



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

September 2, 1980

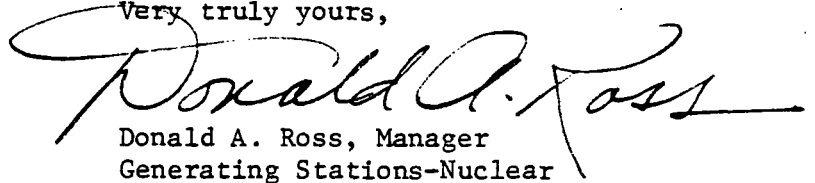
Mr. Boyce H. Grier, Director
Office of Inspection and Enforcement
United States Nuclear Regulatory Commission
Region I
631 Park Avenue
King of Prussia, Pennsylvania 19406

Dear Mr. Grier:

SUBJECT: Oyster Creek Nuclear Generating Station
Docket No. 50-219
Effluent Release Report No. 80-1

Enclosed are two (2) copies of Effluent Release Report No. 80-1 for our Oyster Creek Nuclear Generating Station Unit No. 1. This report is submitted in accordance with Section 6.9.3.c of the Technical Specifications of the Oyster Creek Unit No. 1 Provisional License, DPR-16.

Very truly yours,



Donald A. Ross, Manager
Generating Stations-Nuclear

ck
Enclosures (2)

cc: Director (6 copies)
Office of Inspection and Enforcement
U. S. Nuclear Regulatory Commission
Washington, DC 20555

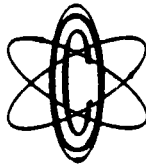
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General Public Utilities System

OYSTER CREEK NUCLEAR GENERATING STATION



SEMIANNUAL REPORT NO. 80-1

PROVISIONAL OPERATING LICENSE NO. DPR-16

RADIOACTIVE EFFLUENT RELEASES

JANUARY 1, 1980 THROUGH JUNE 30, 1980

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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

Dec. 1, 1979	Operating at approximately 93% Rated Power
Dec. 15, 1979	Operating at approximately 89% Rated Power
Dec. 31, 1979	Operating at approximately 84% Rated Power
Jan. 5, 1980	Reactor Shutdown - Refueling Outage
Jan. 15, 1980	Reactor Shutdown - Refueling Outage
Jan. 30, 1980	Reactor Shutdown - Refueling Outage
Feb. 15, 1980	Reactor Shutdown - Refueling Outage
Feb. 29, 1980	Reactor Shutdown - Refueling Outage
Mar. 15, 1980	Reactor Shutdown - Refueling Outage
Mar. 31, 1980	Reactor Shutdown - Refueling Outage
Apr. 15, 1980	Reactor Shutdown - Refueling Outage
Apr. 30, 1980	Reactor Shutdown - Refueling Outage
May 15, 1980	Reactor Shutdown - Refueling Outage
May 31, 1980	Reactor Shutdown - Refueling Outage
Jun. 15, 1980	Reactor Shutdown - Refueling Outage
Jun. 30, 1980	Reactor Shutdown - Refueling Outage

II. EFFLUENT AND WASTE DISPOSAL SUMMARY

II. EFFLUENT AND WASTE DISPOSAL SUMMARY

A. Gaseous Effluents

During the reporting period, January 1, 1980 through June 1980, a total of $9.51 \text{ E } 3$ curies of fission and activation gases, $1.57 \text{ E } -1$ curies of non-particulate halogens with half-lives greater than eight days, $2.67 \text{ E } -2$ curies of particulate activity with half-lives greater than eight days, and 6.40 curies of tritium were released. Totals include effluents released from both an elevated stack and a ground-level radwaste vent. The gaseous effluent summary must be submitted incomplete at this time due to normal analyzation delays of Strontium 89 and 90 from the analyses vendor on the radwaste duct. An addendum completed in full will be issued as soon as all data is received. The maximum hourly release rate of gross activity from the stack was $2.60 \text{ E } 4$ microcuries per second which occurred at approximately 0200 on January 4, 1980.

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

B. Liquid Effluents

A total of $1.60 \text{ E } 7$ liters of water was processed through the Radwaste System. Of this, $7.92 \text{ E } 6$ liters containing $1.54 \text{ E } 2$ curies of activity were released to the environment. The maximum concentration of gross radioactivity (beta-gamma) released to the unrestricted area (average over the period of release) was $1.14 \text{ E } -7$ microcuries per milliliter on March 21, 1980.

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

C. Solid

During the reporting period, a total volume of $1.37 \text{ E } 3$ cubic meters of solid waste containing $5.08 \text{ E } 2$ curies of activity was shipped off site in 97 shipments. No irradiated material was shipped off site during this period.

The solid waste shipment data are summarized in Table II-3.

D. Meteorological Data

During the reporting period, onsite meteorological conditions were monitored and recorded. Greater than 90% 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. Included is 116 meter and 10 meter data.

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

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

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

- b. Iodines, half-lives >8 days:
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 Gases:
1. First Quarter - 3.48 E-3 uCi/cc
2. Second Quarter - - -

- b. Iodines:
5.20 E-8 uCi/cc

- c. Particulates:
5.20 E-8 uCi/cc

- 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 - uCi/ml

H-3	3 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	Xe-133	3 E-6
Fe-59	6 E-5	Cs-134	9 E-6
Co-60	5 E-5	Cs-137	2 E-5
Kr-85m	3 E-6	Ba-140	3 E-5
Sr-89	3 E-6	La-140	2 E-5
Sr-90	3 E-7	Ce-141	9 E-5
Nb-95	1 E-4	Ce-144	1 E-5
Tc-99m	6 E-3	Pa-233	1 E-4

3. Average Energy

- a. First Quarter - 7.84 E-1 mev
- b. Second Quarter - ---

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. First Quarter - 38 releases
 - b. Second Quarter - 72 releases
2. Total time period for batch releases:
 - a. First Quarter - 1.18 E 4 minutes
 - b. Second Quarter - 1.19 E 4 minutes
3. Maximum time period for a batch release:
 - a. First Quarter - 1.04 E 3 minutes
 - b. Second Quarter - 6.35 E 2 minutes
4. Average time period for a batch release:
 - a. First Quarter - 3.11 E 2 minutes
 - b. Second Quarter - 1.65 E 2 minutes
5. Minimum time period for a batch release:
 - a. First Quarter - 8.50 E 1 minutes
 - b. Second Quarter - 4.30 E 1 minutes
6. Average stream flow during periods of release of effluent in a flowing stream:
 - a. First Quarter - 2.13 E 6 liters/minute
 - b. Second Quarter - 2.05 E 6 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 SEMI-ANNUAL REPORT 1980-1
 GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	Unit	First Quarter	Second Quarter	Est. Total Error %
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A. Fission & activation gases

1. Total release	Ci	9.51 E 3	< MDL	3.0 E 1
2. Average release rate for period	μCi/sec	2.59 E 4	-	
3. Percent of Tech Spec limit	%	9.66	-	

B. Iodines

1. Total iodine-131	Ci	1.57 E-1	< MDL	2.5 E 1
2. Average release rate for period	μCi/sec	1.99 E-2	-	
3. Percent of Tech Spec limit	%	4.98 E-1	-	

C. Particulates

1. Particulates with half-lives >8 days	Ci	2.27 E-2*	3.97 E-3*	2.5 E 1
2. Average release rate for period	μCi/sec	2.89 E-3*	5.05 E-4*	
3. Percent of Tech Spec limit	%	7.23 E-2*	1.26 E-2*	
4. Gross alpha radioactivity	Ci	7.42 E-5	7.34 E-5	

D. Tritium

1. Total release	Ci	4.24	2.16	4.0 E 1
2. Average release rate for period	μCi/sec	5.39 E-1	2.75 E-1	

* Quarterly data incomplete - see Effluent and Waste Disposal Summary

TABLE II - 1B
 EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1980-1
 GASEOUS EFFLUENTS-ELEVATED RELEASE

CONTINUOUS MODE

Nuclides Released	Unit	First Quarter	Second Quarter		MDL
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1. Fission gases

krypton-85m	Ci	4.47 E 2	< MDL		4.16 E-10
krypton-87	Ci	1.46 E 3	< MDL		1.01 E-9
krypton-88	Ci	1.38 E 3	< MDL		1.22 E-9
xenon-133	Ci	4.48 E 2	< MDL		3.27 E-10
xenon-135	Ci	2.42 E 3	< MDL		3.42 E-10
xenon-135m	Ci	7.70 E 2	< MDL		1.00 E-9
xenon-138	Ci	2.58 E 3	< MDL		1.88 E-9
others					
krypton-89	Ci	< 1.00	< MDL		2.01 E-8
xenon-133m	Ci	< MDL	< MDL		2.94 E-9
xenon-137	Ci	2.82	< MDL		1.40 E-8
Total for period	Ci	9.51 E 3	-		

2. Iodines

Iodine-131	Ci	1.51 E-1	< MDL		1.03 E-10
Iodine-133	Ci	5.64 E-2	< MDL		1.33 E-10
Iodine-135	Ci	4.52 E-2	< MDL		6.90 E-10
Total for period	Ci	2.53 E-1	-		

Table 1C
Effluent and Waste Disposal Semiannual Report 1980-1
Gaseous Effluents-Ground-Level releases

Nuclides Released	Unit	First Quarter	Second Quarter		MDL
1. Fission Gases					
Total for Period	Ci	< MDL	< MDL		
2. Iodines					
Iodine-131	Ci	6.65 E-3	< MDL		9.58 E-10
Iodine-133	Ci	6.18 E-4	< MDL		2.08 E-10
Iodine-135	Ci	1.97 E-4	< MDL		5.52 E-10
Total for Period	Ci	7.47 E-3	-		
3. Particulates					
Manganese-54	Ci	< MDL	2.24 E-6		2.33 E-10
Cobalt-60	Ci	3.02 E-4	4.99 E-4		3.09 E-9
Strontium-89	Ci	< MDL*	*		6.39 E-12
Strontium-90	Ci	< MDL*	*		3.92 E-12
Strontium-91	Ci	1.16 E-5	< MDL		2.93 E-10
Technetium-99m	Ci	2.92 E-6	< MDL		4.38 E-11
Cesium-137	Ci	7.21 E-5	8.27 E-6		8.15 E-10
Cerium-141	Ci	< MDL	4.60 E-7		3.42 E-11
Cerium-144	Ci	< MDL	2.67 E-6		1.51 E-10
Total for Period	Ci	3.89 E-4	5.12 E-4*		

*Quarterly Data Incomplete - see Effluent and Waste Disposal Summary.

