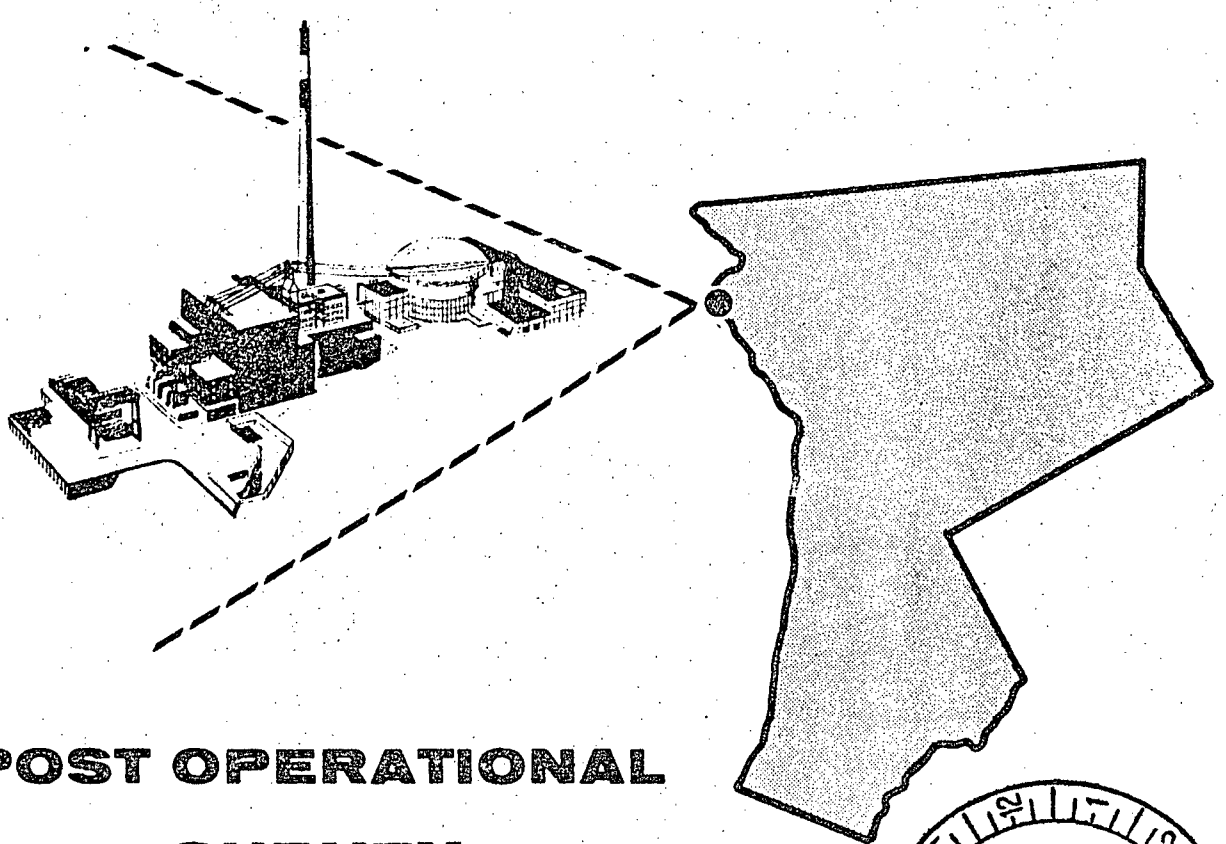
CONSOLIDATED EDISON

INDIAN POINT REACTOR



POST OPERATIONAL SURVEY AUGUST 1965

DIVISION OF ENVIRONMENTAL HEALTH SERVICES

NEW YORK STATE DEPARTMENT OF HEALTH

HOLLIS S. INGRAHAM, M.D. *Commissioner*

HOLLIS S. INGRAHAM, M.D.
COMMISSIONER

STATE OF NEW YORK
DEPARTMENT OF HEALTH

84 HOLLAND AVENUE
ALBANY, NEW YORK 12208

DIVISION OF
ENVIRONMENTAL HEALTH SERVICES

MEREDITH H. THOMPSON, D. ENG.
ASSISTANT COMMISSIONER

BUREAU OF
RADIOLOGICAL HEALTH SERVICES
SHERWOOD DAVIES, B.C.E., M.P.H.
DIRECTOR

August 30, 1965

Dr. Meredith H. Thompson
Assistant Commissioner
Division of Environmental Health Services
84 Holland Avenue
Albany 8, New York

Re: Post-Operational Environmental Survey
Village of Buchanan, Westchester County

Dear Doctor Thompson:

This is the first report on the post-operational survey in the vicinity of the Consolidated Edison Thorium Reactor located in the Village of Buchanan, Westchester County. Descriptions of survey sites and analyses performed are contained and sampling results are brought up-to-date.

The report was prepared by David J. Romano, Assistant Sanitary Engineer under the direction of William J. Kelleher, Associate Sanitary Engineer, both from the Bureau of Radiological Health Services. Field work was done by representatives of the New York State Conservation Department and local health departments.

Very truly yours,

Sherwood Davies

Sherwood Davies, P.E.
Director of
Bureau of Radiological Health Services

Consolidated Edison Indian Point Reactor

POST OPERATIONAL SURVEY

August, 1965

Division of Environmental Health Services

New York State Department of Health

Hollis S. Ingraham, M.D.
Commissioner

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Consolidated Edison Company of New York, Inc.

Post-Operational Survey

In The Vicinity Of

Indian Point Station

Introduction

The Division of Environmental Health Services in cooperation with the Consolidated Edison Company of New York, the Rockland County Health Department and the Westchester County Department of Health has been monitoring environmental radioactivity in the vicinity of the Indian Point Station since the reactor went into operation on August 2, 1962. This report summarizes the environmental sampling data for the period of August 2, 1962, to December 24, 1964.

Pre-operational monitoring and site surveillance were compiled in two previous reports of the Division of Environmental Health Services both entitled, "Pre-Operational Environmental Survey In The Vicinity Of The Consolidated Edison Thorium Reactor" dated November, 1959, and June, 1962.

Survey Description

The Westchester County Department of Health, and the Rockland County Department of Health collected samples from sites in the vicinity of the reactor. Valuable assistance in sample collection from the Hudson River was provided by the Bureau of Marine Fisheries of the New York State Department of Conservation. The type of samples taken, frequency of sampling, and sampling sites are listed below:

1. Air — Weekly Composite Sample

   Peekskill - Camp Field Filter Plant

2. Fallout — Weekly Composite Sample

   Peekskill - Camp Field Filter Plant

3. Milk — Monthly Grab Sample

   Yorktown - Hanover Hill Farm
   Clarkstown - Strawtown Dairy
   Bedford - Guard Hill Farm
   Mt. Pleasant - Grasslands

4. Water — Monthly Grab Sample

   Clarkstown - Lake De Forest
   Highland Falls - Bog Meadow Brook
   Yorktown - Croton Reservoir
   Clarkstown - Congers Lake
   Peekskill - Camp Field Filter Plant Reservoir
   Ossining - Indian Brook Reservoir
   Bedford - Byram Lake

Weekly Composite Sample

Peekskill - Hudson River at Standard Brands
Ossining - Hudson River at Sing Sing

5. Mud — Twice Yearly Sample

Croton-on-Hudson - Croton Bay
Iona Island - North End
Peekskill - Peekskill Bay
Nyack - West end of Tappan Zee Bridge
Stony Point - Hudson River opposite Con Edison

6. Vegetation — Monthly Grab Sample

Haverstraw - Letchworth Village Reservoir
Clarkstown - Dreyfus Reservoir
Yorktown - Croton Reservoir
Peekskill - Camp Field Filter Plant
Ossining - Indian Brook Reservoir
Bedford - Byram Lake

7. Algae — Twice Yearly Sample

Croton-on-Hudson - Croton Bay
Iona Island - North End
Nyack - West end of Tappan Zee Bridge
Cortlandt - Greens Cove

8. Fish — Twice Yearly Sample

Croton-on-Hudson - Croton Bay
Iona Island - North End
Peekskill - Peekskill Bay
Nyack - West end of Tappan Zee Bridge
Cortlandt - Greens Cove

9. Gamma Background — A Reuter-Stokes RSG-9 Pressurized Ionization Chamber was used to determine gamma backgrounds at nineteen different sites in the vicinity of the reactor.

Sampling Methods

1. Air - Approximately 1 cubic foot per minute of air was drawn through a fiberglass filter paper of 2 inch diameter for a weekly period using a Gast Air Pump and the filter was analyzed at the Division of Laboratories and Research. The total measured radionuclide content of air was expressed as pc/M^3 of gross beta activity.

2. Fallout - A sample was collected over a week's time using a polyethylene container with an exposure area of 0.101 ft^2 and a depth of approximately 9 inches from the rim. The container was placed in an exposed, outside location for a period of seven days. The top was then replaced and the entire unit sent to the Division of Laboratories and Research for analysis for Iodine-131, Strontium-89 and 90, Barium Lanthanum-140, Cesium-137 and Zirconium Niobium-95.

3. Milk - Two liter samples were taken monthly from several farms in the area of the reactor for analysis in the Marinelli-type configuration used in the gamma spectrometer at the Division of Laboratories and Research. Tests were made for I-131, Ba-La-140, Cs-137 and Potassium. Sr-89 and 90 were analyzed by chemical separation and beta counting.

4. Water - Weekly composite and monthly grab samples were obtained at selected stations. These were analyzed for gross beta, I-131, Cs-137, Ba-La-140, Zr-Nb-95, Sr-89 and 90.

5. Vegetation- Samples were obtained monthly during the growing season - usually May to November. The samples consisted of various grasses. These were placed in plastic bags and analyzed at the Division of Laboratories and Research for Cs-137, I-131, Ba-La-140, Mn-54, Zr-Nb-95 and Potassium.

6. Algae - Twice yearly samples consisting of assorted algae were collected in May and November from the Hudson River above and below the reactor site. These were placed in plastic bags and sent to the Division of Laboratories and Research. The analyses performed for vegetation were also performed on algae samples.

7. Mud - Mud was collected twice yearly in plastic jars at the same time as the algae samples. The amount collected varied. These samples were analyzed for gross gamma.

8. Fish - Assorted species of fish were collected by netting twice yearly at the same time as algae and mud samples. At the Laboratory, the sample was ground into a meal and analyzed for I-131, Ba-La-140, Cs-137, Zr-Nb-95 and Potassium.

