JCP&L / GPU

Jersey Central Power & Light Company
Madison Avenue at Punch Bowl Road
Morristown, New Jersey 07960
(201) 455-8200

March 1, 1979

Mr. Boyce H. Grier, Director
Office of Inspection and Enforcement
Region I
United States Nuclear Regulatory Commission
631 Park Avenue
King of Prussia, Pennsylvania 19406

Dear Mr. Grier:

Subject: Oyster Creek Nuclear Generating Station
Docket No. 50-219
Effluent Release Report No. 78-2

Enclosed are two (2) copies of Effluent Release Report No. 78-2 for our Oyster Creek Nuclear Generating Station Unit No. 1. This report is submitted in accordance with Section 6.9.3 of the Technical Specifications of our Oyster Creek Unit No. 1 Provisional License, DPR-16.

Very truly yours,

Donald A. Ross, Manager
Generating Stations-Nuclear

cs

Enclosures

cc: Director (6 copies)
Office of Inspection and Enforcement
United States Nuclear Regulatory Commission
Washington, DC 20555
c/o Distribution Services Branch, DDC, ADM

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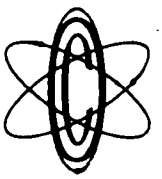
Jersey Central Power & Light Company
is a Member of the
General Public Utilities System

OYSTER CREEK
NUCLEAR GENERATING STATION



SEMIANNUAL REPORT NO. 78-2

PROVISIONAL OPERATING LICENSE NO. DPR-16

RADIOACTIVE EFFLUENT RELEASES

JULY 1, 1978 THROUGH DECEMBER 31, 1978

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LIST OF TABLES

I. INTRODUCTION

I. INTRODUCTION

This report is submitted in accordance with Section 6.9.3 of the Technical Specifications of the Oyster Creek Unit No. 1 Provisional Operating License, DPR-16.

The following is a brief summary of plant operations during the reporting period.

Operations Summary

June 1, 1978	Operating at approximately 88% rated power
June 14, 1978	Reactor shutdown
June 16, 1978	Reactor startup
June 30, 1978	Operating at approximately 84% rated power
July 15, 1978	Operating at approximately 80%
July 31, 1978	Operating at approximately 76% rated power
August 15, 1978	Operating at approximately 77% rated power
August 25, 1978	Reactor shutdown
August 26, 1978	Reactor startup
August 31, 1978	Operating at approximately 69% rated power
September 15, 1978	Operating at approximately 66% rated power
September 16, 1978	Reactor shutdown - refueling outage
September 30, 1978	Reactor shutdown - refueling outage
October 15, 1978	Reactor shutdown - refueling outage
October 31, 1978	Reactor shutdown - refueling outage
November 15, 1978	Reactor shutdown - refueling outage
November 30, 1978	Reactor shutdown - refueling outage
December 5, 1978	Reactor startup
December 8, 1978	Plant generator on line
December 13, 1978	Reactor shutdown
December 18, 1978	Reactor startup
December 31, 1978	Operating at approximately 100% rated power

II. EFFLUENT AND WASTE DISPOSAL SUMMARY

II. EFFLUENT AND WASTE DISPOSAL SUMMARY

A. Gaseous Effluents

During the reporting period, July 1, 1978 through December 31, 1978, a total of 3.46 E 5 curies of fission and activation gases, 3.68 curies of non-particulate halogens with half-lives greater than eight days, 2.88 curies of particulate activity with half lives greater than eight days*, and 1.35 E 1 curies of tritium were released. The maximum hourly release rate of gross activity was 6.38 E 4 microcuries per second at approximately 0800 on August 8, 1978.

The airborne releases are summarized in Table II-1A.

B. Liquid Effluents

A total of 1.58 E 7 liters of water was processed through the radwaste system. Of this, 1.71 E 6 liters containing 9.88 E-2 curies of activity* were released to the environment.

The liquid release data are summarized in Table II-2A.

C. Solid

During the reporting period, a total volume of 1.08 E 3 cubic meters of solid waste containing 7.95 E 2 curies of activity was shipped off site in 82 shipments. No irradiated material was shipped off site during this period.

The waste shipment data are summarized in Table III-3.

D. Meteorological Data

During the reporting period, onsite meteorological conditions were monitored and recorded. Greater than 90 percent data recovery was achieved for this period. Joint frequency distribution of wind speed and wind direction per atmospheric stability class per quarter tables summarize the data.

The meteorological data are summarized in Tables II-4A.

E. Special Analyses

A temporary program was initiated to monitor releases from the turbine building roof fans. For comparative purposes, it is noted that I-131 releases from the roof fans were less than one percent of the I-131 release from the stack.

These results are summarized in Table II-5.

*Strontium-89 and Strontium-90 release data have not been provided herein because of delays encountered in the radiochemical analyses of various effluent samples. An addendum to this report supplying the strontium release data shall be forwarded after all analyses are completed.

EFFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT

SUPPLEMENTAL INFORMATION

FACILITY - Oyster Creek Nuclear Generating Station

LICENSEE - Jersey Central Power & Light Company

1. Regulatory Limits

   a. Fission and Activation Gases:
   Technical Specification 3.6.A.1

   $$Q = \frac{0.21}{\bar{E}} \text{ Ci/sec}$$

   b. Iodines:
   Technical Specification 3.6.A.2

   4 uCi/Sec

   c. Particulates, half-lives > 8 days:
   Technical Specification 3.6.A.2

   4 uCi/sec

   d. Liquid Effluents:
   Technical Specification 3.6.B.1
   Maximum permissible concentrations,
   Appendix B, Table II, Column 2,
   of 10 CFR 20 and notes 1 through 5 thereto.

2. Maximum Permissible Concentrations

   a. Fission and Activation Gasses:
   Technical Specification 3.6.A.1

   b. Iodines:
   Technical Specification 3.6.A.2

   c. Particulates:
   Technical Specification 3.6.A.2

   d. Liquid Effluents:

   From Appendix B, Table II, Column 2,
   of 10 CFR 20 and notes 1 through 5 thereto:

(NOTE: MPC's for isotopes detected listed below)
Unit - μCi/ml

H-3	3 E-3	Tc-99m	6 E-3
Cr-51	2 E-3	Ru-103	8 E-5
Mn-54	1 E-4	Sb-124	2 E-5
Co-57	5 E-4	I-131	3 E-7
Co-58	1 E-4	I-133	1 E-6
Fe-59	6 E-5	Xe-133	3 E-6
Co-60	5 E-5	Cs-134	9 E-6
Zn-65	1 E-4	Xe-135	3 E-6
Sr-89	3 E-6	Cs-136	9 E-5
Sr-90	3 E-7	Cs-137	2 E-5
Sr-91	7 E-5	Ba-140	3 E-5
Zr-95	6 E-5	La-140	2 E-5
Nb-95	1 E-4	Ce-141	9 E-5
Nb-95m	3 E-6	Ce-143	4 E-5
Mo-99	2 E-4	Ce-144	1 E-5

3. Average Energy

   a. Third Quarter - 7.89 E-1 mev

   b. Fourth Quarter - 8.48 E-1 mev

4. Measurements and Approximation of Total Radioactivity

   a. Fission and Activation Gases:
   The incorporation of a weekly grab sample analysis using gamma ray spectrometry with a GeLi Detector, a conversion factor, and the continuous recording of the stack effluent on a continuous activity monitor.

   b. Iodines:
   Semi-weekly sample analysis - gamma ray spectrometry with a GeLi Detector, low background beta counter, internal proportional beta counter, and a single channel gamma counter.

   c. Particulates:
   semi-weekly sample analysis - gamma ray spectrometry with a GeLi Detector, low background beta counter, internal proportional beta counter, and single channel gamma counter.

   d. Liquid Effluents:
   Analysis per batch release - gamma ray spectrometry with a GeLi Detector, a low background beta counter, and a liquid scintillation counter.

5. Batch Releases

a. Liquid

1. Number of batch releases:

a. Third quarter - 1 release
b. Fourth quarter - 20 releases

2. Total time period for batch releases:

a. Third quarter - 415 minutes
b. Fourth quarter - 7036 minutes

3. Maximum time period for a batch release:

a. Third quarter - 415 minutes
b. Fourth quarter - 914 minutes

4. Average time period for a batch release:

a. Third quarter - 415 minutes
b. Fourth quarter - 352 minutes

5. Minimum time period for a batch release:

a. Third quarter - 415 minutes
b. Fourth quarter - 125 minutes

6. Average stream flow during periods of release of effluent in a flowing stream

a. Third quarter - 1.86 E6 liters/minute
b. Fourth quarter - 2.04 E6 liters/minute

b. Gaseous

Not applicable (batch releases)

6. Abnormal Releases

a. Liquid

1. Number of releases:
None
2. Total activity released:
Not applicable

b. Gaseous

1. Number of releases:

None

2. Total activity released:

Not applicable

TABLE II-1A
EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (YEAR) 1978-2
GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	Unit	Third Quarter	Fourth Quarter	Est. Total Error %
A. Fission & activation gases				
1. Total release	Ci	2.76 E 5	6.96 E 4	3.0 E 1
2. Average release rate for period	µCi/sec	4.24 E 4	3.78 E 4	
3. Percent of Tech Spec limit	%	1.59 E 1	1.52 E 1	
B. Iodines				
1. Total iodine-131	Ci	2.97	7.10 E-1	2.5 E 1
2. Average release rate for period	µCi/sec	3.73 E-1	8.92 E-2	
3. Percent of Tech Spec limit	%	9.33	2.23	
C. Particulates				
1. Particulates with half-lives >8 days	Ci	*	*	2.5 E 1
2. Average release rate for period	µCi/sec	*	*	
3. Percent of Tech Spec limit	%	*	*	
4. Gross alpha radioactivity	Ci	5.14 E-5	9.49 E-5	
D. Tritium				
1. Total release	Ci	1.15 E 1	1.99	4.0 E 1
2. Average release rate for period	µCi/sec	1.45	2.50 E-1	

*See effluent and waste disposal summary

TABLE II - 1B
EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT
GASEOUS EFFLUENTS-ELEVATED RELEASE

CONTINUOUS MODE

Nuclides Released	Unit	Third Quarter	Fourth Quarter		MDL
1. Fission gases					
krypton-85m	Ci	1.72 E 4	3.48 E 3		2.06 E-9
krypton-87	Ci	4.99 E 4	1.22 E 4		7.35 E-9
krypton-88	Ci	5.53 E 4	1.18 E 4		6.05 E-9
xenon-133	Ci	1.87 E 4	1.52 E 3		1.62 E-9
xenon-135	Ci	8.61 E 4	1.59 E 4		1.70 E-9
xenon-135m	Ci	1.30 E 4	5.38 E 4		6.84 E-9
xenon-138	Ci	3.53 E 4	1.93 E 4		8.61 E-9
Others					
krypton-89	Ci	3.00	1.00		9.77 E-8
xenon-133m	Ci	1.67 E 2	<MDL		1.47 E-8
xenon-137	Ci	6.00	2.70 E 1		9.57 E-8
Total for period	Ci	2.76 E 5	6.96 E 4		
2. Iodines					
Iodine-131	Ci	2.97	7.10 E-1		3.74 E-10
Iodine-133	Ci	8.75	2.33		3.98 E-10
Iodine-135	Ci	7.08	7.41		2.11 E-9
Total for period	Ci	1.88 E 1	1.05 E 1		

