLASS NO.	LOWER B.	UPPER B.	FREQUENCY	REL.FREQ.%
1	6.000	6.900	0.0	0
2	6.900	7.800	1.0	4
3	7.800	8.700	1.0	4
4	8.700	9.600	1.0	4
5	9.600	10.500	9.0	36
6	10.500	11.400	5.0	20
7	11.400	12.300	5.0	20
8	12.300	13.200	2.0	8
9	13.200	14.100	1.0	4
10	14.100	15.000	0.0	0

PLOT OF HISTOGRAM



ENVIRONMENTAL SAMPLE STATISTICAL DATA

TABLE 15

ENVIRONMENTAL TLD READINGS

TOTAL DOSE 1st Qtr. mRem/Qtr.
GAMMA
INDICATOR STATION

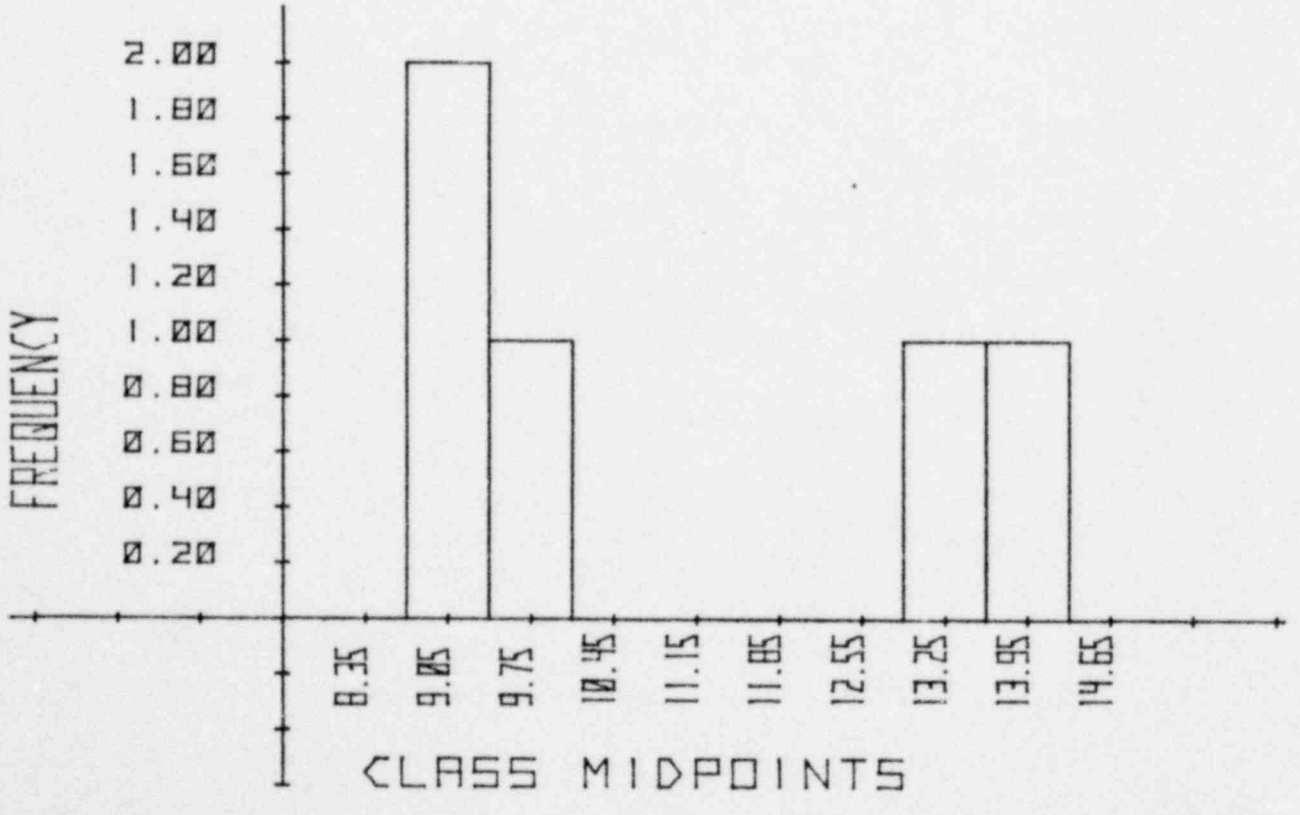
SAMPLE STATISTICS
****

NUMBER OF SAMPLES	5.000	MINIMUM VALUE	9.000
STANDARD DEV.	2.345	RANGE	5.000
MEAN VALUE	11.000	MAXIMUM VALUE	14.000
VARIANCE	5.500	CLASS WIDTH	0.700

HISTOGRAM

CLASS NO.	LOWER B.	UPPER B.	FREQUENCY	REL.FREQ.%
1	8.000	8.700	0.0	0
2	8.700	9.400	2.0	40
3	9.400	10.100	1.0	20
4	10.100	10.800	0.0	0
5	10.800	11.500	0.0	0
6	11.500	12.200	0.0	0
7	12.200	12.900	0.0	0
8	12.900	13.600	1.0	20
9	13.600	14.300	1.0	20
10	14.300	15.000	0.0	0

PLOT OF HISTOGRAM



ENVIRONMENTAL SAMPLE STATISTICAL DATA

TABLE 15

ENVIRONMENTAL TLD READINGS

TOTAL DOSE 2nd Qtr. mRem/Qtr.
GAMMA
INDICATOR STATION

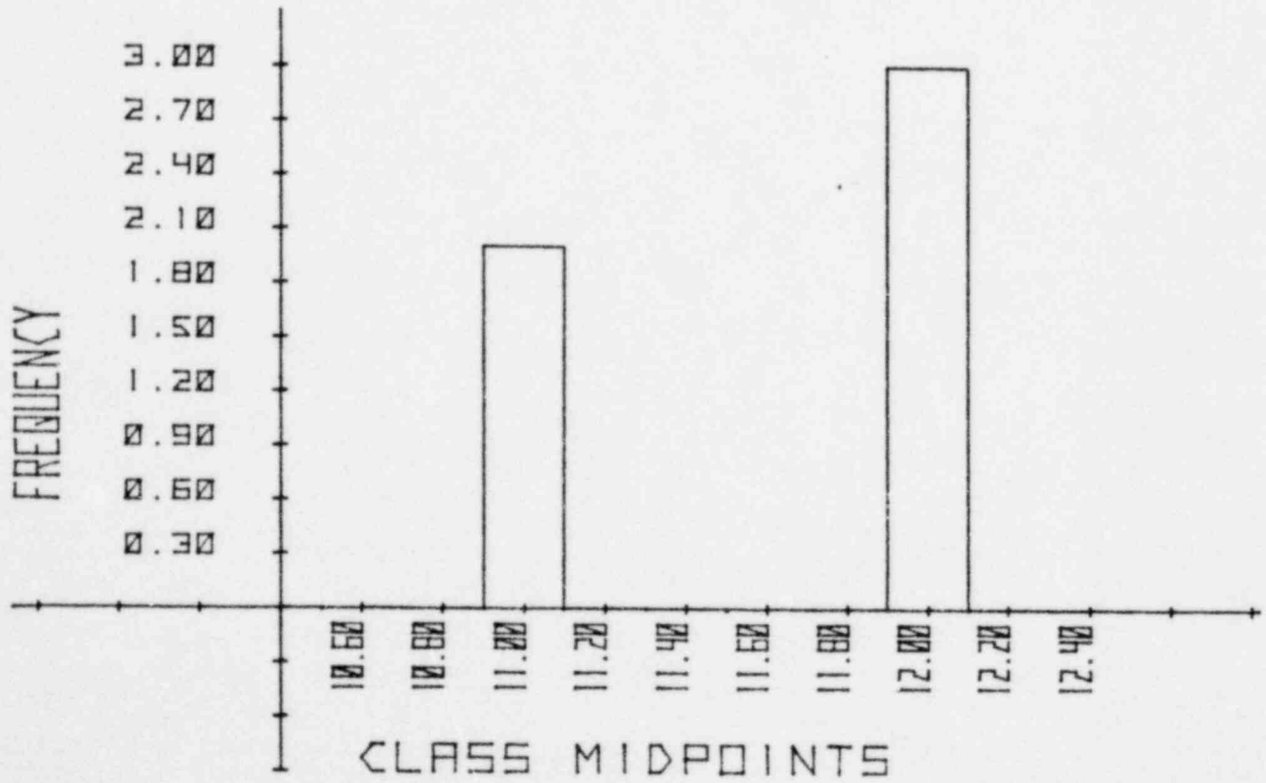
SAMPLE STATISTICS
****

NUMBER OF SAMPLES	5.000	MINIMUM VALUE	11.000
STANDARD DEV.	0.548	RANGE	1.000
MEAN VALUE	11.600	MAXIMUM VALUE	12.000
VARIANCE	0.300	CLASS WIDTH	0.200

HISTOGRAM

CLASS NO.	LOWER B.	UPPER B.	FREQUENCY	REL.FREQ.%
1	10.500	10.700	0.0	0
2	10.700	10.900	0.0	0
3	10.900	11.100	2.0	40
4	11.100	11.300	0.0	0
5	11.300	11.500	0.0	0
6	11.500	11.700	0.0	0
7	11.700	11.900	0.0	0
8	11.900	12.100	3.0	60
9	12.100	12.300	0.0	0
10	12.300	12.500	0.0	0

PLOT OF HISTOGRAM



ENVIRONMENTAL SAMPLE STATISTICAL DATA

TABLE 15

ENVIRONMENTAL TLD READINGS

TOTAL DOSE 3rd Qtr. mRem/Qtr.
GAMMA
INDICATOR STATION

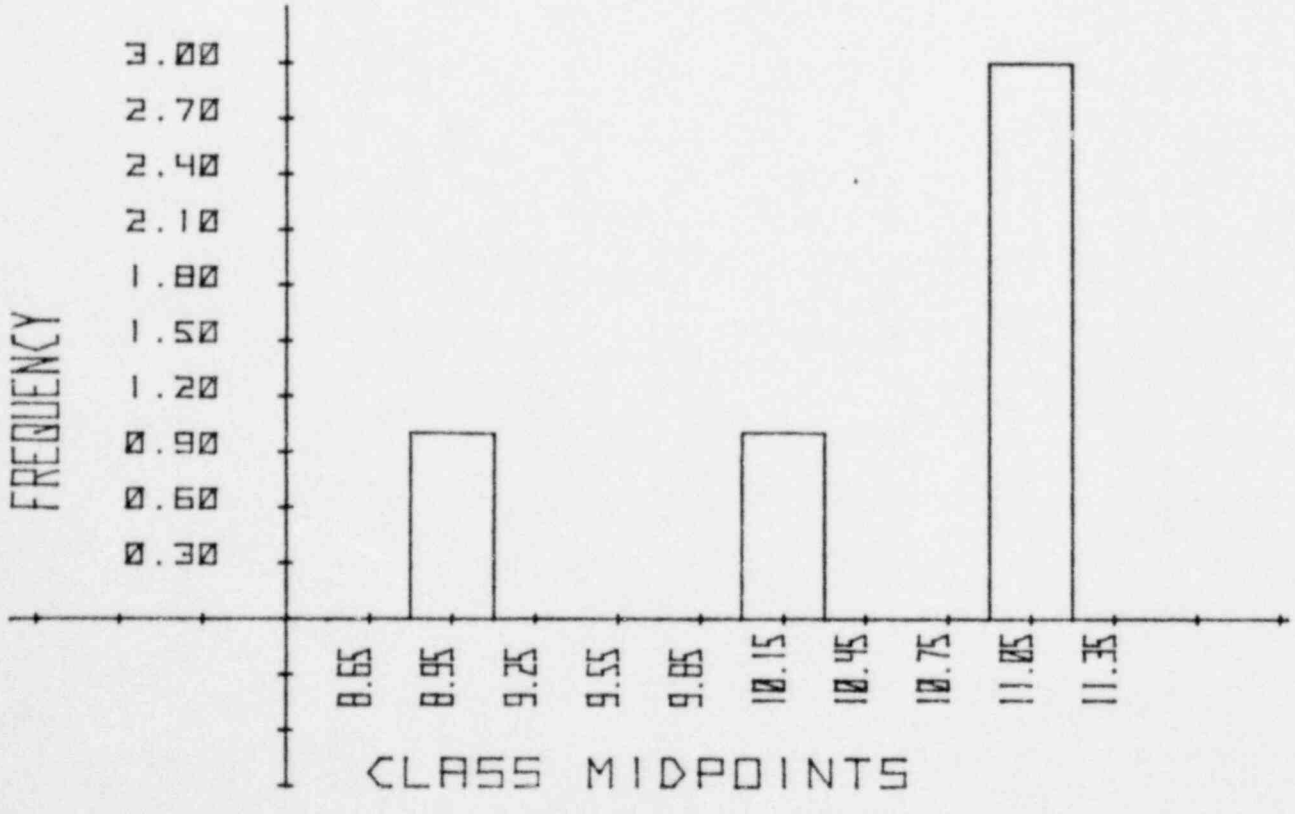
SAMPLE STATISTICS
****

NUMBER OF SAMPLES	5.000	MINIMUM VALUE	9.000
STANDARD DEV.	0.894	RANGE	2.000
MEAN VALUE	10.400	MAXIMUM VALUE	11.000
VARIANCE	0.800	CLASS WIDTH	0.300

HISTOGRAM

CLASS NO.	LOWER B.	UPPER B.	FREQUENCY	REL.FREQ.%
1	8.500	8.800	0.0	0
2	8.800	9.100	1.0	20
3	9.100	9.400	0.0	0
4	9.400	9.700	0.0	0
5	9.700	10.000	0.0	0
6	10.000	10.300	1.0	20
7	10.300	10.600	0.0	0
8	10.600	10.900	0.0	0
9	10.900	11.200	3.0	60
10	11.200	11.500	0.0	0

PLOT OF HISTOGRAM



ENVIRONMENTAL SAMPLE STATISTICAL DATA

TABLE 15

ENVIRONMENTAL TLD READINGS

TOTAL DOSE 4th Qtr. mRem/Qtr.
GAMMA
INDICATOR STATION

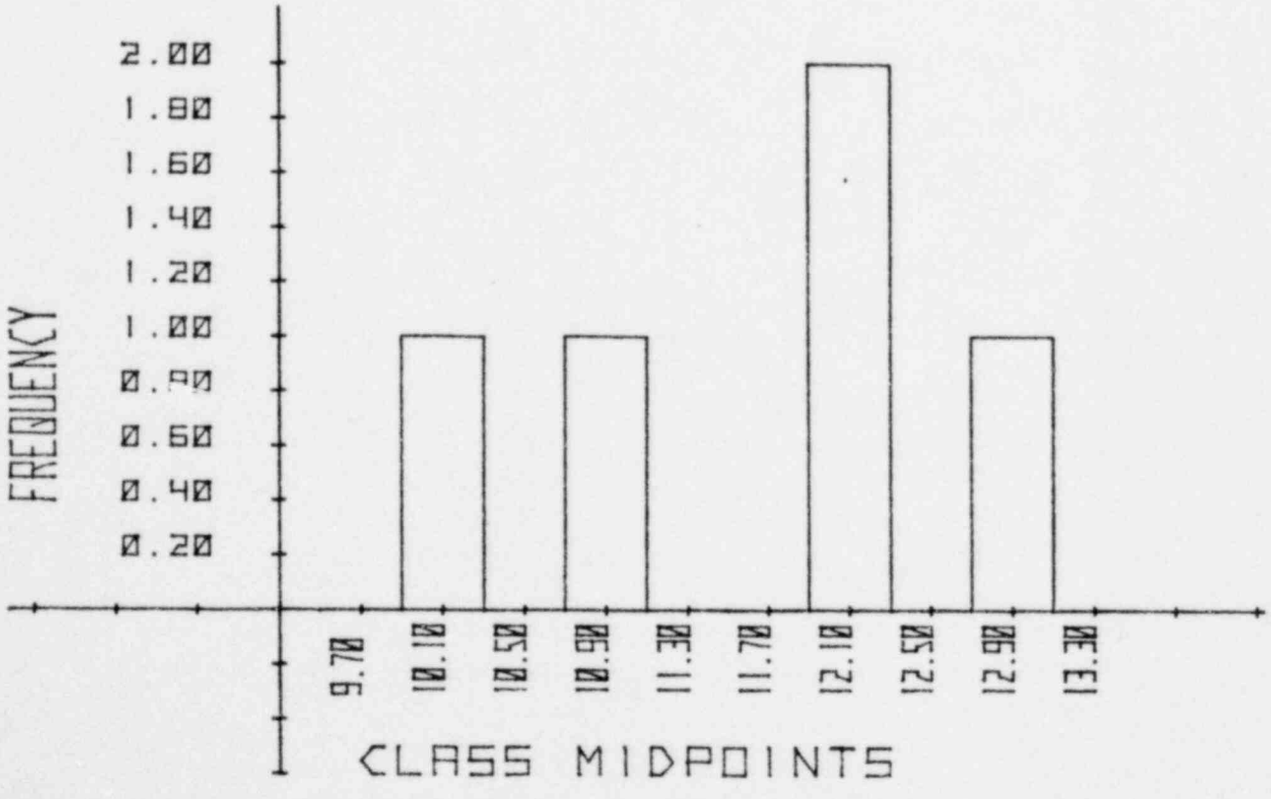
SAMPLE STATISTICS
****

NUMBER OF SAMPLES	5.000	MINIMUM VALUE	10.000
STANDARD DEV.	1.140	RANGE	3.000
MEAN VALUE	11.600	MAXIMUM VALUE	13.000
VARIANCE	1.300	CLASS WIDTH	0.400

HISTOGRAM

CLASS NO.	LOWER B.	UPPER B.	FREQUENCY	REL.FREQ.%
1	9.500	9.900	0.0	0
2	9.900	10.300	1.0	20
3	10.300	10.700	0.0	0
4	10.700	11.100	1.0	20
5	11.100	11.500	0.0	0
6	11.500	11.900	0.0	0
7	11.900	12.300	2.0	40
8	12.300	12.700	0.0	0
9	12.700	13.100	1.0	20
10	13.100	13.500	0.0	0

PLOT OF HISTOGRAM



ENVIRONMENTAL SAMPLE STATISTICAL DATA

TABLE 15

ENVIRONMENTAL TLD READINGS

TOTAL DOSE FOR YEAR mRem/Qtr.
GAMMA
INDICATOR STATION

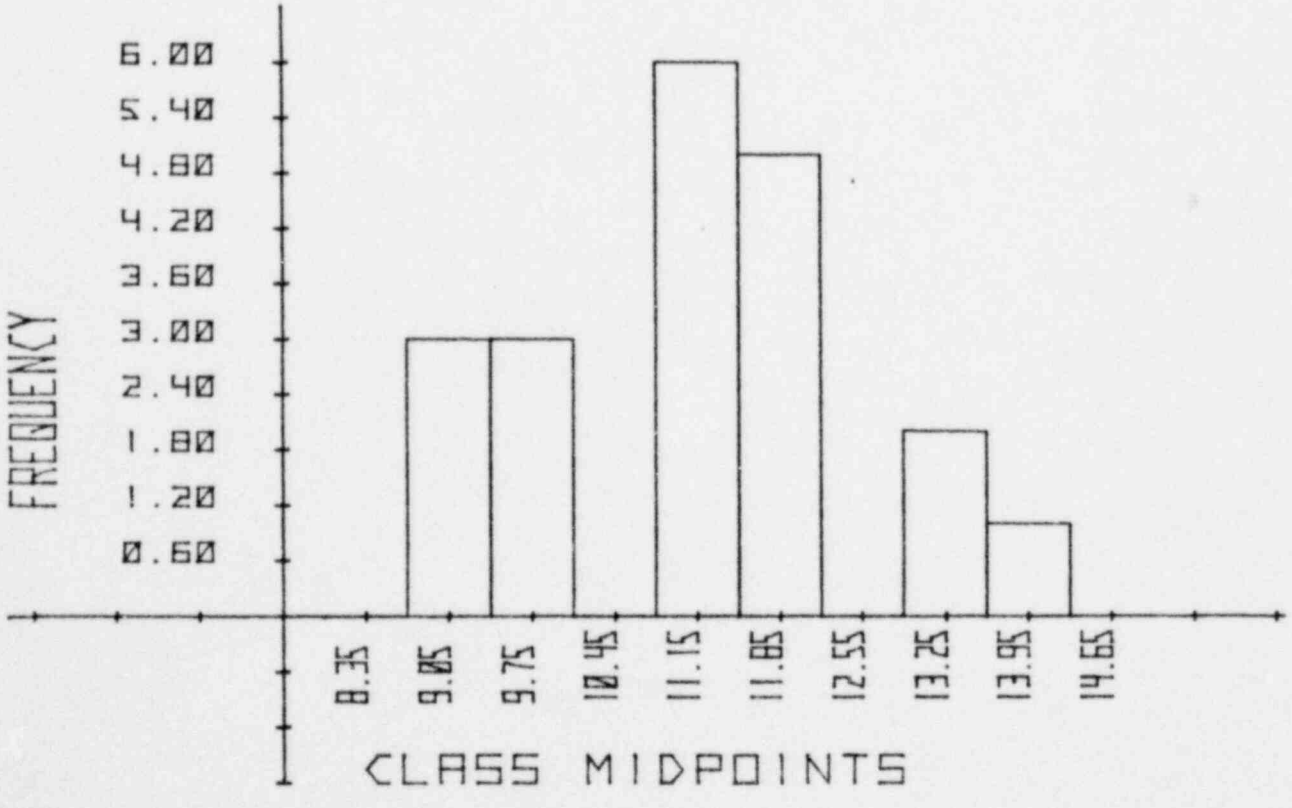
SAMPLE STATISTICS
****

NUMBER OF SAMPLES	20.000	MINIMUM VALUE	9.000
STANDARD DEV.	1.387	RANGE	5.000
MEAN VALUE	11.150	MAXIMUM VALUE	14.000
VARIANCE	1.924	CLASS WIDTH	0.700

HISTOGRAM

CLASS NO.	LOWER B.	UPPER B.	FREQUENCY	REL.FREQ.%
1	8.000	8.700	0.0	0
2	8.700	9.400	3.0	15
3	9.400	10.100	3.0	15
4	10.100	10.800	0.0	0
5	10.800	11.500	6.0	30
6	11.500	12.200	5.0	25
7	12.200	12.900	0.0	0
8	12.900	13.600	2.0	10
9	13.600	14.300	1.0	5
10	14.300	15.000	0.0	0

PLOT OF HISTOGRAM



ENVIRONMENTAL SAMPLE STATISTICAL DATA

TABLE 16

CONTINOUS RADIATION MONITORS

AVG. MONTHLY VALUE mr/hr
GAMMA
CONTROL STATION

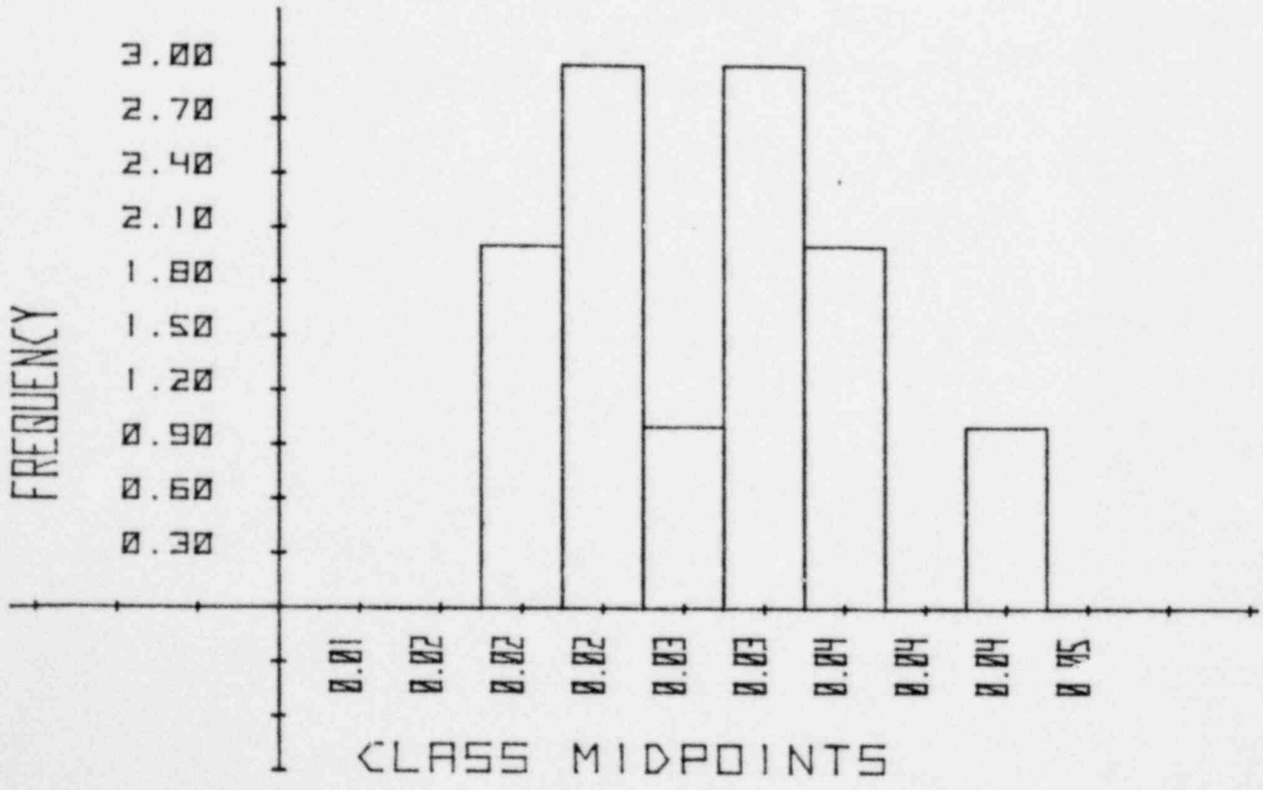
SAMPLE STATISTICS
****

NUMBER OF SAMPLES	12.000	MINIMUM VALUE	0.020
STANDARD DEV.	0.006	RANGE	0.022
MEAN VALUE	0.029	MAXIMUM VALUE	0.042
VARIANCE	0.000	CLASS WIDTH	0.004