Gamma scans of samples were made in the gamma spectrometer facility. This is a four port-top loading instrument. Each port houses a 4" x 4" NaI-Thallium activated crystal. Constant geometry for counting is maintained by using a Marinelli configuration sample container. The information from each crystal is fed into 256 channels of a 512 channel

Nuclear Data Multi-Channel Analyzer. The range of the instrument is 0-2.56 Mev with an energy scale of 10 Mev per channel.

9. Gamma Background - In August of 1964, personnel of the New York State Department of Health, Bureau of Radiological Health Services conducted a gamma background survey at various sites in the area around the reactor. The Reuter-Stokes RSG-9 Pressurized Ionization Chamber was used. This instrument can detect gamma radiation in the range of 1-200 microroentgens per hour.

The instrument consists of two parts: the ionization chamber and the electronic housing which is positioned directly above the ionization chamber. The chamber is a 1/8" thick steel pressure tank with a volume of 8.2 liters filled with pure argon at 43.5 atmospheric pressure or 625 psig. The electronic housing contains its own power supply and employs a vibrating reed electrometer read out device.

The pressurized ionization chamber was calibrated with a one millicurie Radium 226 point source in equilibrium with its progeny.

The measured gamma exposure rate is due to both terrestrial, fallout and cosmic radiation. It is possible to separate the total exposure rate into these two components by reading a pressure altitude versus cosmic exposure rate chart which was derived from Atomic Energy Commission formula relating pressure altitude and cosmic ray exposure rate. The pressure altitude is determined by means of an altimeter. The terrestrial fallout portion is the difference of the total and the cosmic portion.

Discussion of Results

The gross beta activity levels in air (Figure 1) show that there were no significant differencesbetween the Peekskill station and the average for the entire State. The graphs of each are in close agreement. The higher values from the summer of 1962 to June, 1963, were due to nuclear bomb test fallout and were approximately the same as the pre-operational survey values which also showed the effects of nuclear test fallout.

Strontium 89 and 90 fallout values were practically the same for both Peekskill and the State average. Strontium 89 peaks occur identically on both Figures 2 and 5 in the late winter-early spring of 1963; these were due to atmospheric nuclear testing during 1962.

The gross beta activity levels in water (Figure 3) were approximately the same as those reported in the June, 1962 pre-operational report. The Glenmont Station is located on the Hudson River, south of Albany. The Lake De Forest Station is a surface water reservoir in Rockland County.

A comparison of Figures 4 and 6 indicates that there is no significant difference between the values of the Albany and Hanover Hill Farm milk stations. The spring, 1963, peaks of Strontium 89 and 90 were noted for all milk stations and were due primarily to fallout from the 1962 nuclear tests.

A summary of environmental discharges from the Indian Point Reactor has been supplied by the Consolidated Edison Company and has been included in the Appendix of this report. The values given in this table indicate that the Plant has been operating within its allowable limits.

Summary

The data collected indicates that no significant increase in the background radioactivity levels can be attributed to the operation of the Indian Point Reactor since August 2, 1962. Fallout from the nuclear bomb tests late in 1962 was the prime cause of the activity increases observed in air, fallout, water and milk for the early spring of 1963. Since nuclear testing has ceased, the activity levels in these environmental samples has decreased considerably.

APPENDIX

Air Samples

Consolidated Edison Post-Operational Survey

Westchester County

Sampling Point - Camp Field Filter Plant

Collection	Gross Beta Activity (pc/M^3)	Collection	Gross Beta Activity (pc/M^3)
8/2/62	2.0	6/27/63	8.0
8/9/62	1.0	7/3/63	9.0
8/16/62	3.0	7/11/63	6.0
8/23/62	3.0	7/18/63	5.0
8/30/62	4.0	7/25/63	7.0
9/6/62	7.0	8/1/63	8.0
9/13/62	5.0	8/8/63	7.0
9/20/62	4.0	8/15/63	4.0
9/27/62	5.0	8/22/63	3.0
10/4/62	3.0	8/29/63	4.0
10/11/62	6.0	9/5/63	4.0
10/18/62	8.0	9/12/63	3.0
10/28/62	4.0	9/19/63	2.0
11/1/62	5.0	9/26/63	3.0
11/8/62	22.0	10/3/63	3.0
11/15/62	13.0	10/10/63	2.0
11/21/62	9.0	10/31/63	1.0
11/29/62	14.0	11/7/63	< 1.0
12/6/62	3.0	11/21/63	2.0
12/13/62	6.0	12/5/63	1.0
12/20/62	6.0	12/12/63	1.0
12/27/62	9.0	12/19/63	1.0
1/3/63	6.0	12/26/63	1.0
1/10/63	6.0	1/2/64	1.0
1/17/63	10.0	1/9/64	1.0
1/24/63	10.0	1/16/64	1.0
1/31/63	8.0	1/23/64	1.0
2/7/63	5.0	1/28/64	1.0
2/14/63	9.0	2/6/64	1.0
2/21/63	10.0	2/13/64	1.0
2/28/63	8.0	2/20/64	2.0
3/7/63	5.0	2/27/64	2.0
3/14/63	5.0	3/5/64	1.0
3/21/63	9.0	3/12/64	2.0
3/28/63	11.0	3/19/64	1.0
4/4/63	9.0	3/26/64	2.0
4/11/63	13.0	4/2/64	2.0
4/18/63	13.0	4/9/64	2.0
4/25/63	8.0	4/16/64	2.0
5/2/63	6.0	4/23/64	1.0
5/9/63	6.0	4/30/64	3.0
5/16/63	8.0	5/7/64	2.0
5/23/63	5.0	5/14/64	2.0
5/29/63	7.0	5/21/64	3.0
6/6/63	6.0	5/28/64	2.0
6/13/63	11.0	6/4/64	3.0
6/20/63	13.0	6/11/64	1.0

Air Samples Continued

Collection	Gross Beta Activity (pc/M^3)
6/18/64	2.0
6/25/64	3.0
7/2/64	1.0
7/9/64	1.0
7/16/64	1.0
7/30/64	1.0
8/6/64	1.0
8/13/64	1.0
8/20/64	1.0
8/27/64	< 1.0
9/3/64	1.0
9/10/64	1.0
9/17/64	< 1.0
9/24/64	< 1.0
10/1/64	< 1.0
10/8/64	< 1.0
10/15/64	< 1.0
10/22/64	2.0
10/29/64	1.0
11/5/64	< 1.0
11/12/64	2.0
11/19/64	< 1.0
11/25/64	< 1.0
12/3/64	< 1.0
12/10/64	< 1.0
12/17/64	< 1.0

Fallout Samples

Consolidated Edison Post-Operational Survey

Westchester County

Sampling Point - Camp Field Filter Plant

Collection	Results (pc/ft^2/day)					
	I-131	Sr-90	Sr-89	Ba-La-140	Cs-137	Zr-Nb-95
8/2/62		< 3	< 3			
8/9/62		< 3	< 3			
8/16/62		< 3	< 3			
8/23/62		< 3	< 3			
8/30/62		< 3	< 3			
9/6/62		< 3	< 3			
9/13/62		< 3	< 3			
9/20/62		< 3	< 3			
9/27/62		< 3	< 3			
10/4/62		< 3	< 3			
10/11/62		< 3	< 3			
10/18/62		< 3	< 3			
10/25/62		< 3	< 3			
11/1/62		< 3	< 3			
11/8/62		< 3	< 3			
11/15/62		< 3	< 3			
11/22/62		< 3	< 3			
11/29/62		< 3	< 3			
12/6/62		< 3	< 3			
12/13/62		< 3	< 3			
12/20/62		< 3	< 3			
12/27/62	< 20	< 3	20	< 20	28	
1/3/63	< 20	< 3	7			
1/10/63	< 20	< 3	98	125	82	
1/17/63	< 20	< 3	35	57	24	
1/24/63	< 20	< 3	39	100	24	
1/31/63	< 20	< 3	49	38	65	
2/7/63	< 20	< 3	3	< 20	< 20	
2/14/63	< 20	< 3	10	< 20	< 20	66
2/21/63	< 20	10	22	< 20	120	< 20
2/28/63	< 20	< 3	14	< 20	< 20	< 20
3/7/63	< 20	12	74	< 20	< 20	21
3/14/63	< 20	7	35	71	< 20	< 20
3/21/63	< 20	< 3	28	< 20	< 20	< 20
3/28/63	< 20	< 3	34	< 20	< 20	22
4/4/63	< 20	< 3	31	< 20	< 20	31
4/11/63	< 20	2	21	< 20	< 20	125
4/18/63	< 20	5	22	< 20	< 20	124
4/25/63	27	< 3	23	< 20	< 20	193
5/2/63	< 20	3	11	< 20	< 20	146
5/9/63	< 20	7	94	238	< 20	400
5/16/63	< 20	7	16	< 20	20	74
5/23/63	39	< 3	23	< 20	31	107
5/29/63	< 20	< 3	20	27	< 20	20
6/6/63	< 20	6	94	184	74	214