Table II-1C
Effluent and Waste Disposal Semi-Annual Report 1978-2
Gaseous Effluents - Summation of All Releases

Nuclides Released	Unit	Third Quarter	Fourth Quarter		MDL
3. Particulates					
Strontium-89	Ci	*	*		
Strontium-90	Ci	*	*		
Cesium-134	Ci	1.00 E-3	1.17 E-4		9.52 E-11
Cesium-137	Ci	9.63 E-3	1.26 E-3		1.23 E-10
Barium-140	Ci	2.73	5.39 E-2		1.43 E-9
Lanthanum-140	Ci	2.28	3.69 E-2		6.21 E-10
Others					
Chromium-51	Ci	2.82 E-3	9.36 E-5		1.35 E-9
Manganese-54	Ci	4.53 E-4	1.46 E-2		1.30 E-10
Cobalt-58	Ci	<MDL	2.30 E-5		4.75 E-11
Iron-59	Ci	<MDL	4.12 E-4		1.96 E-10
Cobalt-60	Ci	1.33 E-5	4.16 E-3		4.09 E-10
Zinc-65	Ci	9.08 E-4	<MDL		1.77 E-9
Strontium-91	Ci	1.66 E-1	2.52 E-1		1.33 E-9
Zirconium-95	Ci	<MDL	4.30 E-5		1.09 E-10
Niobium-95	Ci	<MDL	3.36 E-4		9.19 E-11
Molybdenum-99	Ci	3.35 E-2	1.02 E-2		3.57 E-10
Technetium-99m	Ci	3.35 E-2	1.02 E-2		3.57 E-10
Ruthenium-103	Ci	<MDL	3.40 E-5		6.78 E-11
Ruthenium-106	Ci	<MDL	8.33 E-4		1.05 E-9
Iodine-131	Ci	4.05 E-2	2.76 E-3		3.93 E-10
Iodine-133	Ci	4.03 E-1	2.79 E-2		3.58 E-10
Iodine-135	Ci	5.48 E-1	5.67 E-2		3.71 E-8
Cerium-141	Ci	1.79 E-3	4.83 E-4		1.29 E-10
Cerium-143	Ci	9.11 E-3	1.01 E-4		3.61 E-10
Cerium-144	Ci	1.45 E-2	2.40 E-4		8.17 E-10
Protactinium-233	Ci	1.39 E-3	4.11 E-4		4.55 E-10
Neptunium-239	Ci	1.03 E-2	3.44 E-3		7.57 E-10
Total for Period	Ci				

*See effluent and waste disposal summary

TABLE II-2A
EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978-2
LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	Unit	Third Quarter	Fourth Quarter	Est. Total Error %
A. Fission and activation products				
1. Total releases (not including tritium, gases, alpha)	Ci	*	*	3.0 E 1
2. Average diluted concentration during period	µCi/ml	*	*	
3. Percent of applicable limit	%	*	*	
B. Tritium				
1. Total release	Ci	1.05	1.85 E 1	3.0 E 1
2. Average diluted concentration during period	µCi/ml	9.47 E-9	2.79 E-7	
3. Percent of applicable limit	%	3.16 E-4	9.31 E-3	
C. Dissolved and entrained gases				
1. Total release	Ci	3.38 E-3	<MDL	3.0 E 1
2. Average diluted concentration during period	µCi/ml	3.05 E-11	-	
3. Percent of applicable limit	%	1.02 E-3	-	
D. Gross alpha radioactivity				
1. Total release	Ci	<MDL	1.08 E-3	3.0 E 1
E. Volume of waste released (prior to dilution)	liters	7.10 E 4	1.64 E 6	1.0 E 1
F. Volume of dilution water used during period	liters	4.17 E 11	2.49 E 11	1.0 E 1

*See effluent and waste disposal summary.

Table II-2B

Effluent and Waste Disposal Report 1978-2

Liquid Effluents

Batch Release

Nuclide	Unit	Third Quarter	Fourth Quarter		MDL
Strontium-89	Ci	*	*		
Strontium-90	Ci	*	*		
Iodine-131	Ci	4.90 E-4	<MDL		8.86 E-10
Cesium-134	Ci	<MDL	4.80 E-3		7.16 E-10
Cesium-137	Ci	<MDL	6.92 E-3		6.75 E-10
Chromium-51	Ci	1.14 E-3	<MDL		9.48 E-9
Manganese-54	Ci	5.48 E-4	1.40 E-2		7.34 E-10
Cobalt-58	Ci	<MDL	2.65 E-4		7.39 E-10
Iron-59	Ci	<MDL	8.33 E-4		1.30 E-9
Cobalt-60	Ci	1.41 E-3	4.21 E-2		1.18 E-9
Zinc-65	Ci	2.99 E-4	<MDL		1.44 E-9
Strontium-91	Ci	<MDL	6.68 E-4		2.24 E-9
Molybdenum-99	Ci	2.90 E-4	<MDL		1.77 E-9
Technetium-99m	Ci	2.90 E-4	<MDL		1.77 E-9
Barium-140	Ci	7.81 E-4	1.85 E-4		1.61 E-9
Lanthanum-140	Ci	3.00 E-3	5.01 E-4		8.69 E-10
Cobalt-57	Ci	<MDL	1.20 E-4		6.66 E-10
Zirconium-95	Ci	<MDL	1.34 E-3		1.09 E-9
Niobium-95	Ci	1.70 E-4	2.22 E-3		7.00 E-10
Niobium-95m	Ci	<MDL	1.82 E-4		5.88 E-9
Ruthenium-103	Ci	1.27 E-4	8.01 E-4		6.90 E-10
Antimony-124	Ci	<MDL	3.25 E-4		6.81 E-10
Iodine-133	Ci	2.13 E-4	<MDL		6.79 E-10
Cesium-136	Ci	<MDL	1.38 E-4		7.39 E-10
Cerium-141	Ci	3.91 E-4	6.63 E-3		1.99 E-9
Cerium-143	Ci	<MDL	1.71 E-4		1.42 E-9
Cerium-144	Ci	<MDL	4.10 E-3		4.69 E-9
Total (above)	Ci				
Xenon-133	Ci	2.88 E-3	<MDL		6.61 E-10
Xenon-135	Ci	5.03 E-4	<MDL		1.19 E-9
Total (above)	Ci	3.38 E-3	<MDL		

TABLE II-3
EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1978-2
SOLID WASTE AND IRRADIATED FUEL SHIPMENTS

A. Solid waste shipped offsite for burial or disposal (not irradiated fuel)

1. Type of waste	Unit	6-month period	Est. Total Error, %
a. Spent resins, filter sludges, evaporator bottoms, etc.	m^3 Ci	3.62 E 2 7.85 E 2	5.0 E 1
b. Drycompressible waste contaminated equip., etc.	m^3 Ci	7.14 E 2 1.00 E 1	5.0 E 1
c. Irradiated components, control rods, etc.	m^3 Ci	None	-
d. Other (describe	m^3 Ci	None	-

2. Estimate of major nuclide composition (by type of waste)	Percentage	Activity (Ci)	MDL (Ci)
a. Co-60	32.4	2.54 E 2	1.64 E-9
Cs-137	25.9	2.03 E 2	9.18 E-10
Sr-89	9.9	7.77 E 1	1.00 E-12
Mn-54	9.0	7.07 E 1	1.64 E-9
Cs-134	9.0	7.07 E 1	8.47 E-10
b. Co-60	61.9	6.19	1.40 E-10
Mn-54	30.7	3.07	1.34 E-10
Cs-137	4.0	0.40	9.19 E-11
Ce-144	1.7	0.17	1.89 E 10
Cs-134	0.9	0.09	8.47 E-11
c.			
d.			

3. Solid Waste Disposition Number of Shipments	Mode of Transportation	Destination
82	Motor vehicle	Barnwell, S.C.

B. Irradiated Fuel Shipments (Disposition)

Number of Shipments	Mode of Transportation	Destination
None		

TABLE II-4A

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD:	July 1, 1978 through September 30, 1978
STABILITY CLASS:	Extremely stable
ELEVATION:	380 feet

WIND SPEED (MPH)

WIND DIRECTION	Calm+ -3	4-7	8-12	-13-18	19-24	>24	TOTAL
N	0	1	3	3	5	1	13
NNE	1	4	6	1	0	0	12
NE	0	5	1	4	1	0	11
ENE	0	0	3	1	0	0	4
E	0	1	0	0	0	0	1
ESE	1	0	3	0	0	0	4
SE	1	4	11	1	0	0	17
SSE	0	1	1	2	0	0	4
S	1	1	4	0	0	0	6
SSW	1	6	3	4	0	0	14
SW	0	1	5	7	7	0	20
WSW	0	0	4	4	18	1	27
W	2	2	2	7	13	3	29
WNW	0	0	2	5	4	0	11
NW	1	2	7	6	2	0	18
NNW	0	1	0	4	12	4	21
VARIABLE	-	-	-	-	-	-	1
TOTAL	8	29	55	49	62	9	212*

*Total does not include variable period

PERIOD OF CALM (HOURS):	0

HOURS OF MISSING DATA:	153

TABLE II-4A

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD:	July 1, 1978 through September 30, 1978
STABILITY CLASS:	Moderately stable
ELEVATION:	380 feet

WIND SPEED (MPH)

WIND DIRECTION	Calm+ -3	4-7	8-12	13-18	19-24	>24	TOTAL
N	0	1	2	12	6	1	22
NNE	2	1	4	1	0	0	8
NE	0	0	1	2	0	0	3
ENE	0	1	2	0	0	0	3
E	1	2	1	0	0	0	4
SE	0	0	2	1	0	0	3
E	0	0	3	2	0	0	5
SSE	0	0	7	3	0	0	10
S	0	1	1	19	0	0	21
SSW	0	0	4	14	13	0	31
SW	1	0	1	18	35	5	60
WSW	0	1	4	13	21	3	42
W	0	1	4	6	3	1	15
WNW	0	0	5	3	5	1	14
NW	1	1	2	4	7	3	18
NNW	0	1	0	1	9	4	15
VARIABLE	-	-	-	-	-	-	2
TOTAL	5	10	43	99	99	18	274*

*Total does not include variable period

PERIOD OF CALM (HOURS):	0

HOURS OF MISSING DATA:	153

TABLE II-4A

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD:	July 1, 1978 through September 30, 1978
STABILITY CLASS:	Slightly stable
ELEVATION:	380 feet

WIND SPEED (MPH)

WIND DIRECTION	Calm+ -3	4-7	8-12	13-18	19-24	>24	TOTAL
N	0	4	8	12	5	0	29
NNE	1	11	15	8	4	0	39
NE	1	5	10	12	6	1	35
ENE	1	6	14	12	4	3	40
E	2	7	13	7	4	4	37
ESE	1	7	16	15	1	0	40
[illegible]	1	10	9	12	2	0	34
SSE	0	7	22	25	0	0	54
S	1	10	22	45	28	0	106
SSW	0	4	9	55	39	1	108
SW	0	8	6	26	25	8	73
WSW	1	11	4	14	7	3	40
W	1	4	7	5	2	2	21
WNW	1	6	3	8	4	0	22
NW	0	4	4	15	11	1	35
NNW	1	6	10	18	13	1	49
VARIABLE	-	-	-	-	-	-	4
TOTAL	12	110	172	289	155	24	762*

*Total does not include variable period

PERIOD OF CALM (HOURS):	0

HOURS OF MISSING DATA:	153

TABLE II-4A

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD:	July 1, 1978 through September 30, 1978
STABILITY CLASS:	Neutral
ELEVATION:	380 feet