TABLE II-2A
EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1980-1
LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	Unit	First Quarter	Second Quarter	Est. Total Error %
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A. Fission and activation products

1. Total releases (not including tritium, gases, alpha)	Ci	8.65 E-2	1.13 E-1	3.0 E 1
2. Average diluted concentration during period	μCi/ml	1.26 E-9	1.91 E-9	
3. Percent of applicable limit	%	5.91 E-5	5.11 E-3	

B. Tritium

1. Total release	Ci	8.21 E 1	7.14 E 1	3.0 E 1
2. Average diluted concentration during period	μCi/ml	1.20 E-6	1.20 E-6	
3. Percent of applicable limit	%	3.99 E-2	4.02 E-2	

C. Dissolved and entrained gases

1. Total release	Ci	9.54 E-4	< MDL	3.0 E 1
2. Average diluted concentration during period	μCi/ml	1.39 E-11	-	
3. Percent of applicable limit	%	4.64 E-4	-	

D. Gross alpha radioactivity

1. Total release	Ci	3.27 E-4	5.89 E-4	3.0 E 1
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E. Volume of waste released (prior to dilution)	liters	2.99 E 6	4.93 E 6	1.0 E 1
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F. Volume of dilution water used during period	liters	2.58 E 11	2.23 E 11	1.0 E 1
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TABLE II-3
EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1980-1
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	3.29 E 2	5.0 E 1
b. Dry compressible waste contaminated equip., etc.	Ci	3.58 E 2	5.0 E 1
	m ³	1.04 E 3	
	Ci	1.50 E 2	
c. Irradiated components, control rods, etc.	m ³	None	-
	Ci		
d. Other (describe	m ³	None	-
	Ci		

2. Estimate of major nuclide composition (by type of waste)	Percentage	Activity (Ci)	MDL (Ci)
a. Strontium - 89	52.1	1.87 E 2	5.00 E-11
Cobalt - 60	31.6	1.13 E 2	1.39 E-10
Manganese - 54	6.8	2.43 E 1	1.39 E-10
Strontium - 90	3.1	1.11 E 1	2.00 E-11
Cesium - 137	2.2	7.88	7.67 E-11
b. Cobalt - 60	59.9	8.99 E 1	8.24 E-10
Manganese - 54	17.2	2.58 E 1	8.24 E-10
Antimony - 124	13.8	2.07 E 1	4.22 E-10
Iron - 59	3.3	4.95	1.45 E-9
Cerium - 144	1.8	2.70	2.24 E-9
c.			
d.			

3. Solid Waste Disposition Number of Shipments	Mode of Transportation	Destination
85	Motor Vehicle	Barnwell, S.C.
12	Motor Vehicle	Beatty, Nevada

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: January 1, 1980 through March 31, 1980

STABILITY CLASS: Extremely unstable

ELEVATION: 10 Meters

WIND SPEED (MPH)

WIND DIRECTION	Calm+ - 3	4-7	8-12	13-18	19-24	>24	TOTAL
N	6	5	8	0	0	0	19
NNE	1	7	5	4	0	0	17
NE	0	6	4	1	0	0	11
ENE	0	3	4	1	0	0	8
E	0	8	6	0	0	0	14
ESE	1	8	4	0	0	0	13
SE	1	1	7	1	0	0	10
SSE	0	0	6	7	0	0	13
S	0	0	8	4	1	0	13
SSW	0	1	3	2	0	0	6
SW	0	4	11	0	0	0	15
WSW	0	1	14	7	0	0	22
W	0	9	18	8	0	0	35
WNW	0	17	49	50	6	0	122
NW	0	8	51	31	1	0	91
NNW	0	3	8	11	1	0	23
VARIABLE	-	-	-	-	-	-	9
TOTAL	9	81	206	127	9	0	432 *

*Total does not include variable period

PERIOD OF CALM (HOURS): 0

HOURS OF MISSING DATA: 202

TABLE II-4A

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: January 1, 1980 through March 31, 1980

STABILITY CLASS: Moderately unstable

ELEVATION: 10 Meters

WIND SPEED (MPH)

WIND DIRECTION	Calm+ -3	4-7	8-12	13-18	19-24	>24	TOTAL
N	1	1	2	0	0	0	4
NNE	0	1	1	0	0	0	2
NE	0	1	0	1	0	0	2
ENE	0	0	0	0	0	0	0
E	0	1	0	0	0	0	1
ESE	0	2	0	0	0	0	2
SE	0	2	0	0	0	0	2
SSE	0	0	2	0	1	0	3
S	0	0	3	1	0	0	4
SSW	1	0	2	0	0	0	3
SW	0	0	1	1	0	0	2
WSW	0	2	0	1	0	0	3
W	0	0	3	2	0	0	5
WNW	0	4	7	1	0	0	12
NW	0	2	1	3	0	0	6
NNW	0	3	0	2	0	0	5
VARIABLE	-	-	-	-	-	-	1
TOTAL	2	19	22	12	1	0	56 *

*Total does not include variable period

PERIOD OF CALM (HOURS): 0

HOURS OF MISSING DATA: 202

TABLE II-4A

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: January 1, 1980 through March 31, 1980

STABILITY CLASS: Slightly unstable

ELEVATION: 10 Meters

WIND SPEED (MPH)

WIND DIRECTION	Calm+ -3	4-7	8-12	13-18	19-24	>24	TOTAL
N	0	2	1	0	0	0	3
NNE	0	1	1	0	0	0	2
NE	0	1	0	2	2	0	5
ENE	0	0	5	0	0	0	5
E	0	0	1	0	0	0	1
ESE	1	0	2	0	0	0	3
SE	0	1	1	0	0	0	2
SSE	0	0	1	0	0	0	1
S	1	1	3	1	0	0	6
SSW	0	0	2	1	0	0	3
SW	1	0	0	0	0	0	1
WSW	1	1	0	0	0	0	2
W	1	3	0	2	1	0	7
WNW	0	3	3	2	0	0	8
NW	0	5	2	1	0	0	8
NNW	0	2	0	2	0	0	4
VARIABLE	-	-	-	-	-	-	2
TOTAL	5	20	22	11	3	0	61 *

*Total does not include variable period

PERIOD OF CALM (HOURS): 0

HOURS OF MISSING DATA: 202

TABLE II-4A

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: January 1, 1980 through March 31, 1980

STABILITY CLASS: Neutral

ELEVATION: 10 Meters

WIND SPEED (MPH)

WIND DIRECTION	Calm+ -3	4-7	8-12	13-18	19-24	>24	TOTAL
N	8	7	18	11	0	0	44
NNE	0	9	23	11	0	0	43
NE	1	6	17	16	7	0	47
ENE	2	1	7	5	0	0	15
E	2	1	1	0	0	0	4
ESE	1	3	10	1	0	2	17
SE	0	4	10	0	3	1	18
SSE	1	9	9	8	2	1	30
S	4	6	15	9	2	1	37
SSW	0	4	3	10	5	0	22
SW	2	7	3	0	0	0	12
WSW	3	16	5	2	0	0	26
W	2	11	13	14	4	0	44
WNW	10	18	20	14	1	0	63
NW	6	23	33	10	0	0	72
NNW	4	13	17	7	0	0	41
VARIABLE	-	-	-	-	-	-	12
TOTAL	46	138	204	118	24	5	535 *

*Total does not include variable period

PERIOD OF CALM (HOURS): 0

HOURS OF MISSING DATA: 202

TABLE II-4A

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: January 1, 1980 through March 31, 1980

STABILITY CLASS: Slightly stable

ELEVATION: 10 Meters

WIND SPEED (MPH)

WIND DIRECTION	Calm+ -3	4-7	8-12	13-18	19-24	>24	TOTAL
N	10	5	4	1	0	0	20
NNE	0	1	0	0	0	0	1
NE	2	2	2	0	1	0	7
ENE	1	7	6	2	0	0	16
E	0	3	2	0	0	0	5
ESE	2	2	1	1	0	0	6
SE	0	6	7	0	0	0	13
SSE	1	15	8	3	0	0	27
S	1	12	22	3	1	0	39
SSW	1	13	7	2	1	0	24
SW	5	18	10	0	0	0	33
WSW	4	19	6	0	0	0	29
W	11	40	26	11	1	0	89
WNW	14	33	28	1	0	0	76
NW	1	26	17	3	0	0	47
NNW	3	16	21	3	0	0	43
VARIABLE	-	-	-	-	-	-	16
TOTAL	56	218	167	30	4	0	475 *

*Total does not include variable period

PERIOD OF CALM (HOURS): 0

HOURS OF MISSING DATA: 202

TABLE II-4A

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: January 1, 1980 through March 31, 1980

STABILITY CLASS: Moderately stable

ELEVATION: 10 Meters

WIND SPEED (MPH)

WIND DIRECTION	Calm+ -3	4-7	8-12	13-18	19-24	>24	TOTAL
N	3	0	0	0	0	0	3
NNE	1	0	0	0	0	0	1
NE	0	1	0	0	0	0	1
ENE	0	3	0	0	0	0	3
E	0	2	0	0	0	0	2
ESE	0	0	0	0	0	0	0
SE	2	0	1	0	0	0	3
SSE	1	2	0	0	0	0	3
S	3	6	0	0	0	0	9
SSW	3	2	0	0	0	0	5
SW	4	23	1	0	0	0	28
WSW	9	16	0	0	0	0	25
W	7	26	1	0	0	0	34
WNW	4	20	1	0	0	0	25
NW	2	10	0	0	0	0	12
NNW	2	3	0	0	0	0	5
VARIABLE	-	-	-	-	-	-	4
TOTAL	41	114	4	0	0	0	159 *

*Total does not include variable period

PERIOD OF CALM (HOURS): 0

HOURS OF MISSING DATA: 202

TABLE II-4A

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: January 1, 1980 through March 31, 1980

STABILITY CLASS: Extremely stable

ELEVATION: 10 Meters

WIND SPEED (MPH)

WIND DIRECTION	Calm+ -3	4-7	8-12	-13-18	19-24	>24	TOTAL
N	2	2	0	0	0	0	4
NNE	2	1	0	0	0	0	3
NE	2	0	0	0	0	0	2
ENE	1	0	0	0	0	0	1
E	2	0	0	0	0	0	2
ESE	0	0	0	0	0	0	0
SE	2	0	0	0	0	0	2
SSE	1	1	0	0	0	0	2
S	5	0	0	0	0	0	5
SSW	5	2	0	0	0	0	7
SW	8	23	0	0	0	0	31
WSW	12	35	0	0	0	0	47
W	13	25	0	0	0	0	38
WNW	10	20	0	0	0	0	30
NW	7	25	0	0	0	0	32
NNW	0	4	0	0	0	0	4
VARIABLE	-	-	-	-	-	-	10
TOTAL	72	138	0	0	0	0	210 *

*Total does not include variable period

PERIOD OF CALM (HOURS): 0

HOURS OF MISSING DATA: 202

TABLE II-4A

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: April 1, 1980 through June 30, 1980

STABILITY CLASS: Extremely unstable

ELEVATION: 10 Meters

WIND SPEED (MPH)

WIND DIRECTION	Calm+ - 3	4-7	8-12	13-18	19-24	>24	TOTAL
N	3	13	9	0	0	0	25
NNE	1	6	12	3	0	0	22
NE	0	9	26	0	0	0	35
ENE	1	6	26	2	0	0	35
E	2	12	21	1	0	0	36
ESE	1	15	34	0	0	0	50
SE	2	4	44	7	0	0	57
SSE	2	5	33	9	0	0	49
S	5	7	14	20	5	0	51
SSW	0	10	10	1	1	0	22
SW	0	8	13	2	0	0	23
WSW	1	6	25	7	0	0	39
W	0	8	31	12	0	0	51
WNW	0	14	38	14	0	0	66
NW	1	10	24	10	0	0	45
NNW	2	13	8	3	0	0	26
VARIABLE	-	-	-	-	-	-	2
TOTAL	21	146	368	91	6	0	632 *

*Total does not include variable period

PERIOD OF CALM (HOURS): 0

HOURS OF MISSING DATA: 98

TABLE II-4A

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: April 1, 1980 through June 30, 1980