Fallout Samples

Consolidated Edison Post-Operational Survey

Continued

Collection	Results (pc/ft²/day)					
	I-131	Sr-90	Sr-89	Ba-La-140	Cs-137	Zr-Nb-95
6/13/63	< 20	4	10	< 20	< 20	70
6/20/63	< 20	3	28	85	32	46
6/27/63	< 20	< 3	13	< 20	< 20	< 20
7/3/63	< 20	< 3	19	< 20	< 20	< 20
7/11/63	< 50	< 3	40	59	< 50	58
7/18/63	< 50	11	13	< 50	< 50	< 50
7/25/63	< 50	< 3	< 3	< 50	< 50	< 50
8/1/63	< 50	8	< 3	< 50	< 50	< 50
8/8/63	< 50	14	46	< 50	< 50	87
8/15/63	< 50	8	< 3	< 50	< 50	< 50
8/22/63	< 50	< 3	< 3	< 50	< 50	< 50
8/29/63	< 20	< 3	< 3	< 20	< 20	< 20
9/5/63	< 50	< 3	26	< 50	< 50	< 50
9/12/63	< 50	< 3	< 3	< 50	< 50	< 50
9/19/63	< 50	< 3	< 3	< 50	< 50	< 50
9/26/63	< 50	< 3	< 3	< 50	< 50	< 50
10/3/63	< 50	< 3	< 3	< 50	< 50	< 50
10/10/63	< 50	< 3	< 3	< 50	< 50	< 50
10/17/63	< 50	3	< 7	< 50	< 50	< 50
10/24/63	< 50	< 3	< 3	< 50	< 50	< 50
10/31/63	< 50	< 3	< 3	< 50	< 50	< 50
11/7/63	< 50	< 3	< 3	< 50	< 50	< 50
11/14/63	< 50	< 3	< 3	< 50	< 50	< 50
11/21/63	< 50	< 3	< 3	< 50	< 50	< 50
11/27/63	< 50	< 3	< 3	< 50	< 50	< 50
12/5/63	< 50	< 3	< 3	< 50	< 50	< 50
12/12/63	< 50	< 3	< 3	< 50	< 50	< 50
12/19/63	< 50	< 3	< 3	< 50	< 50	< 50
12/26/63	< 50	< 3	< 3	< 50	< 50	< 50
1/2/64	< 50	< 3	< 3	< 50	< 50	< 50
1/9/64	< 50	< 3	< 3	< 50	94	< 50
1/16/64	< 50	5	3	< 50	< 50	< 50
1/23/64		5	< 3			
1/28/64	< 50	< 3	3	< 50	< 50	< 50
2/6/64	< 50	4	4	< 50	< 50	< 50
2/13/64	< 50	5	< 3	< 50	< 50	< 50
2/20/64	< 50	< 3	< 3	< 50	< 50	< 50
2/27/64	< 50	< 3	< 3	< 50	< 50	< 50
3/5/64	< 50	12	< 3	< 50	< 50	< 50
3/12/64	< 50	< 3	< 3	< 50	< 50	< 50
3/19/64	< 50	< 3	< 3	< 50	< 50	< 50
3/26/64	< 50	5	< 3	< 50	< 50	< 50
4/2/64	< 50	4	10	< 50	< 50	< 50
4/9/64	< 50	15	< 3	< 50	< 50	< 50
4/16/64	< 50	3	5	< 50	< 50	< 50
4/23/64	< 50	4	< 3	< 50	< 50	< 50

Consolidated Edison Post-Operational Survey

Continued

Collection	Results (pc/ft^2/day)					
	I-131	Sr-90	Sr-89	Ba-La-140	Cs-137	Zr-Nb-95
4/30/64	< 50	3	< 3	< 50	< 50	< 50
5/7/64	< 50	3	< 3	< 50	< 50	< 50
5/14/64	< 50	28	< 3	< 50	< 50	< 50
5/21/64	< 50	< 3	< 3	< 50	< 50	< 50
5/28/64	< 50	< 3	< 3	< 50	93	< 50
6/4/64	< 50	< 3	4	< 50	< 50	< 50
6/11/64	< 50	< 3	< 3	< 50	< 50	< 50
6/18/64	< 50	< 3	< 3	< 50	< 50	< 50
6/25/64	< 50	< 3	< 3	< 50	< 50	< 50
7/2/64	< 50	5	< 3	< 50	< 50	< 50
7/9/64	< 50	< 3	4	< 50	< 50	< 50
7/16/64	< 50	< 3	< 3	< 50	< 50	< 50
7/23/64	< 50	< 3	< 3	< 50	< 50	< 50
7/30/64	< 50	< 3	4	< 50	< 50	< 50
8/6/64	< 50	< 3	< 3	< 50	< 50	< 50
8/13/64	< 50	4	< 3	< 50	< 50	< 50
8/20/64	< 50			< 50	< 50	< 50
8/27/64	< 50	< 3	< 3	< 50	< 50	< 50
9/3/64	< 50	< 3	< 3	< 50	< 50	< 50
9/10/64	< 50	< 3	< 3	< 50	< 50	< 50
9/17/64	< 50	9	< 3	< 50	< 50	< 50
9/24/64	< 50	< 3	< 3	< 50	< 50	< 50
10/1/64	< 50			< 50	< 50	< 50
10/8/64	< 50	< 3	< 3	< 50	< 50	< 50
10/15/64	< 50	< 3	< 3	237	< 50	< 50
10/22/64	< 50			< 50	< 50	< 50
10/29/64	< 50	< 3	< 3		< 50	< 50
11/5/64	< 50	< 3	< 3	< 50	< 50	< 50
11/12/64	< 50	12	< 3	< 50	< 50	< 50
11/19/64	< 50	< 3	< 3	< 50	< 50	106
11/25/64	< 50	< 3	< 3	< 50	< 50	72
12/3/64	< 50			< 50	< 50	< 50
12/10/64	< 50			< 50	< 50	< 50
12/17/64	< 20			< 20	< 20	< 20
12/23/64	< 50			< 50	< 50	< 50

Water Samples

Consolidated Edison Post-Operational Survey

Rockland County

Congers Lake		Lake DeForest	
Collection	Gross Beta (pc/ml)	Collection	Gross Beta (pc/ml)
8/10/62	0.023	8/10/62	0.004
9/19/62	0.018	9/19/62	0.008
10/31/62	0.040	10/31/62	0.019
12/14/62	0.099	12/14/62	0.042
1/11/63	0.016	1/11/63	0.019
2/13/63	0.065	2/13/63	0.020
3/29/63	0.042	3/29/63	0.09
4/22/63	0.023	4/22/63	0.016
5/21/63	0.062	5/21/63	0.041
6/14/63	0.027	6/14/63	0.009
7/10/63	0.042	7/10/63	0.024
8/9/63	0.035	8/9/63	0.019
9/12/63	0.027	9/12/63	0.015
10/9/63	0.015	10/9/63	0.013
11/13/63	0.033	11/13/63	0.003
1/17/64	0.022	1/7/64	0.018
2/24/64	0.015	2/24/64	0.020
3/13/64	0.025	3/13/64	0.013
4/15/64	0.056	4/15/64	0.021
5/21/64	0.026	5/21/64	0.012
6/9/64	0.028	6/9/64	0.010
7/7/64	0.022	7/7/64	0.011
7/21/64	0.021	7/21/64	0.012
8/6/64	0.022	8/6/64	0.008
8/27/64	0.017	8/27/64	0.009
9/9/64	0.016	9/9/64	0.011
9/24/64	0.023	9/24/64	0.011
		11/9/64	0.008
		12/3/64	0.006

Water Samples

Consolidated Edison Post-Operational Survey

Orange County

Sampling Point - Bog Meadow Brook

Collection	Gross Beta (pc/ml)
9/4/62	*
9/17/62	*
10/8/62	*
11/13/62	*
12/10/62	*
2/18/63	0.009
3/11/63	0.008
4/12/63	0.016
5/13/63	0.010
6/17/63	0.026
7/16/63	0.049
8/19/63	0.028
9/16/63	0.004
10/15/63	0.006
11/19/63	0.004
12/16/63	0.005
1/20/64	0.006
2/12/64	< 0.003
3/16/64	0.011
4/14/64	0.005
5/15/64	0.012
6/15/64	0.005
7/15/64	0.004
8/17/64	0.004
9/17/64	0.004
10/19/64	0.005
11/17/64	0.006
12/15/64	0.005

*Sample Not Analyzed.

Water Samples

Consolidated Edison Post-Operational Survey

Westchester County

Sampling Point - Croton Reservoir

Collection	Gross Beta (pc/ml)
8/9/62	0.006
10/10/62	0.013
11/21/62	0.002
12/13/62	< 0.006
1/17/63	0.009
2/19/63	0.005
3/26/63	0.003
4/17/63	0.008
5/14/63	0.008
6/14/63	0.006
7/15/63	0.036
8/19/63	0.021
9/16/63	0.009
10/16/63	0.016
11/14/63	0.014
12/18/63	0.009
1/15/64	< 0.003
2/17/64	0.003
3/16/64	0.014
4/16/64	0.021
5/14/64	0.019
6/12/64	0.010
7/14/64	0.013
8/20/64	0.009
9/14/64	0.009
10/14/64	0.009
11/17/64	0.008
12/15/64	0.006

Water Samples

Consolidated Edison Post-Operational Survey

Westchester County

Sampling Point - Hudson River at Sing Sing

Collection	Gross Beta (pc/ml)	Collection	Gross Beta (pc/ml)
8/3/62	0.010	11/22/63	0.047
8/17/62	0.018	11/28/63	0.079
8/31/62	0.008	12/5/63	0.044
9/14/62	0.012	12/13/63	0.016
9/28/62	0.014	12/20/63	< 0.006
10/12/62	0.033	12/27/63	0.007
10/26/62	0.028	1/3/64	0.031
11/9/62	0.06	1/10/64	0.035
11/22/62	0.05	1/17/64	0.105
12/7/62	< 0.03	1/24/64	0.062
12/21/62	0.07	1/31/64	0.044
1/4/63	< 0.06	2/7/64	0.033
1/18/63	< 0.06	2/14/64	0.109
2/1/63	0.06	2/21/64	0.034
2/15/63	< 0.06	2/28/64	0.026
3/1/63	< 0.06	3/6/64	0.010
3/15/63	< 0.06	3/13/64	0.014
3/28/63	0.028	3/20/64	0.026
4/12/63	< 0.06	3/27/64	0.023
4/26/63	< 0.03	4/3/64	0.017
5/10/63	< 0.006	4/10/64	0.021
5/24/63	< 0.03	4/17/64	0.013
5/30/63	< 0.03	4/24/64	0.002
6/7/63	0.038	5/1/64	0.006
6/14/63	0.021	5/8/64	0.023
6/21/63	< 0.006	5/15/64	0.068
6/28/63	0.03	5/22/64	0.012
7/4/63	0.034	5/29/64	0.029
7/12/63	0.020	6/5/64	0.038
7/18/63	0.045	6/12/64	0.032
7/26/63	0.072	6/19/64	0.034
8/2/63	0.083	6/19/64	0.047
8/9/63	0.090	7/3/64	0.057
8/16/63	0.098	7/10/64	0.054
8/23/63	0.091	7/17/64	0.048
8/30/63	0.072	7/24/64	0.052
9/6/63	0.062	7/31/64	0.058
9/13/63	*	8/7/64	0.054
9/20/63	0.031	8/14/64	0.064
9/27/63	0.071	8/21/64	0.051
10/4/63	< 0.006	8/28/64	0.069
10/11/63	0.053	9/4/64	0.061
10/18/63	0.089	9/11/64	0.054
10/25/63	0.121	9/18/64	0.068
11/1/63	0.065	9/25/64	0.064
11/8/63	< 0.006	10/2/64	0.086
11/15/63	0.095	10/2/64	0.052

Water Samples Continued

Collection	Gross Beta (pc/ml)
10/16/64	0.061
10/23/64	0.078
10/30/64	0.050
11/6/64	0.083
11/13/64	0.050
11/20/64	0.057
11/26/64	0.060
12/4/64	0.074
12/11/64	0.056
12/18/64	0.057
12/24/64	*

*Sample Not Analyzed.