WIND SPEED (MPH)

WIND DIRECTION	Calm+ -3	4-7	8-12	13-18	19-24	>24	TOTAL
N	1	5	7	4	4	0	21
NNE	0	4	6	21	14	0	45
NE	0	3	18	20	12	2	55
ENE	1	5	18	12	4	0	40
E	1	4	21	10	2	1	39
ESE	1	4	24	3	1	1	34
[illegible]	0	4	32	5	0	0	41
SSE	0	4	22	16	1	0	43
S	0	1	13	44	33	1	92
SSW	0	6	18	16	7	0	47
SW	1	6	18	27	5	1	58
WSW	0	5	18	22	0	0	45
W	0	7	14	11	1	0	33
WNW	0	6	13	4	1	0	24
NW	0	6	11	21	5	0	43
NNW	0	4	10	10	3	0	27
VARIABLE	-	-	-	-	-	-	2
TOTAL	5	74	263	246	93	6	687*

*Total does not include variable period

PERIOD OF CALM (HOURS):	0

HOURS OF MISSING DATA:	153

TABLE II-4A

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD:	July 1, 1978 through September 30, 1978
STABILITY CLASS:	Slightly unstable
ELEVATION:	380 feet

WIND SPEED (MPH)

WIND DIRECTION	Calm+ -3	4-7	8-12	13-18	19-24	>24	TOTAL
N	0	0	1	0	0	0	1
NNE	0	0	0	0	1	0	1
NE	0	1	0	4	3	0	8
ENE	0	0	1	2	0	0	3
E	0	1	7	2	0	0	10
ESE	0	3	9	0	0	0	12
E	0	0	6	1	0	0	7
SSE	0	0	0	1	0	0	1
S	0	0	0	2	1	0	3
SSW	0	0	0	3	1	0	4
SW	0	0	2	5	0	0	7
WSW	0	0	1	2	0	0	3
W	0	0	0	1	0	0	1
WNW	0	0	3	1	1	0	5
NW	0	0	3	2	4	0	9
NNW	0	0	1	1	2	0	4
VARIABLE	-	-	-	-	-	-	0
TOTAL	0	5	34	27	13	0	79 *

*Total does not include variable period

PERIOD OF CALM (HOURS):	0

HOURS OF MISSING DATA:	153

TABLE II-4A

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD:	July 1, 1978 through September 30, 1978
STABILITY CLASS:	Moderately unstable
ELEVATION:	380 feet

WIND SPEED (MPH)

WIND DIRECTION	Calm+ -3	4-7	8-12	13-18	19-24	>24	TOTAL
N	0	0	0	0	0	0	0
NNE	0	0	0	1	0	0	1
NE	0	0	0	2	0	0	2
ENE	0	0	1	1	0	0	2
E	0	1	7	1	0	1	10
ESE	0	0	3	0	0	0	3
[illegible]E	0	0	3	1	0	0	4
SSE	0	0	0	1	0	0	1
S	0	0	0	2	0	0	2
SSW	0	0	0	0	0	0	0
SW	0	0	2	0	0	0	2
WSW	0	0	0	0	0	0	0
W	0	0	1	0	0	0	1
WNW	0	0	0	0	0	0	0
NW	0	0	2	1	2	1	6
NNW	0	0	0	0	1	0	1
VARIABLE	-	-	-	-	-	-	0
TOTAL	0	1	19	10	3	2	35 *

*Total does not include variable period

PERIOD OF CALM (HOURS):	0

HOURS OF MISSING DATA:	153

TABLE II-4A

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD:	July 1, 1978 through September 30, 1978
STABILITY CLASS:	Extremely unstable
ELEVATION:	380 Feet

WIND SPEED (MPH)

WIND DIRECTION	Calm+ - 3	4-7	8-12	13-18	19-24	>24	TOTAL
N	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
NE	0	0	1	2	0	0	3
ENE	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0
ESE	0	0	1	0	0	0	1
SE	0	0	0	0	0	0	0
SSE	0	0	0	0	0	0	0
S	0	0	0	0	0	0	0
SSW	0	0	0	0	0	0	0
SW	0	0	1	0	0	0	1
WSW	0	0	0	0	0	0	0
W	0	0	0	0	0	0	0
WNW	0	0	0	0	0	0	0
NW	0	0	0	0	1	0	1
NNW	0	0	0	0	0	0	0
VARIABLE	-	-	-	-	-	-	0
TOTAL	0	0	3	2	1	0	6 *

*Total does not include variable period

PERIOD OF CALM (HOURS):	0

HOURS OF MISSING DATA:	153

TABLE II-4A

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD:	October 1, 1978 through December 31, 1978
STABILITY CLASS:	Extremely stable
ELEVATION:	380 feet

WIND SPEED (MPH)

WIND DIRECTION	Calm+ -3	4-7	8-12	-13-18	- 19-24	>24	TOTAL
N	1	2	8	4	4	1	20
NNE	0	4	13	7	5	0	29
NE	0	3	10	9	2	0	24
ENE	0	6	8	5	0	0	19
E	0	6	1	3	0	0	10
ESE	0	3	2	1	0	0	6
SE	1	1	2	6	0	0	10
SSE	0	0	2	1	3	0	6
S	0	2	3	1	3	2	11
SSW	0	1	0	3	6	4	14
SW	0	1	2	5	6	8	22
WSW	2	3	4	6	9	6	30
W	0	5	12	8	17	4	46
WNW	0	5	7	15	11	10	48
NW	0	2	9	2	11	2	26
NNW	0	1	3	5	5	7	21
VARIABLE	-	-	-	-	-	-	0
TOTAL	4	45	86	81	82	44	342*

*Total does not include variable period

PERIOD OF CALM (HOURS):	0

HOURS OF MISSING DATA:	267

TABLE II-4A

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD:	October 1, 1978 through December 31, 1978
STABILITY CLASS:	Moderately stable
ELEVATION:	380 feet

WIND SPEED (MPH)

WIND DIRECTION	Calm+ -3	4-7	8-12	13-18	19-24	>24	TOTAL
N	1	1	4	4	6	0	16
NNE	0	5	2	10	2	0	19
NE	0	0	4	1	0	0	5
ENE	0	1	4	2	0	0	7
E	0	2	2	4	0	0	8
ESE	0	1	0	0	0	0	1
[illegible]	0	0	2	1	0	0	3
SSE	1	1	0	0	0	0	2
S	0	3	3	1	3	1	11
SSW	0	0	0	2	5	3	10
SW	1	2	2	5	9	22	41
WSW	0	1	2	4	8	16	31
W	0	0	2	7	8	1	18
WNW	0	0	1	11	25	13	50
NW	0	3	2	11	11	3	30
NNW	0	2	2	4	8	1	17
VARIABLE	-	-	-	-	-	-	0
TOTAL	3	22	32	67	85	60	269*

*Total does not include variable period

PERIOD OF CALM (HOURS):	0

HOURS OF MISSING DATA:	267

TABLE II-4A

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD:	October 1, through December 31, 1978
STABILITY CLASS:	Slightly stable
ELEVATION:	380 feet

WIND SPEED (MPH)

WIND DIRECTION	Calm+ -3	4-7	8-12	13-18	19-24	>24	TOTAL
N	0	1	10	19	2	0	32
NNE	2	3	16	6	2	0	29
NE	0	3	11	3	4	2	23
ENE	1	1	7	2	6	6	23
E	2	3	3	5	2	4	19
ESE	1	0	5	4	1	2	13
[illegible]	0	2	0	6	3	4	15
SSE	1	2	2	6	5	3	19
S	1	0	8	5	22	9	45
SSW	0	2	4	13	28	17	64
SW	0	4	10	13	13	10	50
WSW	0	2	3	14	6	4	29
W	0	3	7	17	11	8	46
WNW	0	4	2	17	53	10	86
NW	1	3	8	20	36	5	73
NNW	1	0	5	11	5	0	22
VARIABLE	-	-	-	-	-	-	4
TOTAL	10	33	101	161	199	84	588*

*Total does not include variable period

PERIOD OF CALM (HOURS):	0

HOURS OF MISSING DATA:	267

TABLE II-4A

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD:	October 1, 1978 through December 31, 1978
STABILITY CLASS:	Neutral
ELEVATION:	380 feet

WIND SPEED (MPH)

WIND DIRECTION	Calm+ -3	4-7	8-12	13-18	19-24	>24	TOTAL
N	1	4	14	28	3	0	50
NNE	0	3	16	28	5	0	52
NE	0	1	7	11	3	3	25
ENE	0	4	5	10	13	9	41
E	1	2	4	20	14	4	45
ESE	0	0	4	11	8	1	24
[illegible]	1	3	3	4	1	0	12
SSE	0	0	4	6	0	0	10
S	1	1	5	20	5	7	39
SSW	0	0	1	8	10	7	26
SW	1	0	5	14	2	3	25
WSW	0	3	12	14	4	7	40
W	0	1	7	12	9	18	47
WNW	0	2	9	5	20	22	58
NW	1	6	2	11	13	10	42
NNW	0	2	7	6	5	4	24
VARIABLE	-	-	-	-	-	-	2
TOTAL	6	32	105	208	115	95	561*

*Total does not include variable period

PERIOD OF CALM (HOURS):	0

HOURS OF MISSING DATA:	267

TABLE II-4A

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD:	October 1, 1978 through December 31, 1978
STABILITY CLASS:	Slightly unstable
ELEVATION:	380 feet

WIND SPEED (MPH)

WIND DIRECTION	Calm+ -3	4-7	8-12	13-18	19-24	>24	TOTAL
N	0	1	1	0	2	0	4
NNE	0	0	0	3	0	0	3
NE	0	0	1	3	1	0	5
ENE	0	0	3	0	0	0	3
E	1	1	2	1	0	0	5
ESE	0	0	1	0	0	0	1
SE	0	0	5	1	1	0	7
SSE	0	0	0	0	0	0	0
S	0	0	1	7	1	0	9
SSW	0	1	1	0	0	0	2
SW	0	1	2	2	2	1	8
WSW	0	1	8	9	0	0	18
W	0	0	5	6	5	0	16
WNW	0	1	4	4	4	4	17
NW	0	1	2	3	3	1	10
NNW	0	0	2	3	0	0	5
VARIABLE	-	-	-	-	-	-	0
TOTAL	1	7	38	42	19	6	113*

*Total does not include variable period

PERIOD OF CALM (HOURS):	0

HOURS OF MISSING DATA:	267

TABLE II-4A

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD:	October 1, 1978 through December 31, 1978
STABILITY CLASS:	Moderately unstable
ELEVATION:	380 feet

WIND SPEED (MPH)

WIND DIRECTION	Calm+ -3	4-7	8-12	13-18	19-24	>24	TOTAL
N	0	0	0	0	1	0	1
NNE	0	0	1	5	0	0	6
NE	0	0	1	2	1	0	4
ENE	0	0	4	0	0	0	4
E	0	2	1	1	0	0	4
ESE	0	0	2	0	0	0	2
E	0	0	0	0	0	0	0
SSE	0	0	0	0	0	0	0
S	0	0	0	1	0	0	1
SSW	0	0	0	0	1	0	1
SW	0	0	2	0	0	0	2
WSW	0	0	1	5	0	0	6
W	0	0	1	2	0	0	3
WNW	0	0	1	4	2	3	10
NW	0	0	0	0	3	2	5
NNW	0	0	0	1	0	0	1
VARIABLE	0	0	0	0	0	0	0
TOTAL	0	2	14	21	8	5	50 *