HISTOGRAM

CLASS NO.	LOWER B.	UPPER B.	FREQUENCY	REL.FREQ.%
1	0.010	0.014	0.0	0
2	0.014	0.018	0.0	0
3	0.018	0.022	2.0	17
4	0.022	0.026	3.0	25
5	0.026	0.030	1.0	8
6	0.030	0.034	3.0	25
7	0.034	0.038	2.0	17
8	0.038	0.042	0.0	0
9	0.042	0.046	1.0	8
10	0.046	0.050	0.0	0

PLOT OF HISTOGRAM



ENVIRONMENTAL SAMPLE STATISTICAL DATA

TABLE 16

CONTINOUS RADIATION MONITORS

AVG. MONTHLY VALUE mr/hr
GAMMA
INDICATOR STATION

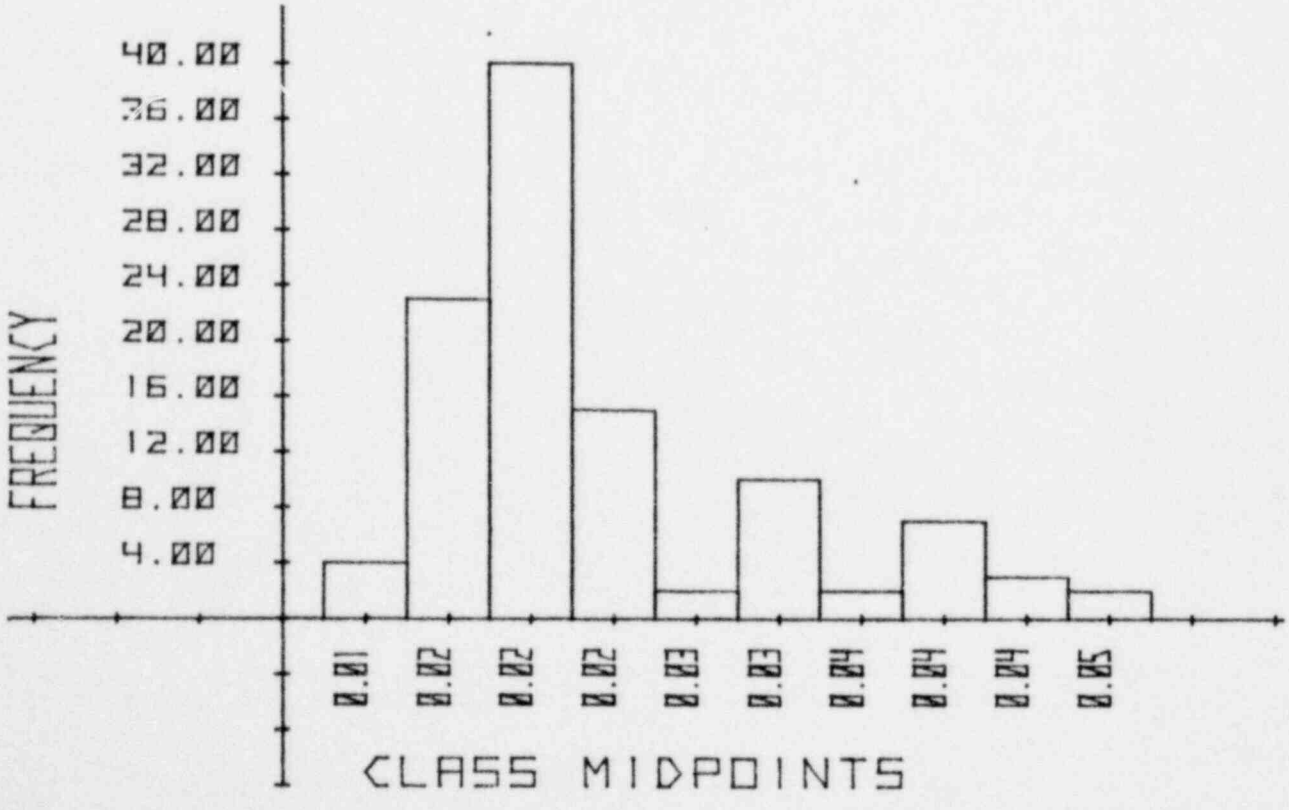
SAMPLE STATISTICS
****

NUMBER OF SAMPLES	108.000	MINIMUM VALUE	0.013
STANDARD DEV.	0.009	RANGE	0.034
MEAN VALUE	0.023	MAXIMUM VALUE	0.047
VARIANCE	0.000	CLASS WIDTH	0.004

HISTOGRAM

CLASS NO.	LOWER B.	UPPER B.	FREQUENCY	REL.FREQ.%
1	0.010	0.014	4.0	4
2	0.014	0.018	23.0	21
3	0.018	0.022	40.0	37
4	0.022	0.026	15.0	14
5	0.026	0.030	2.0	2
6	0.030	0.034	10.0	9
7	0.034	0.038	2.0	2
8	0.038	0.042	7.0	6
9	0.042	0.046	3.0	3
10	0.046	0.050	2.0	2

PLOT OF HISTOGRAM



ENVIRONMENTAL SAMPLE STATISTICAL DATA

TABLE 18

MILK

GAMMA ISOTOPIC pCi/l
K-40
CONTROL STATION

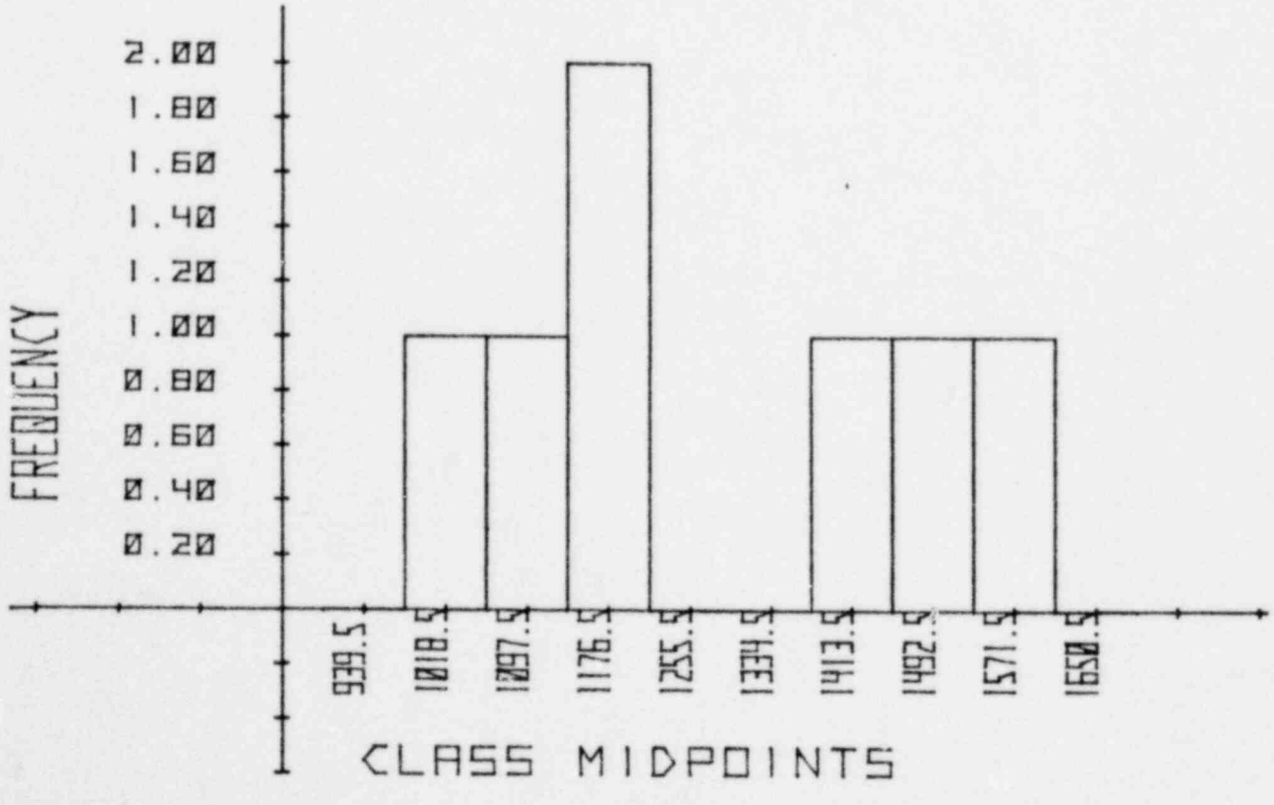
SAMPLE STATISTICS
****

NUMBER OF SAMPLES	7.000	MINIMUM VALUE	990.000
STANDARD DEV.	221.499	RANGE	610.000
MEAN VALUE	1284.286	MAXIMUM VALUE	1600.000
VARIANCE	49061.905	CLASS WIDTH	79.000

HISTOGRAM

CLASS NO.	LOWER B.	UPPER B.	FREQUENCY	REL.FREQ.%
1	900.000	979.000	0.0	0
2	979.000	1058.000	1.0	14
3	1058.000	1137.000	1.0	14
4	1137.000	1216.000	2.0	29
5	1216.000	1295.000	0.0	0
6	1295.000	1374.000	0.0	0
7	1374.000	1453.000	1.0	14
8	1453.000	1532.000	1.0	14
9	1532.000	1611.000	1.0	14
10	1611.000	1690.000	0.0	0

PLOT OF HISTOGRAM



ENVIRONMENTAL SAMPLE STATISTICAL DATA

TABLE 18

MILK

GAMMA ISOTOPIC pCi/l
K-40
INDICATOR STATION

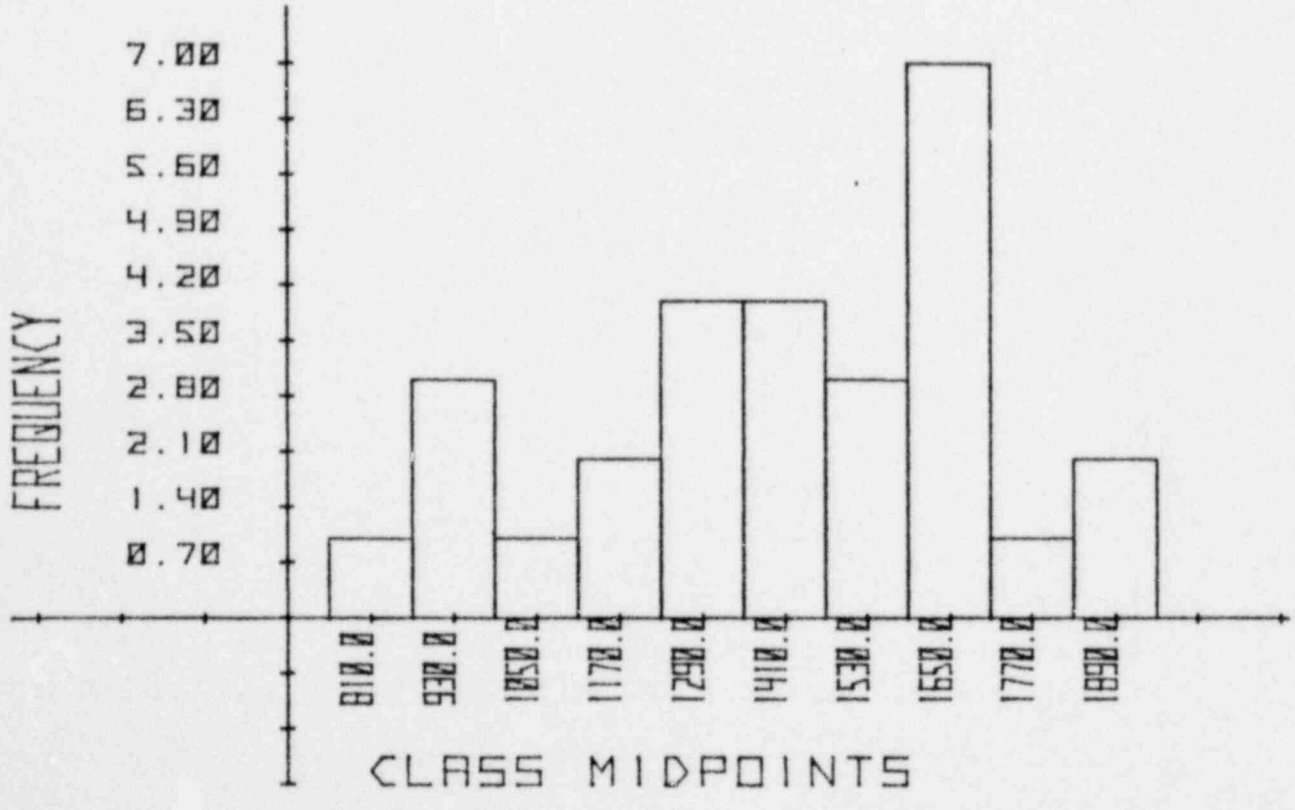
SAMPLE STATISTICS
****

NUMBER OF SAMPLES	28.000	MINIMUM VALUE	800.000
STANDARD DEV.	285.858	RANGE	1100.000
MEAN VALUE	1405.000	MAXIMUM VALUE	1900.000
VARIANCE	81714.815	CLASS WIDTH	120.000

HISTOGRAM

CLASS NO.	LOWER B.	UPPER B.	FREQUENCY	REL.FREQ.%
1	750.000	870.000	1.0	4
2	870.000	990.000	3.0	11
3	990.000	1110.000	1.0	4
4	1110.000	1230.000	2.0	7
5	1230.000	1350.000	4.0	14
6	1350.000	1470.000	4.0	14
7	1470.000	1590.000	3.0	11
8	1590.000	1710.000	7.0	25
9	1710.000	1830.000	1.0	4
10	1830.000	1950.000	2.0	7

PLOT OF HISTOGRAM



ENVIRONMENTAL SAMPLE STATISTICAL DATA

TABLE 18

MILK: STATION #5

STRONTIUM pCi/l
Sr-90
CONTROL STATION

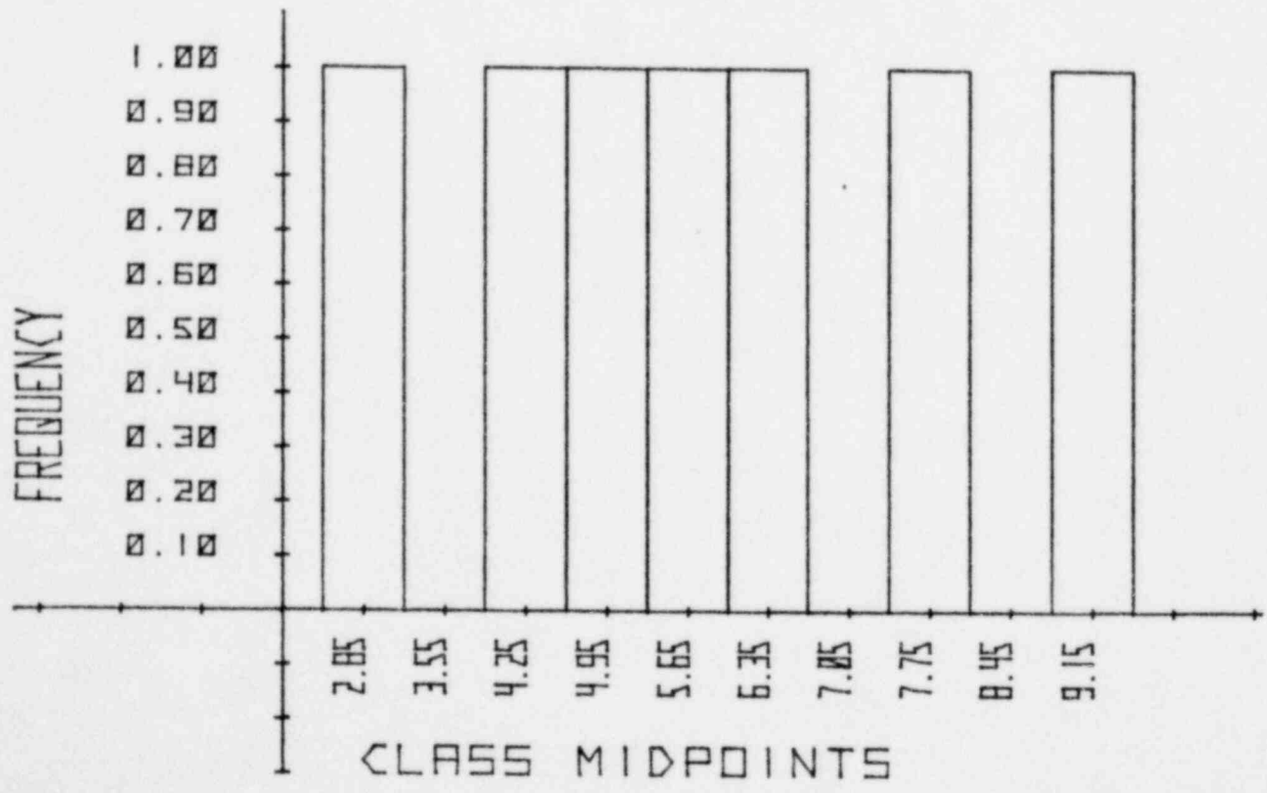
SAMPLE STATISTICS
****

NUMBER OF SAMPLES	7.000	MINIMUM VALUE	3.000
STANDARD DEV.	2.040	RANGE	6.000
MEAN VALUE	5.886	MAXIMUM VALUE	9.000
VARIANCE	4.161	CLASS WIDTH	0.700

HISTOGRAM

CLASS NO.	LOWER B.	UPPER B.	FREQUENCY	REL.FREQ.%
1	2.500	3.200	1.0	14
2	3.200	3.900	0.0	0
3	3.900	4.600	1.0	14
4	4.600	5.300	1.0	14
5	5.300	6.000	1.0	14
6	6.000	6.700	1.0	14
7	6.700	7.400	0.0	0
8	7.400	8.100	1.0	14
9	8.100	8.800	0.0	0
10	8.800	9.500	1.0	14

PLOT OF HISTOGRAM



ENVIRONMENTAL SAMPLE STATISTICAL DATA

TABLE 18

MILK

STRONTIUM pCi/l
Sr-90
INDICATOR STATION

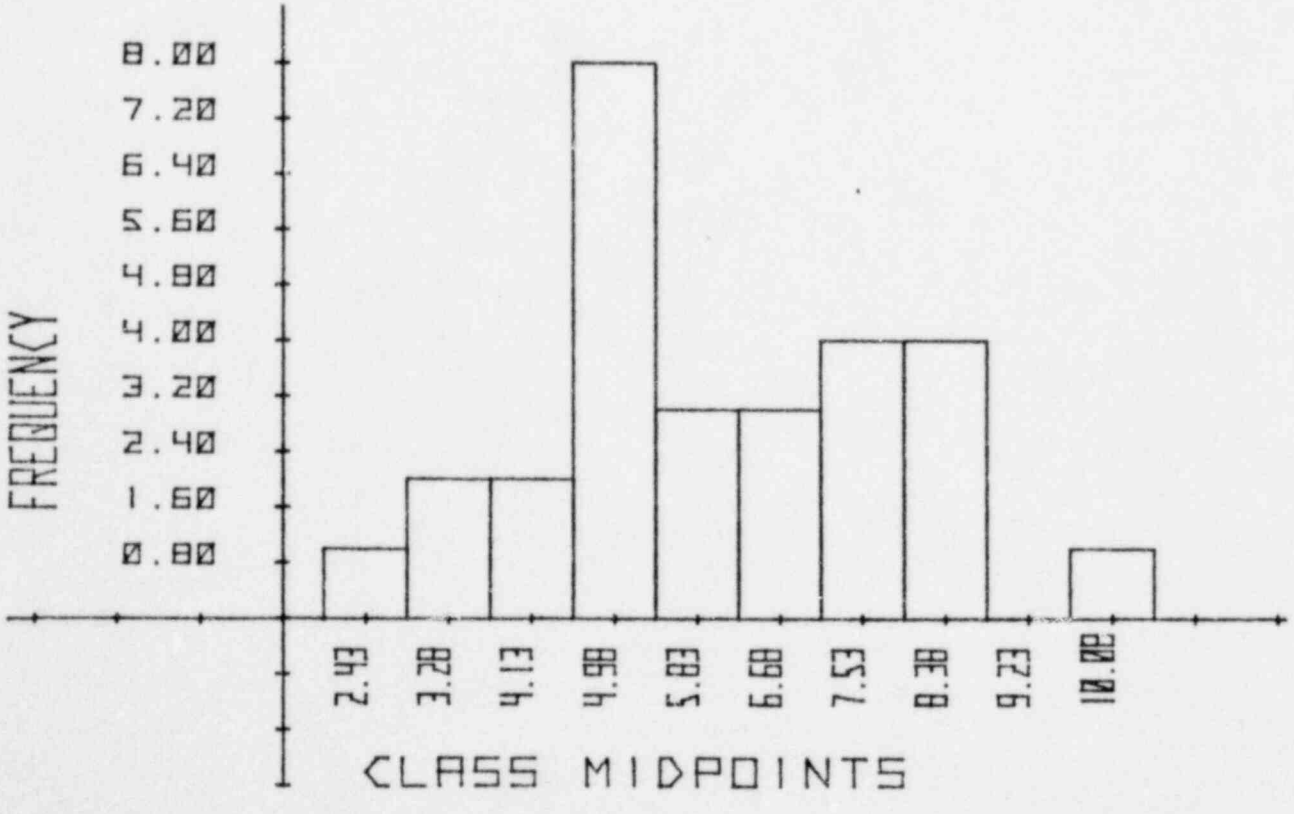
SAMPLE STATISTICS
****

NUMBER OF SAMPLES	28.000	MINIMUM VALUE	2.500
STANDARD DEV.	1.814	RANGE	7.500
MEAN VALUE	5.925	MAXIMUM VALUE	10.000
VARIANCE	3.292	CLASS WIDTH	0.850

HISTOGRAM

CLASS NO.	LOWER B.	UPPER B.	FREQUENCY	REL.FREQ.%
1	2.000	2.850	1.0	4
2	2.850	3.700	2.0	7
3	3.700	4.550	2.0	7
4	4.550	5.400	8.0	29
5	5.400	6.250	3.0	11
6	6.250	7.100	3.0	11
7	7.100	7.950	4.0	14
8	7.950	8.800	4.0	14
9	8.800	9.650	0.0	0
10	9.650	10.500	1.0	4