Consolidated Edison Post-Operational Survey

Westchester County

Sampling Point - Hudson River at Standard Brands

Collection	Gross Beta (pc/ml)	Collection	Gross Beta (pc/ml)
8/2/62	0.006	11/21/63	0.040
8/16/62	0.023	11/28/63	0.048
8/30/62	0.033	12/5/63	0.030
9/13/62	0.026	12/12/63	0.020
9/27/62	0.010	12/19/63	0.020
10/11/62	*	12/26/63	0.012
10/25/62	0.030	1/2/64	0.015
11/8/62	0.080	1/9/64	0.025
11/22/62	0.030	1/16/64	0.024
12/6/62	0.030	1/23/64	0.031
12/20/62	0.030	1/30/64	0.032
1/3/63	0.065	2/6/64	< 0.006
1/17/63	0.030	2/13/64	< 0.006
1/31/63	0.060	2/20/64	0.006
2/14/63	0.060	2/27/64	0.012
2/28/63	0.060	3/5/64	0.007
3/14/63	0.060	3/12/64	0.007
3/28/63	0.060	3/19/64	0.016
4/11/63	0.021	3/26/64	0.020
4/25/63	0.015	4/2/64	0.014
5/9/63	0.008	4/9/64	< 0.012
5/23/63	0.010	4/16/64	0.045
5/30/63	0.040	4/23/64	0.007
6/6/63	0.006	4/30/64	0.005
6/13/63	0.028	5/7/64	0.008
6/20/63	0.009	5/14/64	0.005
6/27/63	0.019	5/21/64	0.012
7/4/63	0.023	5/28/64	0.016
7/11/63	0.062	6/4/64	0.029
7/18/63	0.054	6/11/64	0.015
7/25/63	0.056	6/18/64	0.022
8/1/63	0.095	6/25/64	0.022
8/8/63	< 0.003	7/2/64	0.035
8/15/63	0.057	7/9/64	0.031
8/22/63	0.085	7/16/64	0.036
8/29/63	0.072	7/23/64	0.040
9/5/63	0.077	7/30/64	0.038
9/12/63	0.010	8/6/64	0.036
9/19/63	0.019	8/13/64	0.023
9/26/63	0.012	8/20/64	0.041
10/3/63	< 0.012	8/27/64	0.038
10/10/63	< 0.006	9/3/64	0.036
10/17/63	< 0.006	9/10/64	0.042
10/24/63	0.031	9/17/64	0.052
10/31/63	< 0.012	9/25/64	0.036
11/7/63	< 0.003	10/2/64	0.048
11/14/63	< 0.031	10/19/64	0.032

Water Samples Continued

Collection	Gross Beta (pc/ml)
10/16/64	0.043
10/23/64	0.038
10/30/64	0.024
11/6/64	0.048
11/13/64	0.088
11/20/64	0.045
11/26/64	0.046
12/4/64	*
12/11/64	0.030
12/18/64	0.058
12/24/64	*

*Sample Not Analyzed.

Water Samples

Consolidated Edison Post-Operational Survey

Westchester County

Indian Brook Reservoir		Byram Lake	
Collection	Gross Beta (pc/ml)	Collection	Gross Beta (pc/ml)
8/9/62	0.005	8/9/62	*
9/5/62	0.013	9/5/62	*
10/11/62	0.013	10/10/62	0.015
11/21/62	0.021	11/21/62	0.001
12/13/62	0.053	12/13/62	0.028
1/17/63	0.042	1/17/63	*
2/19/63	0.029	2/19/63	0.009
3/26/63	0.028	3/26/63	0.012
4/18/63	0.012	4/17/63	*
5/14/63	< 0.06	5/14/63	*
6/14/63	0.036	6/14/63	*
7/16/63	0.079	7/15/63	*
8/19/63	0.026	8/19/63	*
9/16/63	0.013	9/16/63	*
10/16/63	0.012	10/15/63	0.031
11/14/63	0.028	11/14/63	0.018
11/21/63	< 0.006	12/8/63	0.008
12/18/63	*	1/15/64	0.009
1/15/64	0.013	2/17/64	0.003
1/23/64	0.035	3/16/64	0.023
2/17/64	0.016	4/16/64	0.015
3/16/64	0.015	5/14/64	0.015
4/16/64	0.020	6/12/64	0.010
5/14/64	0.013	7/14/64	0.004
6/12/64	0.007	8/21/64	0.010
7/14/64	0.017	9/14/64	0.009
8/20/64	0.004	10/14/64	0.010
9/14/64	0.012	11/17/64	0.013
10/14/64	0.007	12/15/64	0.008
11/17/64	0.006		
12/15/64	0.007		

*Sample Not Analyzed.

Water Samples

Consolidated Edison Post-Operational Survey

Westchester County

Sampling Point - Camp Field Filter Plant

Collection	Gross Beta (pc/ml)
8/9/62	0.007
9/5/62	0.004
10/11/62	0.012
11/21/62	0.006
12/13/62	0.022
1/16/63	0.029
2/19/63	0.051
3/26/63	0.053
4/18/63	0.008
5/14/63	0.010
618/63	0.015
7/16/63	0.020
8/19/63	0.020
9/16/63	0.012
10/15/63	0.012
11/14/63	0.021
12/18/63	0.011
1/15/64	0.009
2/17/64	0.013
3/16/64	0.010
4/16/64	0.019
5/14/64	0.008
6/12/64	0.010
7/14/64	0.010
8/20/64	0.012
9/14/64	0.006
10/14/64	0.005
11/17/64	0.004
12/15/64	0.007

Water Samples

Consolidated Edison Post-Operational Survey

Analyses for I-131, Ba-La-140, Cs-137 and Zr-Nb-95 were also made on all water samples. The results were less than 20 pc/l unless listed in the following table.

Collection	Sampling Point	Isotope	Result (pc/l)
1/11/63	Lake DeForest	Cs-137	28
2/15/63	Hudson River at Sing Sing	Ba-La-140	21
2/19/63	Camp Field Filter Plant	Cs-137	34
3/14/63	Hudson River at Standard Brands	Ba-La-140	27
3/26/63	Camp Field Filter Plant	Zr-Nb-95	27
3/26/63	Indian Brook Reservoir	Zr-Nb-95	37
3/28/63	Hudson River at Standard Brands	Cs-137	35
3/29/63	Congers Lake	I-131	21
3/29/63	Congers Lake	Ba-La-140	32
6/6/63	Hudson River at Standard Brands	Zr-Nb-95	26
6/13/63	Hudson River at Standard Brands	Zr-Nb-95	145
6/14/63	Congers Lake	Zr-Nb-95	21
7/18/63	Hudson River at Standard Brands	Ba-La-140	41

Milk Samples

Consolidated Edison Post-Operational Survey

Westchester County

Sampling Point - Grasslands

Collection	Results (pc/l) I-131	Sr-90	Sr-89	Ba-La-140	Cs-137	g/l K
8/8/62	< 20	8	19			
9/6/62	26	< 3	17			
10/30/62	< 20	11	21	< 20	52	
12/13/62	< 20	7	< 3	< 20	58	
12/26/62	< 20	10	< 3	< 20	59	
1/31/63	< 20	5	5	< 20	< 20	
2/19/63	< 20	6	< 3	< 20	78	
3/26/63	< 20	5	< 3	< 20	20	
4/17/63	51	6	9	< 20	26	
5/14/63	< 20	7	22	< 20	54	1.1
6/14/63	< 20	16	88	< 20	114	
7/16/63	< 20	20	52	< 20	129	1.3
8/19/63	< 20	21	40	< 20	117	1.2
9/16/63	< 20	7	15	< 20	94	1.4
10/16/63	< 20	18	< 3	< 20	94	1.3
11/14/63	< 20	16	< 3	< 20	103	1.7
12/18/63	< 20	13	< 3	< 20	121	1.4
1/15/64	< 20	10	5	< 20	143	1.8
2/17/64	< 20	15	< 3	< 20	122	1.6
3/16/64	< 20	14	< 3	< 20	108	1.4
4/16/64	< 20	11	< 3	< 20	102	1.9
5/14/64	< 20	11	3	< 20	75	1.6
6/12/64	< 20	14	6	< 20	106	1.5
7/15/64	< 20	15	< 3	< 20	83	1.4
9/14/64	< 20	13	< 3	< 20	59	1.5
10/15/64	< 20	10	< 3	< 20	66	1.7
11/17/64	< 20	11	< 3	< 20	45	1.4
12/15/64	< 20	28	< 3	< 20	47	1.6

Milk Samples

Consolidated Edison Post-Operational Survey

Rockland County

Sampling Point - Strawtown Diary

Collection	Results (pc/l) I-131	Sr-90	Sr-89	Ba-La-140	Cs-137	g/l K
10/31/62	< 20	21	3	< 20	53	
2/8/63	< 20	3	< 3	< 20	36	
3/8/63	< 20	< 3	4	< 20	37	
4/9/63	22	4	7	< 20	< 20	
5/16/63	< 20	4	4	< 20	30	
6/12/63	< 20	13	26	< 20	26	
8/2/63	25			< 20	68	1.6
9/10/63	< 20	12	13	< 20	72	1.4
10/14/63	< 20	13	8	< 20	67	1.7
11/13/63	< 20	15	4	< 20	120	1.5
2/24/64	< 20	11	< 3	< 20	92	1.3
5/19/64	< 20	12	< 3	< 20	77	1.3
6/16/64	< 20	13	3	< 20	119	1.5
7/14/64	< 20	21	< 3	< 20	62	1.8
8/18/64	< 20	10	< 3	< 20	43	1.6
10/5/64	< 20	10	< 3	< 20	33	1.6
11/16/64	< 20	8	< 3	23	36	1.6
12/8/64	< 20	9	< 3	< 20	37	1.6