*Total does not include variable period

PERIOD OF CALM (HOURS):	0

HOURS OF MISSING DATA:	267

TABLE II-4A

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD:	October 1, 1978 through December 31, 1978
STABILITY CLASS:	Extremely unstable
ELEVATION:	380 feet

WIND SPEED (MPH)

WIND DIRECTION	Calm+ - 3	4-7	8-12	13-18	19-24	>24	TOTAL
N	0	0	0	0	0	0	0
NNE	0	0	0	1	0	0	1
NE	0	0	0	2	0	0	2
ENE	0	0	3	0	0	0	3
E	0	0	0	0	0	0	0
ESE	0	0	1	0	0	0	1
SE	0	0	0	0	0	0	0
SSE	0	0	0	0	0	0	0
S	0	0	0	0	0	0	0
SSW	0	0	0	0	0	0	0
SW	0	0	0	0	0	0	0
WSW	0	0	0	1	0	0	1
W	0	0	0	4	1	0	5
WNW	0	0	0	2	2	0	4
NW	0	0	0	0	1	1	2
NNW	0	0	0	0	0	0	0
VARIABLE	-	-	-	-	-	-	0
TOTAL	0	0	4	10	4	1	19*

*Total does not include variable period

PERIOD OF CALM (HOURS):	0

HOURS OF MISSING DATA:	267

TABLE II-5
Turbine Building Roof Fan Releases

Sampling Period	Nuclide	Activity Released (uCi)	Percent of Off/Stack gas (%)
8/21/78	Xe-135	8.02 E-5	1.39 E-3
8/21/78	I-131	3.58 E 2	2.86 E-1
to 8/22/78	La-140	3.52 E 2	2.63 E-1
8/22/78	Xe-135	6.34 E-5	1.10 E-3
8/22/78	I-131	7.38 E 2	7.78 E-1
to	Ba-140	2.80 E 2	2.94 E-1
8/25/78	La-140	2.58 E 2	3.27 E-1
8/25/78	Xe-135	2.06 E-3	3.58 E-2
9/1/78	I-131	2.25 E 2	2.18 E-1
to	Ba-140	7.34 E 1	8.80 E-2
9/5/78	La-140	1.02 E 2	1.84 E-1
9/8/78	Kr-85m	7.46 E-5	6.97 E-3
	Xe-135	1.23 E-4	2.67 E-3

III. ENVIRONMENTAL SUMMARY

III. ENVIRONMENTAL MONITORING

The environmental monitoring program was conducted during the reporting period in accordance with Technical Specification 4.6.B.3. The program included five general types of monitoring. These were (1) atmospheric radiation, (2) fallout, (3) domestic water, (4) surface water, and (5) marine life. This monitoring was accomplished by analyzing film badges for exposure and air particulate filters, rain water, vegetation, soil, crops, well water, surface water, silt, and clams for radioactivity. The analyses results from these samples are found on the forthcoming tables. The time period covered by this monitoring extended from June 1978 through November 1978, instead of July 1978 through December 1978, due to normal delay in sample analysis and reporting by the vendor. The sampling locations are listed in Table III-A and are depicted in Figures III-1 and III-2.

1. Atmospheric Radiation monitoring results, consisting of radiogas (film badges) and air particulate radioactivity measurements, are listed in Tables III-B, III-C, III-D, III-E, III-H, and Table III-J. These tables cover the collection period from June 1978 through November 1978, with the exception of Table III-B which includes collection dates from June 1978 through August 1978 and Table III-C, which covers collection dates from September 1978 through November 1978.

   Included in Table III-D, in addition to the indicator monitoring stations 2 through 17, are stations 1 and T1, which are located on site at the meteorological tower, and three background stations which are located at Allenhurst (A), Cookstown (C), and Hammonton (H), New Jersey.

   During the reporting period, several special programs were conducted and are listed below.

   A. TLD evaluation - This program has continued intact since the last period on a monthly basis. All exposures for this reporting period are seen in Table III-F.

   B. Isotopic analyses were performed on all air particulate filters. The results can be found in Table III-H.

   C. Iodine 131 analyses were run on all the charcoal filters. The results are shown in Table III-J.

2. Fallout monitoring, consisting of rainwater radioactivity measurements, is listed in Tables III-B, III-C and Table III-E. Background rainwater from stations A, C and H results are in Table III-J.

3. Domestic Water monitoring, consisting of well water sample analyses, is listed in Tables III-B, III-C, and III-E.

4. Surface Water monitoring, consisting of water and silt analyses from Barnegat Bay, Forked River, and Oyster Creek, is listed in Tables III-B, III-C, and III-E. The background station for surface water and silt is station number 31 and these results can be seen in Table III-J.

   Isotopic analyses were performed on the silt samples from the bay and discharge canal. The results can be seen in Table III-K.

5. Marine Life monitoring consisting of clam samples, is listed in Table III-B, III-C & III-E. The background station results are listed in Table III-J.

6. In addition to these analyses, vegetation, soil, and crop samples were analyzed. The results are shown in Tables III-B, III-C, and III-E.

   Isotopic analyses were performed on vegetable samples. The results are listed in Table III-L.

TABLE III-A
OYSTER CREEK STATION
ENVIRONMENTAL MONITORING STATIONS
LOCATION AND TYPE SAMPLE COLLECTED

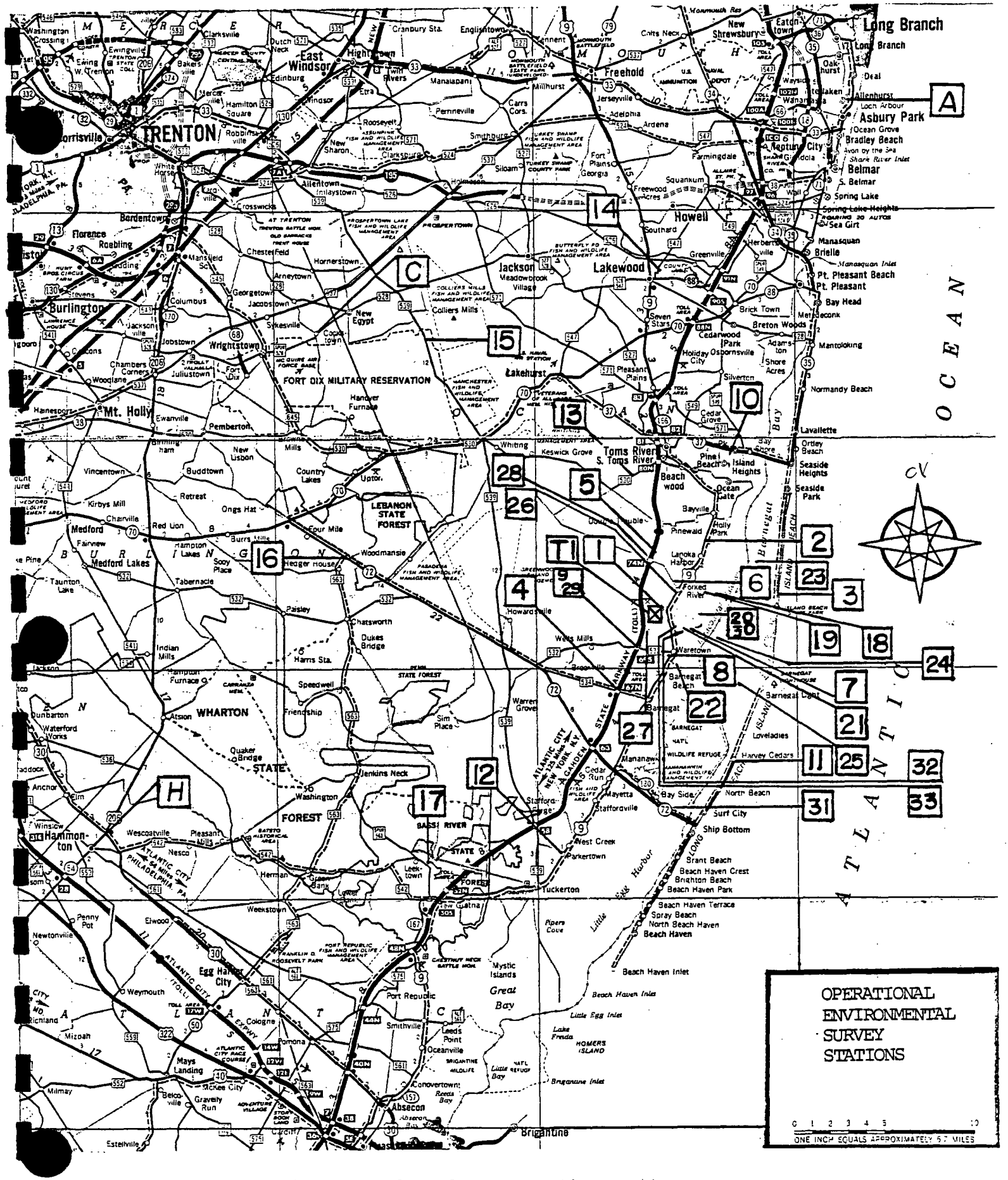
STATION NUMBER		SAMPLE COLLECTED
1	Forked River, N.J. - Oyster Creek Meteorological Tower	AP, RG, RW, WW, V, E
T1	Forked River, N.J. - Oyster Creek Meteorological Tower	RG
2	Pinewald, N.J. - Route #9 at JCP&L Company Pinewald Substation north of Forked River, N.J.	AP, RG, RW, V, E
3	Island Beach State Park, N.J. - Near old Coast Guard Station	AP, RG, RW, V, E
4	Barnegat, N.J. - Route #534, Windward at Barnegat, first road West of Parkway Exit	AP, RG, RW, V, E
5	Forked River, N.J. - Garden State Parkway Northbound Entrance to Holiday House	AP, RG, RW, V, E
6	Forked River, N.J. - Lane Place, behind St. Pius X Catholic Church	RG
7	Waretown, N.J. - Compass Road, second pole North of Bay Parkway	RG
8	Waretown, N.J. - Route #9 at the Waretown Substation	RG
9	Waretown, N.J. - Route #532, North side of road at Parkway	RG
10	Toms River, N.J. - Route 37 East, adjacent to "Eastern Off Road Supplies"	RG
11	Harvey Cedars, N.J. - Long Beach Blvd. and East 70th street, Long Beach Island	RG
12	Parkertown, N.J. - Route #9, East of Assembly of God Church	RG
13	South Toms River, N.J. - Dover Road, next to last pole traveling West on North side.	RG
14	Lakewood, N.J. - Larrabee Substation, just off Route #547 on Randolph Road	RG
15	New Egypt, N.J. - Route #539, last pole on South side, adjacent to "Bomark" Site	RG