STABILITY CLASS: Moderately unstable

ELEVATION: 10 Meters

WIND SPEED (MPH)

WIND DIRECTION	Calm+ -3	4-7	8-12	13-18	19-24	>24	TOTAL
N	1	3	0	0	0	0	4
NNE	0	1	6	1	0	0	8
NE	1	0	2	0	0	0	3
ENE	0	2	1	1	0	0	4
E	1	3	0	0	0	0	4
ESE	0	1	2	0	0	0	3
SE	1	0	3	1	0	0	5
SSE	0	0	5	1	0	0	6
S	0	3	2	0	0	0	5
SSW	0	0	2	0	0	0	2
SW	0	0	3	0	0	0	3
WSW	1	1	1	1	0	0	4
W	0	3	2	2	0	0	7
WNW	0	3	1	2	0	0	6
NW	0	0	0	0	0	0	0
NNW	0	2	0	0	0	0	2
VARIABLE	-	-	-	-	-	-	3
TOTAL	5	22	30	9	0	0	66 *

*Total does not include variable period

PERIOD OF CALM (HOURS): 0

HOURS OF MISSING DATA: 98

TABLE II-4A

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: April 1, 1980 through June 30, 1980

STABILITY CLASS: Slightly unstable

ELEVATION: 10 Meters

WIND SPEED (MPH)

WIND DIRECTION	Calm+ -3	4-7	8-12	13-18	19-24	>24	TOTAL
N	0	2	2	0	0	0	4
NNE	1	3	7	0	0	0	11
NE	0	3	2	0	0	0	5
ENE	0	1	1	1	1	0	4
E	1	0	0	0	0	0	1
ESE	0	4	0	0	0	0	4
SE	0	2	1	0	0	0	3
SSE	0	2	4	1	1	0	8
S	0	1	2	0	0	0	3
SSW	1	1	2	1	0	0	5
SW	0	0	1	0	0	0	1
WSW	0	3	2	0	0	0	5
W	0	2	2	1	0	0	5
WNW	0	1	0	0	0	0	1
NW	0	1	0	1	0	0	2
NNW	0	1	1	0	0	0	2
VARIABLE	-	-	-	-	-	-	2
TOTAL	3	27	27	5	2	0	64 *

*Total does not include variable period

PERIOD OF CALM (HOURS): 0

HOURS OF MISSING DATA: 98

TABLE II-4A

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: April 1, 1980 through June 30, 1980

STABILITY CLASS: Neutral

ELEVATION: 10 Meters

WIND SPEED (MPH)

WIND DIRECTION	Calm+ -3	4-7	8-12	13-18	19-24	>24	TOTAL
N	3	7	2	2	0	0	14
NNE	0	11	15	0	0	0	26
NE	2	12	20	2	0	0	36
ENE	2	12	4	8	2	0	28
E	4	10	4	0	0	0	18
ESE	1	15	4	0	0	0	20
SE	2	8	18	4	0	0	32
SSE	3	17	11	8	3	0	42
S	3	17	16	14	4	0	54
SSW	6	16	10	2	0	0	34
SW	6	12	5	0	0	0	23
WSW	7	12	3	1	0	0	23
W	5	7	7	1	0	0	20
WNW	5	4	7	9	0	0	25
NW	9	13	7	1	0	0	30
NNW	1	9	2	0	0	0	12
VARIABLE	-	-	-	-	-	-	8
TOTAL	59	182	135	52	9	0	437 *

**Total does not include variable period

PERIOD OF CALM (HOURS): 0

HOURS OF MISSING DATA: 98

TABLE II-4A

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: April 1, 1980 through June 30, 1980

STABILITY CLASS: Slightly stable

ELEVATION: 10 Meters

WIND SPEED (MPH)

WIND DIRECTION	Calm+ -3	4-7	8-12	13-18	19-24	>24	TOTAL
N	1	2	1	0	0	0	4
NNE	3	5	0	0	0	0	8
NE	1	5	0	2	0	0	8
ENE	0	7	3	2	0	0	12
E	2	11	3	0	0	0	16
ESE	2	6	2	0	0	0	10
SE	0	9	10	6	0	0	25
SSE	0	10	6	3	1	0	20
S	1	16	10	3	3	0	33
SSW	4	28	11	7	0	0	50
SW	6	31	9	3	0	0	49
WSW	0	46	14	2	0	0	62
W	3	18	9	3	0	0	33
WNW	5	17	14	4	0	0	40
NW	5	10	7	4	0	0	26
NNW	0	3	2	0	0	0	5
VARIABLE	-	-	-	-	-	-	4
TOTAL	33	224	101	39	4	0	401 *

*Total does not include variable period

PERIOD OF CALM (HOURS): 0

HOURS OF MISSING DATA: 98

TABLE II-4A

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: April 1, 1980 through June 30, 1980

STABILITY CLASS: Moderately stable

ELEVATION: 10 Meters

WIND SPEED (MPH)

WIND DIRECTION	Calm+ -3	4-7	8-12	13-18	19-24	>24	TOTAL
N	3	1	0	0	0	0	4
NNE	1	1	0	0	0	0	2
NE	0	1	0	0	0	0	1
ENE	1	0	0	0	0	0	1
E	0	0	0	0	0	0	0
ESE	0	2	0	0	0	0	2
SE	1	2	3	0	0	0	6
SSE	3	5	1	1	0	0	10
S	0	4	1	1	0	0	6
SSW	6	8	1	0	0	0	15
SW	3	18	1	0	0	0	22
WSW	4	29	2	0	0	0	35
W	3	10	0	0	0	0	13
WNW	3	21	0	1	0	0	25
NW	3	9	0	0	0	0	12
NNW	0	1	1	0	0	0	2
VARIABLE	-	-	-	-	-	-	8
TOTAL	31	112	10	3	0	0	156 *

*Total does not include variable period

PERIOD OF CALM (HOURS): 0

HOURS OF MISSING DATA: 98

TABLE II-4A

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: April 1, 1980 through June 30, 1980

STABILITY CLASS: Extremely stable

ELEVATION: 10 Meters

WIND SPEED (MPH)

WIND DIRECTION	Calm+ -3	4-7	8-12	13-18	19-24	>24	TOTAL
N	4	1	0	0	0	0	5
NNE	1	0	0	0	0	0	1
NE	3	0	0	0	0	0	3
ENE	0	1	0	0	0	0	1
E	1	0	0	0	0	0	1
ESE	0	0	0	0	0	0	0
SE	0	2	0	0	0	0	2
SSE	4	4	0	0	0	0	8
S	6	3	0	0	0	0	9
SSW	8	3	0	0	0	0	11
SW	7	31	1	0	0	0	39
WSW	12	76	0	0	0	0	88
W	15	27	1	0	0	0	43
WNW	11	24	0	1	0	0	36
NW	9	26	1	0	0	0	36
NNW	2	6	0	0	0	0	8
VARIABLE	-	-	-	-	-	-	9
TOTAL	83	204	3	1	0	0	291 *

*Total does not include variable period

PERIOD OF CALM (HOURS): 0

HOURS OF MISSING DATA: 98

TABLE II-4A

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: January 1, 1980 through March 31, 1980

STABILITY CLASS: Extremely unstable

ELEVATION: 116 Meters

WIND SPEED (MPH)

WIND DIRECTION	Calm+ - 3	4-7	8-12	13-18	19-24	>24	TOTAL
N	0	0	2	0	0	0	2
NNE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
ENE	0	0	0	1	0	0	1
E	0	0	0	0	0	0	0
ESE	0	0	0	0	0	0	0
SE	0	0	1	0	0	0	1
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	1	0	0	1
WNW	0	0	0	2	0	1	3
NW	0	0	0	2	0	0	2
NNW	0	0	0	0	0	0	0
VARIABLE	-	-	-	-	-	-	0
TOTAL	0	0	3	7	0	1	11 *

*Total does not include variable period

PERIOD OF CALM (HOURS): 0

HOURS OF MISSING DATA: 165

TABLE II-4A

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: January 1, 1980 through March 31, 1980

STABILITY CLASS: Moderately unstable

ELEVATION: 116 Meters

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	1	0	0	0	1
NE	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0
E	0	0	2	0	0	0	2
ESE	0	0	0	0	0	0	0
SE	0	0	1	0	0	0	1
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	0	0	0	0
W	0	0	0	1	0	0	1
WNW	0	0	0	0	5	6	11
NW	0	0	0	1	2	5	8
NNW	0	0	0	0	0	0	0
VARIABLE	-	-	-	-	-	-	0
TOTAL	0	0	4	2	7	11	24 *

*Total does not include variable period

PERIOD OF CALM (HOURS): 0

HOURS OF MISSING DATA: 165

TABLE II-4A

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: January 1, 1980 through March 31, 1980

STABILITY CLASS: Slightly unstable

ELEVATION: 116 Meters

WIND SPEED (MPH)

WIND DIRECTION	Calm+ -3	4-7	8-12	13-18	19-24	>24	TOTAL
N	0	0	0	1	0	0	1
NNE	0	0	0	0	0	0	0
NE	0	0	0	1	0	0	1
ENE	0	0	0	1	0	0	1
E	0	0	0	0	0	0	0
ESE	0	0	0	0	0	0	0
SE	0	1	0	0	0	0	1
SSE	0	0	0	0	1	0	1
S	0	0	0	0	0	0	0
SSW	0	0	0	0	0	0	0
SW	0	0	2	1	0	0	3
WSW	0	0	1	6	1	0	8
W	0	0	0	5	1	3	9
WNW	0	0	2	3	14	12	31
NW	0	0	2	15	11	8	36
NNW	0	0	0	0	1	2	3
VARIABLE	-	-	-	-	-	-	0
TOTAL	0	1	7	33	29	25	95 *

*Total does not include variable period

PERIOD OF CALM (HOURS): 0

HOURS OF MISSING DATA: 165

TABLE II-4A

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: January 1, 1980 through March 31, 1980

STABILITY CLASS: Neutral

ELEVATION: 116 Meters

WIND SPEED (MPH)

WIND DIRECTION	Calm+ -3	4-7	8-12	13-18	19-24	>24	TOTAL
N	0	6	3	9	10	2	30
NNE	5	5	3	5	8	2	28
NE	0	3	16	7	1	12	39
ENE	1	2	4	7	2	11	27
E	0	5	8	0	0	0	13
ESE	1	1	4	0	1	0	7
SE	0	4	10	1	0	0	15
SSE	1	4	6	9	3	1	24
S	0	3	11	16	4	1	35
SSW	0	0	3	6	7	8	24
SW	3	1	3	2	1	2	12
WSW	0	4	8	9	6	4	31
W	0	1	4	11	14	16	46
WNW	1	2	13	35	29	33	113
NW	0	8	25	32	31	35	131
NNW	2	5	11	12	17	19	66
VARIABLE	-	-	-	-	-	-	5
TOTAL	14	54	132	161	134	146	641 *

*Total does not include variable period

PERIOD OF CALM (HOURS): 0

HOURS OF MISSING DATA: 165

TABLE II-4A

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: January 1, 1980 through March 31, 1980

STABILITY CLASS: Slightly stable

ELEVATION: 116 Meters

WIND SPEED (MPH)