Milk Samples

Consolidated Edison Post-Operational Survey

Westchester County

Sampling Point - Guard Hill Farm

Collection	Results (pc/l) I-131	Sr-90	Sr-89	Ba-La-140	Cs-137	g/l K
8/7/62	< 20	7	25			
10/30/62	46	8	26	<20	6.6	
12/13/62	< 20	7	4	<20	93	
12/27/62	< 20	6	6	<20	94	
1/31/63	< 20	9	9	<20	69	
2/17/63		17	4			
3/26/63	< 20	5	< 3	20	44	
4/18/63	< 20			<20	58	1.5
5/14/63	< 20	18	58	<20	91	
6/14/63	< 20	42	158	<20	169	
7/16/63	< 20	54	139	<20	209	1.1
8/19/63	< 20	70	134	<20	177	0.8
9/16/63	< 20	20	26	<20	123	1.7
10/15/63	< 20	35	42	<20	150	1.6
11/14/63	< 20	28	20	<20	164	1.5
12/18/63	< 20	19	9	<20	172	1.3
1/15/64	< 20	25	8	<20	180	1.4
2/17/64	< 20			<20	110	1.7
3/16/64	< 20	24	< 3	<20	126	1.4
4/16/64	< 20	31.0	< 3.0	<20	172	1.5
5/14/64	< 20	28	13	<20	110	1.4
6/12/64	< 20	41	< 3	<20	144	1.5
7/14/64	< 20	26	< 3	<20	115	1.2
8/21/64	< 20	10	< 3	<20	50	1.3
9/14/64	< 20	18	< 3	<20	53	1.6
10/14/64	< 20	20	< 3	<20	63	1.6
11/17/64	< 20	18	< 3	<20	61	1.5
12/15/64	< 20	16	< 3	<20	43	1.2

Milk Samples

Consolidated Edison Post-Operational Survey

Westchester County

Sampling Point - Hanover Hill Farm

Collection	Results (pc/l) I-131	Sr-90	Sr-89	Ba-La-140	Cs-137	g/l K
8/7/62	< 20					
8/12/62		14	40			
9/6/62	< 20	17	17			
10/30/62	37	13	33		43	
12/13/62	< 20	4	16	< 20	63	
12/27/62	< 20	8	8	< 20	71	
1/31/63	< 20	10	< 3	< 20	59	
2/19/63	< 20	3	9	< 20	66	
3/26/63	< 20	10	8	< 20	62	
4/17/63	< 20	10	22	< 20	46	
5/14/63	< 20	22	73	< 20	90	1.1
6/14/63	< 20	32	84	< 20	154	
7/16/63	< 20	27	57	< 20	172	1.4
8/19/63	< 20	32	28	< 20	113	1.6
9/16/63	< 20	11	24	< 20	83	1.4
10/15/63	< 20	22	< 3	< 20	87	1.3
11/14/63	< 20	17	14	< 20	99	1.4
12/18/63	< 20	19	< 3	< 20	95	1.5
1/16/64	< 20	22	5	< 20	121	1.7
2/17/64	< 20	16	3	< 20	125	1.7
3/16/64	< 20	10	4	< 20	159	1.5
4/16/64	< 20	90	3	< 20	127	1.4
5/14/64	< 20	26	< 3	< 20	107	1.5
6/12/64	< 20	34	4	< 20	153	1.4
7/9/64	< 20			< 20	89	1.7
7/14/64	< 20	16	< 3	< 20	79	1.3
8/20/64	< 20	19	< 3	< 20	65	1.5
9/14/64	< 20	13	3	< 20	50	1.6
10/14/64	< 20	16	< 3	< 20	73	1.7
11/17/64	< 20	18	< 3	< 20	51	1.5
12/15/64	< 20	26	< 3	< 20	52	1.5

Vegetation Samples

Consolidated Edison Post-Operational Survey

Rockland County

Sampling Point - Letchworth Village Reservoir

Collection	Results (pc/kg) Cs-137	Mn-54	Zr-Nb-95	(g/kg) K
5/21/63	< 20		67,500	7.4
6/14/63	< 20		47,000	5.9
7/10/63	660		22,300	5.8
8/9/63	3900		32,800	4.4
9/12/63	3640		1,000	-
10/9/63	4900		10,500	17.6
11/13/63	< 20		8,743	4.3
1/17/64	4750	3900	5,200	1.8
5/21/64	932	1853	1,092	2.6
6/9/64	1126	1192	< 860	1.6
7/21/64	811	3844	< 695	1.7
8/27/64	896	2287	< 430	1.2
11/9/64	864	1686	< 375	4.03
12/3/64	1140	2877	< 430	2.8

Note: Analyses for Iodine-131 and Ba-La-140 were made. The results indicated that the amounts of these nuclides present were less than the limit of sensitivity of the spectrometer.

Vegetation Samples

Consolidated Edison Post-Operational Survey

Rockland County

Sampling Point - Dreyfus Reservoir

Collection	Results (pc/kg) Cs-137	Mn-54	Zr-Nb-95	(g/kg) K
5/21/63	< 20		25000	4.4
6/14/63	< 20		18400	12.8
7/10/63	1850		18050	8.6
8/9/63	272		18400	5.5
9/12/63	2610		5210	-
10/9/63	2720		9250	5.7
11/13/63	1659		797	3.3
1/17/64	< 2000	< 2000	2958	5.8
5/21/64	< 770	< 770	995	6.7
6/9/64	< 955	< 955	955	4.0
7/21/64	< 770	< 770	< 770	1.2
8/27/64	597	< 463	< 463	2.5
11/9/64	689	612	< 400	2.1
12/3/64	946	828	< 500	2.7

Note: Analyses for Iodine-131 and Ba-La-140 were made. The results indicated that the amounts of these nuclides present were less than the limit of sensitivity of the spectrometer.

Consolidated Edison Post-Operational Survey

Collection	Sampling Point	County	Results (pc/kg) I-131	(pc/kg) Ba-La-140	(pc/kg) Cs-137	(pc/kg) Zr-Nb-95	(g/kg) K
5/27/63	Iona Island	Rockland	49	< 20	166	81	-
10/2/63	Iona Island	Rockland	< 20	< 20	67	200	2.8
7/7/64	Iona Island	Rockland	< 20	< 20	30	< 20	0.6
10/14/64	Iona Island	Rockland	< 64	73	66	< 64	2.5
5/27/63	Peekskill Bay	Westchester	66	< 20	128	169	-
10/2/63	Peekskill Bay	Westchester	-	-	-	-	-
7/7/64	Peekskill Bay	Westchester	< 40	< 40	< 40	< 40	0.6
5/28/63	Green's Cove	Westchester	61	< 20	102	182	-
10/3/63	Green's Cove	Westchester	< 20	< 20	51	96	3.7
7/8/64	Green's Cove	Westchester	< 50	< 50	< 50	< 50	1.7
10/15/64	Green's Cove	Westchester	< 64	< 64	< 64	< 64	2.9
5/27/63	Tappan Zee	Rockland	58	< 20	145	256	-
10/2/63	Tappan Zee	Rockland	-	-	-	-	-
7/7/64	Tappan Zee	Rockland	< 77	< 77	< 77	< 77	2.0
10/14/64	Tappan Zee	Rockland	< 64	< 64	< 64	< 64	2.8
5/28/63	Croton Bay	Westchester	< 20	< 20	243	32	-
10/3/63	Croton Bay	Westchester	< 20	< 20	45	69	-
7/8/64	Croton Bay	Westchester	< 44	< 44	< 44	< 44	-
10/15/64	Croton Bay	Westchester	< 64	< 64	65	< 64	3.3

Algae Samples

Consolidated Edison Post-Operational Survey

Collection	Sampling Point	County	Results (pc/kg) Mn-54	Results (g/kg) K	Results (pc/kg) Zr-Nb-95
10/2/63	Tappan Zee	Rockland	-	3.3	7450
7/7/64	Tappan Zee	Rockland	1819	5.9	730
10/3/63	Green's Cove	Westchester	-	-	-
7/8/64	Green's Cove	Westchester	707	6.6	< 180
10/2/63	Iona Island	Rockland	-	-	-
7/7/64	Iona Island	Rockland	2494	2.1	241
10/14/64	Iona Island	Rockland	845	-	59
7/8/64	Croton Bay	Westchester	356	2.4	189
10/15/64	Croton Bay	Westchester	72	-	< 20

Note:

Iodine-131, Ba-La-140, and Cs-137 analyses were also performed. These nuclides were not detected with the exception of the following samples:

Collection	Sampling Point	Isotope	Result (pc/kg)
5/27/63	Tappan Zee	Cs-137	540
7/7/63	Iona Island	Cs-137	340
10/2/63	Tappan Zee	Cs-137	565
7/8/64	Green's Cove	Cs-137	372
10/15/64	Croton Bay	Cs-137	43

Mud Samples

Consolidated Edison Post-Operational Survey

Collection	Sampling Point	County	Gross Gamma (pc/kg)
10/2/63	Iona Island	Rockland	2860
7/7/64	Iona Island	Rockland	7416
10/2/63	Tappan Zee	Rockland	5990
7/7/64	Tappan Zee	Rockland	3160
10/2/63	Peekskill Bay	Westchester	18000
7/7/64	Peekskill Bay	Westchester	3150
10/3/63	Croton Bay	Westchester	7820
7/8/64	Croton Bay	Westchester	720
10/3/63	Green's Cove	Westchester	5780
7/8/64	Green's Cove	Westchester	1420
7/7/64	Stony Point	Rockland	2160

Pressurized Ionization Chamber

Consolidated Edison Post-Operational Survey

Westchester County

Station	Date	Inst. Reading (Volts)	Cosmic Portion (ur/hr)	Total (ur/hr)
Indian Point	8/25/64	2.05	3.4	10.2
St. Patrick's Church	8/25/64	2.10	3.4	10.5
Buchanan	8/25/64	2.20	3.4	11.0
Peekskill	8/25/64	2.35	3.4	11.8
Bear Mountain Road	8/24/64	2.15	3.5	10.8
Dregon Road	8/25/64	2.10	3.5	10.5
Mill Pond	8/25/64	2.20	3.5	11.0
St. Mark's School	8/25/64	2.40	3.5	12.0
Route 9W	8/24/64	2.30	3.4	11.5
West Haverstraw	8/24/64	2.20	3.4	11.0
New City Park	8/24/64	2.10	3.4	10.5
Nelson Park	8/26/64	2.50	3.5	12.5
Pines Bridge	8/26/64	2.20	3.6	11.0
Granite Springs	8/27/64	2.00	3.6	10.0
Taconic Parkway	8/24/64	2.60	3.9	13.0
Hastings-on-the-Hudson	8/26/64	2.20	3.5	11.0
Westchester County Airport	8/26/64	2.20	3.6	11.0
Blue Heron Lake	8/26/64	2.50	3.6	12.5
North Salem	8/27/64	2.10	3.6	10.5

Consolidated Edison Post-Operational Survey

Summary Of Environmental Discharges From The Consolidated Edison Reactor

Year	Total Activity* Released		Amount Needed To Dilute To Operational Limits**	
	Water (curies)	Air (curies)	Water (gal/yr)	Air (ft^3/yr)
1962	0.131	None	1.72×10^7	None
1963	0.164	0.0072	2.17×10^7	8.46×10^8
1964	11.03	13.180	1.46×10^9	1.6×10^{12}

*Exclusive of Tritium

**Operational Limits

1) Water = 2×10^{-6} μc/ml

2) Air = 3×10^{-10} μc/ml

In normal plant operations 435,000,000 gpd. is discharged * into the Hudson River while 300,000 cfm of gas is discharged up stack.