PLOT OF HISTOGRAM



ENVIRONMENTAL SAMPLE STATISTICAL DATA

TABLE 18

MILK

GAMMA ISOTOPIC pCi/l
Cs-137
CONTROL STATION

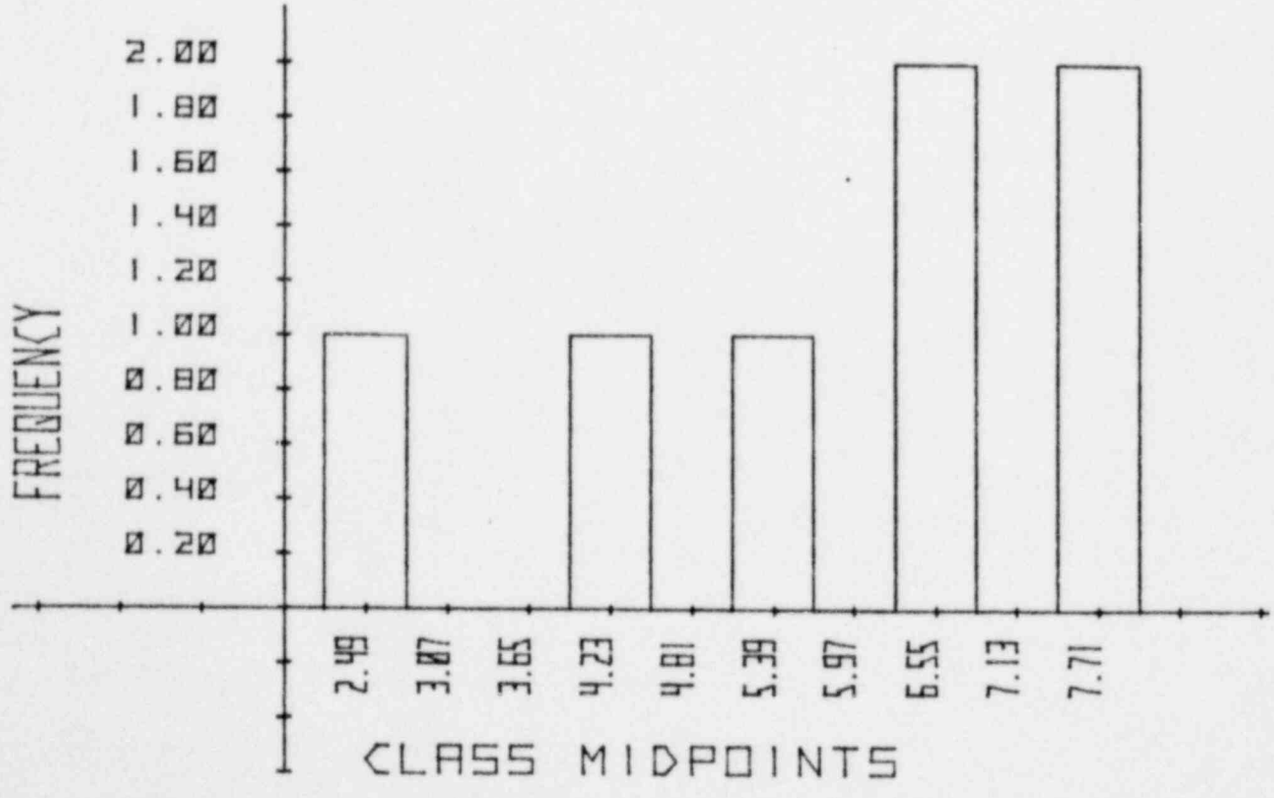
SAMPLE STATISTICS
****

NUMBER OF SAMPLES	7.000	MINIMUM VALUE	2.400
STANDARD DEV.	1.977	RANGE	5.400
MEAN VALUE	5.829	MAXIMUM VALUE	7.800
VARIANCE	3.909	CLASS WIDTH	0.580

HISTOGRAM

CLASS NO.	LOWER B.	UPPER B.	FREQUENCY	REL.FREQ.%
1	2.200	2.780	1.0	14
2	2.780	3.360	0.0	0
3	3.360	3.940	0.0	0
4	3.940	4.520	1.0	14
5	4.520	5.100	0.0	0
6	5.100	5.680	1.0	14
7	5.680	6.260	0.0	0
8	6.260	6.840	2.0	29
9	6.840	7.420	0.0	0
10	7.420	8.000	2.0	29

PLOT OF HISTOGRAM



ENVIRONMENTAL SAMPLE STATISTICAL DATA

TABLE 18

MILK

GAMMA ISOTOPIC pCi/l
Cs-137
INDICATOR STATION

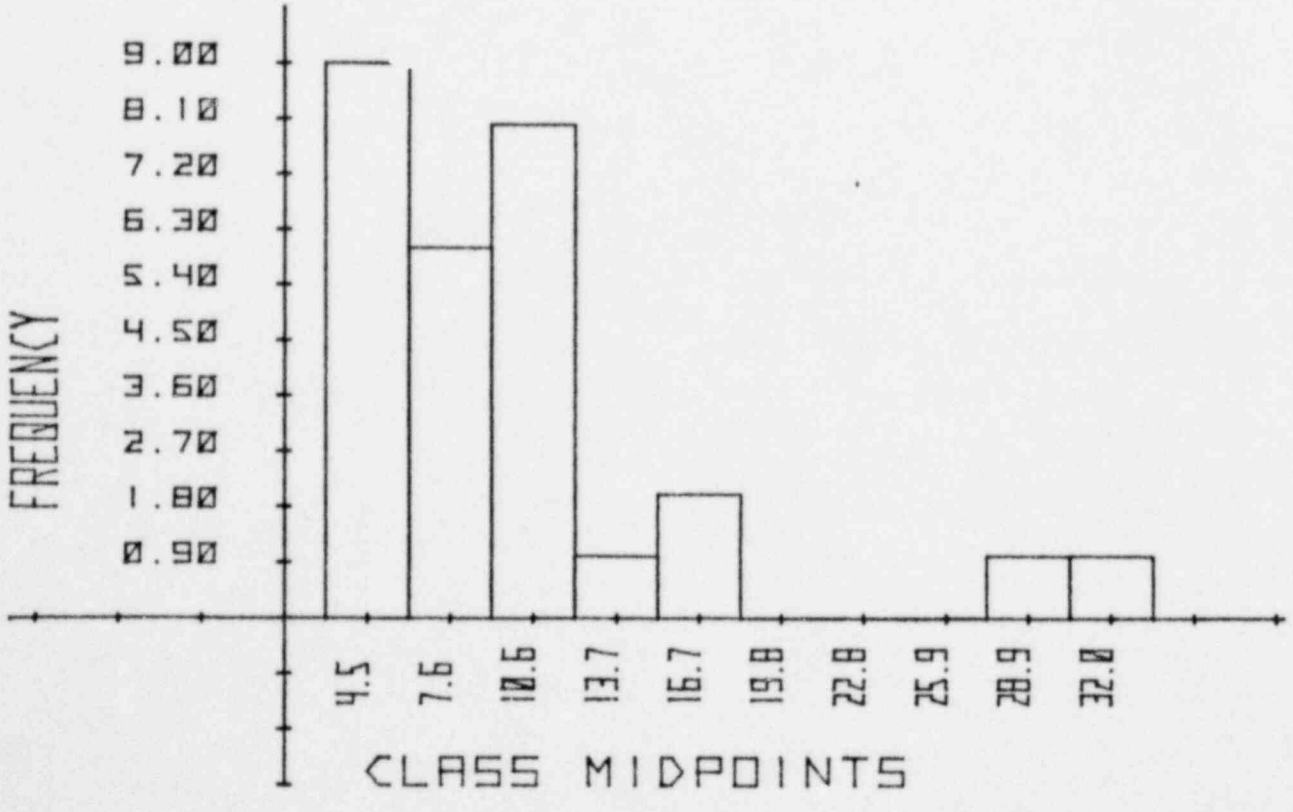
SAMPLE STATISTICS
****

NUMBER OF SAMPLES	28.000	MINIMUM VALUE	3.400
STANDARD DEV.	7.094	RANGE	29.600
MEAN VALUE	9.936	MAXIMUM VALUE	33.000
VARIANCE	50.327	CLASS WIDTH	3.050

HISTOGRAM

CLASS NO.	LOWER B.	UPPER B.	FREQUENCY	REL.FREQ.%
1	3.000	6.050	9.0	32
2	6.050	9.100	6.0	21
3	9.100	12.150	8.0	29
4	12.150	15.200	1.0	4
5	15.200	18.250	2.0	7
6	18.250	21.300	0.0	0
7	21.300	24.350	0.0	0
8	24.350	27.400	0.0	0
9	27.400	30.450	1.0	4
10	30.450	33.500	1.0	4

PLOT OF HISTOGRAM



ENVIRONMENTAL SAMPLE STATISTICAL DATA

TABLE 20

MEAT and POULTRY

GAMMA ISOTOPIC pCi/g(wet)
K-40
INDICATOR STATION

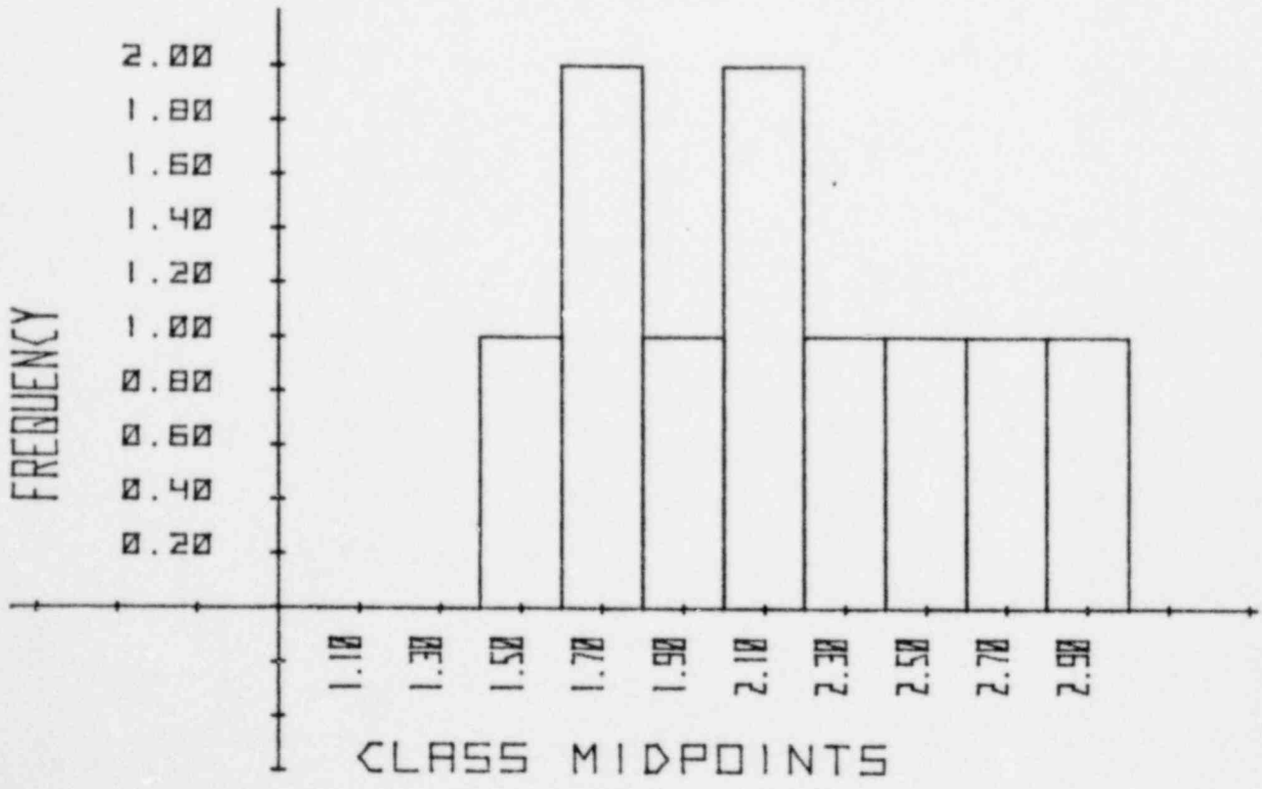
SAMPLE STATISTICS
****

NUMBER OF SAMPLES	10.000	MINIMUM VALUE	1.500
STANDARD DEV.	0.457	RANGE	1.300
MEAN VALUE	2.100	MAXIMUM VALUE	2.800
VARIANCE	0.209	CLASS WIDTH	0.200

HISTOGRAM

CLASS NO.	LOWER B.	UPPER B.	FREQUENCY	REL.FREQ.%
1	1.000	1.200	0.0	0
2	1.200	1.400	0.0	0
3	1.400	1.600	1.0	10
4	1.600	1.800	2.0	20
5	1.800	2.000	1.0	10
6	2.000	2.200	2.0	20
7	2.200	2.400	1.0	10
8	2.400	2.600	1.0	10
9	2.600	2.800	1.0	10
10	2.800	3.000	1.0	10

PLOT OF HISTOGRAM



ENVIRONMENTAL SAMPLE STATISTICAL DATA

TABLE 20

MEAT and POULTRY

GAMMA ISOTOPIC pCi/g(wet)
Cs-137
INDICATOR STATION

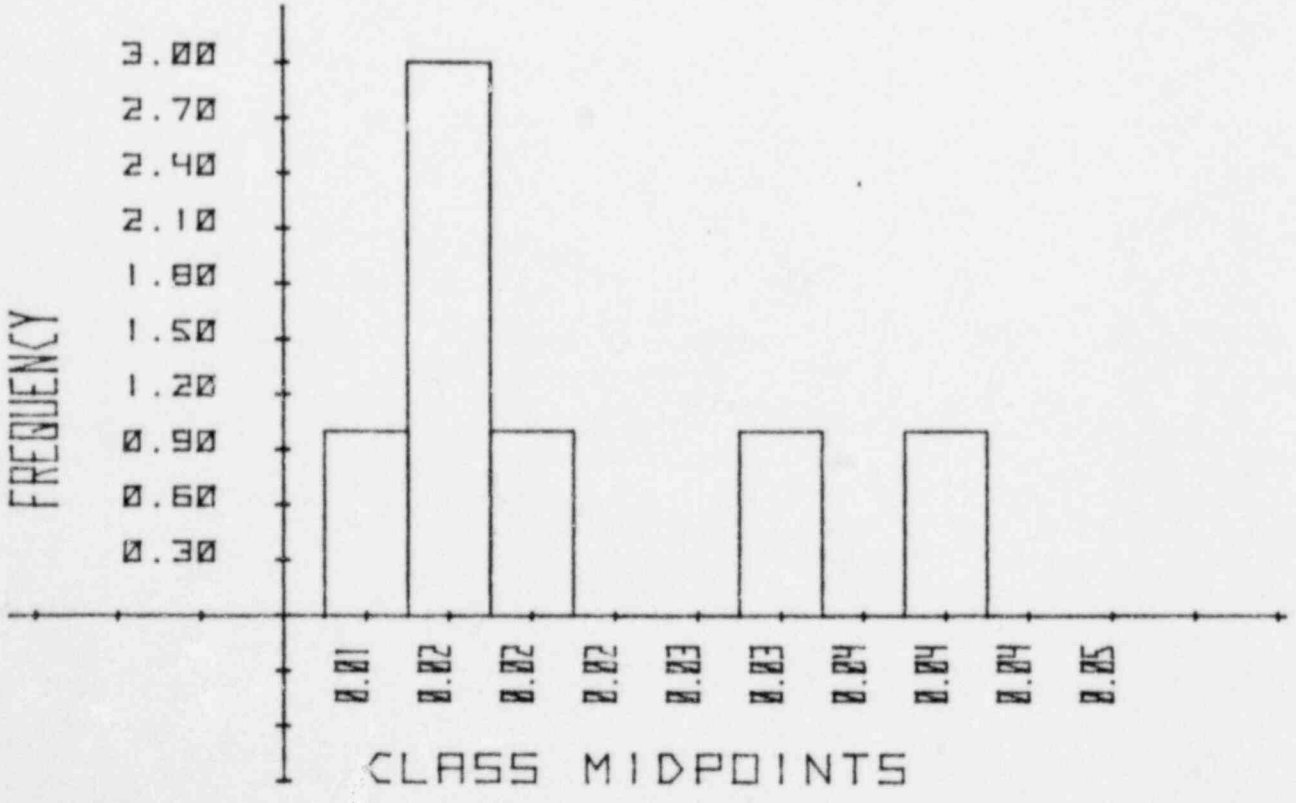
SAMPLE STATISTICS
****

NUMBER OF SAMPLES	7.000	MINIMUM VALUE	0.013
STANDARD DEV.	0.011	RANGE	0.027
MEAN VALUE	0.021	MAXIMUM VALUE	0.040
VARIANCE	0.000	CLASS WIDTH	0.004

HISTOGRAM

CLASS NO.	LOWER B.	UPPER B.	FREQUENCY	REL.FREQ.%
1	0.010	0.014	1.0	14
2	0.014	0.018	3.0	43
3	0.018	0.022	1.0	14
4	0.022	0.026	0.0	0
5	0.026	0.030	0.0	0
6	0.030	0.034	1.0	14
7	0.034	0.038	0.0	0
8	0.038	0.042	1.0	14
9	0.042	0.046	0.0	0
10	0.046	0.050	0.0	0

PLOT OF HISTOGRAM



ENVIRONMENTAL SAMPLE STATISTICAL DATA

TABLE 20

PRODUCE

GAMMA ISOTOPIC pCi/g (wet)
K-40
INDICATOR STATION

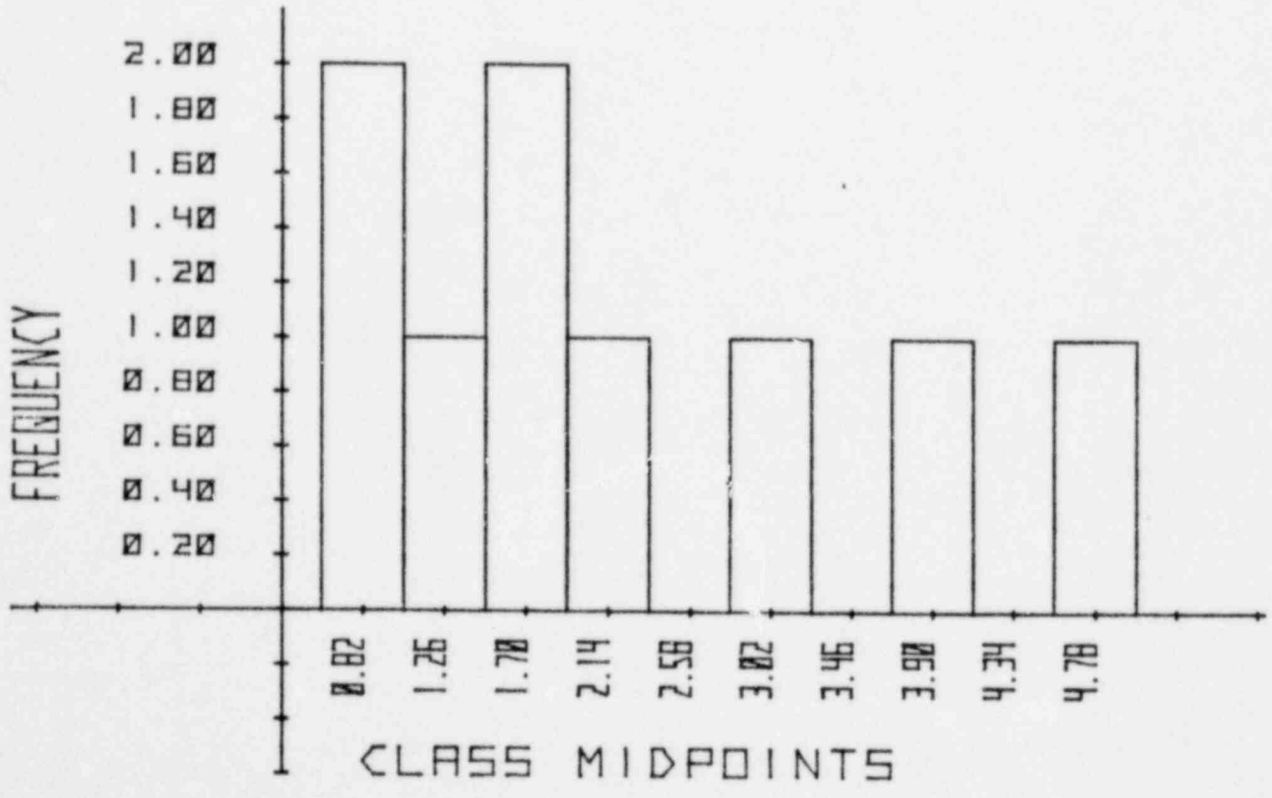
SAMPLE STATISTICS
****

NUMBER OF SAMPLES	9.000	MINIMUM VALUE	0.800
STANDARD DEV.	1.386	RANGE	4.000
MEAN VALUE	2.211	MAXIMUM VALUE	4.800
VARIANCE	1.921	CLASS WIDTH	0.440

HISTOGRAM

CLASS NO.	LOWER B.	UPPER B.	FREQUENCY	REL.FREQ.%
1	0.600	1.040	2.0	22
2	1.040	1.480	1.0	11
3	1.480	1.920	2.0	22
4	1.920	2.360	1.0	11
5	2.360	2.800	0.0	0
6	2.800	3.240	1.0	11
7	3.240	3.680	0.0	0
8	3.680	4.120	1.0	11
9	4.120	4.560	0.0	0
10	4.560	5.000	1.0	11

PLOT OF HISTOGRAM



VI.

Data Summary and Conclusions

VI DATA SUMMARY AND CONCLUSIONS

The results of the 1978 Radiological Environmental Monitoring Program must be put into perspective considering the natural processes of the environment and the aggregate of past data. Several factors must be considered in the course of radiological data evaluation and interpretation. First, it must be recognized that our environ includes an abundant inventory of natural background radiation of primordial and daily origin which is in a constant state of flux, influenced by a myriad of phenomena, from solar activity to barometric pressure. Secondly, the detonation of man-made nuclear devices in the atmosphere has resulted in an extensive array of radioactive isotopes in the atmosphere and on the surface of the Earth from global fallout.

Section VII, titled HISTORICAL DATA, contains sample statistics from previous environmental sampling. In the process of determining the impact (or lack of impact) of the plant on the environment, the scrutiny of past analytical data can be a tool by which positive (and possible negative) trends can be discerned. The interpreation of historical data in this report was done to a limited degree. Because of the constant change in analytical sensitivities, as state-of-the-art detection capabilities improve, data comparisons become difficult. Minimum detection capabilities for the 1969 and 1974 analyses of environmental data would be considered anomalies by 1979 analytical standards.

A. LAKE PROGRAM

Tables 3 through 9 list the analytical results for the aquatic media sampled during the 1978 sampling program. Aquatic samples were obtained at a combination of four on-site locations. The transect designations used for the on-site sampling are NMPW (01), NMPP (02), JAF (03) and NMPE (04). Due to the local unavailability of certain required sample media, samples could not be obtained consistently at each of the same on-site transects sampled for other media. Off-site samples were collected in the vicinity of the Oswego Harbor OFF-SITE (00).

1. Periphyton - Table 3

The collection and analysis of periphyton organisms was performed twice during 1978. The first collection was on 6/27-28/78 and the second collection was completed on 8/23/78. The results of gamma spectral analysis of these samples is presented in Table 3, section IV. Analytical results show that a significant concentration of Ce-144 (pCi/g) was present in periphyton organisms collected on 6/27-28/78. The origin of Ce-144 in the periphyton samples is not totally certain, but the majority of evidence indicates that the concentration of Ce-144 in the sample is the result of atmospheric nuclear testing, fallout and the subsequent runoff into Lake Ontario. The first piece of evidence that indicates that the presence of Ce-144 is not plant related is the fact that a concentration of 0.10 ± 0.06 pCi/g (wet) was present in the control station sample. The control station is located in the Oswego Harbor, 8 miles west of the site.

Based on the meterology and limnology of the area, the control station should not be impacted by plant operation. The liquid release of Ce-144 for the second half of 1977 and the first half of 1978 was low with a total concentration of 2.89×10^{-2} Ci. Calculation of expected concentrations of Ce-144 in aquatic plants can be made. Using a bioaccumation factor of 4000 pCi/kg per pCi/l a discharge dilution of 1.82×10^{11} liters, a release concentration of 2.90×10^{10} pCi of Ce-144 and a near field dilution factor of 6, the maximum concentration of Ce-144 that can be expected to be found in periphyton organisms residing in close proximity to the plant is 0.106 pCi/g (wet). The calculated concentration of 0.106 pCi/g (wet) is a very conservative calculation and is well below the concentration present in the July 1978 sample. If a more realistic far-field dilution factor of 9 is used a maximum expected concentration of 0.071 pCi/g (wet) can be calculated which is 15 times less than the analytical results, indicating that the Ce-144 in the periphyton must be due to a source other than the plant effluent.

The second set of periphyton samples collected showed a reduction in Ce-144 activity by a factor of 10 for the indicator or on-site sample stations using the maxima for each sample period. The concentration of Ce-144 at the off-site or control location showed a slight increase in activity from 0.10 pCi/g (wet) to 0.13 pCi/g (wet). The presence of Ce-144 in both of the off-site samples, further reinforces the belief that its presence is due to sources other than the plant.