WIND DIRECTION	Calm+ -3	4-7	8-12	13-18	19-24	>24	TOTAL
N	3	6	6	9	19	4	47
NNE	0	3	5	9	10	1	28
NE	2	3	3	5	14	10	37
ENE	0	2	2	0	14	12	30
E	0	3	2	3	8	2	18
ESE	1	0	2	4	4	1	12
SE	1	1	1	3	8	7	21
SSE	0	1	7	3	9	11	31
S	1	0	5	16	16	16	54
SSW	0	0	5	12	24	19	60
SW	0	5	0	8	14	7	34
WSW	0	0	6	12	8	1	27
W	0	1	10	14	20	16	61
WNW	0	1	19	47	76	29	172
NW	1	2	14	41	58	22	138
NNW	1	6	3	12	29	22	73
VARIABLE	-	-	-	-	-	-	4
TOTAL	10	34	90	198	331	180	843 *

*Total does not include variable period

PERIOD OF CALM (HOURS): 0

HOURS OF MISSING DATA: 165

TABLE II-4A

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: January 1, 1980 through March 31, 1980

STABILITY CLASS: Moderately stable

ELEVATION: 116 Meters

WIND SPEED (MPH)

WIND DIRECTION	Calm+ -3	4-7	8-12	13-18	19-24	>24	TOTAL
N	0	0	2	5	1	1	9
NNE	0	0	1	1	0	0	2
NE	0	1	2	2	0	0	5
ENE	0	0	2	2	0	0	4
E	1	0	0	1	5	3	10
ESE	0	0	0	1	0	0	1
SE	0	0	1	0	0	2	3
SSE	1	0	3	4	1	3	12
S	0	0	3	2	0	1	6
SSW	0	0	0	3	7	3	13
SW	0	0	1	1	10	3	15
WSW	0	0	2	0	9	4	15
W	0	0	5	13	10	3	31
WNW	0	0	0	18	32	1	51
NW	0	0	3	22	40	2	67
NNW	0	0	3	24	16	3	46
VARIABLE	-	-	-	-	-	-	1
TOTAL	2	1	28	99	131	29	290 *

*Total does not include variable period

PERIOD OF CALM (HOURS): 0

HOURS OF MISSING DATA: 165

TABLE II-4A

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: January 1, 1980 through March 31, 1980

STABILITY CLASS: Extremely stable

ELEVATION: 116 Meters

WIND SPEED (MPH)

WIND DIRECTION	Calm+ -3	4-7	8-12	13-18	19-24	>24	TOTAL
N	0	0	2	2	0	0	4
NNE	1	1	3	0	0	0	5
NE	0	0	3	1	0	0	4
ENE	0	0	0	1	0	0	1
E	0	0	0	0	0	0	0
ESE	1	0	0	0	0	0	1
SE	2	0	0	1	0	0	3
SSE	0	4	2	2	1	0	9
S	0	3	7	2	1	0	13
SSW	0	1	5	1	1	0	8
SW	0	0	2	1	4	1	8
WSW	0	0	1	2	5	1	9
W	0	1	0	1	7	5	14
WNW	0	1	0	3	5	0	9
NW	0	0	1	6	2	1	10
NNW	0	2	3	1	0	0	6
VARIABLE	-	-	-	-	-	-	1
TOTAL	4	13	29	24	26	8	104 *

*Total does not include variable period

PERIOD OF CALM (HOURS): 0

HOURS OF MISSING DATA: 165

TABLE II-4A

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: April 1, 1980 through June 30, 1980

STABILITY CLASS: Extremely unstable

ELEVATION: 116 Meters

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	1	0	0	2
ENE	0	0	3	4	0	0	7
E	0	0	3	2	0	0	5
ESE	0	0	0	0	0	0	0
SE	0	0	2	1	0	0	3
SSE	0	0	1	0	0	0	1
S	0	0	0	1	0	0	1
SSW	0	0	0	1	0	0	1
SW	0	0	0	0	0	0	0
WSW	0	0	0	1	1	0	2
W	0	0	2	5	3	3	13
WNW	0	0	0	4	3	1	8
NW	0	0	0	3	5	2	10
NNW	0	0	0	0	0	0	0
VARIABLE	-	-	-	-	-	-	0
TOTAL	0	0	12	23	12	6	53 *

*Total does not include variable period

PERIOD OF CALM (HOURS): 0

HOURS OF MISSING DATA: 112

TABLE II-4A

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: April 1, 1980 through June 30, 1980

STABILITY CLASS: Moderately unstable

ELEVATION: 116 Meters

WIND SPEED (MPH)

WIND DIRECTION	Calm+ -3	4-7	8-12	13-18	19-24	>24	TOTAL
N	0	0	0	1	0	0	1
NNE	0	0	0	0	1	0	1
NE	0	0	0	3	1	0	4
ENE	0	0	1	4	0	0	5
E	0	0	2	1	0	0	3
ESE	0	1	3	0	0	0	4
SE	0	0	3	6	0	0	9
SSE	0	0	0	0	0	0	0
S	0	0	0	0	2	0	2
SSW	0	0	0	0	1	0	1
SW	0	0	0	3	1	0	4
WSW	0	0	0	3	0	0	3
W	0	0	0	1	1	0	2
WNW	0	0	2	4	2	2	10
NW	0	0	1	2	4	2	9
NNW	0	0	2	2	1	0	5
VARIABLE	-	-	-	-	-	-	0
TOTAL	0	1	14	30	14	4	63 *

*Total does not include variable period

PERIOD OF CALM (HOURS): 0

HOURS OF MISSING DATA: 112

TABLE II-4A

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: April 1, 1980 through June 30, 1980

STABILITY CLASS: Slightly unstable

ELEVATION: 116 Meters

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	2	0	0	2
NE	0	0	2	7	0	0	9
ENE	0	0	4	2	0	0	6
E	0	0	4	1	0	0	5
ESE	0	1	9	0	0	0	10
SE	0	0	7	7	0	0	14
SSE	0	0	1	1	0	0	2
S	0	0	1	0	1	1	3
SSW	0	0	0	1	1	0	2
SW	0	0	1	1	2	0	4
WSW	0	1	2	3	2	3	11
W	0	0	5	7	2	1	15
WNW	0	1	3	3	2	2	11
NW	0	1	7	6	4	1	19
NNW	0	0	2	1	0	0	3
VARIABLE	-	-	-	-	-	-	0
TOTAL	0	4	49	42	14	8	117 *

*Total does not include variable period

PERIOD OF CALM (HOURS): 0

HOURS OF MISSING DATA: 112

TABLE II-4A

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: April 1, 1980 through June 30, 1980

STABILITY CLASS: Neutral

ELEVATION: 116 Meters

WIND SPEED (MPH)

WIND DIRECTION	Calmt+ -3	4-7	8-12	13-18	19-24	>24	TOTAL
N	0	3	12	5	0	0	20
NNE	1	4	14	25	4	0	48
NE	1	9	14	9	0	1	34
ENE	0	8	4	7	4	0	23
E	2	5	8	4	1	0	20
ESE	0	5	12	6	0	0	23
SE	0	1	26	23	2	1	53
SSE	1	0	20	27	5	2	55
S	0	3	16	28	14	8	69
SSW	0	4	8	8	7	8	35
SW	1	5	4	6	8	2	26
WSW	0	0	10	11	11	3	35
W	1	3	11	14	7	2	38
WNW	0	3	16	10	11	12	52
NW	1	6	13	10	9	6	45
NNW	0	4	12	5	1	2	24
VARIABLE	-	-	-	-	-	-	4
TOTAL	8	63	200	198	84	47	600 *

*Total does not include variable period

PERIOD OF CALM (HOURS): 0

HOURS OF MISSING DATA: 112

TABLE II-4A

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: April 1, 1980 through June 30, 1980

STABILITY CLASS: Slightly stable

ELEVATION: 116 Meters

WIND SPEED (MPH)

WIND DIRECTION	Calmt+ -3	4-7	8-12	13-18	19-24	>24	TOTAL
N	1	4	4	1	2	0	12
NNE	2	2	9	16	15	0	44
NE	2	3	5	10	8	2	30
ENE	0	3	4	10	5	18	40
E	0	3	13	11	0	1	28
ESE	2	3	4	11	0	0	20
SE	2	2	11	13	10	16	54
SSE	2	0	21	26	16	12	77
S	0	1	12	16	8	7	44
SSW	0	1	10	28	20	12	71
SW	0	3	8	16	17	3	47
WSW	1	5	11	18	15	6	56
W	1	3	7	14	13	8	46
WNW	1	1	2	7	10	12	33
NW	0	8	15	10	18	10	61
NNW	0	5	5	6	8	0	24
VARIABLE	-	-	-	-	-	-	4
TOTAL	14	47	141	213	165	107	687 *

*Total does not include variable period

PERIOD OF CALM (HOURS): 0

HOURS OF MISSING DATA: 112

TABLE II-4A

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: April 1, 1980 through June 30, 1980

STABILITY CLASS: Moderately stable

ELEVATION: 116 Meters

WIND SPEED (MPH)

WIND DIRECTION	Calm+ -3	4-7	8-12	13-18	19-24	>24	TOTAL
N	0	1	1	8	0	0	10
NNE	0	1	6	1	0	0	8
NE	0	0	1	1	0	0	2
ENE	0	1	0	0	0	0	1
E	0	2	1	0	0	0	3
ESE	0	0	0	1	0	0	1
SE	0	0	2	0	0	0	2
SSE	0	0	6	4	0	0	10
S	0	3	4	10	1	0	18
SSW	0	0	8	14	16	2	40
SW	0	3	3	6	12	5	29
WSW	1	0	4	12	19	14	50
W	0	5	6	9	13	5	38
WNW	0	3	6	10	13	1	33
NW	1	3	2	12	17	9	44
NNW	1	2	5	12	14	4	38
VARIABLE	-	-	-	-	-	-	0
TOTAL	3	24	55	100	105	40	327 *

*Total does not include variable period

PERIOD OF CALM (HOURS): 0

HOURS OF MISSING DATA: 112

TABLE II-4A

HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: April 1, 1980 through June 30, 1980

STABILITY CLASS: Extremely stable

ELEVATION: 116 Meters

WIND SPEED (MPH)

WIND DIRECTION	Calm+ -3	4-7	8-12	-13-18	19-24	>24	TOTAL
N	0	5	3	7	1	0	16
NNE	0	4	2	2	0	0	8
NE	1	0	1	1	0	0	3
ENE	0	0	0	0	0	0	0
E	0	0	0	2	0	0	2
ESE	0	0	0	0	0	0	0
SE	0	0	1	0	0	0	1
SSE	1	0	2	0	1	0	4
S	0	0	1	5	0	0	6
SSW	1	0	0	7	1	0	9
SW	0	4	3	7	8	2	24
WSW	1	0	7	9	15	7	39
W	0	1	5	13	6	8	33
WNW	1	0	1	7	9	2	20
NW	0	1	5	7	8	3	24
NNW	0	3	3	11	5	5	27
VARIABLE	-	-	-	-	-	-	0
TOTAL	5	18	34	78	54	27	216 *

*Total does not include variable period

PERIOD OF CALM (HOURS): 0

HOURS OF MISSING DATA: 112

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 December 1979 through May 1980 instead of January 1980 through June 1980, 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 Figure III-1.

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 December 1979 through May 1980, with the exception of Table III-B which includes collection dates from December 1979 through February 1980 and Table III-C, which covers collection dates from March 1980 through May 1980.

