

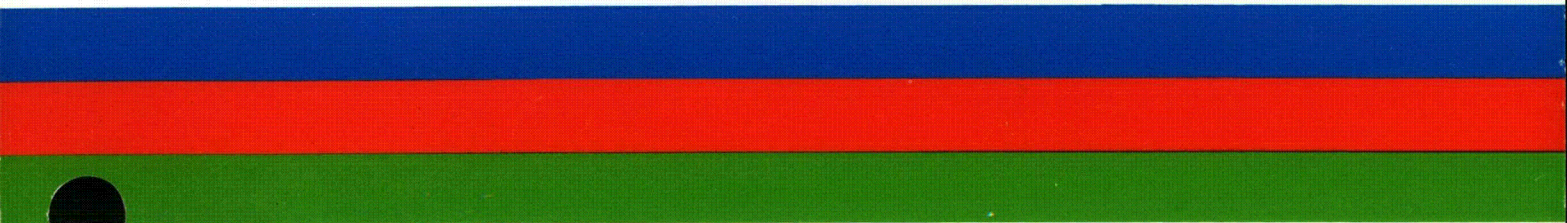
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GENERAL PUBLIC UTILITIES



GPU NUCLEAR CORPORATION
OYSTER CREEK NUCLEAR GENERATING STATION
EFFLUENT RELEASE REPORT
1986-2

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SUMMARY

OYSTER CREEK NUCLEAR GENERATING STATION

1986-2 SEMIANNUAL EFFLUENT RELEASE REPORT

The Semiannual Effluent Release Report is submitted to the United States Nuclear Regulatory Commission (NRC) every six months in accordance with the Oyster Creek Nuclear Generating Station (OCNGS) Technical Specifications. It summarizes the radioactive liquid and gaseous effluents released and solid radioactive wastes shipped from the OCNGS. In addition, meteorological data is presented in joint frequency tables per atmospheric stability class. This report concludes that exposures to man from OCNGS radioactive effluents are well below the federal limits contained in Title 10, Part 50 of the Code of Federal Regulations which are considered by the NRC to be acceptable limits to protect the health and welfare of the public.

For clarity, the report is organized into three parts. Section I provides a summary of plant operations for the reporting period. The reactor was shutdown during the period from July 1, 1986 through December 20, 1986 for maintenance and refueling. Reactor startup occurred on December 21, 1986 for low power testing. The generator was placed on-line on December 28, 1986.

Section II summarizes the meteorological data and effluents released from the facility for the reporting period. It itemizes gaseous releases

of 37.1 curies of fission and activation gases, 0.0316 curies of non-particulate halogens, 4.61 curies of tritium, and 0.00232 curies of particulate radioactivity. In addition, * curies of fission and activation products, 0.00135 curies of dissolved gases, and 1.07 curies of tritium were released in 9 batch liquid releases. Section II also itemizes 694.2 curies of radioactivity, contained in 445 cubic meters of waste, which was shipped offsite in 35 shipments. These releases are similar to or less than releases of nuclear plants of comparable type, age, and size. The report underscores the fact that all effluents released were within the federal regulatory requirements of OCNGS Technical Specifications.

Section III provides an assessment of Oyster Creek's radiological impact on man. Written and tabular output concludes that exposures to man from facility radioactive effluents for this reporting period are well below the federal regulatory limits specified in 10CFR20, 10CFR50, and the OCNGS Technical Specifications.

The OCNGS Technical Specifications were revised during the second quarter of the reporting period. Data are reported accordingly.

* The data base is not complete per this date. Delays were encountered in obtaining Strontium-89 and Strontium-90 data for liquid releases made in the second quarter. An addendum to this report updating this section shall be prepared and submitted as soon as the data are available.

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I. INTRODUCTION

I. INTRODUCTION

The Oyster Creek Nuclear Generating Station has generated electricity since December, 1969. The operating license permits station operation up to a power level of 1930 megawatts (thermal) at a levelized, installed annual capacity of 620 megawatts (electrical). A more detailed description of the facility can be obtained from the Final Environmental Statement.

This report is submitted in accordance with Section 6.9 of the Technical Specifications - Appendix A of the Oyster Creek Unit Number 1 Provisional Operating License, DPR-16. Section I includes a brief summary of the plant operating status from July 1, 1986 through December 31, 1986.

Section II follows the format of USNRC Regulatory Guide 1.21 for the provision of summaries of OCNCS gaseous effluents, liquid effluents and solid waste offsite shipments. In addition, this section provides information on meteorological data for the reporting period of July 1, 1986 through December 31, 1986. A description of the meteorological data collection system is provided, as well as joint frequency distribution tables for the various stability classes (in USNRC Regulatory Guide 1.21 format) and cumulative wind roses.

The Oyster Creek Operating License and Technical Specifications were amended on November 20, 1986. Amendment 108 incorporated the Radiological Effluent Technical Specifications (RETS) required by Appendix I to 10CFR50. Because the transition to RETS occurred midterm in this reporting period, limits applicable prior to and after November 20, 1986 are clearly marked.