A concentration of 0.10 ± 0.01 pCi/g (wet) of Co-60 was found in the August sample at the NMPP (02) transect. The significance of this level of activity may be only that it is 10 times the control station results. The total liquid release of Co-60 for the second half of 1977 and the first half of 1978 was equal to 0.235 Ci. An integrated release of this quantity should not produce any detectable environmental impact and was well within the discharge limits imposed by the plant's Technical Specifications. It should also be noted that the detection of a small quantity of Co-60 in the off-site or control station may indicate the presence of Co-60 is Lake Ontario periphyton. As stated above any samples collected from the off-site location should be outside the influence of plant operation.

A dose calculation from activity found in the lake periphyton is difficult as these organisms are not in the human food chain. For the purpose of illustration a dose calculation can be made using some unrealistic assumptions. If an adult were to consume 64 kg/yr of periphyton (an amount equal to the maximum annual adult consumption of leafy vegetables), the dose from the on-site Ce-144 concentration would be 0.0018 mrem/yr (whole body) and would be 0.03 mrem/ yr (whole body) from Co-60 with the total dose being equal to 0.0318 mrem/yr. The significance of this greatly over estimated dose is very low with respect to natural background radiation and the changes in the natural background levels due to mans activities.

An examination of past periphyton data shows a decline in activity of Ce-144 and Co-60 in the periphyton organisms in the vicinity of Nine Mile Point. Past levels of Ce-144 and Co-60 are presented in graphic form in figures VIII-6 and VIII-7 respectively.

2. Bottom Sediment - Table 4

Bottom sediment samples were collected twice during the 1978 sampling effort. Gamma spectral analysis and Sr-90 analysis results are listed in table 4. The review of bottom sediment analysis results indicated that Cs-137 was the major nuclide occuring in this media. The presence of Co-60 was also detected in possibly significa t concentrations with a maximum concentration of 1.5 pCi/g (dry) at the JAF (03) sample location. The presence of Cs-137 in sediment samples may be attributed to a large extent, to the detonation of nuclear devices in the atmosphere. The long radioactive half life of Cs-137 (30 years) is condusive to the accumulation of this fission product in the environment. The presence of detectable concentrations of Cs-137 at the off-site (00) sample station is strong evidence that the Cs-137 activity is from sources other than plant effluents.

The June 1978 sediment samples showed a Co-60 concentration of 1.50 $\pm$ 0.20 pCi/g (dry) at the JAF (03) on-site sample location. The presence of Co-60 in sediment off shore from the plant may be due to deposition of plant effluents. The sediment found in areas of the plant is transient by nature often stirred up the region winds and waves, keeping sediment in the area from becoming heavily layered. The physical makeup of the offshore area is predominantly bedrock. The chemical properties of the sediment may cause low concentrations of trace metals to become concentrated by acting as an ion exchange medium with the dissolved material in the lake water.

A second consideration that should be noted is that Co-60 concentrations in the vicinity of Nine Mile Point may be the results of atmospheric detonation of nuclear devices and the widespread global fallout and concentration of isotopes from surface runoff. The fact that higher concentrations were present at the on-site locations could be related to the nonexistant or slow sedimentation rate of the promontory area while the control station located at the mouth of the Oswego River, would have a very high sedimentation rate, thus masking any radionuclide build up in buried sediment layers.

The total liquid release to the lake for the third and fourth quarter in 1977 and the first and second quarters of 1978 was 0.270 Ci of Co-60 and 0.0134 Ci for Cs-137. All releases were well within effluent limits contained in the plant's technical specifications.

The dose to man cannot be directly calculated for lake bottom sediment as bottom sediment is not accessible to man and any radioactivity found in the sediment is shielded by the over lying water. In addition, lake sediment is not direclty in the food chain of man or aquatic life. Bottom feeding biota may ingest small quantities of sediment but to a very limited degree. No passage of radionuclides to the human food chain from material deposited in lake sediment is expected. To display the impact of radioactivity in sediment samples with respect to the dose to man concept, the unlikely assumption could be made that lake bottom sediment could at some future time find its way to the surface and become shoreline sediment. Assuming that the density of sediment is 40 kg/m^2 (dry) and an average residence time on the shore of 47 hr/yr for a teenager, the annual dose from a Cs-137 concentration of 2.1 pCi/g (dry) would be 0.017 mrem/yr whole body and the dose from Co-60 with a concentration of 1.5 pCi/g (dry) would be 0.048 mrem/yr whole body, resulting in a total whole body dose of 0.065 mrem/yr. This dose could be considered minimal, if not insignificant with respect to natural background levels. A review of historical data shows the levels of Cs-137 to be randomly distributed with no definable trend evident. Past levels of Cs-137 and Co-60 are depicted in Figures VIII-8 and VIII-9.

3. Mollusks - Table 5

The results of Mollusk sampling are presented in table 5. Sampling efforts for mollusks in the vicinity of Nine Mile Point were of limited success during the first collection, in June, 1978. The lake bottom configuration off shore from the site is mainly bedrock, with sediment of insufficient depth to sustain a mollusk population. For this reason only NMPW (02) and the off-site (00) location yielded sufficient quantities for a meaningful analysis in the June 27 and 30, 1978 sample collection. Sufficient quantities were obtained at the off-site and 2 on-site transects in the October 2, 1978 collection. During both collections no mollusks were found on the JAF (03) transect.

Gamma spectral analysis revealed the presence of Mn-54 and Co-60 activity in mollusk tissue. Mn-54 activity was found in both collections at the NMPP (02) sample transect. A possible explanation for the existence of such a disproportionate concentration of Mn-54 could be the very high bioaccumation factor of manganese for fresh water mollusk of 90,000 pCi/kg per pCi/l. Such a high bioaccumulation factor would result in a rapid accumulation of manganese activity in mollusks which are indigenous to the off-shore area of the site. The total release of Co-60 and Mn-54 via liquid effluent from the plant for the period of July 1, 1977 to June 30, 1978 was 0.235 Ci for Co-60 and 0.199 Ci for Mn-54. Discharge dilution flow for this same period of time was equal to 5.89×10^{11} liters.

The fresh water mollusks found in the vicinity of Nine Mile Point are not consumed by humans and are considered to be in the aquatic food chain to only a limited degree. Because fresh water mollusks are not considered edible, no accurate estimate of the possible dose contribution to man from their use as a food can be made. A dose estimate can be made using inflated parameters for the purpose of evaluation of possible dose contribution from the use of fresh water mollusks. Using the average individual consumption of seafood of 1.0 kg/yr for an adult the dose due to ingestion would be 0.001 mrem/yr whole body and 0.015 mrem/yr to the gastrointestinal tract from Mn-54 concentrations. The dose resulting from a Co-60 concentration of 0.22 pCi/g (wet) would be 0.001 mrem/yr whole body and 0.009 mrem/yr to the gastrointestinal tract. The maximum dose received from consuming 1 kg of fresh water mollusks in a year's time would be 0.002 mrem/yr whole body and 0.24 to the gastrointestinal tract. As illustrated above, the resulting dose is very low and in reality would probably be 0.00 because the species is inedible.

The review of past data shows that Sr-89 and Sr-90 levels are declining but a limited number of data points does not provide evidence of a distinct trend. Graphs of previous mollusk samples with respect to Mn-54 and Co-60 levels, are presented in figures VIII-10 and VIII-11.

4. Gammarus - Table 6

Gammarus samples were collected twice during 1978. The first sample collection yielded masses of 9, 12, and 38 grams at the NMPP (02), JAF (03), and off-site transects respectively. The August 1978 sampling effort yielded marginally sufficient sample volumes from JAF (03) transect with 248 grams and the off-site (00) transect with 478 grams. The NMPP (02) transect yielded only 64 grams of sample. Several attempts were made on each collection using a variety of sampling methods.

In spite of the low sample volumes, sensitivity of the gamma spectral analysis remained low. MDL values for Sr-89 analyses ranged from <0.07 to <0.20 pCi/g (wet).

Insignificant levels of Cs-137 and Ce-144 were detected in both the off-site sample and the on-site JAF (03) sample from the August 1978 collection. Both the Cs-137 and Ce-144 are suspected to be the result of atmospheric nulcear testing along with Sr-90 activity which was detected at all locations from the June and August collections.

An additional detectable measurement resulting from the analysis of gammarus samples was a 0.10 ± 0.10 pCi/g (wet) concentration of Mn-54 found in the August NMPP (02) sample. The associated error for the analysis is on the order of 100% resulting in little analytical confidence in the results. Even if this lack of confidence was resolved the significance of the possible activity present is very small from a dose to man standpoint and an environmental impact viewpoint. The presence of trace amounts of Mn-54 in aquatic organisms can be related to the large bioaccumation factor of many fresh water organisms.

The analyses of gammarus show no significant impact from plant operation. Historical gammarus data shows reduction of Sr-90 levels in the organism. Cs-137 levels show a similar reduction in the activity levels found in gammarus in the vicinity of the site.

5. Fish - Table 7

A total of 28 fish samples were collected from Lake Ontario and were analyzed for gamma emitters, Sr-89 and Sr-90 activity. Sample collections were made during May (spring season) and October (fall season) at 2 on-site locations (NMPP-02, JAF-03) and one off-site location (OFF-SITE 00).

Analysis results indicate no detectable impact from the operation of the plant. The data does show however a number of isotopes present in fish samples which can be directly attributed to atmospheric nuclear testing. Cs-137 levels were detected in 25 of the 28 samples collected for 1978, from both on-site and off-site sample locations. In addition, Sr-90 levels were detected in 20 of the 28 samples, again at both on-site and off-site locations. Because Lake Ontario fish are in the human food chain a reasonable estimate of dose to man can be made. Assuming that the average adult fish consumption is 6.9 kg/yr and the maximum activity level of 0.20 pCi/g (wet) for Cs-137 and 0.25 pCi/g (wet) for Sr-90 as found in the samples are used, the calculated dose to man would be 0.33 mrem/yr whole body and 1.31 mrem/yr to the bone. If the amount of fish consumed were raised to the estimated maximum of 21 kg/yr, the resulting dose would be equal to 1.28 mrem/yr whole body and 4.31 mrem to the bone. The dose resulting from atmoshperic testing via fish samples can be calculated to be many times the dose calculated for previous sampled media, which may be considered to be related to the operation of the plant.

Historical data shows that the level of Cs-137 in the locally sampled fish has declined. Cs-137 activity reached a mean high of 1.40 pCi/g (Wet) in 1975 (at the indicator stations) and has fallen off to the present mean low of 0.08 pCi/g (wet). Sr-89 and Sr-90 levels have shown a parallelism to the Cs-137 trend, with a mean high in 1976 of 0.27 pCi/g (wet), a present low of 0.01 pCi/g (wet) and 0.01 pCi/g (wet) for Sr-89 and Sr-90 respectively. Cs-137 levels have been graphed and may be found in figure VIII-12.

6. Lake Water - Tables 8A, 8B, 9

Lake Water samples are analyzed for gross beta, tritium, strontium 89, strontuim 90, and gamma emitters.

Gross beta, tritium and strontuim 89 and 90 analyses showed no evidence of plant related radiological impact on the environment. The gross beta mean activity for 1978 was significantly lower than all previous years that analyses of lake water has been performed. This reduction in activity is most directly attributed to the improvement of analytical procedures and equipment.

Lake water tritium has an indicator mean activity of 389 pCi/l for 1978. Tritium levels in the area of Nine Mile Point have remained constant since sampled for H-3 (1974-1978). Tritium is a naturally occuring radioactive isotope of hydrogen which is produced in the upper atmosphere by cosmic radiation. The fact that Tritium is naturally occurrin may account for background levels in the lake varying slightly from year to year.

Strontium-90 activity was detected in 9 of the 12 quarterly samples. Both the on-site and off-site sample locations showed detectable levels of Sr-90, ranging from 1.10 pCi/l to 0.40 pCi/l. As in the fish samples above, Sr-90 levels can be attributed to atmospheric nuclear testing. Overall Sr-90 levels have decreased slightly, from 1977 to 1978. Strontium-89 was detected in 3 on-site samples during the year. All detectable Sr-89 activities were at or below the MDL level with associated errors ranging from 50 to 85 percent. The presence of these levels of Sr-89 is not considered to be significant and may be attributed to recent atmospheric testing by the People's Republic of China.

Analysis was performed on 36 monthly composites from 3 sample locations. Fluctuating backgrounds in plant counting equipment often resulted in background concentrations larger than the gross sample concentrations. The net sample concentrations were reported as 0.00+ accumulative error (background error + sample error). A number of positive activities were detected for Co-60 and Mn-54, however, the large error associated with the determination could lead to the conclusion that no activity was present in the sample and was the result of in-plant background.

Because of the large associated analyses error and fluctuating counting room background, all samples after June 1978 were sent to a contractor for analysis so that lower background variations, and therefore lower statistical counting errors, would result. As indicated in table 9 (section IV) all analyses after June 1978 resulted in no positive detectable levels of activity, as would be expected, all analytical results were reported at MDL levels.

The following nuclides were detected in the control location samples but do not show up in Table 9. They were excluded from this table because they were detected only once during 1978.

Month	Nuclide*	NMP Inlet	JAF Inlet	Raw City Water
March	Zn-65	<17.3	19.5 ± 5.5	<15.3
April	I-133	3.4 ± 2.4	<5.2	<5.1

* Concentration in pCi/l

B. LAND PROGRAM

The results of terrestrial sample analyses for the 1978 reporting period are included in Tables 10 through 20.

1. Air Particulates - Tables 10 and 11

Tables 10 and 11 give the air particulate gross beta results for the 6 off-site and 9 on-site stations respectively. No significant levels of gross beta activity were present on the 315 off-site samples or the 466 on-site samples analyzed during the 1978 program. The off-site air monitoring stations showed a gross beta activity slightly greater than the associated on-site stations for the same sample period (off-site mean of 0.14 pCi/m^3, on-site mean of 0.10 pCi/m^3). Both the off-site and on-site gross beta activity are up slightly from the four previous years, but are significantly lower than the activity levels for 1969. This change in gross beta activity over the years can be attributed to several factors. In the early 1960's, atmospheric detonation of nuclear devices was proliferous. With the adoption of nuclear test ban treaties by most of the world's countries, the atmosphere had purged itself of most of the contaminates from this testing. The decrease in gross beta activity since the 1960's has been a world wide, and nationally observed trend. In the last several years, the majority of activity found on air particulate filters, analyzed for gross activity, is the result of naturally occurring activity in the form of uranium and thorium daughter products. The concentration of the naturally occurring isotopes in the biosphere is based on location and is affected by time related processes such as wind direction and snow cover. The fluxuation of natural background concentrations and the fact that the People's Republic of China conducted two nuclear atmospheric detonations during 1978 can be considered the major reason for the slight increase in gross beta activity in the 1978 samples at both the off-site and on-site sample locations. Figure VIII-15 is a graph of air particulate gross beta activity from 1974 through 1978.

2. Monthly Particulate Composites - Table 13

On a monthly schedule, air particulate filters are composited by location (off-site/on-site).

Positive activities were detected at both the off-site and on-site sample of the following isotopes: Co-60, Mn-54, Co-58, Nb-95, Zr-95, Cs-137, Ce-144, Ba La-140 and I-131. The presence of activity in air particulate samples prior to July 1978 are likely the result of in-plant background fluxuations affecting sample counting equipment. The March sample analysis shows the presence of I-131 in both the off-site and on-site composites. The concentrations were 2.50×10^{-3} pCi/m^3 for the on-site and 4.60×10^{-3} pCi/m^3 for the off-site sample. The MDL's for I-131 on composite samples ranged from 9.28×10^{-5} to 2.51×10^{-4} pCi/m^3. These I-131 activities can be directly attributed to a nuclear atmospheric test conducted by the People's Republic of China, on March 14, 1978.

Using the off-site concentrations on a nuclide basis as control, the Febuary Co-60 activity of 1.53×10^{-2} pCi/m^3 in the on-site composite may be considered of possible significance, using two times the control station value as a screening level. As discussed above, this activity is likely a result of a counting environment background from the plant.

Two nuclides were identified in the December composite but were not included in the second half of Table 12. The nuclides were Ce-144 and Ru-103 with concentrations of $2.8 \pm 1.9 \times 10^{-4}$ and $4.5 \pm 2.4 \times 10^{4}$ pCi/m^3 respectively.

3. Airborn I-131 - Tables 13 and 14.

The results of the I-131 (charcoal cartridge) analysis for the six off-site and nine on-site monitoring stations are presented in Tables 13 and 14.

The March 27-28 sample results showed detectable I-131 concentrations at 4 of the 6 off-site sample locations and 5 of the 9 on-site sample locations. The off-site activity ranged from 0.03 ± 0.01 to 0.04 ± 0.01 pCi/m^3, while the corresponding on-site sample results ranged from 0.03 ± 0.01 to 0.06 ± 0.01 pCi/m^3. The source of the I-131 can be attributed to an atmospheric nuclear test conducted by the People's Republic of China, on March 14, 1978. The widespread occurance of detectable I-131, also evident in the monthly air particulate composite results, support the fact that the concentrations of I-131 were due to the test conducted by the Chinese, and not plant operation.

During 1978, three single on-site samples showed detectable levels of I-131 activity. The 9/25 sample from the I on-site station showed an I-131 concentration of 0.02 $\pm$ 0.01 pCi/M^3. The 6/27 sample at the H on-site station showed a detectable concentration of 0.07 $\pm$ 0.01 pCi/m^3 and the G on-site station showed an activity of 0.04 $\pm$ 0.01 pCi/m^3 on 10/16. The activity reported in these samples is very low in concentration and in each case close to the MDL level of 0.01 to 0.08 pCi/m^3 (range). These measurements were recorded in the second half of the year and are not considered to be related to atmospheric fallout. Plant releases during the second half of 1978 were higher than the first and second quarter of 1978. The higher release rates for the second half of 1978 may be correlated to refueling outage maintenance. The concentrations detected during the second half of 1978 were analogous to the levels detected from atmospheric testing recorded earlier in the year.

A dose calculated using the maximum detected concentration of 0.07 pCi/m^3, and based on NRC staff assumptions in Regulatory Guide 1.109, would be equal to 0.83 mrem/yr to the thyroid and 0.001 mrem/yr to the whole body. This annual dose calculation is made using an inhalation rate of 8000 m^3/yr for the average adult and a dose factor of 1.49 x 10^{-3} mrem/pCi inhaled and 2.56 x 10^{-6} mrem/pCi inhaled for the thyroid and whole body dose respectively. The dose resulting from the detected I-131 levels calculated above assumes that the level of I-131 concentration in air remains constant for an entire year. A review of the data table shows that no I-131 concentration was detected for longer than one sample period which would be a maximum time period of 7 days. If the dose calculation is adjusted to reflect the real temporal distribution of the sample results, the dose calculation can be reduced by a factor of 52. The recalculated doses would then be 0.016 mrem/yr to the thyroid and 0.00003 mrem/yr (300 x 10^{-5} mrem/yr) whole body dose.

Although trace amounts of I-131 were detected in 3 samples during 1978, this represents only six tenths of one percent (0.6 %) of the on-site samples collected during the year and only four tenths of one percent (0.4 %) of the total airborne iodine samples collected. It should be noted that minute traces of I-131 have and can be detected by our air monitoring system. A review of the data indicates that radioiodine releases are not routinely detected in the environs of the site as confirmed by the few actual detectable I-131 concentrations recorded during the 1978 operating period.

4. TLD'S (Environmental Dosimetery) - Table 15

TLD results for the first and second quarters are reported as an average of 5 individual LiF chips. The third and fourth quarter TLD's are $Ca(SO_4)$ (Tm). Each reported value is the average of 4 independent readings (2 readings/TLD - 2 TLD's/ location). This is due to a contractor change starting in April of 1978.

The TLD's are broken down into 3 groups for reporting purposes. The groups are on-sites, off-sites, and si - boundary (see sample summary). The net dose at the site boundary (site boundary average - off-site average) for each quarter were 1, 1, 0, 0, respectively (mrem). The total site boundary dose (mrem) for 1978 was 2.

Badges 31, 32, 39, and 40 are located within the NMP-1 fenced area near the Radwaste Building and are being influenced by waste trucks being loaded in the building or parked nearby. Badges 27 through 30 are located within the JAF restricted area and are being affected by waste trucks being loaded in or parked near the JAF Radwaste Building.

5. Radiation Monitors - Table 16

Radiation monitors are located in 10 of the 15 air monitoring stations. Each of the on-site air monitoring stations contains a radiation monitor and the C off-site station contains a similar radiation monitor. The radiation monitors consist of a GM detector with an associated power supply, chart recorder and trip unit. The monitor has an operating and recording range of 0.01 to 100 mrem/hr. Each radiation monitor has a small radioactive source mounted on the detector to produce an on-scale reading. The design intent of the monitors is to detect possible dose rates resulting from plume releases from the plant. The radiation monitors are not considered capa[illegible] of detecting minute fluxuations in levels of background radiation. Therefore, no comparison can be made between the radiation monitor reading with those of environmental TLD's.

6. Milk - Table 17 and 18

Milk samples were collected monthly from each of 5 farms and analyzed for I-131. Twice per month milk was collected from the same 5 farms. The two monthly samples were composited by location and were analyzed for gamma emitters and Sr-90. Tables 17 and 18 shows milk sample results for I-131, gamma emitters, and Sr-90 respectively.

As noted earlier there were two Chinese nuclear tests conducted in the atmosphere in 1978. The first test was in mid-March and the second in mid-December. Milk samples were not collected during the period that fallout occurred in the Northeastern United States because cattle were not on open pasture due to snow cover. By the time cattle were on spring pasture feeding any expected I-131 fallout had decayed. Cs-137, a significant nuclear test byproduct would remain abundant and detectable for a much longer period of time. Due to the long half life of Cs-137 (30.2 years), the concentration has a tendancy to build up in the environment and thus was detected in every milk sample (including the control samples) collected during 1978. The concentrations of Cs-137 varied during the 1978 grazing season due primarily to local weather patterns and precipitation trends. Cs-137 levels have shown a decreasing trend since 1976 in the vicinity of the site. Graphic levels of Cs-137 are shown on Figure VIII-16.

Iodine levels in the 1978 milk samples were at or below the MDL level. One positive radioiodine concentration was detected during the year with a positive value of 0.19 $\pm$ 0.07 pCi/l. This concentration is below the normal MDL level and was due to long counting time, resulting in very high sensitivity.

The dose estimate of a teen drinking 200 liters of milk per year, based on 0.19 pCi/l of I-131 would be 0.05 mrem/yr based on a six month grazing season. The comparison of 1978 milk I-131 data shows a significant decrease in I-131 levels in milk from previous years sampled. It should be noted that previous data is biased by I-131 resulting from the detonation of nuclear devices in the atmosphere, while such results are not part of the 1977 and 1978 data. (See Figure VIII-17).

Sr-90 levels detected in 1978 milk samples are a remnant of past atmospheric testing. Detected levels of Sr-90 range from 2.5 pCi/l to 10.0 pCi/l and were recorded in both off-site and on-site samples. Past data review (1974-1978) shows a consistant level of Sr-90 in the milk samples since 1974. A peak concentration was recorded in the 1976 samples and levels have been on a general decrease to date. Figure VIII-18 represents a graph of Sr-90 levels from 1974 through 1978.

7. Milch Animal Census - Table 19 and Figure 5

The number of milch animals located within a ten mile radius of the plant is estimated to be 712 cows and 18 goats for the spring census; which shows a decrease of 223 cows and an increase of 15 goats from the 1977 spring census. The 1978 summer census showed a total of 643 cows and 17 goats which represents a decrease in the number of cows by 259 animals and an increase in the number of goats by 15 over the 1977 summer census.

8. Human Food Products - Table 20

The result of analyses performed on meat, poultry, eggs and food crops are shown on Table 20. Human food crop analyses for I-131 resulted in minimum detectable activities ranging from <3 to <10 pCi/kg (wet). All analyses were performed within one half-life.

Sight traces of Cs-137 were found in the meat, poulty, and egg samples as was to be expected. One positive detection of a trace amount of Mn-54 in a pear sample was recorded, which was suspect, due to the high associated counting error. The location was resampled and resulted in no detectable Mn-54.

C. CONCLUSIONS

The Radiological Environmental Monitoring Program is conducted each year to determine the radiological impact of the James A. FitzPatrick Nuclear Power Plant on the local environment. As demonstrated by the analytical results of the 1978 program, the major radiological impact on the environment was the result of fallout from atmospheric nuclear testing.