Included in Table III-D, in addition to the indicator monitoring stations 2 through 17, are stations 1 and 11, 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 are seen in Table III-H.
- C. Iodine 131 analyses were run on all the charcoal filters. The results are shown in Table III-G.

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, and 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.

During February, Surface Water, Silt and Clam samples were not collected from Station 31 due to Barnegat Bay freezing over.

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

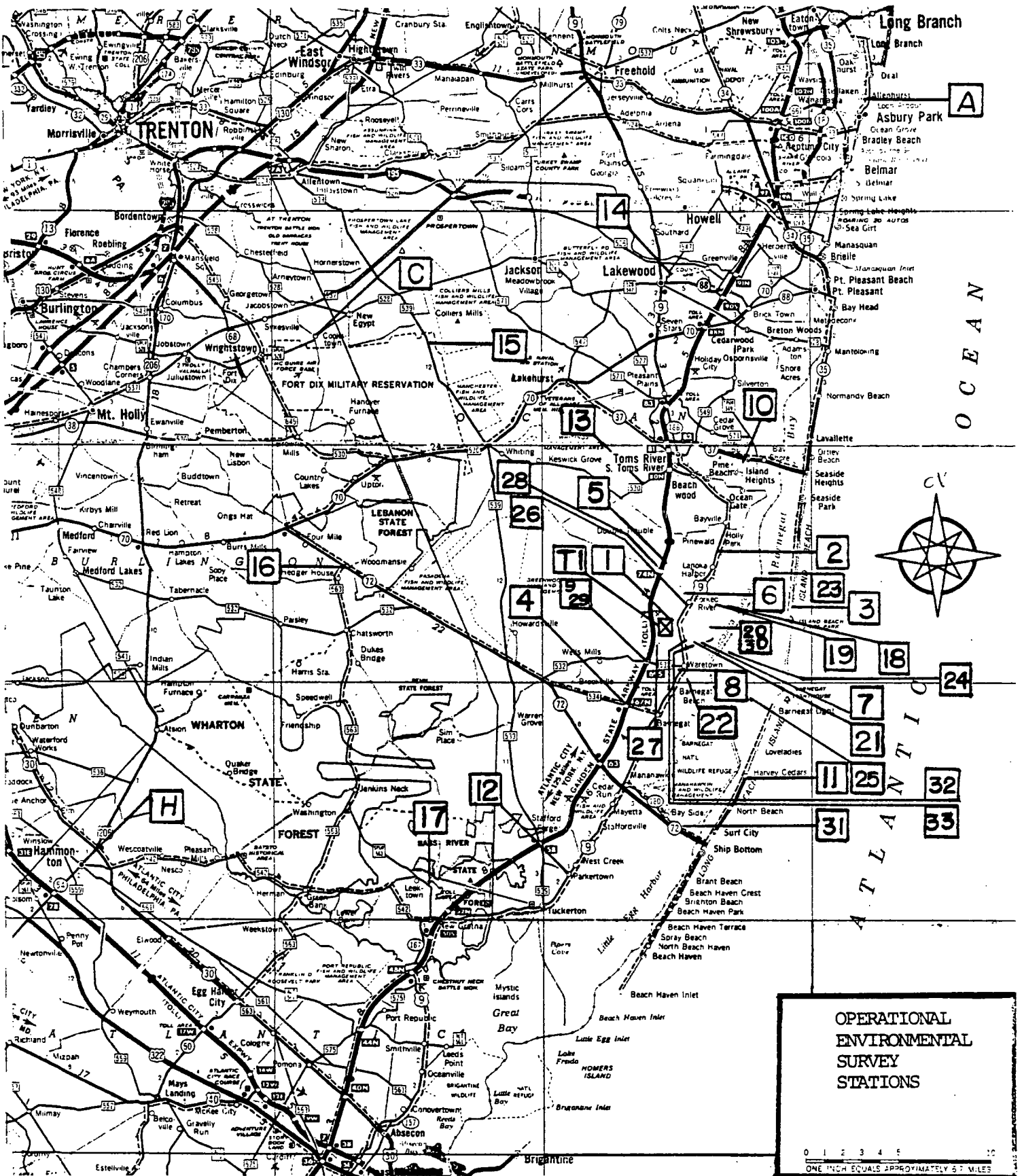
<u>STATION NUMBER</u>		<u>SAMPLE COLLECTED</u>
1	Forked River, N.J. - Oyster Creek Meteorological Tower	AP, RG, RW, WW, V, E
T1	Forked River, N.J. - Oyster Creek Meteorological Tower	RG
2	Pinewald, N.J. - Route #9 at JCP&L Company Pinewald Substation north of Forked River, N.J.	AP, RG, RW, V, E
3	Island 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

<u>STATION NUMBER</u>		<u>SAMPLE COLLECTED</u>
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	WW
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, approx- imately 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; approx- imately 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

<u>STATION NUMBER</u>		<u>SAMPLE COLLECTED</u>
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 Company 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

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

RG - Radiogun (film)

AP - Air Particulate

RW - Rain Water

V - Vegetation

E - Earth

WW - Well Water

SW - Surface Water

AQS - Silt & Sediment

AQL - Clam

FPV - Crop

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

1. A contractor, Ecological Analysts, has continued a program to assess the environmental impact of the facility on Barnegat Bay Biological Life.
2. Environmental sample analysis data is being computerized to quickly and accurately assess plant impact. This will increase program efficiency.
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 NJ Department of Environmental Protection.
4. The air samplers at all eight air sampling stations were replaced with entirely new air sampling units.

ANALYSIS OF DATA

A statistical analysis of the data generated by laboratory analyses of samples collected as part of the Oyster Creek Radiological Environmental Monitoring Program did reveal some environmental media having higher than normally observed levels of radioactivity in one form or another during the reporting period. A study was made to determine if a correlation exists between facility releases and elevated environmental levels of radioactivity. A discussion of the findings follows.

December 10, 1979:

Well Water, Station 1, Gross Alpha-Soluble

Well Water Station 1 exhibited a slightly higher than normal gross alpha-soluble activity. Two liquid releases were made during this month, but no alpha activity was detected in either prior to release. It is unlikely that the slightly elevated alpha radioactivity was a result of plant operations.

January 7, 1980:

Air Particulate, Station 5, Gross Alpha
Well Water, Station 1, K-40
Earth, Station 2, Gross Beta

The gross alpha radioactivity level at Air Particulate Station 5 was found to be higher than expected. This anomalous result is believed to be extrapolated due to a small sampling volume versus plant operations. During the sampling period, a normal alpha radioactivity release rate from the plant stack was observed. Assuming normal meteorological conditions, this elevated concentration could not be achieved via plant release due to meteorological dilution and dispersion.

During January, a higher than expected concentration of Potassium-40 was observed at Well Water Station 1. Potassium-40 is a naturally occurring isotope in nature and observed in high quantities in salt water. This extrapolated result was the effect of a small amount of salt water seeping into this well water.

An earth sample collected from Station 2 had a slightly higher than normal gross beta concentration. An average quantity of beta radioactivity was released from the plant stack during this four week period. Assuming normal meteorological conditions, this radioactivity would be diluted and dispersed into concentrations below the reported value. This elevated analysis result is not considered to be plant related.

February 4, 1980:

Earth, Station 4, Gross Beta
Surface Water, Station 23, Tritium

During February, an earth sample collected at Station 4, exhibited a higher than normal gross beta radioactivity concentration. During this sampling period, the plant was shutdown. On this basis, this result was not plant related.

A Surface Water sample collected from Station 23 had a slightly higher than expected tritium analysis result. During the collection period, 20 liquid releases were made from the plant. Calculations show that the average tritium concentration per day from the liquid releases would be 1.65×10^{-1} pCi/liter per day. Adding this calculated average result to the average concentration for this station, the summation would be below the reported analysis result. In addition, further dilution would result due to this station's location being several miles north of the mouth of Oyster Creek. On these bases, this result is deemed not plant related.

March 3, 1980:

Well Water, Station 19, Gross Alpha-Insoluble
Well Water, Station 20, Gross Beta-Soluble
Surface Water, Station 25, Uranium
Silt and Sediment, Station 32, Ra-226

A higher than normal gross alpha-insoluble analysis result was observed at Well Water Station 19. During the collection period, 7 liquid releases were made from the facility. The average gross alpha concentration released offsite per day was calculated to be 4.79×10^{-5} pCi/liter which is well below the reported analysis result. This extrapolated result was not plant related.

A sample collected from Well Water Station 20 indicated a slightly higher than normal gross beta-soluble result. As documented in past reports, salt water has intruded into this well. This has caused the analysis results from this location to be higher than normal. This elevated radioactive analysis result is not plant related.

A total uranium concentration, reported from a sample collected from Surface Water Station 25, was slightly higher than normal. Using the calculated alpha concentration mentioned above, the calculated concentration is far below the reported analysis result. Therefore, it is highly unlikely that this result is plant related.

A higher than normal Radium-226 result was reported at Silt and Sediment Station 32. Ra-226 is a naturally occurring nuclide found in abundance in salt water. The analysis results for Ra-226 tend to fluctuate indiscriminately. Although it has been documented that the silt and sediment in Oyster Creek contains small quantities of plant related radioactivity, this slightly elevated result is most likely not plant related.

March 31, 1980:

Well Water, Stations 1, 19, 20 & 22, K-40

Well Water, Stations 20 & 21, Gross Alpha-Insoluble
Earth, Station 1, Gross Beta
Surface Water, Station 23, Gross Alpha-Insoluble
Surface Water, Station 25, Tritium
Silt and Sediment, Station 32, Ra-226

Well Water Potassium-40 results from Stations 1, 19, 20 and 22 were found to be slightly higher than normal. Potassium-40 is a naturally occurring isotope which is found in abundance in salt water. A trend has been observed where K-40 analysis results rise in the spring time. This is possibly due to garden fertilizer leaching into the water table, salt water intrusion, or both. These slightly higher than normal radioactive results are not considered plant related.

Gross alpha-insoluble analysis results reported from Well Water Stations 20 and 21, and at Surface Water Station 23 were above normal. During this collection period, 11 liquid releases were made from the facility. No detectable alpha activity was released in any release. It is unlikely that the extrapolated results were plant related.

A Surface Water tritium analysis result from Station 25 was found to be slightly higher than normal. In the 13 liquid releases made during the collection period, the average daily concentration (9.86 pCi/liter) plus the station average did not equal the reported result. It is unlikely that the slightly higher than normal tritium concentration was a result of facility operations.

A Silt and Sediment sample collected from Station 32 during this period indicated Radium-226 results which were higher than normal. Ra-226 is a naturally occurring isotope in nature. Although it is documented that the silt and sediment in Oyster Creek is slightly radioactive due to past plant operations, this elevated concentration is probably due to natural causes as opposed to plant activities.

A gross beta result reported from Earth Station 1 was found to be slightly high. Since the plant was shut down, this result was not considered to be plant related.

April 28, 1980:

Well Water, Station 18, Gross Beta-Soluble
Surface Water, Station 24 and 32, Tritium

A slightly higher than normal gross beta-soluble concentration was observed in well water at Station 18. Twenty four liquid releases were made to the environment during this collection period. The beta-gamma concentration released at the site boundary added to the average station concentration is below the reported results. Any relation to this concentration and the facility is unlikely.