TABLE III-A (Con't)
OYSTER CREEK STATION
ENVIRONMENTAL MONITORING STATIONS
LOCATION AND TYPE SAMPLE COLLECTED

STATION NUMBER		SAMPLE COLLECTED
16	Intersection of Route #563 and Route#72, two poles South	RG
17	New Gretna, N.J. - Route #563, 2 miles North, next to High Voltage Line	RG
18	Forked River, N.J. - Lacey Road, Captain Richie's Marina	
19	Forked River, N.J. - 1015 Inland Road, Forked River Beach	WW
20	Forked River, N.J. - Finninger Farm at Environmental Lab	WW
21	Waretown, N.J. - 215 Dock Avenue, Sands Point Harbor	WW
22	Waretown, N.J. - 1014 Long John Silver Way, Skippers Cove	WW
23	Barnegat Bay - Off Stouts Creek, approximately 400 yards SE (150°) of FL "1" (Heading on BWN "D")	SW, AQS, AQL
24	Barnegat Bay - Approximately 250 yards SE (180°) of FL "3" (Heading on N "66")	SW, AQS, AQL
25	Barnegat Bay - Off Holiday Harbor; approximately 200 yards SE (140°) of the Lagoon Mouth	SW, AQS, AQL
26	Forked River, N.J. - South Branch of Forked River, North of Bridge to Visitor Center	SW, AQS
27	Forked River, N.J. - Downstream of Oyster Creek Fire Pond, approximately 10 yards	SW, AQS
28	Forked River, N.J. - Lacey Road and the Garden State Parkway	FPV
29	Barnegat, N.J. - Route #534 and the Garden State Parkway	FPV
30	Forked River, N.J. - Finninger Farm along Fence	FPV

TABLE III-A (Con't)
OYSTER CREEK STATION
ENVIRONMENTAL MONITORING STATIONS
LOCATION AND TYPE SAMPLE COLLECTED

STATION NUMBER		SAMPLE COLLECTED
31	Manahawkin Bay - Approximately 25 yards SE (140°) of C "23" and N "24"	SW, AQS, AQL
32	Oyster Creek - Mouth of Creek midway between Bulkhead on North Shore and South Shore of Creek	SW, AQS
33	Oyster Creek - Approximately 1200 yards East of Route #9 Bridge, in middle of channel, directly South of Bulkhead running perpendicular to North Shore	SW, AQS
A	Allenhurst, N.J. - JCP&L Company District Headquarters, on Roof	RG, AP, RW
C	Cookstown, N.J. - Route #528 Spur, at JCP&L Companys District Dispatcher	RG, AP, RW
H	Hammonton, N.J. - Egg Harbor Road, at the Atlantic City Electric District Dispatcher	RG, AP, RW



Oyster Creek Nuclear Generating Station
Figure III-1

Analysis of Data

A statistical analysis of the data generated by the laboratory analyses of samples collected as part of the Oyster Creek Radiological Environmental Monitoring Program did reveal the presence of some environmental media having higher than normally observed levels of radioactivity in one form or another at various times throughout the reporting period. Attempts to correlate facility releases with elevated environmental levels of radioactivity were made. A discussion of the findings follows.

June 1978: Silt and Sediment, Station 23, Cobalt-60 Activity

The silt and sediment sample collected from Station 23 (located in Barnegat Bay off Stouts Creek) on June 26, 1978 had a Coblat-60 (Co^{60}) specific activity of 0.52 $\pm$ 0.16 pCi/gram. Similar samples collected from Stations 24, 32 and 33 (in the Oyster Creek discharge canal) on the same date showed lower Co^{60} specific activities at 0.1 $\pm$ 0.02 pCi/gram, <0.02 pCi/gram and 0.27 $\pm$0.03 pCi/gram respectively. The most recent liquid release from the facility occurred on May 26, 1978 when 75 microcuries of Co^{60} were discharged to the environment. There were no other liquid releases in the eight months proceeding the May 1978 discharge. The June, 1978 Station 23 sediment Co^{60} activity approximates the sediment Co^{60} activity observed in October, 1971 (0.37 $\pm$ 0.04 pCi/gram) as measured by the USEPA[1]. Consideration of the station locations and the observed activity concentrations, facility release data, and historical data leads to the conclusion that the sediment Co^{60} activity observed in June 1978 at Station 23 is most likely the result of past facility discharges and not recent operations.

July 1978: Vegetation, Station 2, gross beta activity
Well water, Stations 19 and 21, gross beta (insoluble) activity

The vegetation sample collected from Station 2 was found to have a gross beta activity of 10.9 pCi/gram. Since no abnormally high levels of radioactivity were observed in the rainwater, soil and air particulate samples also collected from Station 2, the likelihood of a fallout incidence having occurred is minimal. The well water samples collected from Stations 19 and 21 showed higher than normally observed levels of gross beta (insoluble) activity. There were no liquid releases from the facility that could account for these observations.

August 1978: Silt and Sediment Food Products Various, Station 30, Strontium-90 activity
Food Products Various, Station 30, Strontium-90 activity

Since there were no recent radioactive liquid discharges from the facility, the Cs-137 activity found in the silt and sediment sample collected at Station 23 on August 23, 1978 was most likely the result of previous plant discharges.

The food products various (grass) sample collected from Station 30 on August 21, 1978 had a slightly higher than normally observed level of Strontium-90 activity at 0.884 $\pm$0.046 pCi/gram.

[1]EPA-520/5-76-003, page 102, table 5.29, sample #25.

November 1978: Air Particulate, Station 5, Gross Alpha Activity
Silt and Sediment, Station 32, Potassium-40, Cobalt-60, Cesium-137 and Thorium-232
Well Water, Station 18, Tritium and Potassium-40
Surface Water, Station 24, Tritium

The air particulate sample collected at Station 5 between October 31, 1978 and November 14, 1978 was found to have a gross alpha activity concentration of 0.00305 ± 0.00076 pCi/m^3. This activity concentration approximates the levels observed at the background station in Hammonton, N.J. for the same survey period where the air particulate alpha concentration was measured at 0.00315 ± 0.00071 pCi/m^3. During the sampling period 9.35 μCi of airborne particulate alpha activity were discharged from the facility at an average concentration of approximately 0.1 pCi/m^3. Using conservative atmospheric dispersion parameters ($X/Q = 10^{-5}$, wind direction continuously toward the sample station) and the known release rate, an airborne particulate alpha activity concentration of 1×10^{-6} pCi/m^3 could have resulted at Station 5. It is unlikely that the airborne alpha activity observed at Station 5 is the result of facility operations.

The silt and sediment sample collected from Station 32 on November 15, 1978 showed levels of radioactivity higher than those normally observed at that location. Two of the isotopes found in excess were potassium-40 and thorium-232, both naturally occurring nuclides, with concentrations of 15 ± 1.5 pCi/gram and 0.69 ± 0.13 pCi/gram respectively. These levels are lower than the activities observed at the Manahawkin Bay background station where the K^{40} activity was 18 ± 1.8 pCi/gram and the Th^{232} activity was 0.82 ± 0.08 pCi/gram. The buildup of Co^{60} and Cs^{137} activity in the Oyster Creek discharge canal bottom has been documented. Since only 2.98×10^{-2} curies of Co^{60} and 6.39×10^{-3} curies of Cs^{137} were released from the facility between September 18, 1978 and November 14, 1978 yielding average concentrations of 1.1×10^{-3} pCi/gram-Co^{60} and 2.5×10^{-4} pCi/gram-Cs^{137}, it is most likely that the activities observed are the result of previous facility discharges to the environment.

The well water sample collected from Station 18 on November 17, 1978 showed higher than normally observed levels of the naturally occurring isotopes tritium and potassium-40 at 284 ± 172 pCi/L-H^3 and 2.45 ± 0.25 pCi/L-K^{40}. The tritium activity at Station 18 was the highest of the six samples collected. Whereas, the K^{40} activity at Station 18 was the lowest of the six sample locations.

The surface water sample collected from Station 24 on November 15, 1978 had an unusually high tritium concentration. The H^3 activity was measured in five separate analyses and found to be 646 ± 180 pCi/L, 641 ± 180 pCi/L, 700 ± 50 pCi/L, 500 ± 154 pCi/L and 620 ± 155 pCi/L. The first two values represent determinations made on duplicate samples by RMC, Inc. the third value was determined by Interex Corp., and the fourth and fifth values were determined by the NJDEP. The H^3 activity measured in the samples procured from the remaining seven sampling stations were all found to be less than 167 pCi/L. Between 12:25 a.m. and 3:45 a.m. of the 15th 0.947 curies of tritium were discharged to the environment via liquid release paths. The average tritium concentration of the release would have been approximately 2.4×10^3 pCi/L. This represents a release at roughly 0.1% of the maximum permissible concentration given by 10 CFR part 20, Appendix B, Table 11, Column 2 of 3×10^{-3} μCi/ml. If the water samples were collected around 8:00 a.m., a dilution flow of 8.91×10^8 liters would have occurred. A discharge of 9.47×10^{11} pCi in 8.91×10^8 liters would produce a concentration of 1.06×10^3 pCi/L if the tritium were evenly dispersed. This level corresponds to the approximate 700 pCi/L concentrations observed. Even though this high activity was not observed at Stations 32 and 33 (located in the discharge canal) it is possible that the activity observed at Station 24 was the result of the most recent release.

RADIOLOGICAL IMPACT ON MAN

Environmental monitoring results for the period 6/78 - 11/78 indicate that intakes of Oyster Creek effluent isotopes did not exceed 1% of the intakes equivalent to exposure at 10 CFR 20, Appendix B, Table II concentrations.

During growing season months inhalation and terrestrial food pathways are available to gaseous effluent isotopes. The pathways available to liquid effluent isotopes are fish and shellfish consumption. Concentrations exceeded minimum detectable levels for only a few isotopes in only a few samples. Although man-made isotopes detected in the environment are almost always the result of weapons fallout, it was conservatively assumed for this analysis that environmenatal levels were due to Oyster Creek operations. Intakes from inhalation, fish ingestion, and shellfish ingestion were estimated from air and clam sample results. (Fish concentrations were estimated from clam measurements). Intakes are less than 1% of intakes equivalent to exposure to concentrations in 10 CFR 20, Appendix B, Table II.

Intakes via terrestrial food pathways are estimated from analyses of fresh produce samples collected during the harvest season. Only low levels of Cs-137 and Ru-103 (near minimum detectable limits) were detected in some vegetable samples. Intakes from all terrestrial food pathways do not exceed 1% of intakes equivalent to exposure to concentrations in 10 CFR 20, Appendix B, Table II. This assumes concentrations of 4.0, 20.0 and 5.0 pCi/kgm vegetation for I-131, Cs-137, and Ru-103, and consumption of 340 kgm per year, from regulatory guide 1.109 (Rev. 1), Table E-5 (vegetables only).

The following code is to be used to identify sample types in the following Tables.

RG - Radiogas (film)

AP - Air Particulate

RW - Rain Water

V - Vegetation

E - Soil

WW - Well Water

SW - Surface Water

AQS - Silt

AQL - Clam

FPV - Crop

During the reporting period, the following special projects were initiated or continued:

1. A contractor, Ichthyological Associates, has continued a program to access the environmental impact of the facility on Barnegat Bay Biological Life.

2. Environmental sample analysis data is being digitized in order to quickly and accurately assess plant impact via computer program.

3. A Quality Assurance/Control program has remained intact within the environmental sampling and analysis program. "Blind" duplicate samples are being collected quarterly by station personnel and sent for analysis to the primary analyses contractor, an independent analyses vendor, and the N.J. Department of Environmental Protection.