The levels of natural background and the associated fluxuation in intensity are much more significant in terms of dose to man (normal background in the vicinity of the site is equal to 60 mrem/yr) than radiation levels in the environment associated with the operation of the plant.

It is therefore concluded that no appreciable radiological environmental impact has resulted from the operation of the James A. FitzPatrick Nuclear Power Plant.

D. REFERENCES

1. U.S. Nuclear Regulatory Commission Regulatory Guide 1.109, "Calculation of Annual Doses to Man from Routine Releases of Reactor Effluent for the Purpose of Evaluating Compliance with 10 CFR Part 50, Appendix I", March 1976.

2. U.S. Nuclear Regulatory Commission Regulatory Guide 1.109, "Calculation of Annual Doses to Man from Routine Releases of Reactor Effluent for the Purpose of Evaluating Compliance with 10 CFR Part 50, Appendix I", October 1977.

3. Eichholz, G. Environmental Aspects of Nuclear Power, First Edition, 1976, Ann Arbor Science Publishers, Inc., Ann Arbor, Michigan.

4. National Council on Radiation Protection and Measurements (NCRP), Environmental Radiation Measurements, NCRP Report No. 50, 1976.

VII.

Historical Data

SAMPLE STATISTICS FROM PREVIOUS ENVIRONMENTAL SAMPLING

The mean, standard deviation, minimum value, maximum value, and range, were calculated for selected sample mediums and isotopes.

Special Considerations

1) Sample data listed as 1969 was taken from the NINE MILE POINT, PRE-OPERATIONAL SURVEY, 1969 and ENVIRONMENTAL MONITORING REPORT FOR NIAGARA MOHAWK POWER CORPORATION NINE MILE POINT NUCLEAR STATION, NOVEMBER 1970.

2) Sample data listed as 1974 is taken from the NINE MILE POINT NUCLEAR STATION, ENVIRONMENTAL OPERATING REPORT. The 1974 data is pre-operational to the James A. FitzPatrick Nuclear Power Plant, which started commercial operation in November 1974.

3) Sample data listed as 1975, 1976, and 1977 is taken from the respective Environmental operating reports for the Nine Mile Point Nuclear Station and James A. FitzPatrick Nuclear Power Plant.

4) Only measured values were used for statistical calculations.

ENVIRONMENTAL SAMPLE STATISTICS					
PERIPHYTON Cs-137 pCi/g (wet) CONTROL	MEAN	STD. DEV.	MAX.	MIN.	RANGE
1978	0.04	0.03	0.063	0.023	0.04
1977	<MLD	-	-	-	-
1976	5.00	ONLY	ONE	DATA	POINT
1975	<MDL	-	-	-	-
1974	0.10	0.02	0.12	0.09	0.30
1969 (Pre-Operational)	NO DATA	-	-	-	-

PERIPHYTON Cs-137 pCi/g (wet) INDICATOR	MEAN	STD. DEV.	MAX.	MIN.	RANGE
1978	0.11	0.06	0.19	0.05	0.14
1977	0.42	0.56	1.40	0.09	1.31
1976	2.60	1.38	4.10	1.40	2.70
1975	22.25	14.34	36.00	4.00	32.00
1974	5.18	3.73	8.44	1.72	6.72
1969 (Pre-Operational)	NO DATA	-	-	-	-

ENVIRONMENTAL SAMPLE STATISTICS					
BOTTOM SEDIMENT Sr-90 pCi/g (dry) CONTROL	MEAN	STD. DEV.	MAX.	MIN.	RANGE
1978	0.05	0.01	0.04	0.061	0.02
1977	0.05	ONLY	ONE	DATA	POINT
1976	<MDL	-	-	-	-
1975	<MDL	-	-	-	-
1974	<MDL	-	-	-	-
1969 (Pre-Operational)	NO DATA	-	-	-	-

BOTTOM SEDIMENT Sr-90 pCi/g (dry) INDICATOR	MEAN	STD. DEV.	MAX.	MIN.	RANGE
1978	0.015	ONLY	ONE	DATA	POINT
1977	<MDL	-	-	-	-
1976	0.04	0.00	0.04	0.04	0.00
1975	0.29	0.27	0.65	0.03	0.62
1974	<MDL	-	-	-	-
1969 (Pre-Operational)	0.08	ONLY	ONE	DATA	POINT

ENVIRONMENTAL SAMPLE STATISTICS					
BOTTOM SEDIMENT Cs-137 pCi/g (dry) CONTROL	MEAN	STD. DEV.	MAX.	MIN.	RANGE
1978	0.61	0.15	0.71	0.50	0.21
1977	0.68	0.08	0.73	0.62	0.11
1976	<MDL	-	-	-	-
1975	0.40	0.10	0.50	0.30	0.20
1974	0.11	ONLY	ONE	DATA	POINT
1969 (Pre-Operational)	NO DATA	-	-	-	-

BOTTOM SEDIMENT Cs-137 pCi/g (dry) INDICATOR	MEAN	STD. DEV.	MAX.	MIN.	RANGE
1978	0.99	0.80	2.10	0.24	1.86
1977	2.27	1.90	4.10	0.31	3.79
1976	2.45	0.64	2.90	2.00	0.90
1975	0.83	0.86	3.50	0.20	3.30
1974	0.40	0.26	0.58	0.21	0.37
1969 (Pre-Operational)	0.38	0.09	0.44	0.31	0.13

ENVIRONMENTAL SAMPLE STATISTICS					
MOLLUSKS Sr-89 pCi/g (wet) CONTROL	MEAN	STD. DEV.	MAX.	MIN.	RANGE
1978	0.02	ONLY	ONE	DATA	POINT
1977	<MDL	-	-	-	-
1976	NO DATA	-	-	-	-
1975	NO DATA	-	-	-	-
1974	NO DATA	-	-	-	-
1969 (Pre-Operational)	NO DATA	-	-	-	-

MOLLUSKS Sr-89 pCi/g (wet) INDICATOR	MEAN	STD. DEV.	MAX.	MIN.	RANGE
1978	0.05	0.03	0.07	0.03	0.04
1977	<MDL	-	-	-	-
1976	0.42	ONLY	ONE	DATA	POINT
1975	<MDL	-	-	-	-
1974	<MDL	-	-	-	-
1969 (Pre-Operational)	NO DATA	-	-	-	-

ENVIRONMENTAL SAMPLE STATISTICS					
MOLLUSKS Sr-90, pCi/g (wet) CONTROL	MEAN	STD. DEV.	MAX.	MIN.	RANGE
1978	0.14	0.02	0.15	0.12	0.03
1977	<MDL	-	-	-	-
1976	NO DATA	-	-	-	-
1975	NO DATA	-	-	-	-
1974	NO DATA	-	-	-	-
1969 (Pre-Operational)	NO DATA	-	-	-	-

MOLLUSKS Sr-90, pCi/g(wet) INDICATOR	MEAN	STD. DEV.	MAX.	MIN.	RANGE
1978	0.14	0.03	0.18	0.10	0.08
1977	0.10	0.02	0.11	0.07	0.04
1976	0.51	ONLY	ONE	DATA	POINT
1975	0.17	0.04	0.19	0.14	0.05
1974	0.32	ONLY	ONE	DATA	POINT
1969 (Pre-Operational)	0.12	0.17	0.24	0.01	0.24

ENVIRONMENTAL SAMPLE STATISTICS					
MOLLUSKS Cs-137, pCi/g (wet) CONTROL	MEAN	STD. DEV.	MAX.	MIN.	RANGE
1978	<MDL	-	-	-	-
1977	<MDL	-	-	-	-
1976	NO DATA	-	-	-	-
1975	NO DATA	-	-	-	-
1974	NO DATA	-	-	-	-
1969 (Pre-Operational)	NO DATA	-	-	-	-

MOLLUSKS Cs-137, pCi/g (wet) INDICATOR	MEAN	STD. DEV.	MAX.	MIN.	RANGE
1978	0.99	0.80	2.10	0.24	1.86
1977	<MDL	-	-	-	-
1976	0.18	ONLY	ONE	DATA	POINT
1975	<MDL	-	-	-	-
1974	0.26	ONLY	ONE	DATA	POINT
1969 (Pre-Operational)	0.08	ONLY	ONE	DATA	POINT

ENVIRONMENTAL SAMPLE STATISTICS					
GAMMERUS Sr-89, pCi/g (wet) CONTROL	MEAN	STD. DEV.	MAX.	MIN.	RANGE
1978	<MDL	-	-	-	-
1977	<MDL	-	-	-	-
1976	NO DATA	-	-	-	-
1975	NO DATA	-	-	-	-
1974	<MDL	-	-	-	-
1969 (Pre-Operational)	NO DATA	-	-	-	-

GAMMERUS Sr-89, pCi/g (wet) INDICATOR	MEAN	STD. DEV.	MAX.	MIN.	RANGE
1978	<MDL	-	-	-	-
1977	<MDL	-	-	-	-
1976	NO DATA	-	-	-	-
1975	NO DATA	-	-	-	-
1974	<MDL	-	-	-	-
1969 (Pre-Operational)	NO DATA	-	-	-	-

ENVIRONMENTAL SAMPLE STATISTICS					
GAMMERUS Sr-90, pCi/g (wet) CONTROL	MEAN	STD. DEV.	MAX.	MIN.	RANGE
1978	0.14	0.01	0.14	0.13	0.01
1977	0.32	ONLY	ONE	DATA	POINT
1976	NO DATA	-	-	-	-
1975	NO DATA	-	-	-	-
1974	<MDL	-	-	-	-
1969 (Pre-Operational)	NO DATA	-	-	-	-

GAMMERUS Sr-90, pCi/g (wet) INDICATOR	MEAN	STD. DEV.	MAX.	MIN.	RANGE
1978	0.14	0.04	0.21	0.13	0.08
1977	0.40	0.46	0.73	0.08	0.65
1976	NO DATA	-	-	-	-
1975	NO DATA	-	-	-	-
1974	<MDL	-	-	-	-
1969 (Pre-Operational)	NO DATA	-	-	-	-

ENVIRONMENTAL SAMPLE STATISTICS					
GAMMERUS Cs-137, pCi/g (wet) CONTROL	MEAN	STD. DEV.	MAX.	MIN.	RANGE
1978	0.028	ONLY	ONE	DATA	POINT
1977	<MDL	-	-	-	-
1976	NO DATA	-	-	-	-
1975	NO DATA	-	-	-	-
1974	NO DATA	-	-	-	-
1969 (Pre-Operational)	NO DATA	-	-	-	-

GAMMERUS Cs-137 pCi/g (wet) INDICATOR	MEAN	STD. DEV.	MAX.	MIN.	RANGE
1978	[illegible]	0.00	0.05	0.05	0.00
1977	<MDL	-	-	-	-
1976	NO DATA	-	-	-	-
1975	NO DATA	-	-	-	-
1974	0.21	ONLY	ONE	DATA	POINT
1969 (Pre-Operational)	NO DATA	-	-	-	-

ENVIRONMENTAL SAMPLE STATISTICS					
FISH SAMPLES Sr-89, pCi/g (wet) CONTROL	MEAN	STD. DEV.	MAX.	MIN.	RANGE
1978	<MDL	-	-	-	-
1977	0.04	0.01	0.05	0.03	0.02
1976	0.24	0.08	0.33	0.19	0.14
1975	<MDL	-	-	-	-
1974	<MDL	-	-	-	-
1969 (Pre-Operational)	NO DATA	-	-	-	-

FISH SAMPLES Sr-89, pCi/g (wet) INDICATOR	MEAN	STD. DEV.	MAX.	MIN.	RANGE
1978	0.01	0.001	0.015	0.014	0.001
1977	0.07	0.05	0.24	0.03	0.21
1976	0.27	0.15	0.41	0.12	0.29
1975	<MDL	-	-	-	-
1974	<MDL	-	-	-	-
1969 (Pre-Operational)	NO DATA	-	-	-	-

ENVIRONMENTAL SAMPLE STATISTICS					
FISH SAMPLES Sr-90, pCi/g (wet) CONTROL	MEAN	STD. DEV.	MAX.	MIN.	RANGE
1978	0.01	0.004	0.015	0.004	0.01
1977	0.07	0.03	0.14	0.02	0.12
1976	0.25	0.27	0.81	0.05	0.76
1975	0.07	0.06	0.10	0.04	0.06
1974	0.07	0.02	0.09	0.04	0.05
1969 (Pre-Operational)	NO DATA	-	-	-	-

FISH SAMPLES Sr-90, pCi/g (wet) INDICATOR	MEAN	STD. DEV.	MAX.	MIN.	RANGE
1978	0.013	0.006	0.025	0.004	0.021
1977	0.07	0.05	0.24	0.03	0.21
1976	0.28	0.48	2.20	0.05	2.15
1975	0.08	0.03	0.13	0.02	0.11
1974	0.23	0.69	2.30	0.01	0.29
1969 (Pre-Operational)	0.23	0.17	0.51	0.30	0.48

ENVIRONMENTAL SAMPLE STATISTICS					
FISH SAMPLES Cs-137 pCi/g (wet) CONTROL	MEAN	STD. DEV.	MAX.	MIN.	RANGE
1978	0.09	0.050	0.200	0.040	0.16
1977	0.13	ONLY	ONE	DATA	POINT
1976	0.12	ONLY	ONE	DATA	POINT
1975	<MDL	-	-	-	-
1974	0.43	0.37	0.94	0.09	0.85
1969 (Pre-Operational)	NO DATA	-	-	-	-

FISH SAMPLES Cs-137 pCi/g (wet) INDICATOR	MEAN	STD. DEV.	MAX.	MIN.	RANGE
1978	0.08	0.02	0.100	0.030	0.07
1977	0.29	0.21	0.79	0.13	0.66
1976	1.40	1.67	3.90	0.50	3.40
1975	1.38	0.22	1.70	1.10	0.60
1974	0.57	0.82	4.40	0.08	4.32
1969 (Pre-Operational)	0.06	0.04	0.13	0.01	0.12

ENVIRONMENTAL SAMPLE STATISTICS					
LAKE WATER GROSS BETA pCi/l CONTROL	MEAN	STD. DEV.	MAX.	MIN.	RANGE
1978	3.55	1.58	6.10	0.50	5.60
1977	10.9	14.5	49.3	2.50	46.8
1976	42.48	50.62	189.00	4.90	184.10
1975	45.33	52.79	160.00	1.00	159.00
1974	4.85	0.07	4.90	4.80	0.10
1969 (Pre-Operational)	NO DATA	-	-	-	-

LAKE WATER GROSS BETA pCi/l INDICATOR	MEAN	STD. DEV.	MAX.	MIN.	RANGE
1978	4.53	2.62	11.10	0.60	10.50
1977	15.80	21.00	87.00	1.00	86.00
1976	41.76	55.23	192.00	1.10	190.90
1975	18.24	17.08	80.00	0.60	79.40
1974	31.71	20.22	60.00	6.30	53.70
1969 (Pre-Operational)	NO DATA	-	-	-	-

ENVIRONMENTAL SAMPLE STATISTICS					
LAKE WATER Sr-89, pCi/l CONTROL	MEAN	STD. DEV.	MAX.	MIN.	RANGE
1978	<MDL	-	-	-	-
1977	<MDL	-	-	-	-
1976	<MDL	-	-	-	-
1975	<MDL	-	-	-	-
1974	NO DATA	-	-	-	-
1969 (Pre-Operational)	NO DAT	-	-	-	-

LAKE WATER Sr-89, pCi/l INDICATOR	MEAN	STD. DEV.	MAX.	MIN.	RANGE
1978	0.70	0.10	0.80	0.60	0.20
1977	<MDL	-	-	-	-
1976	<MDL	-	-	-	-
1975	0.30	ONLY	ONE	DATA	POINT
1974	NO DATA	-	-	-	-
1969 (Pre-Operational)	NO DATA	-	-	-	-

ENVIRONMENTAL SAMPLE STATISTICS					
LAKE WATER Sr-90 pCi/l CONTROL	MEAN	STD. DEV.	MAX.	MIN.	RANGE
1978	0.90	0.10	1.00	0.80	0.20
1977	1.00	ONLY	ONE	DATA	POINT
1976	<MDL	-	-	-	-
1975	<MDL	-	-	-	-
1974	NO DATA	-	-	-	-
1969 (Pre-Operational)	NO DATA	-	-	-	-

LAKE WATER Sr-90, pCi/l INDICATOR	MEAN	STD. DEV.	MAX.	MIN.	RANGE
1978	0.80	0.30	1.10	0.40	0.70
1977	1.00	ONLY	ONE	DATA	POINT
1976	<MDL	-	-	-	-
1975	<MDL	-	-	-	-
1974	NO DATA	-	-	-	-
1969 (Pre-Operational)	NO DATA	-	-	-	-

ENVIRONMENTAL SAMPLE STATISTICS					
LAKE WATER TRITIUM CONTROL	MEAN	STD. DEV.	MAX.	MIN.	RANGE
1978	303.75	127.51	490.00	215.00	275.00
1977	407.5	97.4	530.0	300.0	230.0
1976	651.7	251.0	929.0	440.0	489.0
1975	362.5	72.8	414.0	311.0	103.0
1974	<MDL	-	-	-	-
1969 (Pre-Operational)	NO DATA	-	-	-	-

LAKE WATER TRITIUM INDICATOR	MEAN	STD. DEV.	MAX.	MIN.	RANGE
1978	389.38	119.94	560.00	253.00	307.00
1977	450.0	67.2	530.0	380.0	150.0
1976	513.0	250.3	889.0	297.0	592.0
1975	334.8	132.5	482.0	124.0	358.0
1974	440.0	84.9	500.0	380.0	120.0
1969 (Pre-Operational)	NO DATA	-	-	-	-

ENVIRONMENTAL SAMPLE STATISTICS					
AIR PARTICULATE GROSS BETA pCi/m^3 CONTROL	MEAN	STD. DEV.	MAX.	MIN.	RANGE
1978	0.14	0.13	0.66	0.01	0.65
1977	0.126	0.080	0.484	0.001	0.483
1976	0.051	0.031	0.240	0.004	0.236
1975	0.085	0.060	0.294	0.008	0.286
1974	0.121	0.104	0.808	0.001	0.807
1969 (Pre-Operational)	0.334	0.097	0.540	0.130	0.410

AIR PARTICULATE GROSS BETA pCi/m^3 INDICATOR	MEAN	STD. DEV.	MAX.	MIN.	RANGE
1978	0.10	0.09	0.34	0.01	0.33
1977	0.070	0.034	0.140	0.016	0.124
1976	0.047	0.032	0.191	0.002	0.189
1975	0.067	0.055	0.456	0.001	0.455
1974	0.111	0.114	0.855	0.003	0.854
1969 (Pre-Operational)	0.320	0.090	0.520	0.130	0.390

ENVIRONMENTAL SAMPLE STATISTICS					
ENVIRONMENTAL TLD's: QUARTERLY READING FOR THE YEAR, mrem OFF-SITE	MEAN	STD. DEV.	MAX.	MIN.	RANGE
1978	10.76	1.56	14.00	7.00	7.00
1977	15.63	4.00	24.00	11.00	13.00
1976	15.42	3.51	21.50	9.60	11.90
1975	16.46	1.95	21.40	13.50	7.90
1974	16.00	6.04	26.70	7.20	19.50
1969 (Pre-Operational)	ALL	DATA	REPORTED	AS	<10

ENVIRONMENTAL TLD's QUARTERLY READINGS FOR THE YEAR, mrem SITE - BOUNDRY	MEAN	STD. DEV.	MAX.	MIN.	RANGE
1978	11.15	1.39	14.00	9.00	5.00
1977	14.90	5.13	28.00	10.00	18.00
1976	15.61	3.26	21.50	11.30	10.20
1975	16.52	4.14	24.40	12.20	12.20
1974	16.91	6.35	28.30	8.40	19.90
1969 (Pre-Operational)	ALL	DATA	REPORTED	AS	<10.

ENVIRONMENTAL SAMPLE STATISTICS					
MILK SAMPLES Sr-90, pCi/l CONTROL	MEAN	STD. DEV.	MAX.	MIN.	RANGE
1978	5.88	2.04	9.00	3.00	6.00
1977	NO	DATA	-	-	-
1976	NO	DATA	-	-	-
1975	NO	DATA	-	-	-
1974	NO	DATA	-	-	-
1969 (Pre-Operational)	NO	DATA	-	-	-

MILK SAMPLES Sr-90, pCi/l INDICATOR	MEAN	STD. DEV.	MAX.	MIN.	RANGE
1978	5.93	1.81	10.00	2.50	7.50
1977	6.07	3.50	15.00	2.00	13.00
1976	7.16	3.41	14.80	1.50	13.30
1975	6.31	3.11	13.80	2.30	11.50
1974	5.66	2.89	14.00	1.00	13.00
1969 (Pre-Operational)	NO	DATA	-	-	-

ENVIRONMENTAL SAMPLE STATISTICS					
MILK SAMPLES Iodine - 131 pCi/l CONTROL	MEAN	STD. DEV.	MAX.	MIN.	RANGE
1978	<MDL	-	-	-	-
1977	NO	DATA	-	-	-
1976	NO	DATA	-	-	-
1975	NO	DATA	-	-	-
1974	NO	DATA	-	-	-
1969 (Pre-Operational)	NO	DATA	-	-	-

MILK SAMPLES Iodine - 131 pCi/l INDICATOR	MEAN	STD. DEV.	MAX.	MIN.	RANGE
1978	0.19	ONLY	ONE	DATA	POINT
1977	0.20	0.14	0.22	-0.40	0.62
1976	3.20	7.81	45.00	0.02	44.98
1975	0.37	0.60	2.99	0.01	2.98
1974	1.23	0.44	2.00	0.70	1.30
1969 (Pre-Operational)	NO	DATA	-	-	-

ENVIRONMENTAL SAMPLE STATISTICS					
MEAT Cs-137, pCi/g (wet)	MEAN	STD. DEV.	MAX.	MIN.	RANGE
1978	0.021	0.011	0.040	0.013	0.027
1977	<MDL	-	-	-	-
1976	<MDL	-	-	-	-
1975	0.10	0.00	0.10	0.10	0.00
1974	NO DATA	-	-	-	-
1969 (Pre-Operational)	NO DATA	-	-	-	-

EGGS Cs-137, pCi/g (wet)	MEAN	STD. DEV.	MAX.	MIN.	RANGE
1978	<MDL	-	-	-	-
1977	<MDL	-	-	-	-
1976	<MDL	-	-	-	-
1975	<MDL	-	-	-	-
1974	NO DATA	-	-	-	-
1969 (Pre-Operational)	NO DATA	-	-	-	-

ENVIRONMENTAL SAMPLE STATISTICS					
HUMAN FOOD CROPS Cs-137 pCi/g (wet)	MEAN	STD. DEV.	MAX.	MIN.	RANGE
1978	0.01	ONLY	ONE	DATA	POINT
1977	<MDL	-	-	-	-
1976	<MDL	-	-	-	-
1975	<MDL	-	-	-	-
1974	0.142	0.09	0.34	0.04	0.30
1969 (Pre-Operational)	NO DATA	-	-	-	-

HUMAN FOOD CROPS Iodine - 131 pCi/g (wet)	MEAN	STD. DEV.	MAX.	MIN.	RANGE
1978	<MDL	-	-	-	-
1977	<MDL	-	-	-	-
1976	<MDL	-	-	-	-
1975	<MDL	-	-	-	-
1974	NO DATA	-	-	-	-
1969 (Pre-Operational)	NO DATA	-	-	-	-

ENVIRONMENTAL SAMPLE STATISTICS					
SOIL SAMPLES Cs-137, pCi/g (dry) CONTROL	MEAN	STD. DEV.	MAX.	MIN.	RANGE
1978	NO	SAMPLES	REQUIRED	IN	1978
1977	1.17	0.48	2.00	0.70	1.30
1976	NO DATA	-	-	-	-
1975	1.07	0.21	1.30	0.90	0.40
1974	NO DATA	-	-	-	-
1969 (Pre-Operational)	NO DATA	-	-	-	-

SOIL SAMPLES Cs-137, pCi/g (dry) INDICATOR	MEAN	STD. DEV.	MAX.	MIN.	RANGE
1978	NO	SAMPLES	REQUIRED	IN	1978
1977	1.03	0.62	2.00	0.30	1.70
1976	NO DATA	-	-	-	-
1975	NO DATA	-	-	-	-
1974	1.03	1.18	2.80	0.40	2.40
1969 (Pre-Operational)	NO DATA	-	-	-	-

ENVIRONMENTAL SAMPLE STATISTICS					
SOIL SAMPLES Sr-90 pCi/g (dry) CONTROL	MEAN	STD. DEV.	MAX.	MIN.	RANGE
1978	NO	SAMPLES	REQUIRED	IN	1978
1977	0.21	0.07	0.29	0.13	0.16
1976	NO DATA	-	-	-	-
1975	0.13	0.10	0.26	0.04	0.22
1974	NO DATA	-	-	-	-
1969 (Pre-Operational)	NO DATA	-	-	-	-

SOIL SAMPLES Sr-90 pCi/g (wet) INDICATOR	MEAN	STD. DEV.	MAX.	MIN.	RANGE
1978	NO	SAMPLES	REQUIRED	IN	1978
1977	0.40	0.18	0.65	0.17	0.48
1976	NO DATA	-	-	-	-
1975	NO DATA	-	-	-	-
1974	0.27	0.06	0.34	0.23	0.11
1969 (Pre-Operational)	NO DATA	-	-	-	-

VIII.