Dilution Available

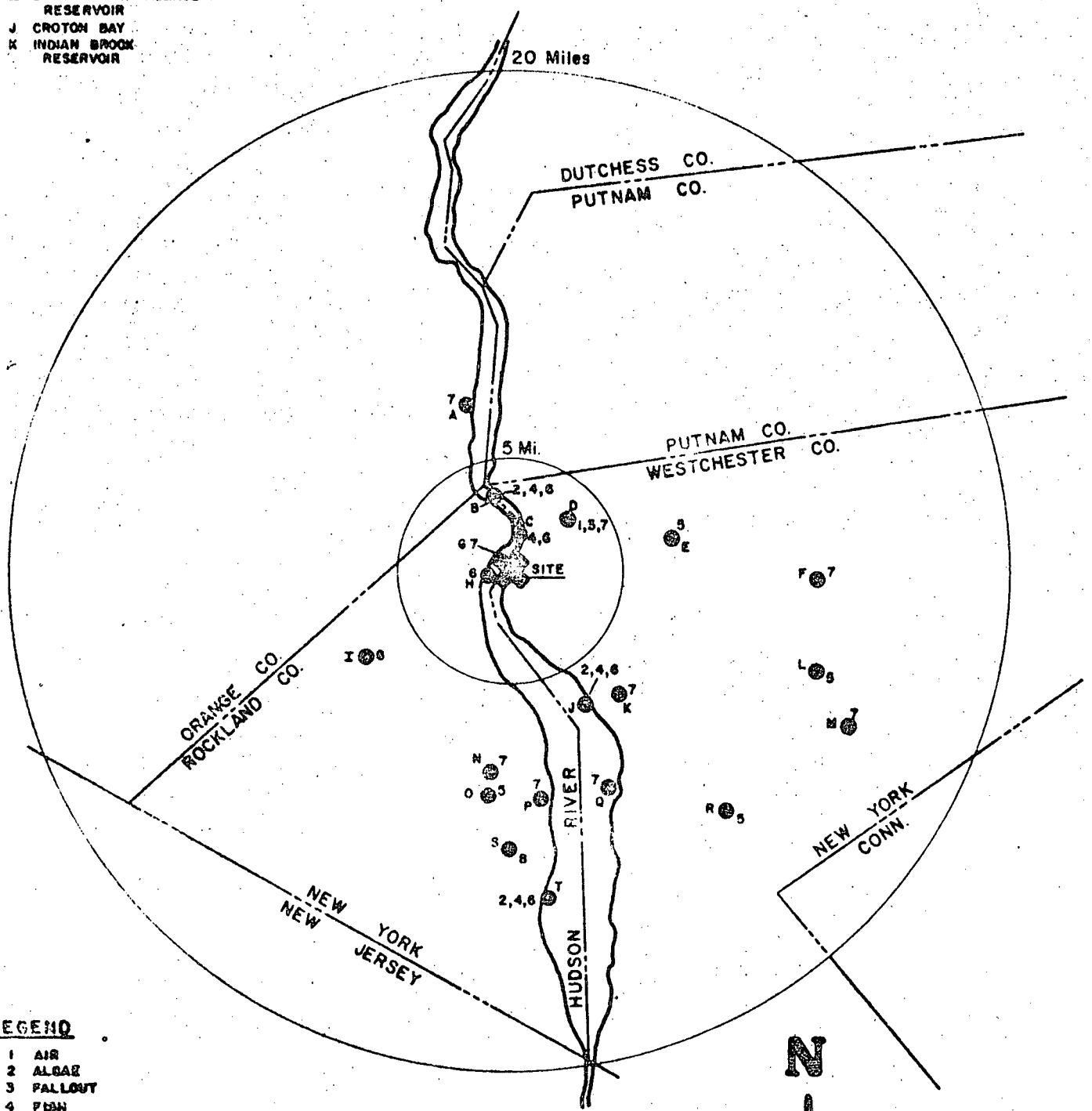
Water - 4×10^5 gal/day = 1.59×10^{11} gallons.

Air - 3×10^5 ft^3/min = 1.6×10^{11} ft^3/yr

Meteorological conditions, from a two year on site survey by New York University, provide for a further dilution factor of 3000 under the worst conditions.

* This is the normal rate of cooling water discharged daily.

A EGG MEADOW BROOK
B IONA ISLAND
C PEEKSKILL BAY
D CAMP FIELD
E HANOVER HILL FARM
F CROTON RESERVOIR
G STANDARD BRANDS & REACTOR SITE
H STONY POINT
I LETCHWORTH VILLAGE RESERVOIR
J CROTON BAY
K INDIAN BROOK RESERVOIR
L GUARD HILL FARM
M BYRAM LAKE
N LAKE DE FOREST
O STRAWTOWN DAIRY
P CONGERS LAKE
Q SING SING
R GRASSLANDS
S DREYFUS RESERVOIR
T TAPPAN ZEE



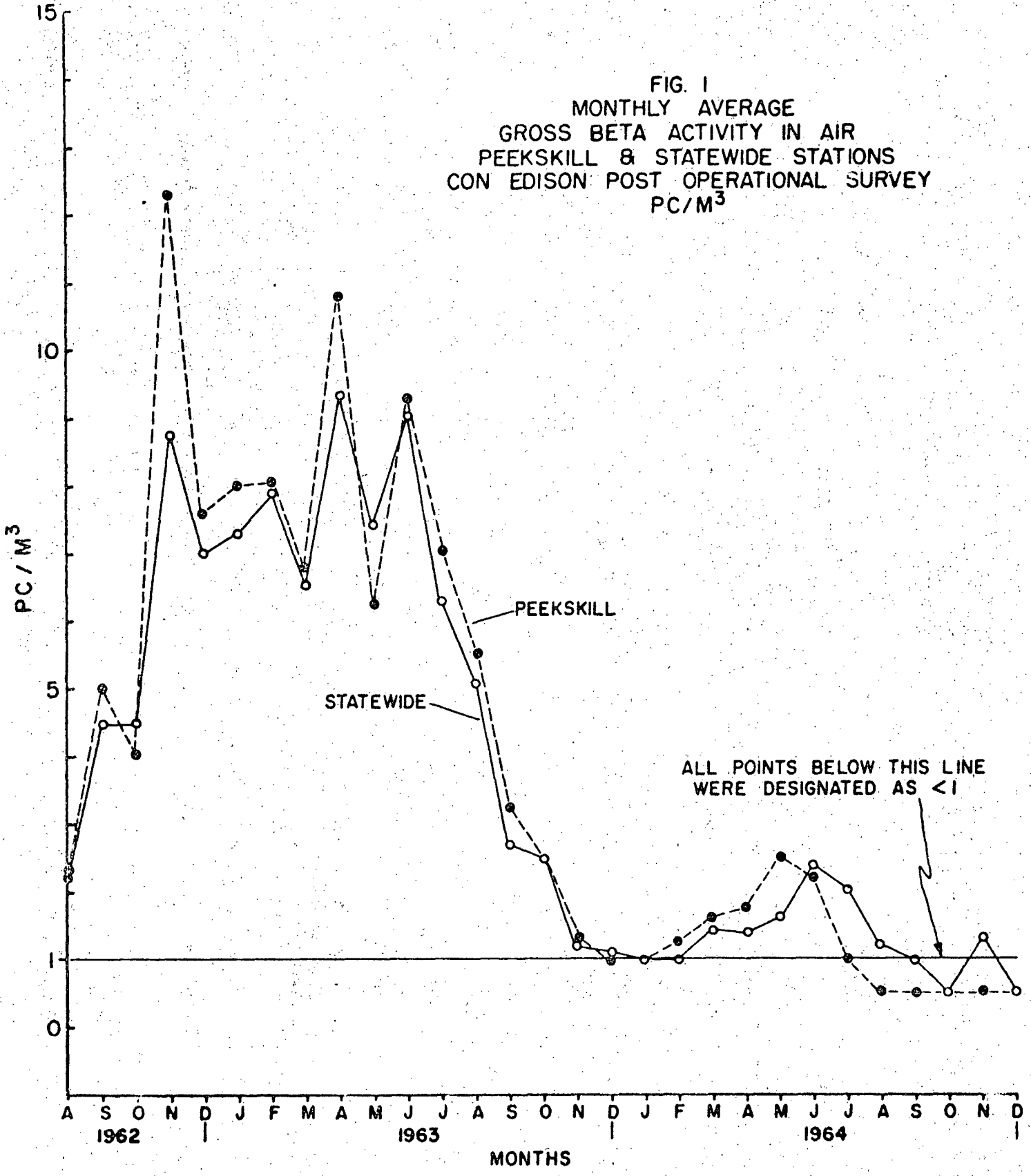
LEGEND
1 AIR
2 ALGAE
3 FALLOUT
4 FISH
5 MILK
6 MEAT
7 WATER
8 VEGETATION

SCALE
0 5 10
MILES

N

CON EDISON INDIAN POINT REACTOR RADIATION SURVEY
LOCATIONS OF SAMPLING STATIONS

FIG. 1
MONTHLY AVERAGE
GROSS BETA ACTIVITY IN AIR
PEEKSKILL & STATEWIDE STATIONS
CON EDISON POST OPERATIONAL SURVEY
PC/M^3