Two tritium concentrations reported for samples collected from Stations 24 and 32 were reported above the normal level. During the collection period, 23 liquid releases were made from the plant. The average tritium concentration released per day plus each station's average sum total far below the analytical results. These anomalies are not considered to be plant caused.

May 27, 1980:

Clams, Station 23, Gross Beta
Silt and Sediment, Station 32, K-40

During the collection period, a clam sample collected from Station 23 exhibited a slightly higher than normally seen gross beta concentration. Station 23 is located approximately 5 miles north of the mouth of Oyster Creek. The beta concentration found at Clam Station 24, located in the mouth of Oyster Creek, is lower than the beta concentration reported at Station 23. Thirty four liquid releases were made during the collection period and the average beta-gamma concentration released per day was calculated to be $1.88 \text{ E-2 pCi/liter}$ at the site boundry. It is unlikely that the elevated beta concentration reported at Station 23 was plant related considering the minute concentration of beta-gamma radioactivity released per day and the relative distant location from the source.

A Silt and Sediment sample collected from Station 32 was found to have a slightly high Potassium-40 concentration. Potassium-40 is a naturally occurring isotope found in abundance in salt water. Oscillations have been observed in the past in K-40 concentrations with these anomalies caused by garden fertilizer, fresh water dilution, etc. This result is not considered to be plant related.

RADIOLOGICAL IMPACT ON MAN

Environmental monitoring results for the period 12/79 - 5/80 indicate that intakes of Oyster Creek effluent isotopes did not exceed 1% of the intakes equivalent to exposure at 10CFR20, Appendix B, Table II concentrations.

During winter and spring months, inhalation is the only intake pathway for gaseous effluent isotopes. The pathways available for liquid effluent isotopes are fish and shellfish consumption.

Concentrations of plant effluent isotopes in air and clams were below minimum detectable concentrations. Because these minimum detectable concentrations are low, it was possible to simplify the analysis by conservatively assuming that plant effluent isotopes were present at minimum detectable concentrations. Intakes from inhalation, fish ingestion, and shellfish ingestion were estimated from air and clam sample results. (Fish concentrations were estimated from clam measurements.) Intakes were less than 1% of intakes equivalent to exposure to concentrations in 10CFR20, Appendix B, Table II.

The USEPA regulation 40CFR190 requires that dose to any real person from certain uranium fuel cycle activities will not exceed in one year 25 mrem for the whole body and other organ except that 75 mrem is the limit for the thyroid. The regulation applies to nuclear power plants. Since there is no other uranium fuel cycle activity likely to contribute doses that are a significant fraction of the EPA limit to people in the vicinity of Oyster Creek, it may be assumed for purposes of this assessment that the full limits apply to Oyster Creek.

The doses equivalent to intakes equivalent to that from 1% of 10CFR20, Appendix B, Table II limits are 5 mrem/yr for the whole body and 15 mrem/yr for other internal organs except for 30 mrem/yr for the bone and the thyroid as recommended in 1CRP2. (Concentration limits for I-131 and Sr-89 and Sr-90 reflect Federal Radiation Council guidance and equivalent doses are lower than 1CRP recommendations.) The analyses herein shows that the doses from food pathways fall below 40CFR190 limits by a wide margin. Measurements from the thermoluminescent dosimeters show no clear contribution of plant effluents to direct radiation dose and indicate that any contribution does not exceed about five mrem. Therefore, it is clear that 40CFR190 dose limits were met in the period under consideration.

Table III- B
 Environmental Monitoring - Quarterly Summary
 Scheduled Collection Period
 December 1, 1979 through February 29, 1980

Medium	Analysis	Sample Locations	Unit	Number of Samples	Quarterly Average	MDL
RG	Exposure	1 thru 17, Tl,A,C,H	Millirem		Table III-D	
AP	Gross α	1, 2, 3, 4, 5	pCi/m ³	5	1.91 E-3	7.00 E-4
AP	Gross β	1, 2, 3, 4, 5	pCi/m ³	30	2.08 E-2	3.09 E-3
RW	Gross Insoluble	1, 2, 3, 4, 5	nCi/m ²	15	<7.50 E-2	7.50 E-2
RW	Gross Soluble	1, 2, 3, 4, 5	nCi/m ²	15	<1.1 ^a E-1	8.20 E-2
V	Gross β	1, 2, 3, 4, 5	pCi/gram - wet	15	3.11	1.77 E-2
E	Gross β	1, 2, 3, 4, 5	pCi/gram - dry	15	6.34	1.15
FPV	Gross β	28, 29, 30	pCi/gram	3	1.92	1.62 E-2
FPV	Sr - 90	28, 29, 30	pCi/gram	3	4.04 E-1	2.25 E-2
FPV	Total Calcium	28, 29, 30	m gram/gram	3	4.82 E-1	2.01 E-3
AQS	Gross α	23,24,25,26,27,32,33	pCi/gram	7	<3.92	3.77
AQS	Gross β	23,24,25,26,27,32,33	pCi/gram	7	3.41	1.03
AQL	Gross α	23, 24, 25	pCi/gram	9	<8.80 E-2	7.80 E-2
AQL	Gross β	23, 24, 25	pCi/gram	9	1.54	2.25 E-2
AQL	K - 40	23, 24, 25	pCi/gram	3	1.40	1.40 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	<8.90 E-3	8.90 E-3
AQL	Zn - 65	23, 24, 25	pCi/gram	3	<1.73 E-2	1.73 E-2
AQL	Sr - 90	23, 24, 25	pCi/gram	3	<4.08 E-3	4.08 E-3
AQL	I - 131	23, 24, 25	pCi/gram	3	<3.78 E-1	3.78 E-1
AQL	Cs - 137	23, 24, 25	pCi/gram	3	<7.80 E-3	7.80 E-3
AQL	Total Calcium	23, 24, 25	m gram/gram	3	7.11 E-1	2.04 E-3
WW	Gross α Insoluble	1,18,19,20,21,22	pCi/liter	18	1.28 E-1	1.10 E-1
WW	Gross α Soluble	1,18,19,20,21,22	pCi/liter	18	<1.81	1.47
WW	Gross β Insoluble	1,18,19,20,21,22	pCi/liter	18	<5.60 E-1	5.45 E-1

Table III- B
 Environmental Monitoring - Quarterly Summary
 Scheduled Collection Period
 December 1, 1979 through February 29, 1980

Medium	Analysis	Sample Locations	Unit	Number of Samples	Quarterly Average	MDL
WW	Gross β Soluble	1,18,19,20,21,22	pCi/liter	18	<2.76	6.14 E-1
WW	H-3	1,18,19,20,21,22	pCi/liter	6	<1.86 E 2	1.56 E 2
WW	K-40	1,18,19,20,21,22	pCi/liter	6	3.62	8.60 E-2
WW	Ra-226	1,18,19,20,21,22	pCi/liter	6	4.36 E-1	9.40 E-2
WW	Ra-228	1,18,19,20,21,22	pCi/liter	6	<8.27 E-1	8.27 E-1
WW	U	1,18;19,20,21,22	pCi/liter	6	<5.25 E-1	4.90 E-1
SW	Gross α Insoluble	23,24,25,26,27,32,33	pCi/liter	21	<2.86 E-1	2.05 E-1
SW	Gross α Soluble	23,24,25,26,27,32,33	pCi/liter	21	<1.90	1.48
SW	Gross β Insoluble	23,24,25,26,27,32,33	pCi/liter	21	<5.70 E-1	5.45 E-1
SW	Gross β Soluble	23,24,25,26,27,32,33	pCi/liter	21	5.70 E 1	3.97
SW	H-3	23,24,25,26,27,32,33	pCi/liter	21	<1.89 E 2	1.72 E 2
SW	K-40	23,24,25,26,27,32,33	pCi/liter	21	<1.52 E 2	1.02 E 2
SW	Co-58	23,24,25,26,27,32,33	pCi/liter	21	<7.72	7.72
SW	Co-60	23,24,25,26,27,32,33	pCi/liter	21	<6.88	6.88
SW	Zn-65	23,24,25,26,27,32,33	pCi/liter	21	<1.45 E 1	1.45 E 1
SW	Sr-90	23,24,25,26,27,32,33	pCi/liter	21	<4.75 E-1	4.78 E-1
SW	I-131	23,24,25,26,27,32,33	pCi/liter	21	<4.10 E 1	4.10 E 1
SW	Cs-137	23,24,25,26,27,32,33	pCi/liter	21	<7.63	7.63
SW	Ra-226	23,24,25,26,27,32,33	pCi/liter	21	<3.36 E-1	1.25 E-1
SW	Ra-228	23,24,25,26,27,32,33	pCi/liter	21	<8.26 E-1	8.05 E-1
SW	U	23,24,25,26,27,32,33	pCi/liter	21	<2.00	1.08
SW	Total Calcium	23,24,25,26,27,32,33	gm/liter	7	1.93 E-1	2.60 E-4

Table III-C
 Environmental Monitoring - Quarterly Summary
 Scheduled Collection Period
 March 1, 1980 through May 30, 1980

Medium	Analysis	Sample Locations	Unit	Number of Samples	Quarterly Average	MDL
RG	Exposure	1 thru 17, T1,A,C,H	Millirem		Table III-D	
AP	Gross α	1, 2, 3, 4, 5	pCi/m ³	5	8.51 E-4	5.33 E-4
AP	Gross β	1, 2, 3, 4, 5	pCi/m ³	35	1.45 E-2	3.78 E-3
RW	Gross Insoluble	1, 2, 3, 4, 5	nCi/m ²	20	< 2.01 E-1	1.93 E-1
RW	Gross Soluble	1, 2, 3, 4, 5	nCi/m ²	20	< 3.76 E-1	1.98 E-1
V	Gross β	1, 2, 3, 4, 5	pCi/gram - wet	20	3.21	1.77 E-2
E	Gross β	1, 2, 3, 4, 5	pCi/gram - dry	20	6.78	1.12
FPV	Gross β	28, 29, 30	pCi/gram	3	7.69	1.04 E-1
FPV	Sr - 90	28, 29, 30	pCi/gram	3	4.17 E-2	8.30 E-3
FPV	Total Calcium	28, 29, 30	m gram/gram	3	1.98	1.06 E-2
AQS	Gross α	23,24,25,26,27,32,33	pCi/gram	7	< 4.73	4.62
AQS	Gross β	23,24,25,26,27,32,33	pCi/gram	7	6.29	1.12
AQL	Gross α	23, 24, 25	pCi/gram	12	< 7.40 E-2	3.51 E-2
AQL	Gross β	23, 24, 25	pCi/gram	12	1.37	1.28 E-2
AQL	K - 40	23, 24, 25	pCi/gram	3	9.50 E-1	1.18 E-1
AQL	Co - 58	23, 24, 25	pCi/gram	3	< 6.73 E-3	6.73 E-3
AQL	Co - 60	23, 24, 25	pCi/gram	3	< 7.83 E-3	7.83 E-3
AQL	Zn - 65	23, 24, 25	pCi/gram	3	< 1.40 E-2	1.40 E-2
AQL	Sr - 90	23, 24, 25	pCi/gram	3	< 6.30 E-2	6.30 E-2
AQL	I - 131	23, 24, 25	pCi/gram	3	< 2.50 E-2	2.50 E-2
AQL	Cs - 137	23, 24, 25	pCi/gram	3	< 6.73 E-3	6.73 E-3
AQL	Total Calcium	23, 24, 25	m gram/gram	3	< 2.86 E-1	3.35 E-3
WW	Gross α Insoluble	1,18,19,20,21,22	pCi/liter	24	< 1.97 E-1	1.49 E-1
WW	Gross α Soluble	1,18,19,20,21,22	pCi/liter	24	< 2.73	2.27
WW	Gross β Insoluble	1,18,19,20,21,22	pCi/liter		< 3.96 E-1	3.88 E-1