Figures and Maps

FIGURES AND MAPS

1. DATA GRAPHS

This section includes graphic representation of selected sample results.

For Graphic Representation results less than the MDL were considered to be at the MDL level of activity.

2. SAMPLE LOCATION

Sample locations referenced as numbers on analysis results tables are plotted on maps.

FIGURE 1

OFF-SITE ENVIRONMENTAL STATION

AND

TLD LOCATIONS *

*TLD at each station

Revised to January 1, 1974

SCALE OF MILES

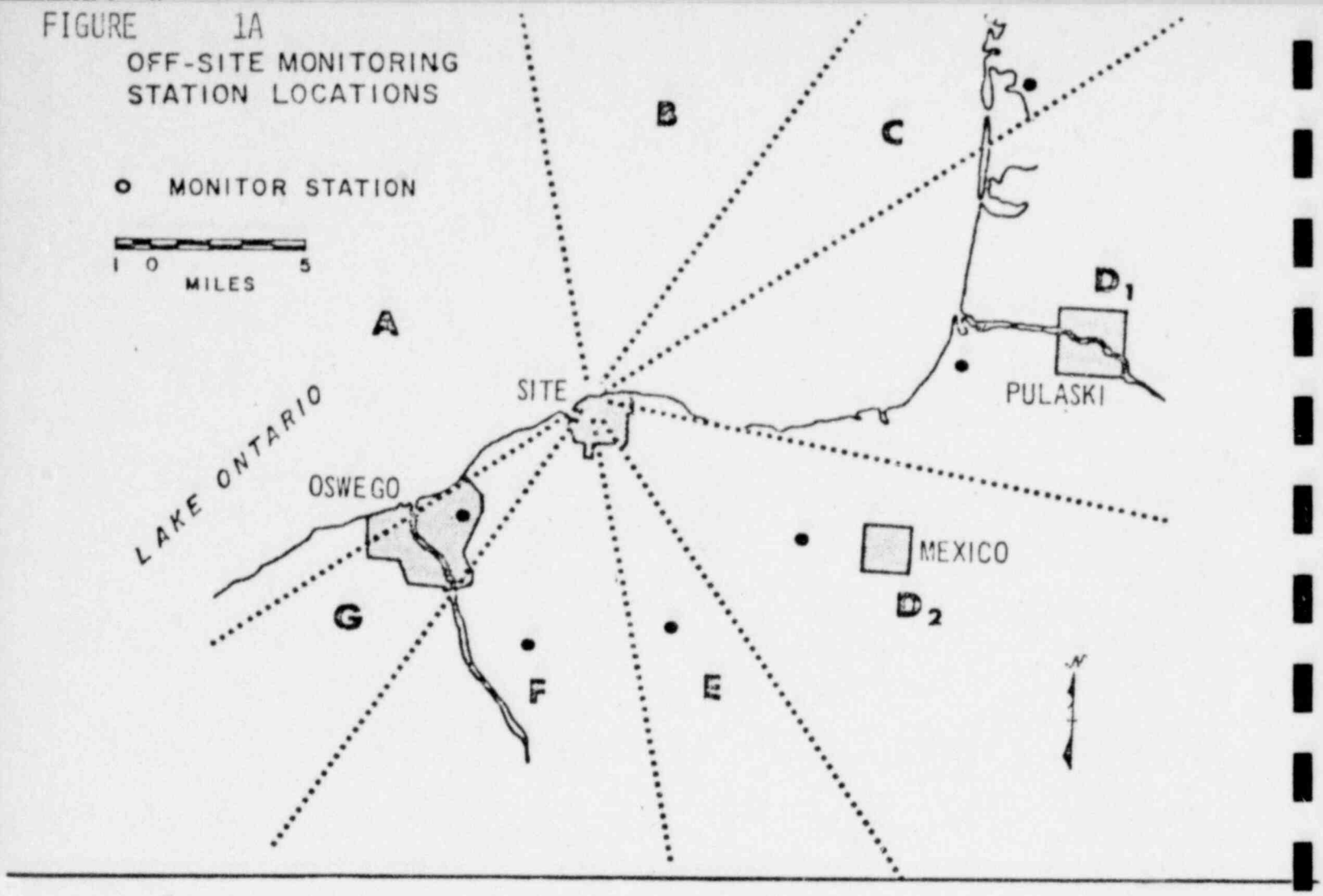
LEGEND

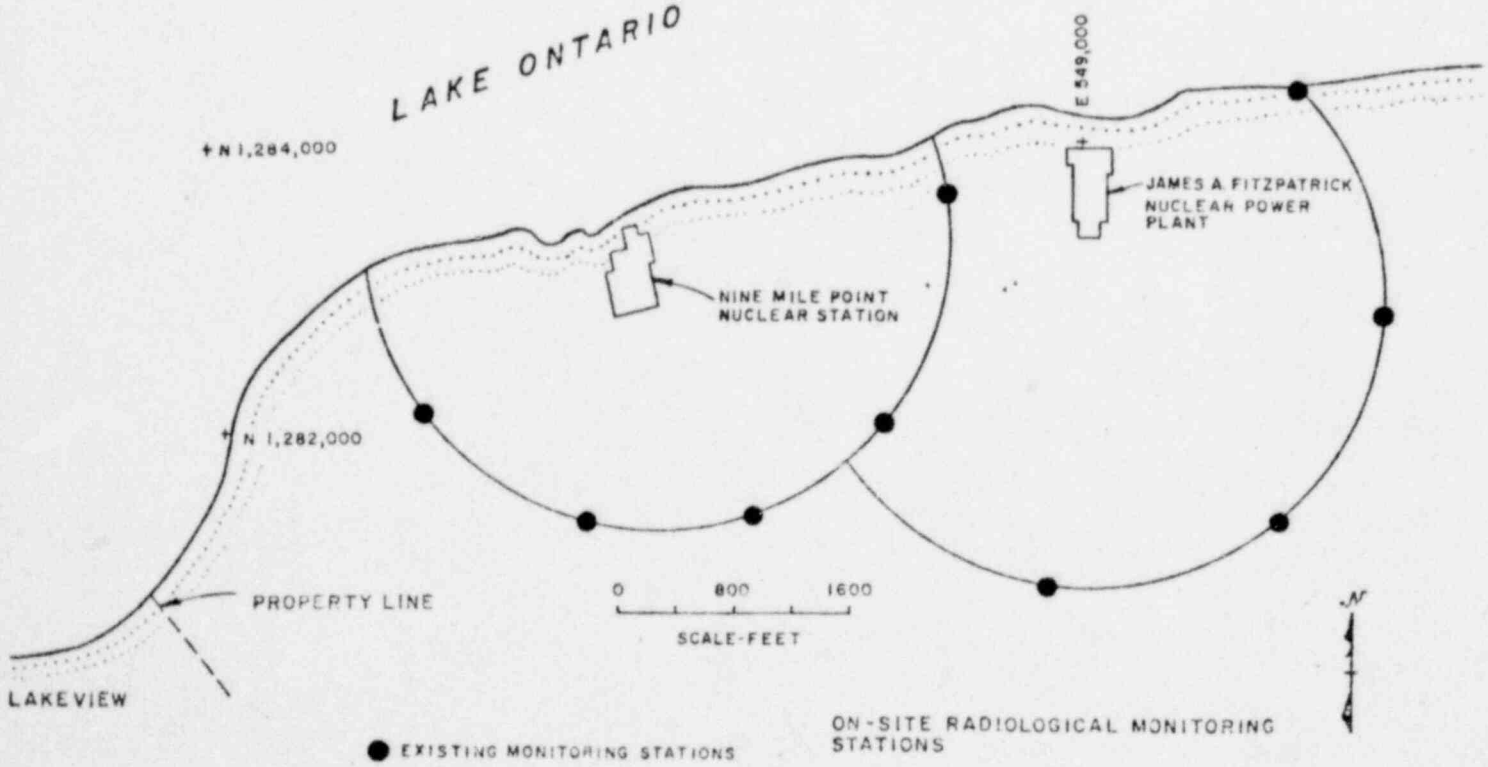
Interstate
U.S. & State Highways
County Roads
Town Roads
County Lines
Town Lines
City & Village Lines
Railroads

Latitude 43°28' N.
Longitude 76°30' W.
at Oswego County Bldg., Oswego, N.Y.
Land Area 968 Square miles

FIGURE 1A

OFF-SITE MONITORING STATION LOCATIONS



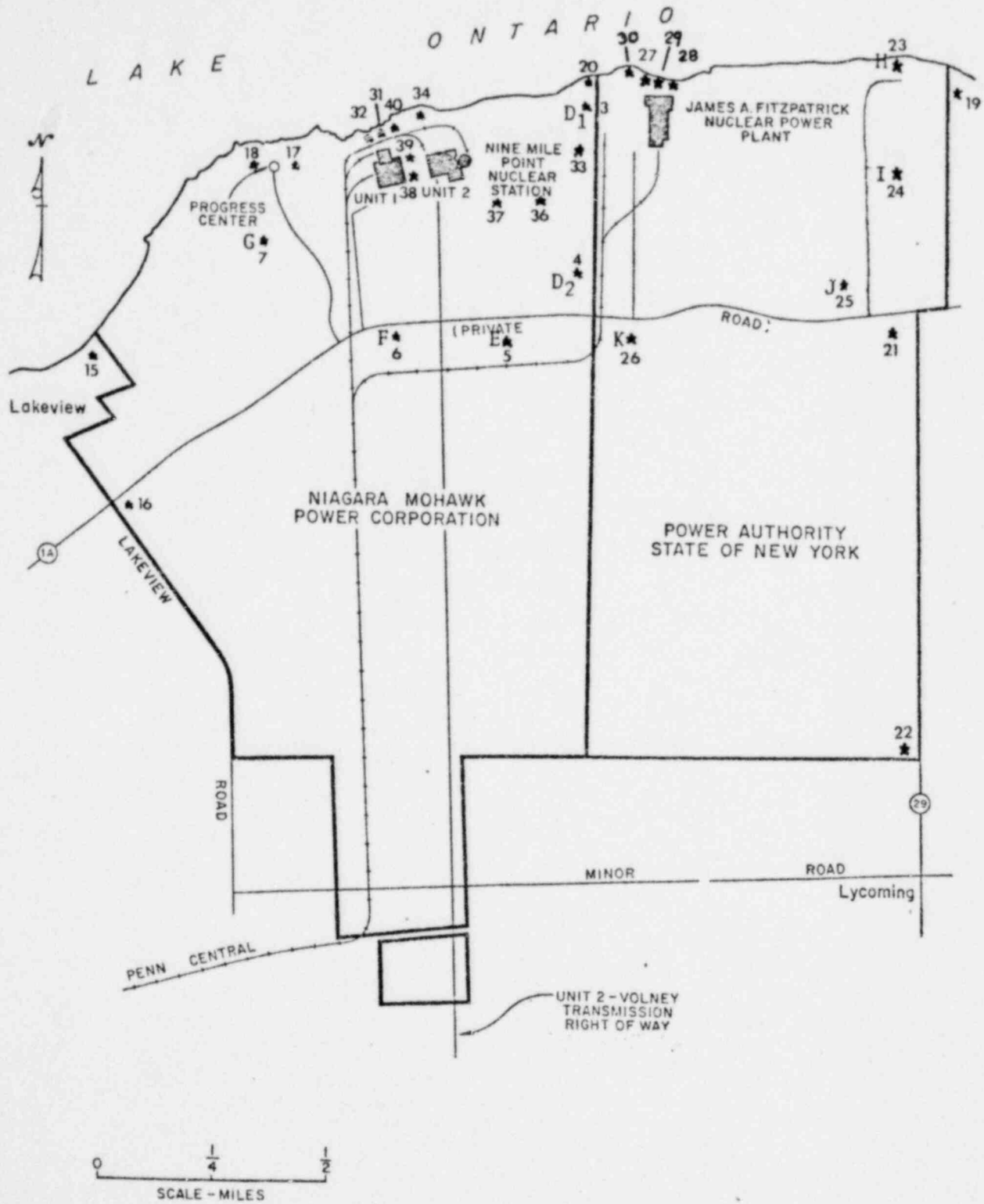


● EXISTING MONITORING STATIONS

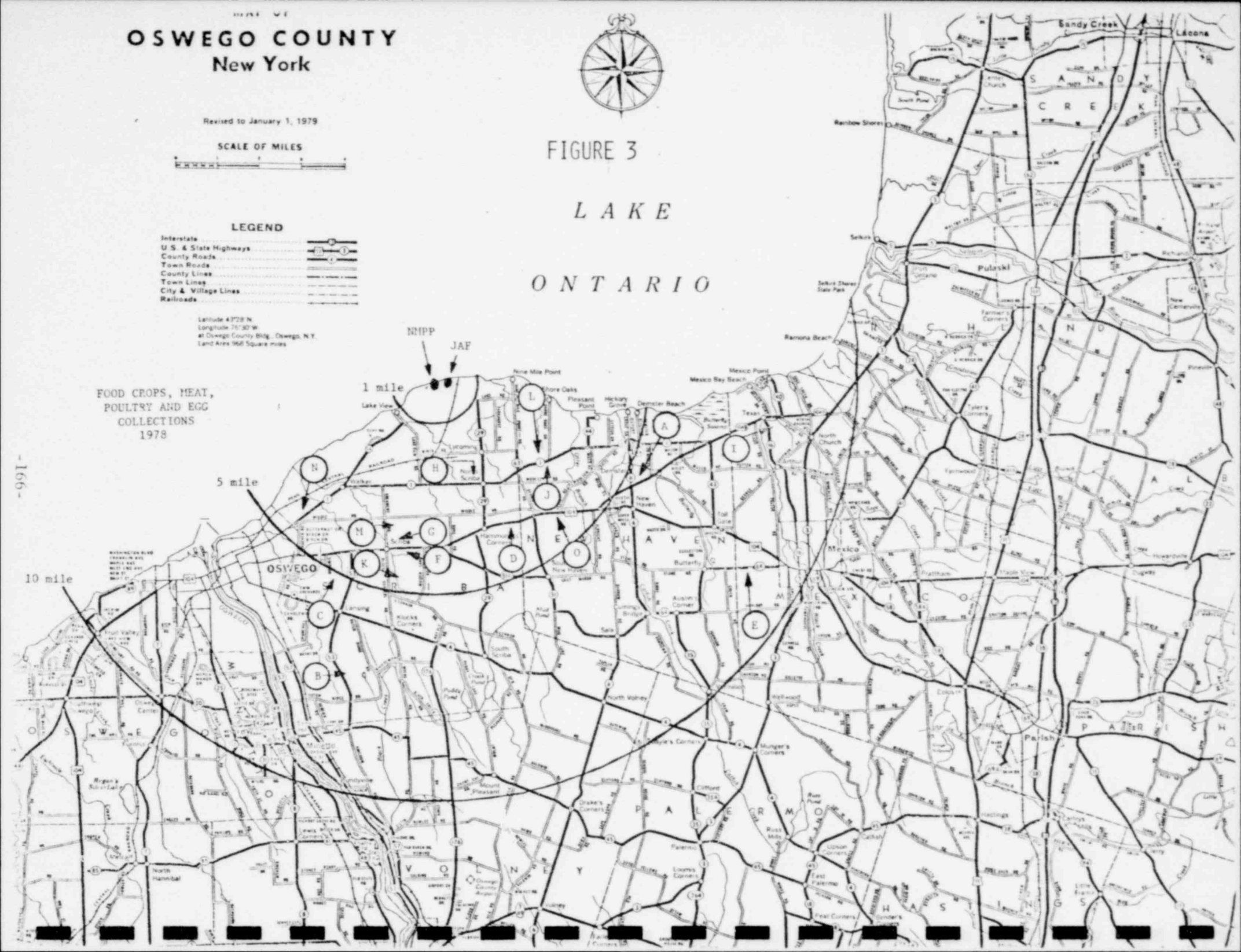
ON-SITE RADIOLOGICAL MONITORING STATIONS

MONITORING STATIONS LOCATED AT 2,000 FT. RADII FROM STACKS

FIGURE 2



SITE VICINITY MAP
ON-SITE ENVIRONMENTAL STATION AND TLD LOCATIONS
*-TLD's
Letters - Stations


OSWEGO COUNTY
New York
Revised to January 1, 1979
SCALE OF MILES
LEGEND
Interstate
U.S. & State Highways
County Roads
Town Roads
County Lines
Town Lines
City & Village Lines
Railroads
Latitude 43°28' N.
Longitude 76°30' W.
at Oswego County Bldg., Oswego, N.Y.
Land Area 968 Square miles
FIGURE 3
LAKE
ONTARIO
NMPP
JAF
1 mile
5 mile
10 mile
FOOD CROPS, MEAT, POULTRY AND EGG COLLECTIONS 1978
OSWEGO
Mexico
Pulaski
Sandy Creek
Lacona
Parish
North Hannibal
Rainbow Shores
Selkirk
Selkirk Shores State Park
Ramona Beach
Mexico Point
Mexico Bay Beach
Nine Mile Point
Lake View
Shore Oaks
Pleasant Point
Hickory Grove
Demster Beach
Texas
New Haven
Butterfly
Austin Corners
Hannibal Corners
Mount Pleasant
Lakeview
Lake Ontario
Lake Road
Lake Street
Main Street
Route 104
Route 481
Route 13
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OSWEGO COUNTY
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SCALE OF MILES
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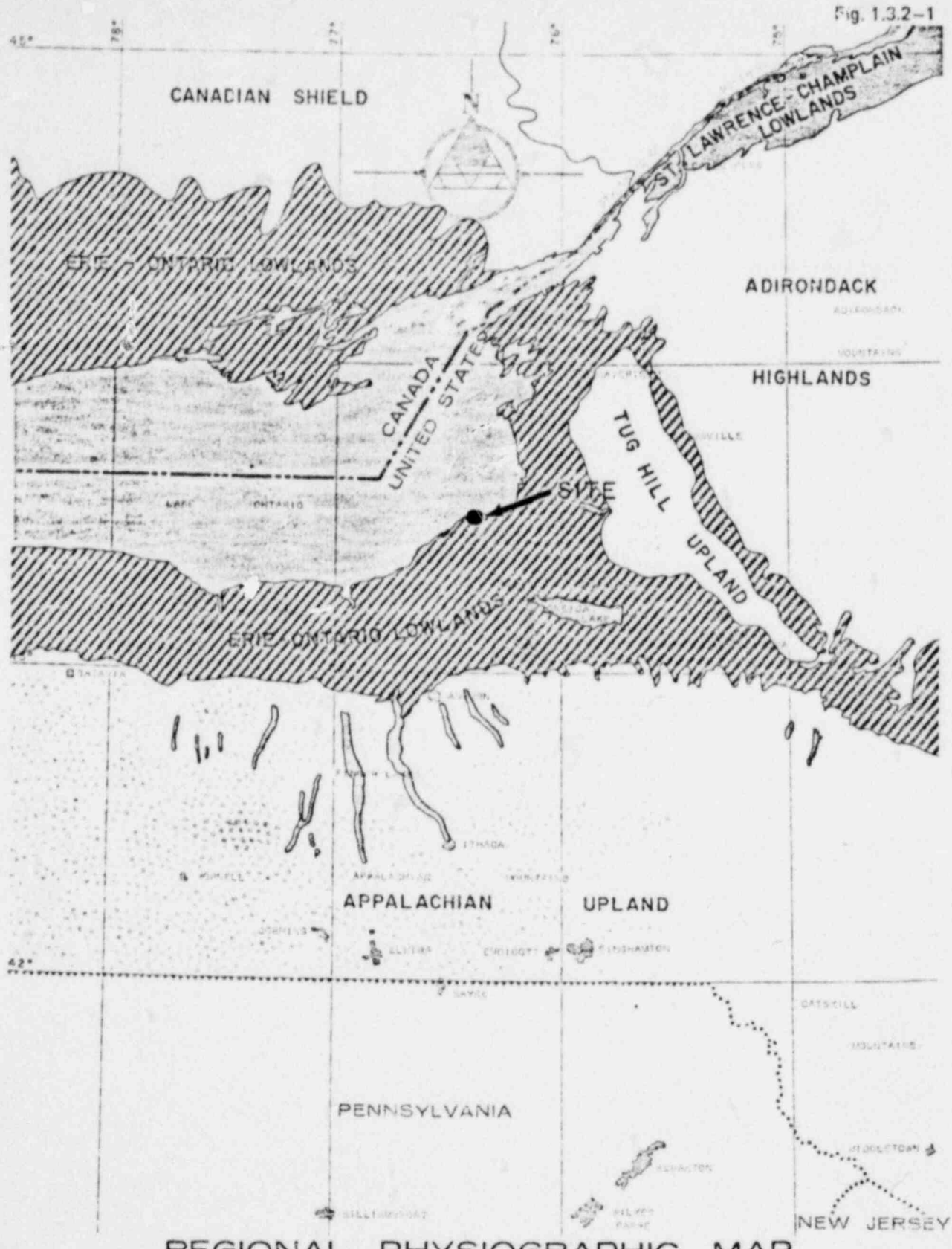
Latitude 43°28' N.
Longitude 76°30' W.
at Oswego County Bldg., Oswego, N.Y.
Land Area 958 Square miles
FIGURE 4
LAKE
ONTARIO
NMPP
JAF
1 mile
5 mile
10 mile
ANIMAL CENSUS
AND
MILK COLLECTION
1978
OSWEGO
Nine Mile Point
Shore Oaks
Pleasant Point
Hickory Grove
Oswego Beach
Mexico Point
Mexico Bay Beach
Pamona Beach
Selkirk
Selkirk Shores State Park
Pulaski
Rainbow Shores
Lakeview
North Scriba
South New Haven
Butterfly
Texas
Austin Corners
Lacona
Parish
North Hannibal
Fruit Valley
Oswego Center
Minetto
Mount Pleasant
Clifford
Palermo
Loomis Corners
Union Corners
East Palermo
Post Corners
Sandier's Corners
Mulligan's Corners
Hoyle's Corners
Drake's Corners
North Valley
Harley's
SANDY CREEK
CHARLANDE
PARISH
HASTINGS
-167-

FIGURE 5



REGIONAL PHYSIOGRAPHIC MAP

STATUTE MILES

10 0 10 20 30 40 50

REFERENCE:

PREPARED FROM PORTIONS OF MAPS (PHYSIOGRAPHICAL SHEETS) LAKE ERIE (1952), 1957, HUDSON RIVER (21D) 1967, AND ST. LAWRENCE RIVER (22E) 1957.

PREPARED FROM A MAP BY THE UNIVERSITY OF THE STATE OF NEW YORK, THE STATE EDUCATION DEPT. ENTITLED "LANDFORMS AND BEDROCK GEOLOGY OF NEW YORK STATE" 1966.