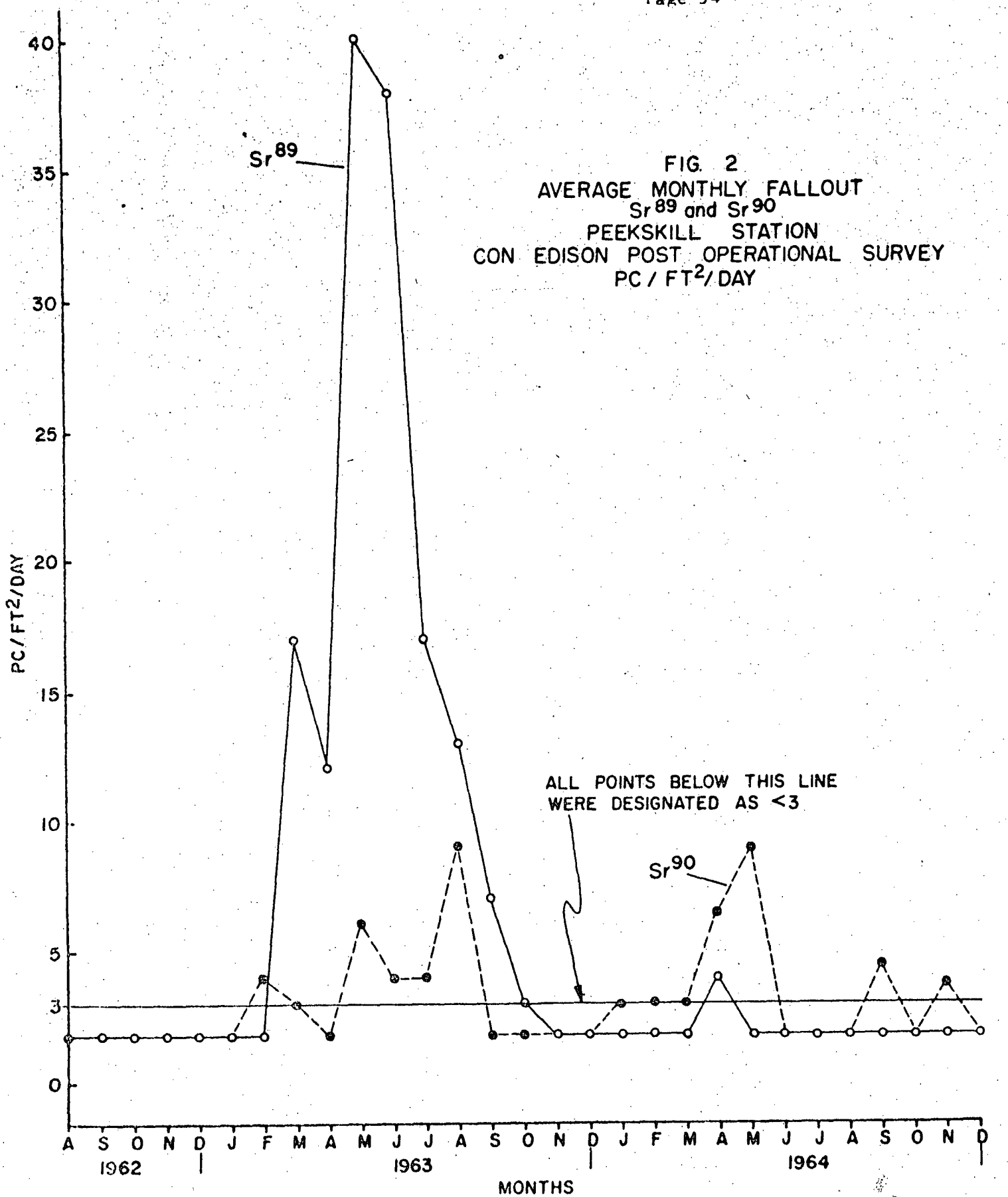


FIG. 2
AVERAGE MONTHLY FALLOUT
Sr 89 and Sr 90
PEEKSKILL STATION
CON EDISON POST OPERATIONAL SURVEY
PC / FT2/ DAY
Sr89
Sr90
ALL POINTS BELOW THIS LINE
WERE DESIGNATED AS <3
PC/FT2/DAY
40
35
30
25
20
15
10
5
3
0
A S O N D J F M A M J J A S O N D J F M A M J J A S O N D
1962
1963
1964
MONTHS

FIG. 3
GROSS BETA ACTIVITY IN WATER
LAKE DE FOREST & GLENMONT
CON EDISON POST OPERATIONAL SURVEY
PC/ML

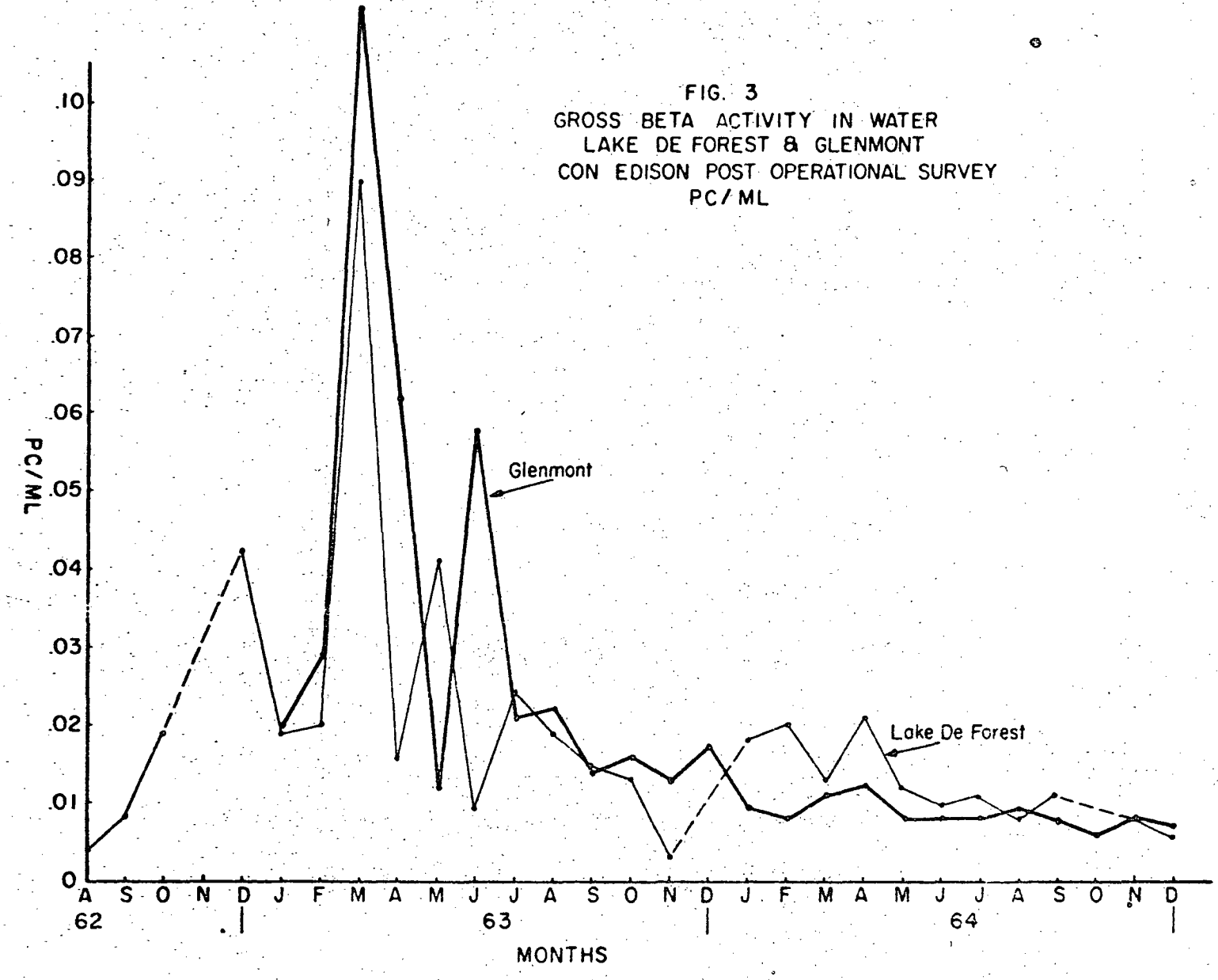
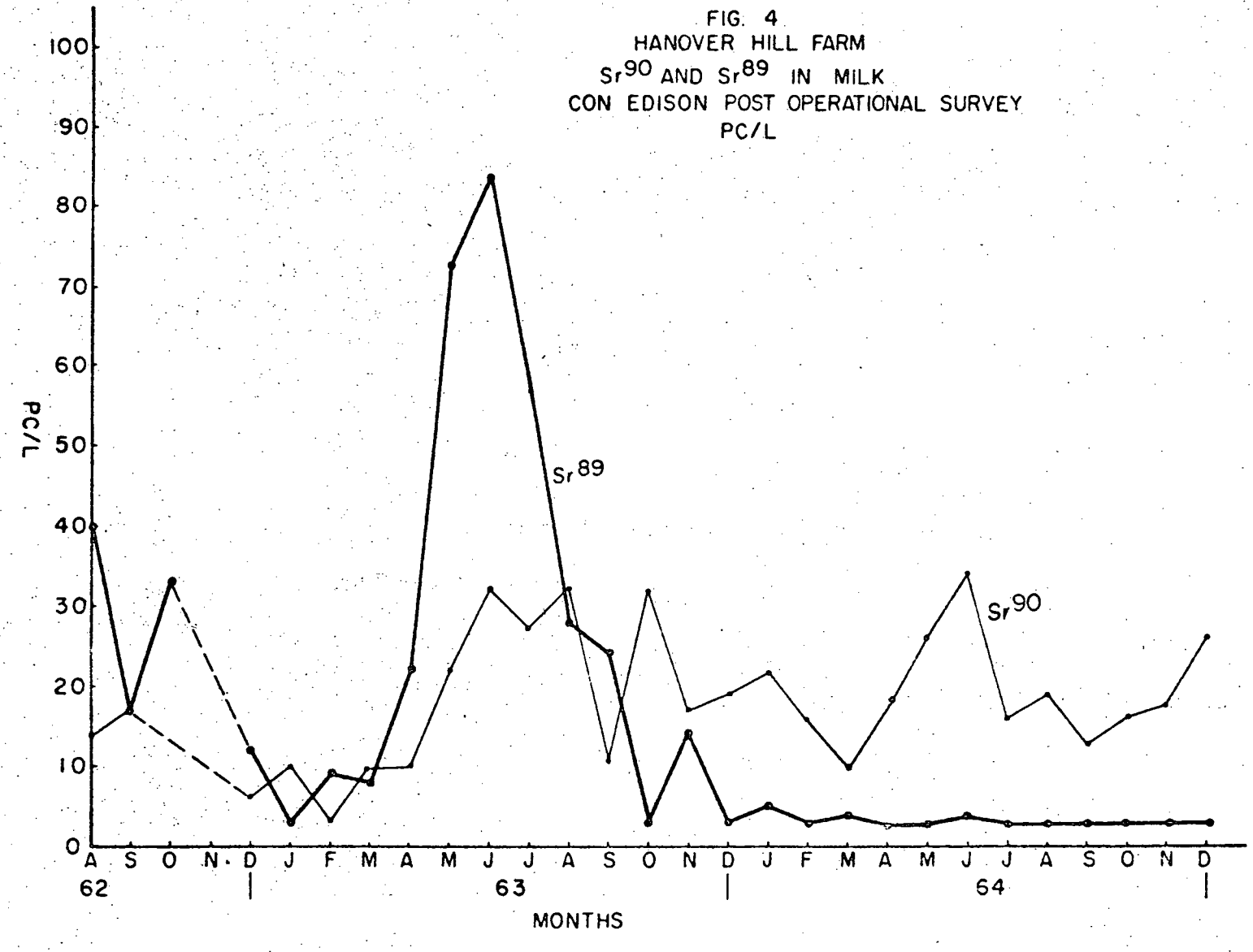