Table III-B
Environmental Monitoring - Quarterly Summary
Scheduled Collection Period

June 1, 1978 Through August 31, 1978

Medium	Analysis	Sample Locations	Unit	Number of Samples	Quarterly Average	MDL
RG	Exposure	1 thru 17, T1,A,C,H	Millirem	-	Table V-D	-
AP	Gross α	1, 2, 3, 4, 5	pCi/m^3	5	1.23 E-3	1.38 E-4
AP	Gross β	1, 2, 3, 4, 5	pCi/m^3	30	7.65 E-2	1.38 E-3
RW	Gross Insoluble	1, 2, 3, 4, 5	nCi/m^2	15	<1.42 E-1	1.07 E-1
RW	Gross β Soluble	1, 2, 3, 4, 5	nCi/m^2	15	1.06	1.25 E-1
V	Gross β	1, 2, 3, 4, 5	pCi/gram - wet	15	4.70	1.07 E-2
E	Gross β	1, 2, 3, 4, 5	pCi/gram - dry	15	5.38	6.95 E-1
FPV	Gross β	28, 29, 30	pCi/gram	3	5.35	1.41 E-2
FPV	Sr - 90	29, 29, 30	pCi/gram	3	4.59 E-1	2.88 E-2
FPV	Total Calcium	28, 29, 30	m gram/gram	3	2.57	2.54 E-3
AQS	Gross α	23,24,25,26,27,32,33	pCi/gram	7	<4.06	2.60
AQS	Gross β	23,24,25,26,27,32,33	pCi/gram	7	9.70	6.67 E-1
AQL	Gross α	23, 24, 25	pCi/gram	9	<4.73 E-2	4.34 E-2
AQL	Gross β	23, 24, 25	pCi/gram	9	1.14	1.87 E-2
AQL	K - 40	23, 24, 25	pCi/gram	3	6.63 E-1	1.33 E-1
AQL	Co - 58	23, 24, 25	pCi/gram	3	<8.33 E-3	8.33 E-3
AQL	Co - 60	23, 24, 25	pCi/gram	3	<1.50 E-2	1.33 E-2
AQL	Zn - 65	23, 24, 25	pCi/gram	3	<2.00 E-2	2.00 E-2
AQL	Sr - 90	23, 24, 25	pCi/gram	3	<6.50 E-3	6.49 E-3
AQL	I - 131	23, 24, 25	pCi/gram	3	<7.67 E-3	7.67 E-3
AQL	Cs - 137	23, 24, 25	pCi/gram	3	<8.33 E-3	8.33 E-3
AQL	Total Calcium	23, 24, 25	m gram/gram	3	1.15	1.73 E-3
WW	Gross α Insoluble	1,18,19,20,21,22	pCi/liter	18	<1.16 E-1	1.14 E-1
WW	Gross α Soluble	1,18,19,20,21,22	pCi/liter	18	<2.87	9.58 E-1
WW	Gross β Insoluble	1,18,19,20,21,22	pCi/liter	18	<5.33 E-1	3.24 E-1

Table III-B
Environmental Monitoring - Quarterly Summary
Scheduled Collection Period
June 1, 1978 through August 31, 1978

Medium	Analysis	Sample Locations	Unit	Number of Samples	Quarterly Average	MDL
WW	Gross β Soluble	1,18,19,20,21,22	pCi/liter	18	<2.31	3.60 E-1
WW	H-3	1,18,19,20,21,22	pCi/liter	6	<1.50 E 2	1.50 E 2
WW	K-40	1,18,19,20,21,22	pCi/liter	6	1.23	8.60 E-2
WW	Ra-226	1,18,19,20,21,22	pCi/liter	6	<1.73 E-1	7.33 E-2
WW	Ra-228	1,18,19,20,21,22	pCi/liter	6	<6.07 E-1	5.98 E-1
WW	U	1,18;19,20,21,22	pCi/liter	6	<1.60 E-1	1.55 E-1
SW	Gross α Insoluble	23,24,25,26,27,32,33	pCi/liter	21	<2.27 E-1	1.99 E-1
SW	Gross α Soluble	23,24,25,26,27,32,33	pCi/liter	21	<1.69	4.53 E-1
SW	Gross β Insoluble	23,24,25,26,27,32,33	pCi/liter	21	<5.36 E-1	3.24 E-1
SW	Gross β Soluble	23,24,25,26,27,32,33	pCi/liter	21	<1.07 E 2	2.94
SW	H-3	23,24,25,26,27,32,33	pCi/liter	21	<1.55 E 2	1.48 E 2
SW	K-40	23,24,25,26,27,32,33	pCi/liter	21	<1.48 E 2	5.76 E 1
SW	Co-58	23,24,25,26,27,32,33	pCi/liter	21	<4.86	4.86
SW	Co-60	23,24,25,26,27,32,33	pCi/liter	21	<4.76	4.76
SW	Zn-65	23,24,25,26,27,32,33	pCi/liter	21	<8.14	8.14
SW	Sr-90	23,24,25,26,27,32,33	pCi/liter	21	<3.89 E-1	3.95 E-1
SW	I-131	23,24,25,26,27,32,33	pCi/liter	21	<4.81	4.81
SW	Cs-137	23,24,25,26,27,32,33	pCi/liter	21	<4.33	4.33
SW	Ra-226	23,24,25,26,27,32,33	pCi/liter	21	<2.77 E-1	7.00 E-2
SW	Ra-228	23,24,25,26,27,32,33	pCi/liter	21	<5.14 E-1	5.14 E-1
SW	U	23,24,25,26,27,32,33	pCi/liter	21	<1.17	3.71 E-1
SW	Total Calcium	23,24,25,26,27,32,33	gm/liter	7	2.17 E-1	2.60 E-4

Table III- C
Environmental Monitoring - Quarterly Summary
Scheduled Collection Period

September 1, 1978 through November 30, 1978

Medium	Analysis	Sample Locations	Unit	Number of Samples	Quarterly Average	MDL
RG	Exposure	1 thru 17, T1,A,C,H	Millirem	-	Table V-D	-
AP	Gross α	1, 2, 3, 4, 5	pCi/m^3	5	1.89 E-3	1.98 E-4
AP	Gross β	1, 2, 3, 4, 5	pCi/m^3	34	3.63 E-2	1.32 E-3
RW	Gross Insoluble	1, 2, 3, 4, 5	nCi/m^2	15	<5.98 E-2	5.10 E-2
RW	Gross β Soluble	1, 2, 3, 4, 5	nCi/m^2	15	5.89 E-1	4.58 E-2
V	Gross β	1, 2, 3, 4, 5	pCi/gram - wet	15	3.34	1.20 E-2
E	Gross β	1, 2, 3, 4, 5	pCi/gram - dry	15	5.38	8.03 E-1
FPV	Gross β	28, 29, 30	pCi/gram	3	5.33	4.21 E-2
FPV	Sr - 90	29, 29, 30	pCi/gram	3	5.61 E-1	2.49 E-2
FPV	Total Calcium	28, 29, 30	m gram/gram	3	2.86	7.71 E-3
AQS	Gross α	23,24,25,26,27,32,33	pCi/gram	7	<2.23	2.04
AQS	Gross β	23,24,25,26,27,32,33	pCi/gram	7	5.40	8.16 E-1
AQL	Gross α	23, 24, 25	pCi/gram	9	<4.47 E-2	3.86 E-2
AQL	Gross β	23, 24, 25	pCi/gram	9	7.12 E-1	1.35 E-2
AQL	K - 40	23, 24, 25	pCi/gram	3	1.00	1.33 E-1
AQL	Co - 58	23, 24, 25	pCi/gram	3	<1.03 E-2	1.03 E-2
AQL	Co - 60	23, 24, 25	pCi/gram	3	<2.40 E-2	1.30 E-2
AQL	Zn - 65	23, 24, 25	pCi/gram	3	<1.67 E-2	1.67 E-2
AQL	Sr - 90	23, 24, 25	pCi/gram	3	<1.30 E-2	1.30 E-2
AQL	I - 131	23, 24, 25	pCi/gram	3	<6.00 E-3	6.00 E-3
AQL	Cs - 137	23, 24, 25	pCi/gram	3	<6.67 E-3	6.67 E-3
AQL	Total Calcium	23, 24, 25	m gram/gram	3	1.02	2.64 E-3
WW	Gross α Insoluble	1,18,19,20,21,22	pCi/liter	18	<1.09 E-1	9.16 E-2
WW	Gross α Soluble	1,18,19,20,21,22	pCi/liter	18	<1.63	7.26 E-1
WW	Gross β Insoluble	1,18,19,20,21,22	pCi/liter	18	<3.39 E-1	3.38 E-1

Table III-C
Environmental Monitoring - Quarterly Summary
Scheduled Collection Period
September 1, 1978 through November 30, 1978

Medium	Analysis	Sample Locations	Unit	Number of Samples	Quarterly Average	MDL
WW	Gross β Soluble	1,18,19,20,21,22	pCi/liter	18	<2.54	3.64 E-1
WW	H-3	1,18,19,20,21,22	pCi/liter	6	<1.98 E 2	1.75 E 2
WW	K-40	1,18,19,20,21,22	pCi/liter	6	4.04	8.60 E-2
WW	Ra-226	1,18,19,20,21,22	pCi/liter	6	<6.57 E-1	1.04 E-1
WW	Ra-228	1,18,19,20,21,22	pCi/liter	6	<6.52 E-1	6.50 E-1
WW	U	1,18;19,20,21,22	pCi/liter	6	<1.33 E-1	1.33 E-1
SW	Gross α Insoluble	23,24,25,26,27,32,33	pCi/liter	21	<3.74 E-1	3.11 E-1
SW	Gross α Soluble	23,24,25,26,27,32,33	pCi/liter	21	<1.68	5.12 E-1
SW	Gross β Insoluble	23,24,25,26,27,32,33	pCi/liter	21	<7.88 E-1	6.63 E-1
SW	Gross β Soluble	23,24,25,26,27,32,33	pCi/liter	21	<1.23 E 2	3.78
SW	H-3	23,24,25,26,27,32,33	pCi/liter	21	<1.93 E 2	1.70 E 2
SW	K-40	23,24,25,26,27,32,33	pCi/liter	21	<1.12 E 2	5.52 E 1
SW	Co-58	23,24,25,26,27,32,33	pCi/liter	21	<4.95	4.95
SW	Co-60	23,24,25,26,27,32,33	pCi/liter	21	<4.81	4.81
SW	Zn-65	23,24,25,26,27,32,33	pCi/liter	21	<8.19	8.19
SW	Sr-90	23,24,25,26,27,32,33	pCi/liter	21	<5.61 E-1	5.54 E-1
SW	I-131	23,24,25,26,27,32,33	pCi/liter	21	<4.95	4.95
SW	Cs-137	23,24,25,26,27,32,33	pCi/liter	21	<4.24	4.24
SW	Ra-226	23,24,25,26,27,32,33	pCi/liter	21	<2.44 E-1	9.22 E-2
SW	Ra-228	23,24,25,26,27,32,33	pCi/liter	21	<5.56 E-1	5.15 E-1
SW	U	23,24,25,26,27,32,33	pCi/liter	21	<1.02	3.95 E-1
SW	Total Calcium	23,24,25,26,27,32,33	gm/liter	7	1.58 E-1	2.60 E-4

Table III-D
Radiogas Film Badges
Scheduled Collection Period
June 1, 1978 through November 30, 1978