DAMES & MOORE

J.A.FITZPATRICK N.P.P-1978

FIGURE 6

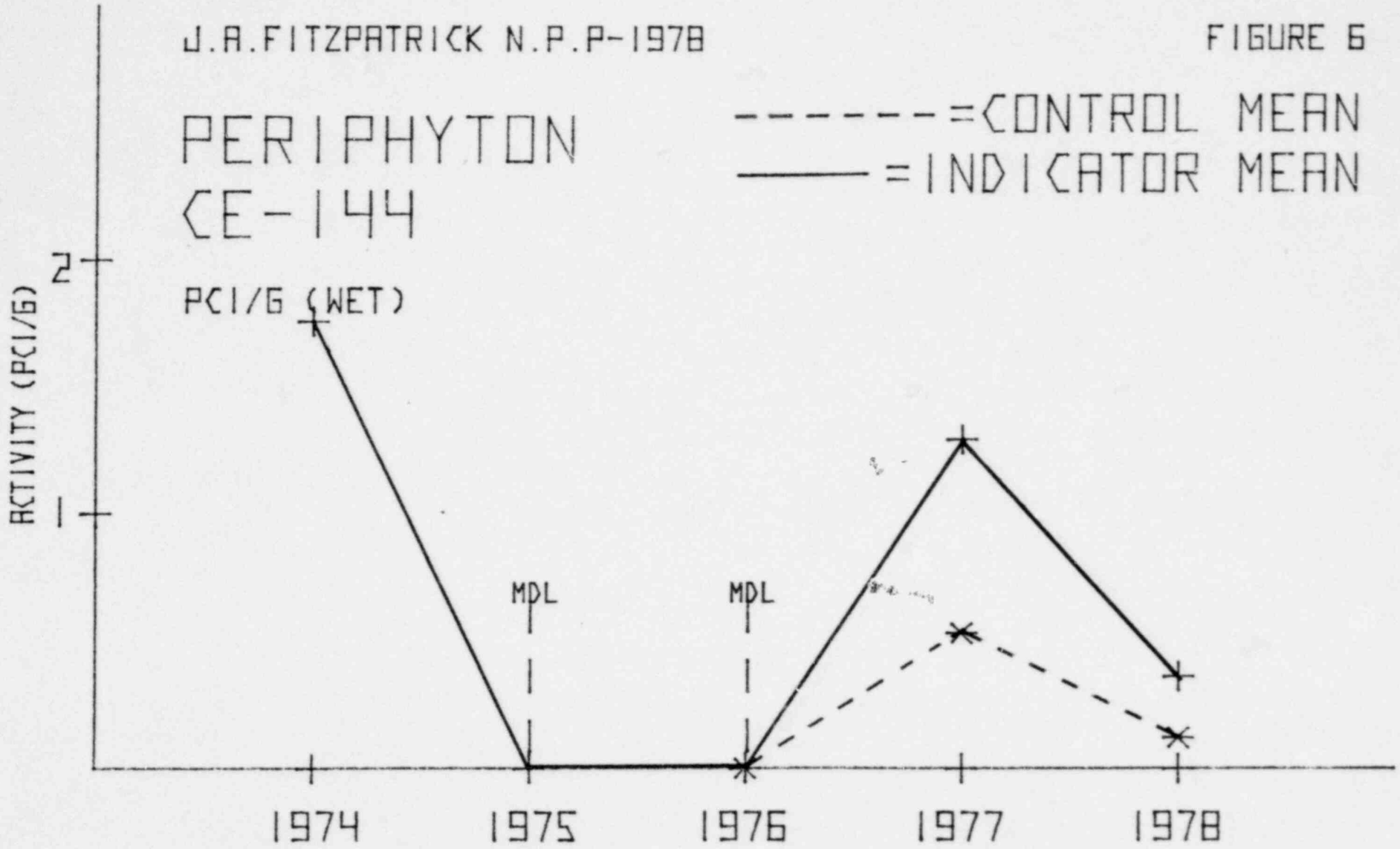


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FIGURE 7

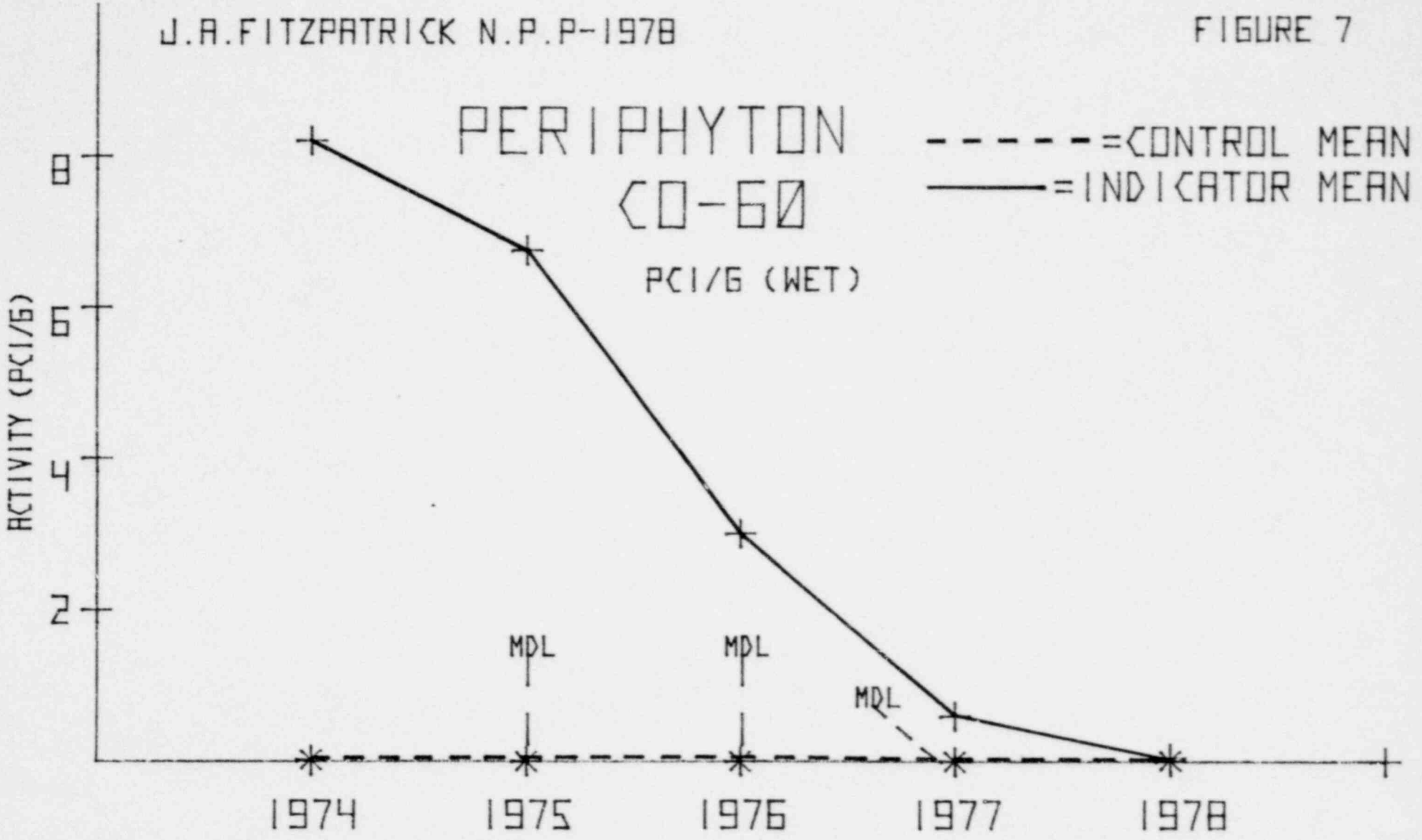

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FIGURE 8

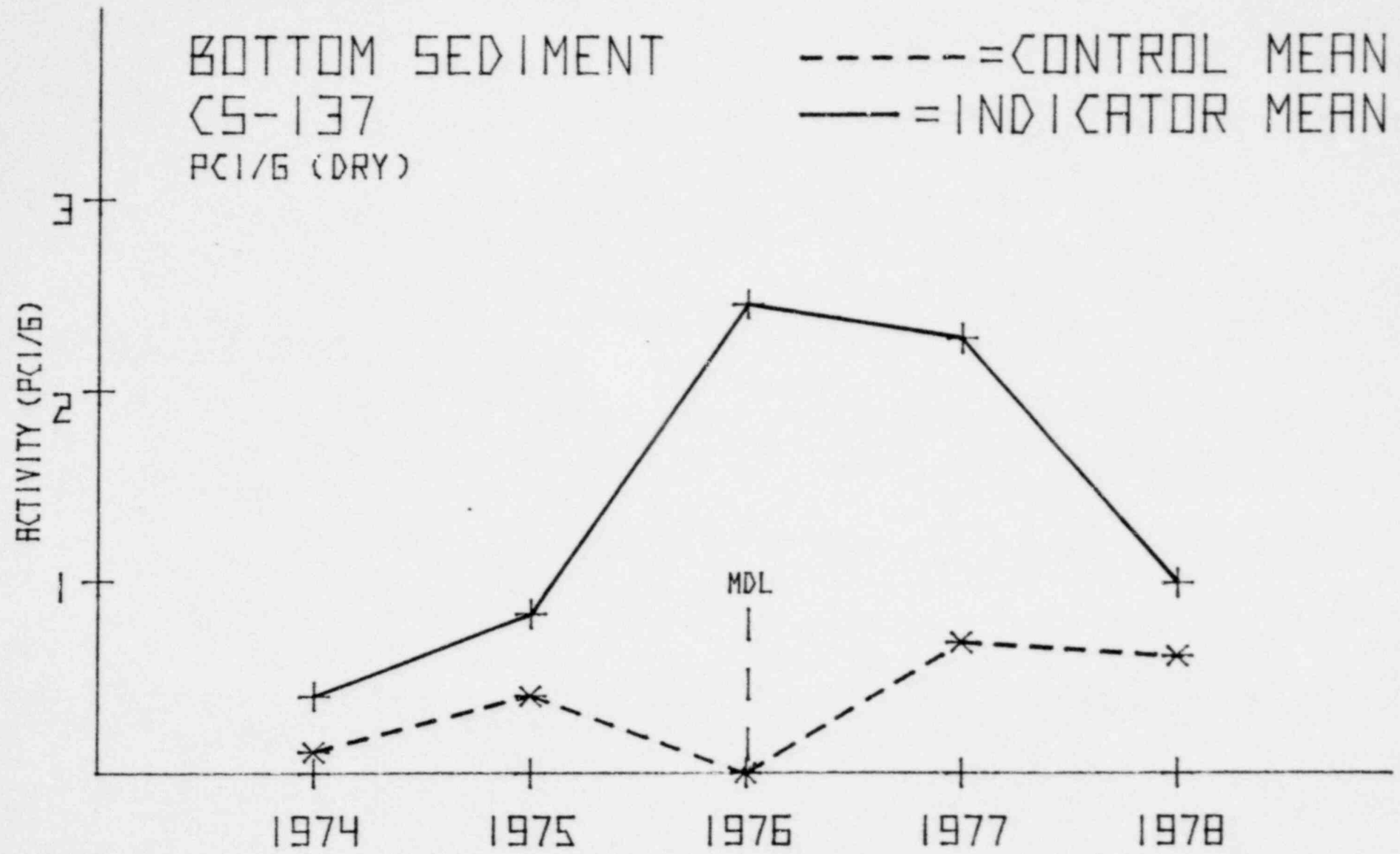

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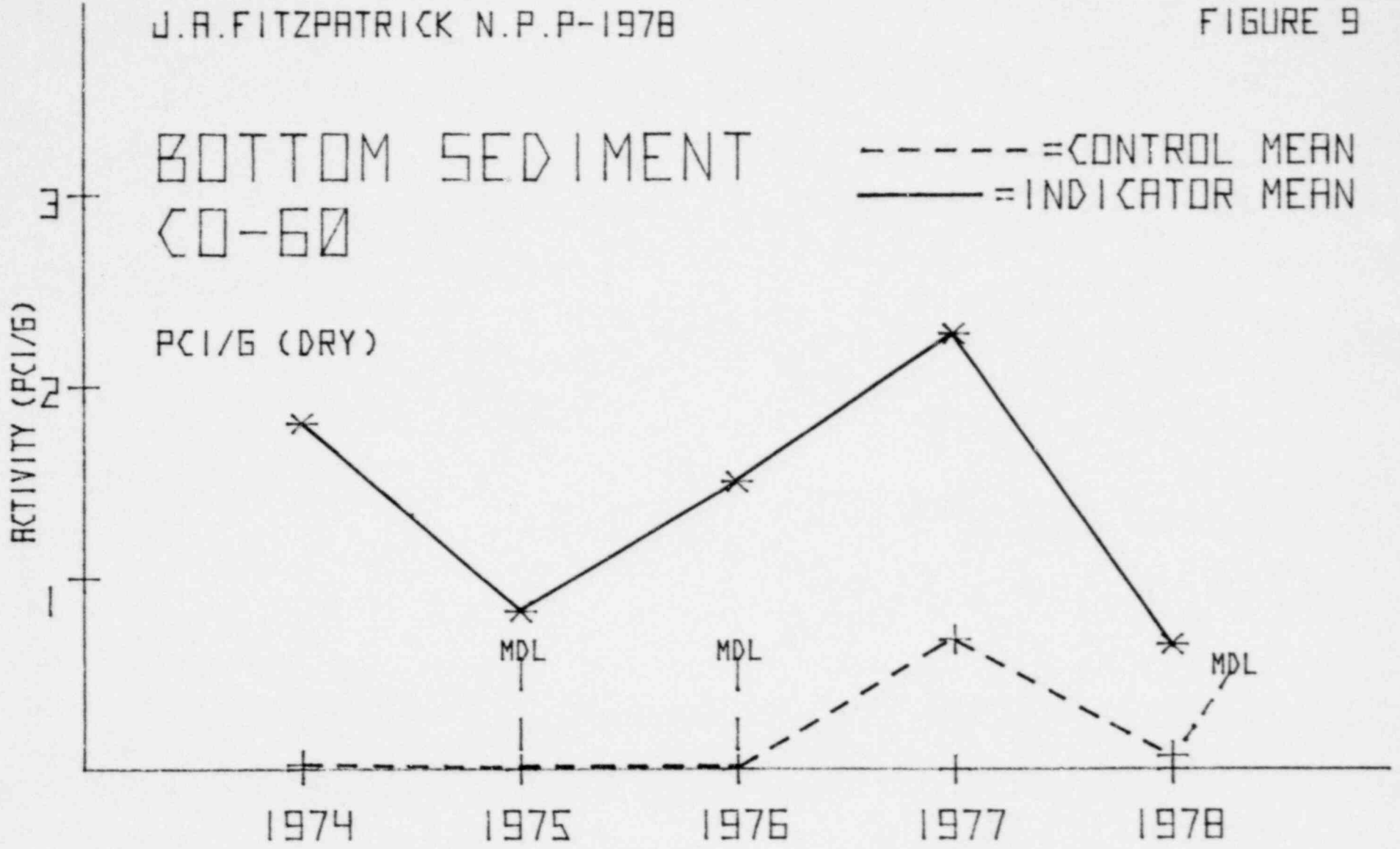
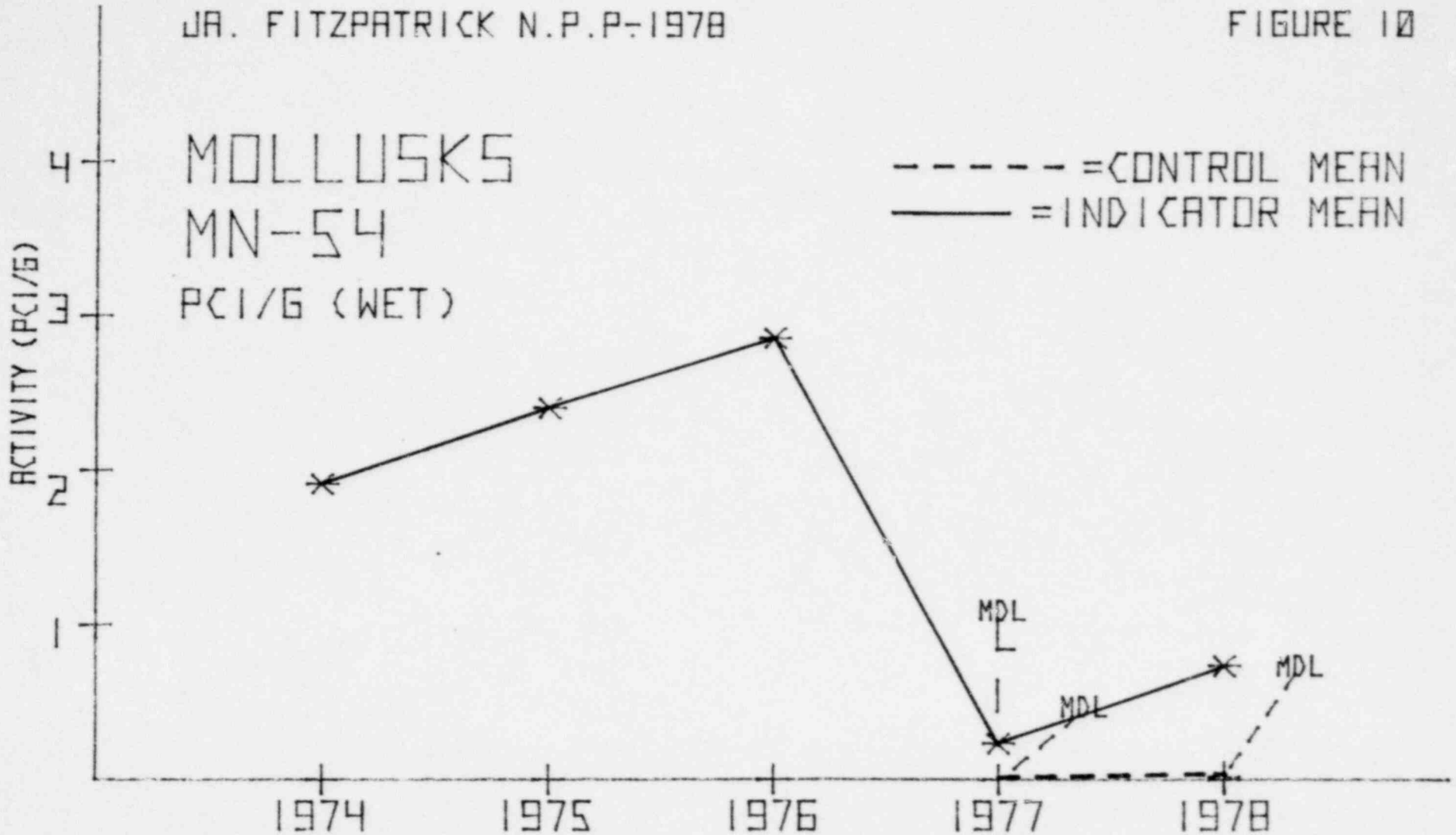
FIGURE 9




JA. FITZPATRICK N.P.P-1978
FIGURE 10
MOLLUSKS
MN-54
PCI/G (WET)
ACTIVITY (PCI/G)
4
3
2
1
----- =CONTROL MEAN
——— =INDICATOR MEAN
MDL
MDL
MDL
1974
1975
1976
1977
1978