FIG. 4
HANOVER HILL FARM
Sr^{90} AND Sr^{89} IN MILK
CON EDISON POST OPERATIONAL SURVEY
PC/L



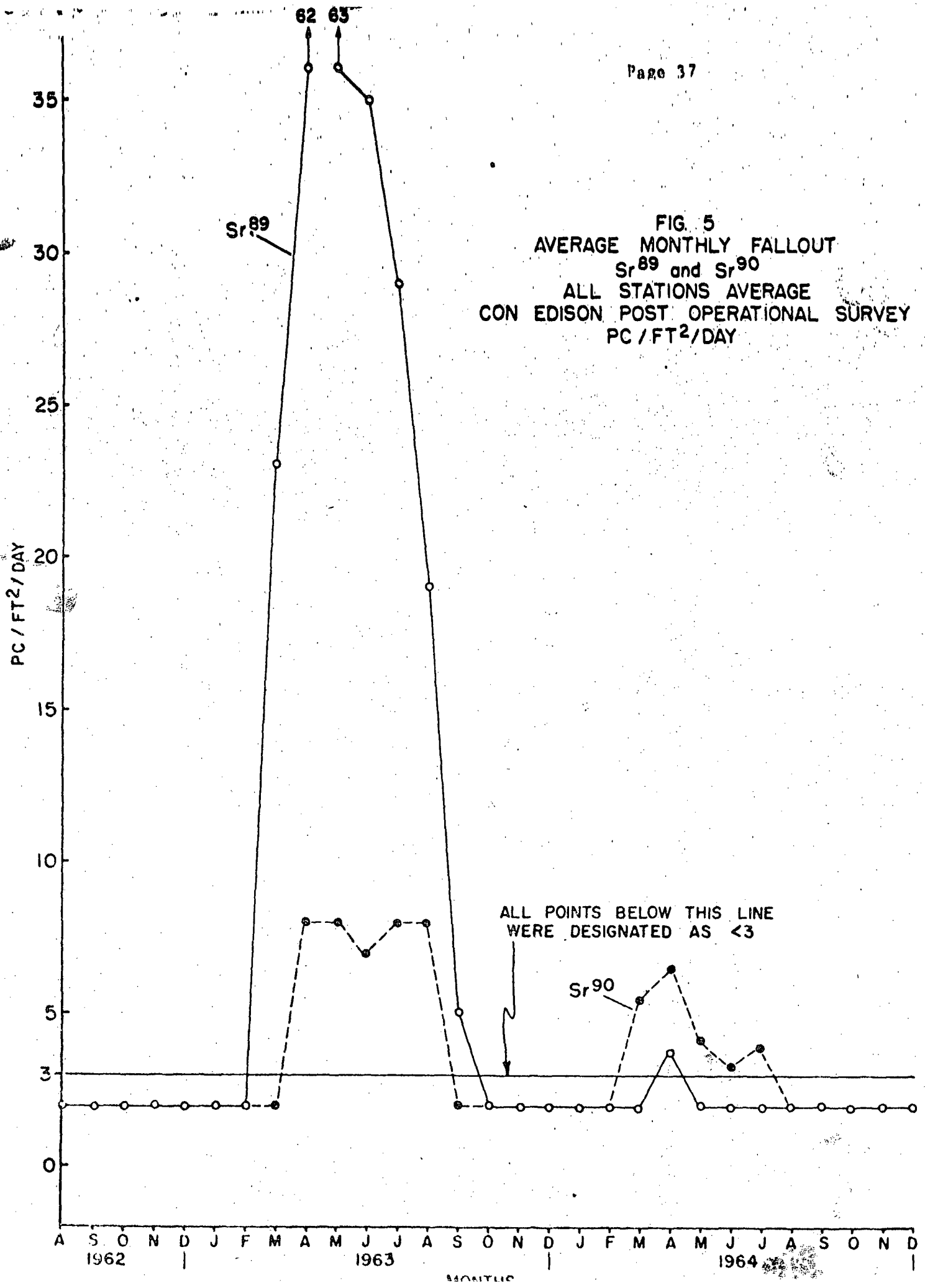
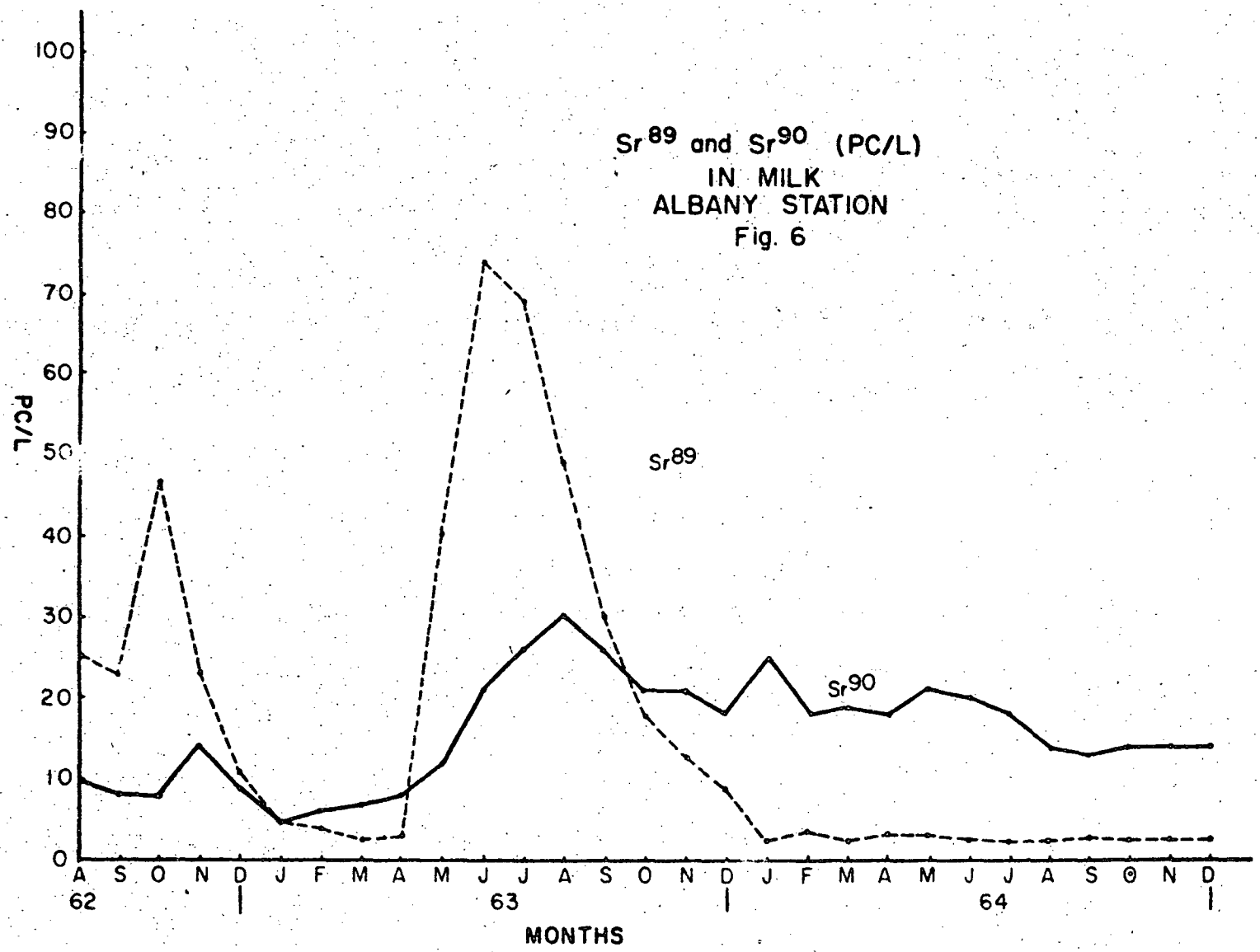


FIG. 5
AVERAGE MONTHLY FALLOUT
Sr^{89} and Sr^{90}
ALL STATIONS AVERAGE
CON EDISON POST OPERATIONAL SURVEY
PC / FT^2 / DAY


Sr 89 and Sr 90 (PC/L)
IN MILK
ALBANY STATION
Fig. 6
PC/L
100
90
80
70
60
50
40
30
20
10
0
Sr89
Sr90
A S O N D J F M A M J J A S O N D J F M A M J J A S O N D
62
63
64
MONTHS