PLANT OPERATIONS SUMMARY

July 1, 1986	Reactor Shutdown - Refueling and Maintenance Outage
July 15, 1986	Reactor Shutdown - Refueling and Maintenance Outage
July 31, 1986	Reactor Shutdown - Refueling and Maintenance Outage
August 15, 1986	Reactor Shutdown - Refueling and Maintenance Outage
August 31, 1986	Reactor Shutdown - Refueling and Maintenance Outage
September 15, 1986	Reactor Shutdown - Refueling and Maintenance Outage
September 30, 1986	Reactor Shutdown - Refueling and Maintenance Outage
October 15, 1986	Reactor Shutdown - Refueling and Maintenance Outage
October 31, 1986	Reactor Shutdown - Refueling and Maintenance Outage
November 15, 1986	Reactor Shutdown - Refueling and Maintenance Outage
November 31, 1986	Reactor Shutdown - Refueling and Maintenance Outage
December 15, 1986	Reactor Shutdown - Refueling and Maintenance Outage
December 21, 1986	0110 Reactor Startup
	0247 Reactor Critical
December 24, 1986	0249 Reactor Scram (from 3% power)
December 26, 1986	1350 Reactor Startup
	1525 Reactor Critical
December 28, 1986	Generator On Line
December 29, 1986	2007 Generator Off Line
	2307 Reactor Scram (Manual)
December 31, 1986	Reactor Shutdown

II. EFFLUENT AND WASTE DISPOSAL SUMMARY

EFFLUENT AND WASTE DISPOSAL SUMMARY

A. Gaseous Effluents

During the reporting period, July 1, 1986 through December 31, 1986, 3.71 E1 curies of fission and activation gases, 6.07 E-4 curies of non-particulate halogens (iodines) with half-lives greater than eight days, 4.46 E-4 curies of particulates with half-lives greater than eight days, and 4.61 curies of tritium were released. The maximum hourly release rate of gross activity from the stack was estimated to be 3.86 E-4 microcuries per second which was a result of residual particulate activity and occurred between September 23, 1986 and September 26, 1986. The first and second quarter airborne releases for this period are summarized in Tables 1A through 1E which are found on pages 12 through 16.

B. Liquid Effluents

A total of 1.09 E7 liters of water was processed through the radwaste system. Of this, 6.69 E5 liters containing * curies of activity were released to the environment. Prior to November 20, 1986, seven liquid releases to the environment were made. No "unidentified" gross radioactivity (beta-gamma) was detected prior to any of these releases, therefore, no maximum concentration of gross radioactivity (beta-gamma) was released to the unrestricted area. The first and second quarter liquid releases for this period are summarized in Tables 2A and 2B which are found on pages 17 and 18.

* The data base is not complete per this date. Delays were encountered in obtaining Strontium-89 and Strontium-90 data for liquid releases made in the second quarter. An addendum to this report updating this section shall be prepared and submitted as soon as the data are available.

C. Solid

During the reporting period, a total volume of 4.45 E2 cubic meters of solid waste containing 6.94 E2 curies of radioactivity was shipped off site in 35 shipments. No irradiated fuel was shipped. The solid waste shipments are summarized in Tables 3A and 3B which are found on pages 19 and 20.

D. Meteorological Data

During the reporting period of July 1, 1986 through December 31, 1986, onsite meteorological conditions were monitored and recorded. Joint frequency distribution of wind speed and direction data obtained from the 116 meter (380 feet) and the 10 meter (33 feet) sensors are summarized for each stability class per quarter. Also included are percent of data recovery and cumulative wind roses for 10 meter (33 feet) and 116 meter (380 feet) elevations. The meteorological data for this reporting period are summarized in Tables 4 through 9 which are found on pages 26 through 58 and page 63.

Meteorological data presented in the format described above for the period of January 1, 1986 through June 30, 1986 can be found in the OCNGS Effluent Release Report 1986-1.

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT

SUPPLEMENTAL INFORMATION

FACILITY - Oyster Creek Nuclear Generating Station

LICENSEE - Owner - Jersey Central Power & Light Company

Operator - GPU Nuclear Corporation

1. Regulatory Limits - Through November 19, 1986

a. Fission and Activation Gases:

Technical Specification 3.6.A.1

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

b. Iodines and particulates, half-lives > 8 days:

Technical Specification 3.6.A.2

$$4 \text{ uCi/sec}$$

c. Liquid Effluents:

Technical Specification 3.6.B.1

Maximum permissible concentrations,

Appendix B, Table II, Column 2

of 10 CFR 20.

2. Regulatory Limits - After November 19, 1986

a. Fission and Activation Gases:

Technical Specification 3.6.E.1

The gross radioactivity in noble gases discharged from the main condenser air ejector shall not exceed a $0.21/\bar{E}$ Ci/sec after the holdup line where \bar{E} is the average gamma energy (Mev per atomic transformation).

Technical Specification 3.6.K.1

The dose equivalent rate outside of the EXCLUSION AREA due to radioactive noble gas in gaseous effluent shall not exceed 500 mrem/year to the total body or 3000 mrem/year to the skin.