Table III- C
 Environmental Monitoring - Quarterly Summary
 Scheduled Collection Period
 March 1, 1980 through May 30, 1980

Medium	Analysis	Sample Locations	Unit	Number of Samples	Quarterly Average	MDL
WW	Gross β Soluble	1,18,19,20,21,22	pCi/liter	24	<3.63	5.99 E-1
WW	H-3	1,18,19,20,21,22	pCi/liter	6	<1.88 E 2	1.93 E 2
WW	K-40	1,18,19,20,21,22	pCi/liter	6	6.18	8.60 E-2
WW	Ra-226	1,18,19,20,21,22	pCi/liter	6	<3.32 E-1	1.29 E-1
WW	Ra-228	1,18,19,20,21,22	pCi/liter	6	<4.93 E-1	4.93 E-1
WW	U	1,18;19,20,21,22	pCi/liter	6	<4.92 E-1	4.92 E-1
SW	Gross α Insoluble	23,24,25,26,27,32,33	pCi/liter	28	<2.83 E-1	2.25 E-1
SW	Gross α Soluble	23,24,25,26,27,32,33	pCi/liter	28	<1.58	9.90 E-2
SW	Gross β Insoluble	23,24,25,26,27,32,33	pCi/liter	28	<5.98 E-1	4.08 E-1
SW	Gross β Soluble	23,24,25,26,27,32,33	pCi/liter	28	<5.75 E 1	4.22
SW	H-3	23,24,25,26,27,32,33	pCi/liter	28	<2.54 E 2	2.52 E 2
SW	K-40	23,24,25,26,27,32,33	pCi/liter	28	<1.48 E 2	8.53 E 1
SW	Co-58	23,24,25,26,27,32,33	pCi/liter	28	<6.99	6.99
SW	Co-60	23,24,25,26,27,32,33	pCi/liter	28	<6.72	6.72
SW	Zn-65	23,24,25,26,27,32,33	pCi/liter	28	<1.33 E 1	1.33 E 1
SW	Sr-90	23,24,25,26,27,32,33	pCi/liter	28	<3.81 E-1	3.79 E-1
SW	I-131	23,24,25,26,27,32,33	pCi/liter	28	<2.09 E 1	2.09 E 1
SW	Cs-137	23,24,25,26,27,32,33	pCi/liter	28	<6.94	6.94
SW	Ra-226	23,24,25,26,27,32,33	pCi/liter	28	<3.06 E-1	1.27 E-1
SW	Ra-228	23,24,25,26,27,32,33	pCi/liter	28	<6.84 E-1	6.83 E-1
SW	U	23,24,25,26,27,32,33	pCi/liter	28	<1.34	9.30 F-1
SW	Total Calcium	23,24,25,26,27,32,33	gm/liter	7	1.35 E-1	2.60 E-4

Table III-D
Radiogas Film Badges
Scheduled Collection Period
December 1, 1979 through May 31, 1980

Collection Date		12-10-79	1-7-80	2-4-80		Three Month Total	3-3-80	3-31-80	4-28-80	5-28-80	Three Month Total	Six Month Total
Station	Unit											
1	Millirem	16	0	4		20	4	0	0	0	4	24
T1	Millirem	8	0	4		12	0	0	0	0	0	12
2	Millirem	12	0	0		12	4	0	0	0	4	16
3	Millirem	8	0	4		12	0	0	0	0	0	12
4	Millirem	4	0	0		4	0	0	0	0	0	4
5	Millirem	4	0	4		8	0	0	0	0	0	8
6	Millirem	8	0	8		16	0	0	0	0	0	16
7	Millirem	8	0	8		16	4	0	0	Lost	4	20
8	Millirem	8	0	8		16	0	0	0	0	0	16
9	Millirem	12	0	8		20	0	0	0	0	0	20
10	Millirem	8	0	8		16	0	0	0	0	0	16
11	Millirem	8	0	Lost		8	0	0	0	0	0	8
12	Millirem	8	0	0		8	0	0	0	0	0	8
13	Millirem	12	0	0		12	0	0	0	0	0	12
14	Millirem	12	0	4		16	4	0	0	0	4	20
15	Millirem	8	0	0		8	0	0	0	0	0	8
16	Millirem	8	0	0		8	4	0	0	0	4	12
17	Millirem	4	0	0		4	0	0	0	0	0	4
A	Millirem	4	0	4		8	4	0	0	0	4	12
C	Millirem	4	0	4		8	0	0	0	0	0	8
H	Millirem	8	0	0		8	0	0	0	0	0	8

Table III-E
 Environmental Monitoring - Semi-annual Summary
 Scheduled Collection Period
 December 1, 1979 through May 31, 1980

Medium	Analysis	Unit	Location with Highest Average	Number of Samples	Maximum	Average	Minimum
RG	Exposure	Millirem	1	7	1.60 E 1	3.40	0.00
AP	Gross α	pCi/m ³	5	2	3.82 E-3	2.75 E-3	1.67 E-3
AP	Gross β	pCi/m ³	2	13	3.64 E-2	1.92 E-2	1.19 E-2
AP	I-131 Charcoal	pCi/m ³	H	13	< 3.79 E-2	< 2.63 E-2	< 1.43 E-2
RW	Gross β Insoluble	nCi/m ²	2	7	< 4.00 E-1	< 2.00 E-1	< 5.00 E-2
RW	Gross β Soluble	nCi/m ²	5	7	1.10	4.00 E-1	8.90 E-2
V	Gross β	pCi/gram-wet	3	7	6.05	5.28	4.07
E	Gross β	pCi/gram-dry	5	7	2.05 E 1	1.11 E 1	7.37
FPV	Gross β	pCi/gram	29	2	1.01 E 1	6.05	1.99
FPV	Sr-90	pCi/gram	29	2	5.92 E-1	3.41 E-1	8.90 E-2
FPV	Total Calcium	mgram/gram	29	2	2.90	2.04	1.18
AQS	Gross α	pCi/gram	32	2	5.08	< 4.86	< 4.64
AQS	Gross β	pCi/gram	33	2	1.34 E 1	1.01 E 1	6.72
AQL	Gross α	pCi/gram	31	6	2.26 E-1	< 9.50 E-2	< 4.17 E-2
AQL	Gross β	pCi/gram	23	7	2.21	1.52	1.01
AQL	K-40	pCi/gram	31	2	1.70	1.50	1.30
AQL	Co-58	pCi/gram	31	2	< 1.20 E-2	< 1.10 E-2	< 9.00 E-3
AQL	Co-60	pCi/gram	31	2	< 1.10 E-2	< 1.00 E-2	< 9.40 E-3
AQL	Zn-65	pCi/gram	24 & 31	2	< 1.70 E-2	< 1.70 E-2	< 1.60 E-2
AQL	Sr-90	pCi/gram	23	2	< 1.14 E-1	< 5.87 E-2	< 3.38 E-3
AQL	I-131	pCi/gram	24	2	< 9.20 E-2	< 6.40 E-2	< 3.50 E-2
AQL	Cs-137	pCi/gram	24 & 31	2	< 9.30 E-3	< 8.60 E-3	< 7.80 E-3
AQL	Total Calcium	mgram/gram	31	2	7.39 E-1	5.50 E-1	3.60 E-1
WW	Gross α Insoluble	pCi/liter	19	7	7.26 E-1	< 2.16 E-1	< 9.59 E-2
WW	Gross α Soluble	pCi/liter	20	7	< 6.32	< 3.50	< 1.05

Table III-3 Continued
 Environmental Monitoring - Semi-annual Summary
 Scheduled Collection Period
 December 1, 1979 through May 31, 1980

Medium	Analysis	Unit	Location with Highest Average	Number of Samples	Maximum	Average	Minimum
WW	Gross β Insoluble	pCi/liter	19	7	9.07 E-1	<5.65 E-1	<3.73 E-1
WW	Gross β Soluble	pCi/liter	20	7	1.56 E 1	<8.20	<5.66 E-1
WW	H-3	pCi/liter	20	2	2.67 E 2	<2.30 E 2	<1.93 E 2
WW	K-40	pCi/liter	20	2	2.15 E 1	1.31 E 1	4.73
WW	Ra-226	pCi/liter	19	2	7.57 E-1	6.59 E-1	5.61 E-1
WW	Ra-228	pCi/liter	22	2	<1.12	<7.74 E-1	<4.28 E-1
WW	U	pCi/liter	20	2	8.60 E-1	<6.76 E-1	<4.92 E-1
SW	Gross α Insoluble	pCi/liter	23	7	8.42 E-1	<3.86 E-1	<1.86 E-1
SW	Gross α Soluble	pCi/liter	25	7	6.85	3.28	1.46
SW	Gross β Insoluble	pCi/liter	23	7	1.38	<7.29 E-1	3.45 E-1
SW	Gross β Soluble	pCi/liter	23	7	2.28 E 2	1.35 E 2	3.12 E 1
SW	H-3	pCi/liter	23	7	4.02 E 2	<2.49 E 2	<1.64 E 2
SW	K-40	pCi/liter	31	6	2.80 E 2	2.12 E 2	1.60 E 2
SW	Co-58	pCi/liter	23	7	<1.20 E 1	<7.71	<6.70
SW	Co-60	pCi/liter	23	7	<1.30 E 1	<7.64	<6.20
SW	Zn-65	pCi/liter	24	7	<1.60 E 1	<1.47 E 1	<1.30 E 1
SW	Sr-90	pCi/liter	31	6	<1.52	<6.62 E-1	1.45 E-1
SW	I-131	pCi/liter	32	7	<8.50 E 1	<3.83 E 1	<1.70 E 1
SW	Cs-137	pCi/liter	27	7	<9.30	<7.54	<6.20
SW	Ra-226	pCi/liter	26	7	9.08 E-1	6.92 E-1	4.42 E-1
SW	Ra-228	pCi/liter	33	7	<1.82	<9.19 E-1	<5.48 E-1
SW	U	pCi/liter	25	7	6.33	2.72	1.04
SW	Total Calcium	gm/liter	25	7	2.95 E 2	2.67 E 2	2.38 E 2

Table III-F
Thermoluminescent Dosimeters
Scheduled Collection Period
December 1, 1979 through May 31, 1980