Collection Date		6-26-78	7-24-78	8-21-78		Three Month Total	9-18-78	10-16-78	11-13-78		Three Month Total	Six Month Total
Station	Unit											
1	Millirem	0	10	0		10	0	0	0		0	10
T1	Millirem	0	0	15		15	0	0	0		0	15
2	Millirem	0	0	0		0	0	0	0		0	0
3	Millirem	0	0	0		0	0	0	0		0	0
4	Millirem	0	0	0		0	0	0	0		0	0
5	Millirem	0	0	0		0	0	0	0		0	0
6	Millirem	0	0	0		0	0	0	0		0	0
7	Millirem	0	0	0		0	0	0	0		0	0
8	Millirem	0	0	0		0	0	0	0		0	0
9	Millirem	0	0	0		0	0	0	0		0	0
10	Millirem	0	0	0		0	0	0	0		0	0
11	Millirem	0	0	0		0	0	0	0		0	0
12	Millirem	0	0	0		0	0	0	0		0	0
13	Millirem	0	0	0		0	0	0	0		0	0
14	Millirem	0	0	0		0	0	0	0		0	0
15	Millirem	0	0	0		0	0	0	0		0	0
16	Millirem	0	0	0		0	0	0	0		0	0
17	Millirem	0	0	0		0	0	0	0		0	0
A	Millirem	0	0	0		0	0	0	0		0	0
C	Millirem	0	0	0		0	0	0	0		0	0
H	Millirem	0	0	0		0	0	0	0		0	0

Table III-E

Environmental Monitoring - Semi-annual Summary
Scheduled Collection Period
June 1, 1978 through November 30, 1978

Medium	Analysis	Unit	Location with Highest Average	Number of Samples	Maximum	Average	Minimum
RG	Exposure	Millirem	T1	6	1.50 E 1	2.50	0.00
AP	Gross α	pCi/m^3	C	2	2.53 E-3	2.38 E-3	2.23 E-3
AP	Gross β	pCi/m^3	5	13	1.27 E-1	6.48 E-2	3.40 E-2
AP	I-131 Charcoal	pCi/m^3	C	13	<2.27 E-2	<1.39 E-2	<5.27 E-3
RW	Gross β Insoluble	nCi/m^2	H	6	4.30 E-1	<1.43 E-1	<1.00 E-2
RW	Gross β Soluble	nCi/m^2	4	6	2.30	1.18	3.10 E-1
V	Gross β	pCi/gram-wet	2	6	1.09 E 1	4.98	3.05
E	Gross β	pCi/gram-dry	5	6	1.21 E 1	9.91	6.81
FPV	Gross β	pCi/gram	28	2	7.79	5.90	4.00
FPV	Sr-90	pCi/gram	30	2	8.84 E-1	6.31 E-1	3.78 E-1
FPV	Total Calcium	mgram/gram	30	2	6.03	4.56	3.08
AQS	Gross α	pCi/gram	23	2	7.17	<4.60	<2.03
AQS	Gross β	pCi/gram	31	2	1.62 E 1	1.51 E 1	1.40 E 1
AQL	Gross α	pCi/gram	25	6	1.02 E-1	<5.63 E-2	<2.19 E-2
AQL	Gross β	pCi/gram	25	6	1.50	1.07	4.68 E-1
AQL	K-40	pCi/gram	25	2	1.60	1.27	9.40 E-1
AQL	Co-58	pCi/gram	23	2	<2.00 E-2	<1.45 E-2	<9.00 E-3
AQL	Co-60	pCi/gram	24	2	4.20 E-2	2.85 E-2	1.50 E-2
AQL	Zn-65	pCi/gram	23	2	<3.00 E-2	<3.00 E-2	<3.00 E-2
AQL	Sr-90	pCi/gram	23	2	<2.38 E-2	<1.75 E-2	<1.12 E-2
AQL	I-131	pCi/gram	23	2	<1.00 E-2	<1.00 E-2	<1.00 E-2
AQL	Cs-137	pCi/gram	23	2	<1.00 E-2	<1.00 E-2	<1.00 E-2
AQL	Total Calcium	mgram/gram	25	2	2.24	1.68	1.11
WW	Gross α Insoluble	pCi/liter	1	6	2.48 E-1	<1.32 E-1	<6.87 E-2
WW	Gross α Soluble	pCi/liter	21	6	1.09 E 1	5.50	3.05

Table III-E Continued
Environmental Monitoring - Semi-annual Summary
Scheduled Collection Period
June 1, 1979 through November 30, 1978

Medium	Analysis	Unit	Location with Highest Average	Number of Samples	Maximum	Average	Minimum
WW	Gross β Insoluble	pCi/liter	19	6	2.55	<7.10 E-1	<3.35 E-1
WW	Gross β Soluble	pCi/liter	21	6	4.96	4.34	3.44
WW	H-3	pCi/liter	18	2	2.84 E 2	<2.17 E 2	<1.50 E 2
WW	K-40	pCi/liter	22	2	4.45	3.15	1.85
WW	Ra-226	pCi/liter	21	2	2.34	1.24	1.30 E-1
WW	Ra-228	pCi/liter	20	2	<1.07	<9.51 E-1	<8.32 E-1
WW	U	pCi/liter	19	2	<3.70 E-1	<2.75 E-1	1.80 E-1
SW	Gross α Insoluble	pCi/liter	25	6	<8.58 E-1	<4.04 E-1	<9.67 E-2
SW	Gross α Soluble	pCi/liter	31	6	5.14	<2.54	<5.00 E-1
SW	Gross β Insoluble	pCi/liter	32	6	2.07	<8.72 E-1	3.20 E-1
SW	Gross β Soluble	pCi/liter	25	6	2.27 E 2	1.84 E 2	1.34 E 2
SW	H-3	pCi/liter	24	6	6.46 E 2	<2.38 E 2	<1.21 E 2
SW	K-40	pCi/liter	31	6	2.50 E 2	1.90 E 2	1.20 E 2
SW	Co-58	pCi/liter	26	6	<6.00	<5.17	<5.00
SW	Co-60	pCi/liter	27	6	<6.00	<5.17	<5.00
SW	Zn-65	pCi/liter	32	6	<9.00	<8.83	<8.00
SW	Sr-90	pCi/liter	27	6	<1.57	<6.23 E-1	<3.13 E-1
SW	I-131	pCi/liter	23,24,27,31&33	6	<5.00	<5.00	<5.00
SW	Cs-137	pCi/liter	26 & 31	6	<5.00	<4.67	<4.00
SW	Ra-226	pCi/liter	27	6	9.70 E-1	4.08 E-1	1.70 E-1
SW	Ra-228	pCi/liter	33	6	1.94	<8.23 E-1	<4.89 E-1
SW	U	pCi/liter	31	6	4.29	<2.20	3.70 E-1
SW	Total Calcium	gm/liter	31	2	3.52 E 2	3.32 E 2	3.12 E 2

Table III-F
Thermoluminescent Dosimeters
Scheduled Collection Period

June 1, 1978 through November 30, 1978

Collection Date		6-26-78	7-24-78	8-21-78		Three Month Total	9-18-78	10-16-78	11-13-78		Three Month Total	Six Month Total
Station	Unit											
1	Millirem	9.02	11.53	8.82		29.37	9.18	5.84	4.62		19.64	49.01
T1	Millirem	9.24	11.08	8.90		29.22	8.64	5.48	4.26		18.38	47.60
2	Millirem	5.23	6.42	3.23		14.88	4.55	5.32	3.83		13.70	28.58
3	Millirem	4.94	5.64	3.82		14.40	4.32	4.22	3.78		12.32	26.72
4	Millirem	4.29	5.64	2.98		12.91	4.04	4.99	3.99		13.02	25.93
5	Millirem	6.04	5.46	3.50		15.00	4.17	4.90	3.91		12.98	27.98
6	Millirem	6.44	6.10	3.92		16.46	4.26	4.48	3.63		12.37	28.83
7	Millirem	4.82	Lost	3.70		8.52	4.07	4.11	3.38		11.56	20.08
8	Millirem	4.30	6.15	3.47		13.92	3.85	4.14	3.33		11.32	25.24
9	Millirem	4.82	5.60	4.53		14.95	4.32	4.97	3.91		13.20	28.15
10	Millirem	5.44	5.37	3.53		14.34	3.81	4.68	3.51		12.00	26.34
11	Millirem	4.53	5.10	3.04		12.67	3.43	4.31	3.85		11.59	24.26
12	Millirem	4.19	4.81	3.29		12.29	3.18	4.55	3.28		11.01	23.30
13	Millirem	4.73	4.94	2.75		12.42	3.80	4.15	3.44		11.39	23.81
14	Millirem	5.74	5.72	3.89		15.35	4.78	5.12	4.25		14.15	29.50
15	Millirem	4.83	4.60	3.21		12.64	3.37	4.65	3.82		11.84	24.48
16	Millirem	4.45	5.35	3.14		12.94	3.52	4.73	3.49		11.74	24.68
17	Millirem	4.44	5.05	3.55		13.04	3.93	4.64	3.50		12.07	25.11
A	Millirem	5.57	5.75	3.90		15.22	4.80	5.18	4.06		14.04	29.26
C	Millirem	4.39	5.67	3.53		13.59	3.65	4.80	3.70		12.15	25.74
H	Millirem	4.24	4.93	3.08		12.25	3.15	4.10	3.23		10.48	22.73

Table III-G
Charcoal Filter Analysis from Air Sampling Stations
Scheduled Collection Period

June 1, 1978 through November 30, 1978

Station	Unit	Number of Samples	Maximum	Average	Minimum
1	pCi/m^3	13	<1.79 E-2	<1.13 E-2	<7.58 E-3
2	pCi/m^3	12	<1.48 E-2	<1.08 E-2	<7.62 E-3
3	pCi/m^3	13	<1.75 E-2	<9.73 E-3	<7.18 E-3
4	pCi/m^3	13	<2.09 E-2	<1.31 E-2	<7.71 E-3
5	pCi/m^3	13	<2.81 E-2	<1.39 E-2	<7.93 E-3

Table III-H

Air Particulate Isotopic Analysis (pCi/m^3)

Scheduled Collection Period - June 1, 1978 through November 30, 1978

Station #	Nuclide	Number of Times Detected	Maximum	Average	Minimum
1	Be-7	7	1.8 E-1	1.1 E-1	6.1 E-2
	Cs-137	2	1.0 E-2	9.5 E-3	8.9 E-3
	Ce-144	1	-	4.7 E-2	-
2	Be-7	6	1.5 E-1	1.1 E-1	5.4 E-2
	Cs-137	2	9.4 E-3	8.9 E-3	8.3 E-3
	Ce-144	1	-	2.9 E-2	-
3	Be-7	6	1.3 E-1	9.8 E-2	7.4 E-2
	Ce-141	2	8.7 E-3	7.1 E-3	5.4 E-3
	Ce-144	2	6.3 E-2	5.5 E-2	4.6 E-2
4	Be-7	8	2.0 E-1	1.0 E-1	6.8 E-2
	Ce-144	2	5.9 E-2	4.2 E-2	2.4 E-2
5	Be-7	8	1.8 E-1	1.1 E-1	6.7 E-2
	Ce-144	2	4.2 E-2	3.6 E-2	3.0 E-2
A (Background)	Be-7	8	1.5 E-1	9.0 E-2	5.4 E-2
	Cs-137	2	1.3 E-2	1.3 E-2	1.2 E-2
C (Background)	Be-7	6	1.7 E-1	1.1 E-1	7.1 E-2
	Ce-144	2	3.1 E-2	3.1 E-2	3.1 E-2
H (Background)	Be-7	5	1.5 E-1	1.0 E-1	7.4 E-2
	Cs-137	1	-	8.4 E-3	-
	Ce-144	1	-	5.4 E-2	-

Table III-J
Background Station Analyses
Scheduled Collection Period
June 1, 1978 through November 30, 1978