J.A.FITZPATRICK N.P.P-1978

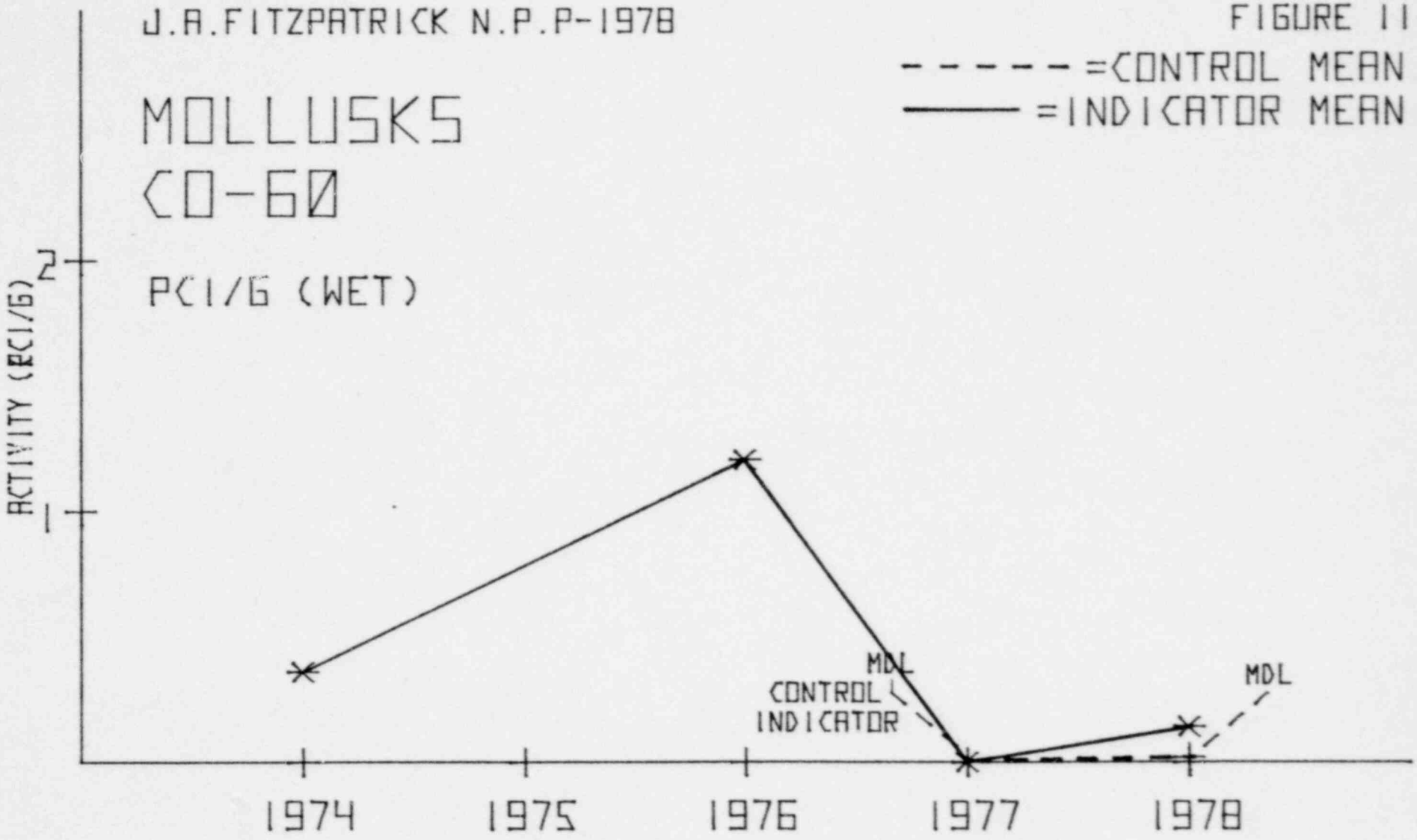
FIGURE 11

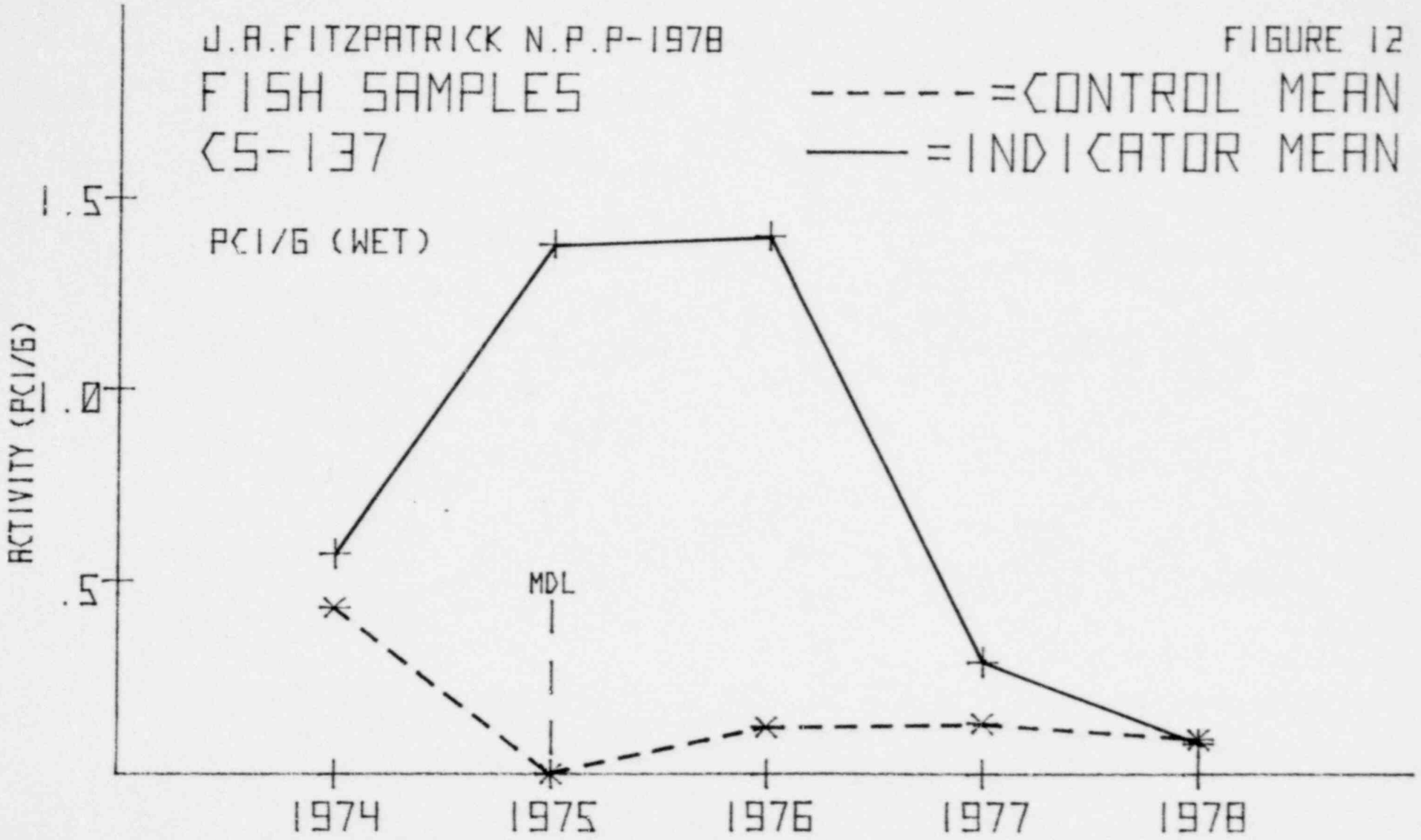
- - - - - =CONTROL MEAN

——— =INDICATOR MEAN

MOLLUSKS
CO-60

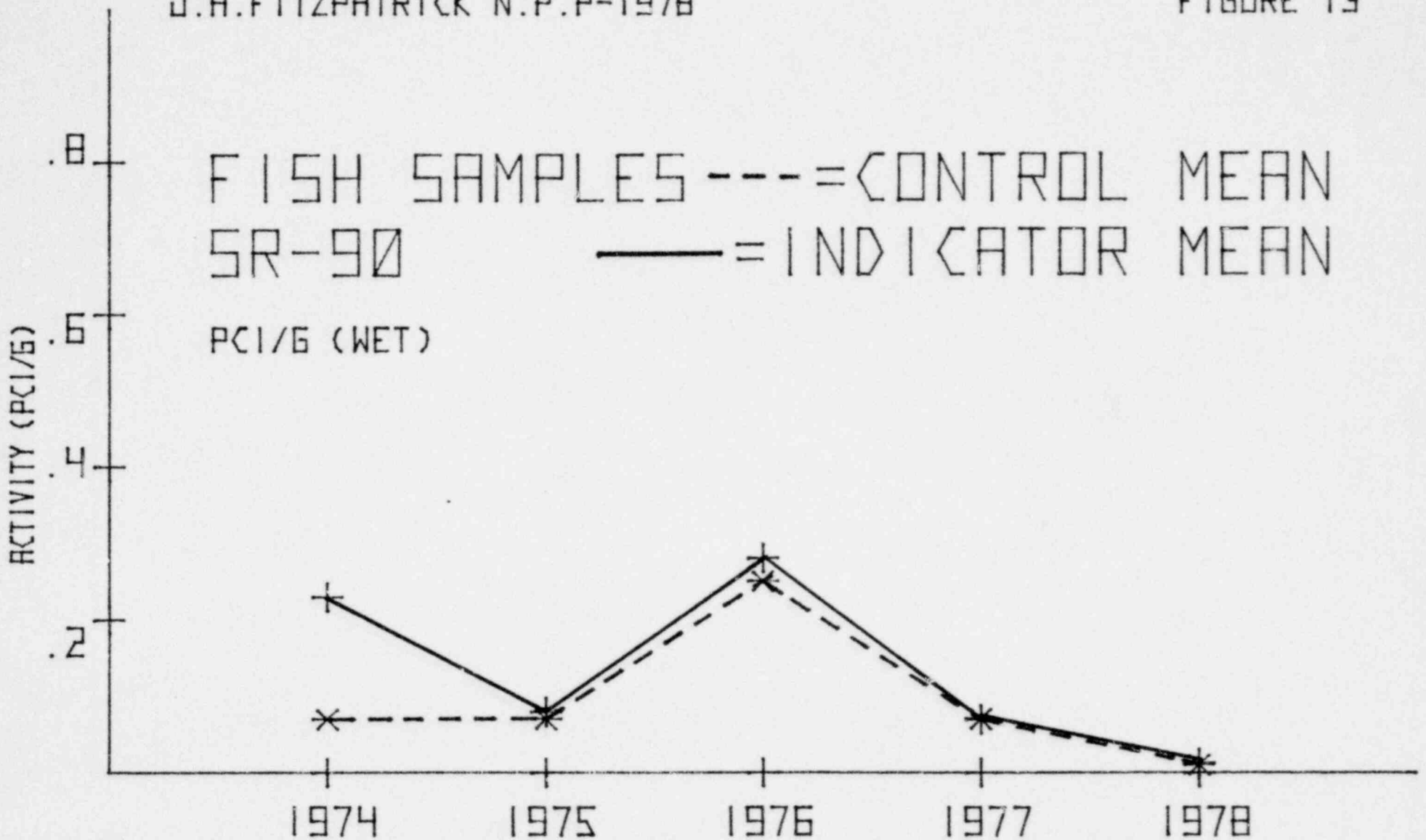
PCI/G (WET)




J.A.FITZPATRICK N.P.P-1978
FIGURE 12
FISH SAMPLES
CS-137
------=CONTROL MEAN
——=INDICATOR MEAN
PCI/G (WET)
ACTIVITY (PCI/G)
1.5
1.0
.5
MDL
1974
1975
1976
1977
1978

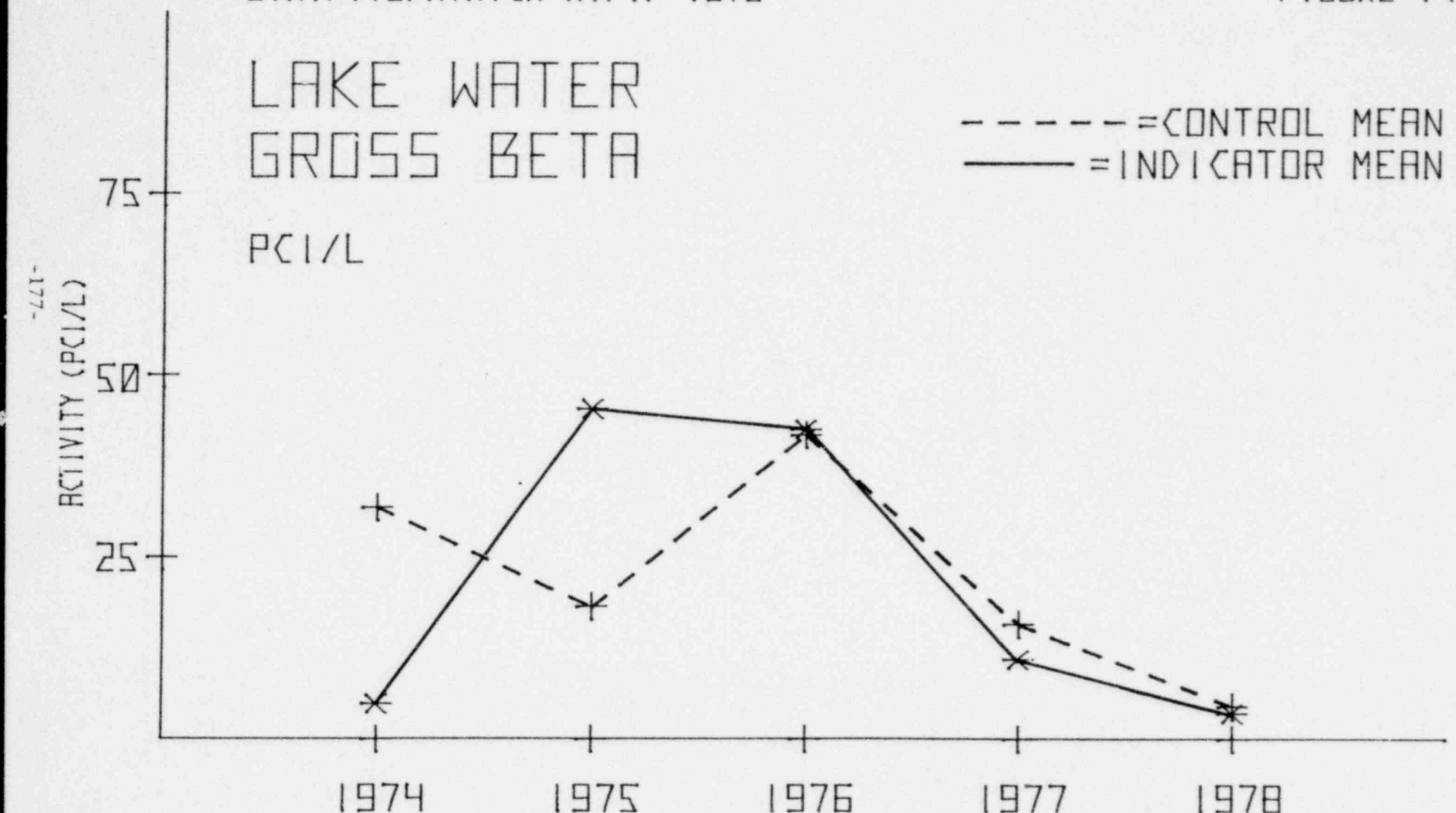
J.A.FITZPATRICK N.P.P-1978

FIGURE 13



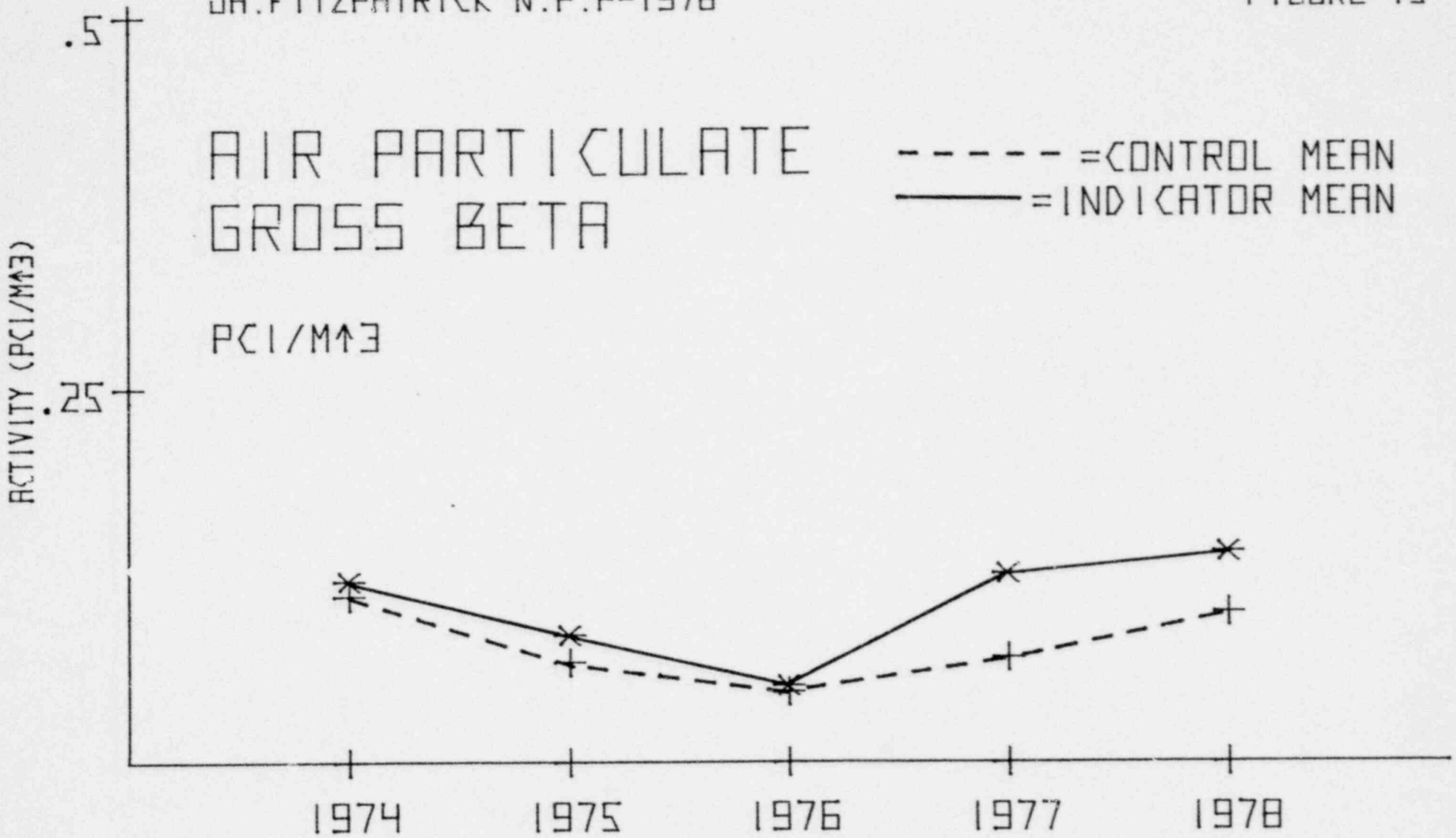
J.A.FITZPATRICK N.P.P-1978

FIGURE 14



JA.FITZPATRICK N.P.P-1978

FIGURE 15



J.A.FITZPATRICK N.P.P-1978

FIGURE 16

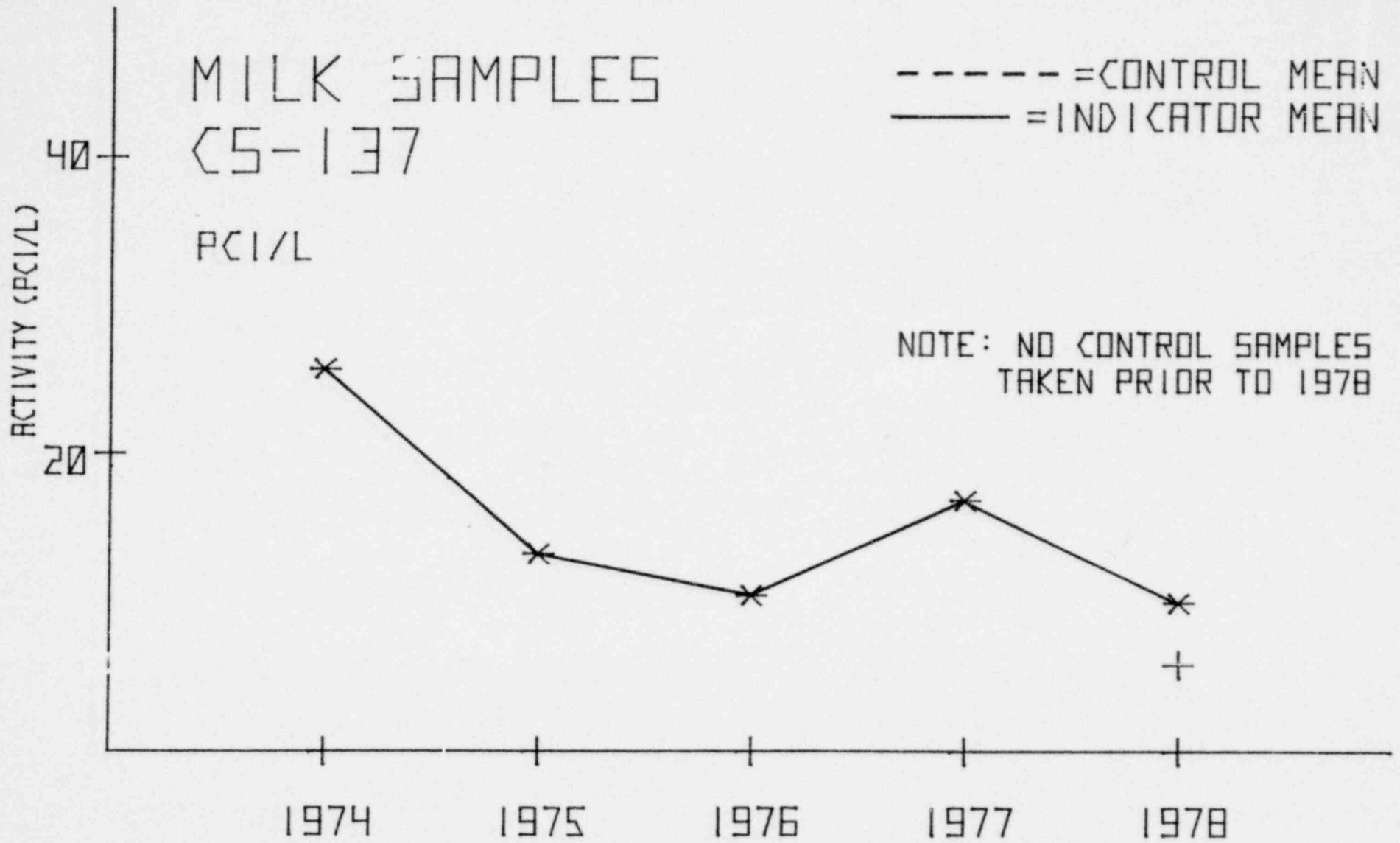


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FIGURE 17

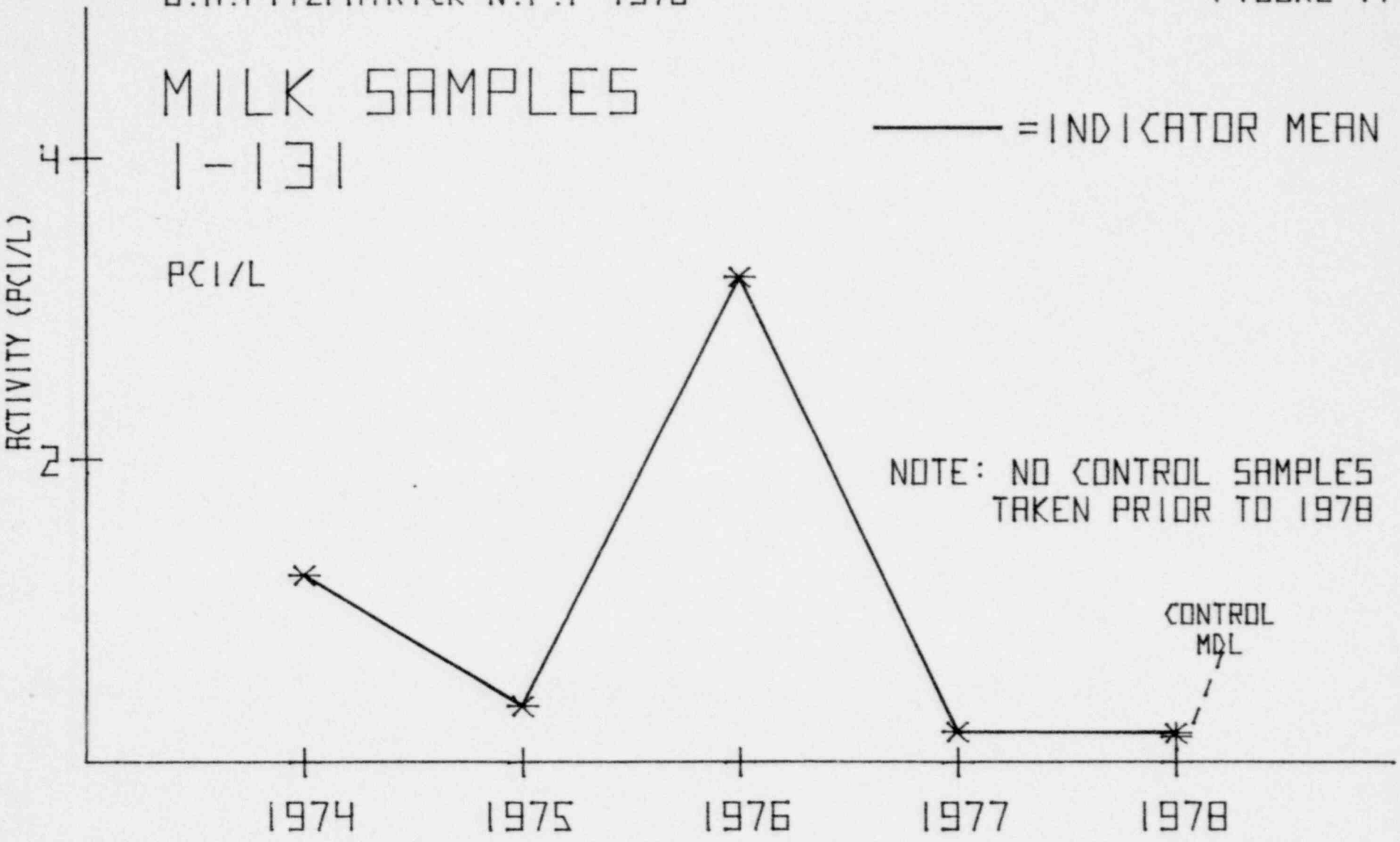

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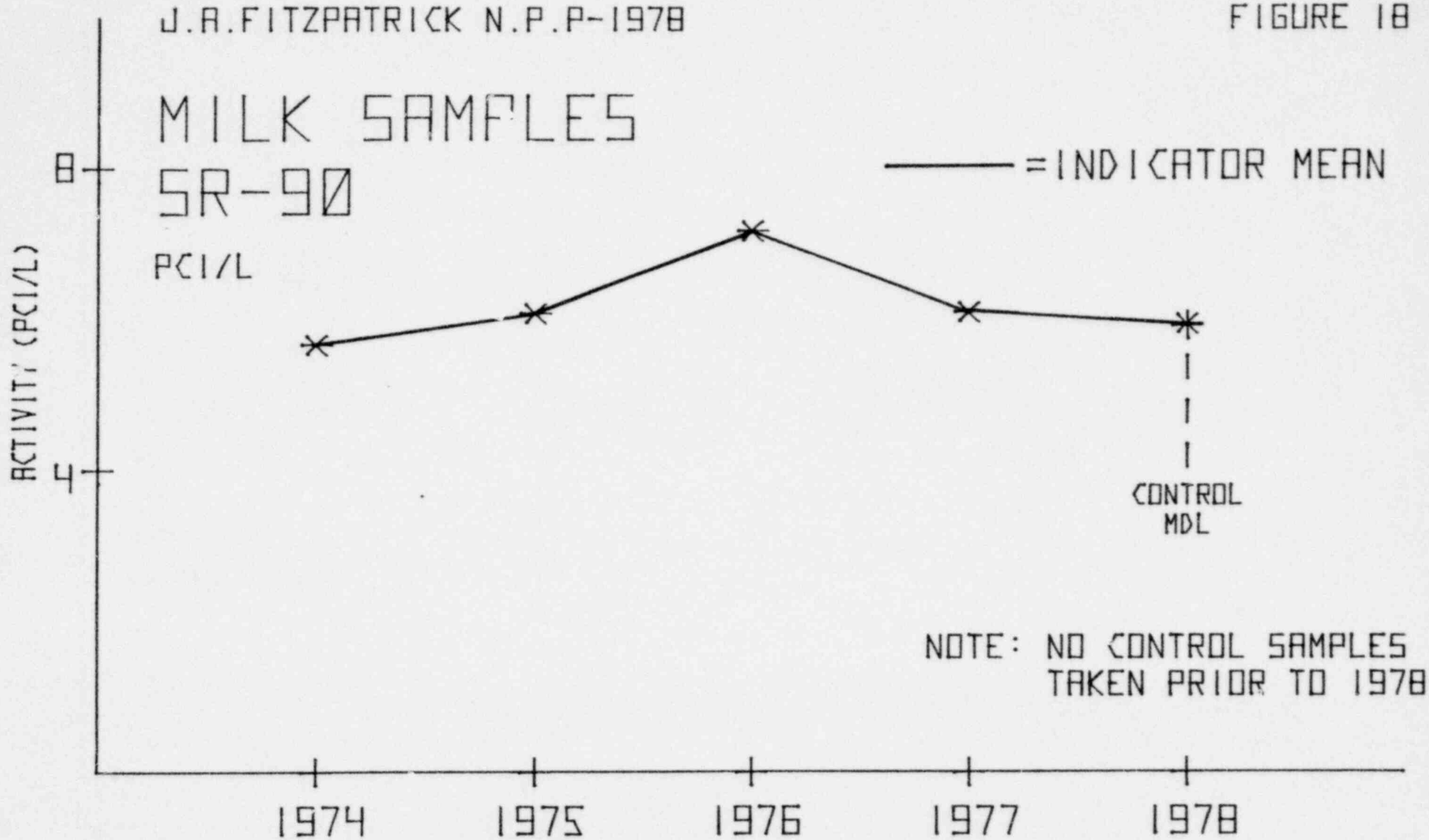
FIGURE 18



NOTE: NO CONTROL SAMPLES TAKEN PRIOR TO 1978