Collection Date		12-10-79	1-7-80	2-4-80		Three Month Total	3-3-80	3-31-80	4-28-80	5-27-80	Three Month Total	Six Month Total
Station	Unit											
1	mRad	8.27	6.94	6.02		21.23	6.21	5.80	4.84	3.76	20.61	41.84
T1	mRad	8.66	7.78	5.93		22.37	5.79	5.60	4.34	3.96	19.69	42.06
2	mRad	5.04	3.92	4.91		13.87	4.72	5.14	4.06	4.03	17.95	31.82
3	mRad	4.80	4.56	4.61		13.97	4.91	4.36	3.41	3.02	15.70	29.67
4	mRad	4.53	3.98	4.77		13.28	4.40	4.37	3.66	3.27	15.70	28.98
5	mRad	5.15	4.02	5.64		14.81	4.51	4.45	3.94	3.68	16.58	31.39
6	mRad	5.88	4.01	5.25		15.14	4.74	4.67	4.15	4.17	17.73	32.87
7	mRad	4.52	4.46	5.79		14.77	4.41	4.91	3.07	3.22	15.61	30.38
8	mRad	4.43	3.91	5.62		13.96	3.87	5.07	3.06	3.18	15.18	29.14
9	mRad	4.86	5.22	5.77		15.85	4.43	4.80	3.91	3.79	16.93	32.78
10	mRad	4.44	4.41	5.41		14.26	4.74	4.92	3.40	3.69	16.75	31.01
11	mRad	4.08	4.07	Lost		8.15	4.09	4.12	3.38	3.64	15.23	23.38
12	mRad	4.74	3.98	5.07		13.79	4.03	4.87	3.04	3.58	15.52	29.31
13	mRad	4.61	4.30	4.54		13.45	4.37	4.34	3.36	4.44	16.51	29.96
14	mRad	5.66	4.76	5.82		16.24	5.56	5.70	4.44	4.75	20.45	36.69
15	mRad	4.22	4.16	5.69		14.07	3.98	4.36	2.90	4.21	15.45	29.52
16	mRad	4.23	3.98	4.90		13.11	4.18	4.29	3.29	3.43	15.19	28.30
17	mRad	3.88	4.50	5.28		13.66	4.22	4.83	3.43	3.09	15.57	29.23
A	mRad	4.83	5.47	5.94		16.24	5.69	5.79	4.41	5.18	21.07	37.31
C	mRad	4.37	4.83	5.08		14.28	4.40	4.93	3.50	4.58	17.41	31.69
H	mRad	4.62	4.12	4.71		13.45	3.89	4.72	2.97	4.01	15.59	29.04

Table III-G
Charcoal Filter Analysis from Air Sampling Stations
Scheduled Collection Period
December 1, 1979 through May 31, 1980

Station	Unit	Number of Samples	Maximum	Average	Minimum
1	pCi/m ³	13	< 4.27 E-2	< 2.29 E-2	< 1.18 E-2
2	pCi/m ³	13	< 5.32 E-2	< 2.61 E-2	< 1.23 E-2
3	pCi/m ³	13	< 4.36 E-2	< 2.30 E-2	< 1.30 E-2
4	pCi/m ³	13	< 4.02 E-2	< 2.45 E-2	< 1.26 E-2
5	pCi/m ³	13	< 5.25 E-2	< 2.59 E-2	< 1.31 E-2

Table III-H
 Air Particulate Isotopic Analysis (pCi/m³)
 Scheduled Collection Period
 December 1, 1979 through May 31, 1980

Station	Nuclide	No. of Times Detected	Maximum	Average	Minimum
1	Be-7	3	1.7 E-1	1.3 E-1	8.8 E-2
2	None Detected				
3	Be-7	4	1.9 E-1	1.4 E-1	9.9 E-2
4	Be-7	1	-	9.5 E-2	-
5	Be-7	3	1.5 E-1	1.2 E-1	8.3 E-2
A Background	Be-7	1	-	1.6 E-1	-
C Background	Be-7	3	2.6 E-1	1.6 E-1	8.8 E-2
H Background	Be-7	1	-	1.3 E-1	-

Table III-J
Background Station Analyses
Scheduled Collection Period
December 1, 1979 through May 31, 1980

Medium	Station	Analysis	Unit	Number of Samples	Maximum	Average	Minimum
AP	A	Gross α	pCi/m ³	2	9.37 E-4	7.78 E-4	6.19 E-4
AP	A	Gross β	pCi/m ³	13	2.16 E-2	1.63 E-2	7.78 E-3
AP	A	I-131	pCi/m ³	13	< 5.52 E-2	< 2.41 E-2	< 1.31 E-2
AP	C	Gross α	pCi/m ³	2	1.19 E-3	9.74 E-4	7.57 E-4
AP	C	Gross β	pCi/m ³	13	3.16 E-2	1.59 E-2	7.78 E-3
AP	C	I-131	pCi/m ³	13	< 4.82 E-2	< 2.47 E-2	< 1.54 E-2
AP	H	Gross α	pCi/m ³	2	1.62 E-3	1.53 E-3	1.44 E-3
AP	H	Gross β	pCi/m ³	13	2.30 E-2	1.52 E-2	6.52 E-3
AP	H	I-131	pCi/m ³	13	< 3.79 E-2	< 2.63 E-2	< 1.43 E-2
RW	A	Gross β Insoluble	nCi/m ²	7	< 1.00 E-1	< 6.60 E-2	< 3.00 E-2
RW	A	Gross β Soluble	nCi/m ²	7	4.80 E-1	< 1.60 E-1	6.90 E-2
RW	C	Gross β Insoluble	nCi/m ²	7	< 3.00 E-1	< 1.00 E-1	4.60 E-2
RW	C	Gross β Soluble	nCi/m ²	7	< 3.00 E-1	< 1.80 E-1	1.00 E-1
RW	H	Gross β Insoluble	nCi/m ²	7	< 4.00 E-1	< 1.30 E-1	6.40 E-2
RW	H	Gross β Soluble	nCi/m ²	7	< 4.00 E-1	< 1.90 E-1	9.40 E-2
AQS	31	Gross α	pCi/gram	2	< 4.63	< 4.19	< 3.74
AQS	31	Gross β	pCi/gram	2	5.78	4.92	4.05
AQL	31	Gross α	pCi/gram	6	2.26 E-1	< 9.50 E-2	< 4.17 E-2
AQL	31	Gross β	pCi/gram	6	1.85	1.49	1.18
AQL	31	K-40	pCi/gram	2	1.70	1.50	1.30
AQL	31	Co-58	pCi/gram	2	< 1.20 E-2	< 1.10 E-2	< 9.00 E-3
AQL	31	Co-60	pCi/gram	2	< 1.10 E-2	< 1.00 E-2	< 9.40 E-3
AQL	31	Zn-65	pCi/gram	2	< 1.70 E-2	< 1.70 E-2	< 1.60 E-2
AQL	31	S-90	pCi/gram	2	< 1.24 E-2	< 8.69 E-3	< 4.98 E-3
AQL	31	I-131	pCi/gram	2	< 9.20 E-2	< 5.80 E-2	< 2.40 E-2

Table III-J Continued
 Background Station Analyses
 Scheduled Collection Period
 December 1, 1979 through May 31, 1980

Medium	Station	Analysis	Unit	Number of Samples	Maximum	Average	Minimum
AQL	31	Cs-137	pCi/gram	2	< 9.30 E-3	< 8.60 E-3	< 7.80 E-3
AQL	31	Total Calcium	mcgram/gram	2	7.39 E-1	5.50 E-1	3.60 E-1
SW	31	Gross α Insoluble	pCi/liter	6	5.04 E-1	< 2.90 E-1	< 1.64 E-1
SW	31	Gross α Soluble	pCi/liter	6	6.31	< 2.68	< 1.30
SW	31	Gross β Insoluble	pCi/liter	6	8.38 E-1	< 6.06 E-1	3.70 E-1
SW	31	Gross β Soluble	pCi/liter	6	1.62 E 2	1.20 E 2	8.31 E 1
SW	31	H-3	pCi/liter	6	2.95 E 2	< 2.37 E 2	< 1.64 E 2
SW	31	K-40	pCi/liter	6	2.80 E 2	2.12 E 2	1.60 E 2
SW	31	Co-58	pCi/liter	6	< 8.70	< 7.47	< 6.80
SW	31	Co-60	pCi/liter	6	< 9.40	< 7.02	< 6.20
SW	31	Zn-65	pCi/liter	6	< 1.60 E 1	< 1.35 E 1	< 1.10 E 1
SW	31	Sr-90	pCi/liter	6	< 1.52	< 6.62 E-1	1.45 E-1
SW	31	I-131	pCi/liter	6	< 6.40 E 1	< 3.28 E 1	< 1.70 E 1
SW	31	Cs-137	pCi/liter	6	< 7.80	< 7.00	< 6.20
SW	31	Ra-226	pCi/liter	6	4.13 E-1	< 2.42 E-1	1.09 E-1
SW	31	Ra-228	pCi/liter	6	< 1.44	< 8.21 E-1	< 3.22 E-1
SW	31	U	pCi/liter	6	5.28	< 2.19	< 1.06
SW	31	Total Calcium	gm/liter	2	2.97 E-1	2.59 E-1	2.21 E-1

Table III-K
 Isotopic Silt Analysis (pCi/gm)
 Scheduled Collection Period
 December 1, 1979 through May 31, 1980

Station	Nuclide	No. of Times Detected	Maximum	Average	Minimum
23	Be-7	1	-	7.1 E-1	-
	K-40	7	5.3	2.5	1.0
	Co-60	1	-	1.8 E-2	-
	Cs-137	4	4.0 E-2	2.7 E-2	2.1 E-2
	Ra-226	7	5.1 E-1	3.6 E-1	2.0 E-1
	Th-232	7	3.6 E-1	2.7 E-1	1.4 E-1
24	Be-7	3	5.8 E-1	4.3 E-1	2.5 E-1
	K-40	7	5.4	2.5	1.0
	Co-60	2	8.4 E-2	5.8 E-2	3.2 E-2
	Cs-137	4	5.7 E-2	3.9 E-2	1.6 E-2
	Ra-226	7	5.0 E-1	4.2 E-1	3.3 E-1
	Th-232	7	4.6 E-1	3.7 E-1	2.8 E-1
25	Be-7	1	-	3.5 E-1	-
	K-40	7	9.2	2.6	8.2 E-1
	Cs-137	2	4.0 E-2	3.0 E-2	2.0 E-2
	Ra-226	7	6.3 E-1	5.0 E-1	3.8 E-1
	Th-232	7	5.5 E-1	4.0 E-1	2.2 E-1
31 Background	Be-7	1	-	3.9 E-1	-
	K-40	6	1.3 E 1	7.2	4.2
	Cs-137	4	1.6 E-1	6.0 E-2	2.1 E-2
	Ra-226	6	3.8 E-1	2.9 E-1	2.0 E-1
	Th-232	6	3.7 E-1	2.9 E-1	2.0 E-1
32	K-40	7	1.4 E 1	5.4	2.2
	Co-60	3	7.7 E-2	6.4 E-2	4.4 E-2
	Cs-137	6	1.3 E-1	5.8 E-2	1.6 E-2
	Ra-226	7	5.8 E-1	4.6 E-1	2.9 E-1
	Th-232	7	5.0 E-1	4.1 E-1	2.8 E-1
33	Be-7	3	1.1	6.0 E-1	2.5 E-1
	K-40	7	1.4 E 1	6.1	2.0
	Co-60	7	5.6 E-1	2.7 E-1	7.5 E-2
	Ru-106	1	-	4.2 E-1	-
	Cs-137	7	3.5 E-1	7.6 E-1	7.4 E-2
	Ce-144	1	-	3.8 E-1	-
	Ra-226	7	5.0 E-1	4.2 E-1	3.3 E-1
	Th-232	7	6.3 E-1	4.3 E-1	2.6 E-1