Medium	Station	Analysis	Unit	Number of Samples	Maximum	Average	Minimum
AP	A	Gross α	pCi/m^3	2	2.59 E-3	1.90 E-3	1.21 E-3
AP	A	Gross β	pCi/m^3	13	1.01 E-1	5.49 E-2	2.18 E-2
AP	A	I-131	pCi/m^3	13	<2.41 E-2	<1.26 E-2	<9.05 E-3
AP	C	Gross α	pCi/m^3	2	2.53 E-3	2.38 E-3	2.23 E-3
AP	C	Gross β	pCi/m^3	13	8.92 E-2	4.86 E-2	2.85 E-3
AP	C	I-131	pCi/m^3	13	<2.27 E-2	<1.39 E-2	<5.27 E-3
AP	H	Gross α	pCi/m^3	2	3.15 E-3	2.05 E-3	9.40 E-4
AP	H	Gross β	pCi/m^3	13	1.39 E-1	4.77 E-2	2.18 E-2
AP	H	I-131	pCi/m^3	13	<1.56 E-2	<1.20 E-2	<7.69 E-3
RW	A	Gross β Insoluble	nCi/m^2	5	<2.00 E-1	<1.30 E-1	<4.00 E-2
RW	A	Gross β Soluble	nCi/m^2	5	1.60	1.12	7.70 E-1
RW	C	Gross β Insoluble	nCi/m^2	6	<2.00 E-1	<9.45 E-2	1.20 E-2
RW	C	Gross β Soluble	nCi/m^2	6	1.10	6.15 E-1	7.10 E-2
RW	H	Gross β Insoluble	nCi/m^2	6	4.30 E-1	<1.43 E-1	<1.0 E-2
RW	H	Gross β Soluble	nCi/m^2	6	1.30	7.55 E-1	2.70 E-1
AQS	31	Gross α	pCi/gram	2	4.11	3.78	3.44
AQS	31	Gross β	pCi/gram	2	1.62 E 1	1.51 E 1	1.40 E 1
AQL	31	Gross α	pCi/gram	6	8.46 E-2	<5.03 E-2	<2.04 E-2
AQL	31	Gross β	pCi/gram	6	1.50	1.00	4.06 E-1
AQL	31	K-40	pCi/gram	2	8.50 E-1	7.65 E-1	6.80 E-1
AQL	31	Co-58	pCi/gram	2	<7.00 E-3	<5.50 E-3	<4.00 E-3
AQL	31	Co-60	pCi/gram	2	2.70 E-2	<1.70 E-2	<7.00 E-3
AQL	31	Zn-65	pCi/gram	2	<1.00 E-2	<8.50 E-3	<7.00 E-3
AQL	31	S-90	pCi/gram	2	<5.10 E-3	<4.30 E-3	<3.49 E-3
AQL	31	I-131	pCi/gram	2	<5.00 E-3	<3.50 E-3	<2.00 E-3

Table III-J Continued
Background Station Analyses
Scheduled Collection Period
June 1, 1978 through November 30, 1978

Medium	Station	Analysis	Unit	Number of Samples	Maximum	Average	Minimum
AQL	31	Cs-137	pCi/gram	2	<6.00 E-3	<4.50 E-3	<3.00 E-3
AQL	31	Total Calcium	mgram/gram	2	1.30	1.06	8.18 E-1
SW	31	Gross α Insoluble	pCi/liter	6	<6.06 E-1	<2.62 E-1	1.09 E-1
SW	31	Gross α Soluble	pCi/liter	6	5.14	<2.54	<5.00 E-1
SW	31	Gross β Insoluble	pCi/liter	6	<1.29	<5.57 E-1	<3.36 E-1
SW	31	Gross β Soluble	pCi/liter	6	2.15 E 2	1.70 E 2	1.21 E 2
SW	31	H-3	pCi/liter	6	<1.82 E 2	<1.58 E 2	<1.21 E 2
SW	31	K-40	pCi/liter	6	2.50 E 2	1.90 E 2	1.20 E 2
SW	31	Co-58	pCi/liter	6	<5.00	<4.83	<4.00
SW	31	Co-60	pCi/liter	6	<6.00	<5.00	<4.00
SW	31	Zn-65	pCi/liter	6	<9.00	<8.33	<7.00
SW	31	Sr-90	pCi/liter	6	6.44 E-1	<4.16 E-1	<2.86 E-1
SW	31	I-131	pCi/liter	6	<5.00	<5.00	<5.00
SW	31	Cs-137	pCi/liter	6	<5.00	<4.67	<4.00
SW	31	Ra-226	pCi/liter	6	8.70 E-1	<2.91 E-1	<1.05 E-1
SW	31	Ra-228	pCi/liter	6	<1.09	<5.65 E-1	<2.47 E-1
SW	31	U	pCi/liter	6	4.29	<2.20	3.70 E-1
SW	31	Total Calcium	gm/liter	2	3.52 E-1	3.32 E-1	3.12 E-1

TABLE III-K
Isotopic Silt Analysis
Scheduled Collection Period - June 1, 1978 through November 30, 1978

Station #	Nuclide	Number of Times Detected	Maximum	Average	Minimum
23	Be-7	3	4.4 E-1	2.6 E-1	1.4 E-1
	K-40	6	1.2 E 1	5.0	1.1
	Mn-54	1	-	3.2 E-2	-
	Co-60	3	5.2 E-1	2.3 E-1	6.1 E-2
	Zr-95	1	-	4.0 E-2	-
	Nb-95	1	-	6.6 E-2	-
	Cs-137	4	1.3 E-1	7.0 E-2	2.9 E-2
	Ce-141	1	-	2.5 E-2	-
	Ce-144	2	4.6 E-1	2.9 E-1	1.1 E-1
	Ra-226	6	7.0 E-1	4.2 E-1	1.4 E-1
	Th-232	6	6.3 E-1	3.8 E-1	1.0 E-1
24	Be-7	2	8.0 E-1	5.1 E-1	2.2 E-1
	K-40	6	1.4 E 1	7.3	6.0 E-1
	Mn-54	2	3.6 E-2	2.9 E-2	2.1 E-2
	Co-60	4	1.6 E-1	8.4 E-2	3.2 E-2
	Nb-95	1	-	1.0 E-1	-
	Ru-103	1	-	6.8 E-2	-
	Ru-106	2	3.3 E-1	3.2 E-1	3.1 E-1
	Cs-137	5	1.3 E-1	8.3 E-2	4.3 E-2
	Ce-141	3	4.1 E-2	3.9 E-2	3.8 E-2
	Ce-144	2	5.4 E-1	4.0 E-1	2.6 E-1
	Ra-226	6	7.5 E-1	4.9 E-1	2.9 E-1
	Th-232	6	7.7 E-1	5.4 E-1	3.7 E-1
25	Be-7	2	2.4 E-1	2.2 E-1	2.0 E-1
	K-40	6	1.3 E 1	6.5	2.0
	Mn-54	1	-	2.0 E-2	-
	Co-60	6	1.7 E-1	9.5 E-2	4.8 E-2
	Zn-65	1	-	5.2 E-2	-
	Cs-137	6	1.0 E-1	5.6 E-2	3.8 E-2
	BaLa-140	1	-	5.3 E-2	-
	Ce-144	2	1.6 E-1	1.4 E-1	1.1 E-1
	Ra-226	6	7.5 E-1	5.5 E-1	3.4 E-1
	Th-232	6	7.7 E-1	4.8 E-1	2.4 E-1
31 (Background)	K-40	6	1.9 E 1	1.5 E 1	1.2 E 1
	Cs-137	5	1.9 E-1	1.0 E-1	3.0 E-2
	Ce-141	1	-	2.7 E-2	-
	Ce-144	2	7.4 E-1	4.1 E-1	8.0 E-2
	Ra-226	6	6.4 E-1	4.5 E-1	3.4 E-1
	Th-232	6	8.4 E-1	6.2 E-1	4.6 E-1

TABLE III-K
(cont.)
Isotopic Silt Analysis
Scheduled Collection Period - June 1, 1978 through November 30, 1978

Station #	Nuclide	Number of Times Detected	Maximum	Average	Minimum
32	Be-7	1	-	6.2 E-1	-
	K-40	6	1.5 E 1	6.0	5.1 E-1
	Mn-54	2	3.4 E-2	2.9 E-2	2.3 E-2
	Co-60	5	1.0	3.6 E-1	4.4 E-2
	Nb-95	2	8.4 E-2	5.3 E-2	2.2 E-2
	Ru-103	1	-	1.3 E-2	-
	Ru-106	1	-	3.9 E-1	-
	Cs-137	3	3.4 E-1	2.6 E-1	2.0 E-1
	Ce-144	2	9.4 E-1	5.1 E-1	8.8 E-2
	Ra-226	6	5.2 E-1	2.9 E-1	1.3 E-1
	Th-232	5	6.9 E-1	3.6 E-1	8.4 E-2
33	Be-7	1	-	5.8 E-1	-
	K-40	6	1.4 E 1	9.0	6.3
	Mn-54	3	7.7 E-2	5.2 E-2	2.5 E-2
	Co-60	6	1.6	5.1 E-1	1.2 E-1
	Nb-95	1	-	1.2 E-1	-
	Ru-103	1	-	7.5 E-2	-
	Ru-106	3	4.1 E-1	3.5 E-1	2.9 E-1
	Sb-125	1	-	8.0 E-2	-
	Cs-134	1	-	3.7 E-2	-
	Cs-137	6	7.2 E-1	2.5 E-1	8.4 E-2
	Ce-144	4	5.3 E-1	4.2 E-1	2.2 E-1
	Ra-226	6	7.0 E-1	5.4 E-1	4.5 E-1
	Th-232	6	7.4 E-1	5.7 E-1	3.8 E-1

TABLE III-L

Vegetable Isotopic Analyses

Location	Sample Type	Isotopes Detected	Analyses Result (pCi/gm - wet)
Waretown, N.J.	Tomatoes	K-40	1.9 ± 0.25
	Cucumbers	K-40	1.2 ± 0.20
		Cs-137	(1.6 ± 0.82) E-2
South Toms River, N.J.	Tomatoes	K-40	1.6 ± 0.26
		Cs-137	(3.3 ± 1.4) E-2
	Cucumbers	K-40	1.4 ± 0.32
		Cs-137	(3.7 ± 1.3) E-2
Barnegat, N.J.	Tomatoes	K-40	1.5 ± 0.24
	Corn	K-40	2.6 ± 0.81
	Eggplant	K-40	2.0 ± 0.44
Forked River, N.J.	Tomatoes	K-40	1.9 ± 0.27
		Cs-137	(6.4 ± 5.9) E-3
	Cucumbers	K-40	1.3 ± 0.21
	Cabbage	K-40	1.7 ± 0.32
		Cs-137	(1.8 ± 1.0) E-2
Farmingdale, N.J.	Tomatoes	K-40	1.8 ± 0.25
	Cucumbers	K-40	1.9 ± 0.27
	String Beans	K-40	2.8 ± 0.36
		Cs-137	(1.1 ± 0.79) E-2
Cookstown, N.J.	Tomatoes	K-40	1.0 ± 0.21
	Peppers	K-40	1.7 ± 0.36
	Squash	K-40	2.3 ± 0.28
Hammonton, N.J.	Tomatoes	K-40	2.0 ± 0.28
		Ru-103	(5.2 ± 4.2) E-3
	Corn	K-40	3.0 ± 0.51
	Cucumbers	K-40	1.4 ± 0.22