Technical Specification 3.6.L.1

The air dose outside of the EXCLUSION AREA due to noble gas released in gaseous effluent shall not exceed:

5 mrad/calendar quarter due to gamma radiation,
10 mrad/calendar quarter due to beta radiation,
10 mrad/calendar year due to gamma radiation, or
20 mrad/calendar year due to beta radiation.

Technical Specification 3.6.N.1

The annual dose to a MEMBER OF THE PUBLIC due to radiation and radioactive material in effluents from the OCNGS outside of the EXCLUSION AREA shall not exceed 75 mrem to his thyroid or 25 mrem to his total body or to any other organ.

b. Iodines and Particulates

Technical Specification 3.6.K.2

The dose equivalent rate outside of the EXCLUSION AREA due to H-3, I-131, I-133, and to radioactive material in particulate having half-lives of 8 days or more in gaseous effluents shall not exceed 1500 mrem/year to any body organ when the dose rate due to H-3, Sr-89, Sr-90, and alpha-emitting radionuclides is averaged over no more than 3 months and the dose rate due to other radionuclides is averaged over no more than 31 days.

Technical Specification 3.6.M.1

The dose to a MEMBER OF THE PUBLIC from iodine-131, iodine-133, and from radionuclides in particulate form having half-lives of 8 days or more in gaseous effluents, outside of the EXCLUSION AREA shall not exceed 7.5 mrem to any body organ per calendar quarter or 15 mrem to any body organ per calendar year.

c. Liquid Effluents:

Technical Specification 3.6.I.1

The concentration of radioactive material, other than noble gases, in liquid effluent in the discharge canal at the Route 9 bridge shall not exceed the concentrations specified in 10CFR Part 20, Appendix B, Table II, Column 2.

Technical Specification 3.6.I.2

The concentration of noble gases dissolved or entrained in liquid effluent in the discharge canal at the Route 9 bridge shall not exceed 2×10^{-4} microcuries/milliliter.

Technical Specification 3.6.J.1

The dose to a MEMBER OF THE PUBLIC due to radioactive material in liquid effluents beyond the outside of the EXCLUSION AREA shall not exceed:

1.5 mrem to the total body during any calendar quarter,
5 mrem to any body organ during any calendar quarter,
3 mrem to the total body during any calendar year, or
10 mrem to any body organ during any calendar year.

3. Maximum Permissible Concentrations (MPC)

a. Fission and Activation Gases:

Appendix B, Table II, Column 2, of 10CFR20

b. Iodines and Particulates:

Appendix B, Table II, Column 2, of 10CFR20

c. Liquid Effluents:

Appendix B, Table II, Column 2, of 10CFR20 except for dissolved or entrained noble gases where the limit is 2 E-4 uCi/ml

4. Average Energy

a. First Quarter - Plant Shutdown

b. Second Quarter - 7.70 E-1 Mev

5. Measurements and Approximation of Total Radioactivity

a. Fission and Activation Gases:

1. Stack - The continuous recording of gross activity and the incorporation of isotopic data obtained from a weekly grab sample analyzed using a GeLi detector.

2. AOG Vent - The continuous recording of gross activity and the incorporation of isotopic data obtained from a monthly grab sample analyzed using a GeLi detector.

c. TB/FP Vent - A grab sample is obtained four times a week which is analyzed for isotopic activity using a GeLi detector.

b. Iodines:

1. Stack - Filters are pulled twice a week and analyzed using a GeLi detector.

2. AOG Vent - Filters are pulled twice a week and analyzed using a GeLi detector.

3. TB/FP Vent - Filters are pulled twice a week and analyzed using a GeLi detector.

c. Particulates:

1. Stack - Filters are pulled twice a week and analyzed using a low background internal proportional beta counter and a GeLi detector.

2. AOG Vent - Filters are pulled twice a week and analyzed using a GeLi detector.

3. TB/FP Vent - Filters are pulled twice a week and analyzed using a GeLi detector.

d. Liquid Effluents:

Analysis per batch release using gamma ray spectrometry with a GeLi Detector, a low background beta counter, and a liquid scintillation counter.

Analysis of Error Associated with the Measurement of Radioactive Materials in Effluents and Solid Wastes Effluents

All stages of the production of effluent estimates have been assigned an estimated and conservative error potential. Stages include sample collection, radiochemical analysis, and compilation of the effluent estimation process. The use of these error factors assures that facility effluents will not be underestimated.

Solid Waste

The process by which the levels of radioactive materials in solid wastes are estimated is one which requires conservatism throughout. Representative sample analyses and/or surface contamination surveys are combined with estimates of waste volume to provide the level of radioactive materials in solid wastes. Conservative techniques are used in all phases of this process to assure that the amount of radioactive material in solid wastes is not underestimated.

6. Batch Releases

a. Liquid

1. Number of batch releases:

a. First Quarter - No Releases

b. Second Quarter - 9 Releases

2. Total time period for batch releases:
 - a. First Quarter - No Releases
 - b. Second Quarter - 1.24 E3 minutes
3. Maximum time period for a batch release:
 - a. First Quarter - No Releases
 - b. Second Quarter - 1.75 E2 minutes
4. Average time period for a batch release:
 - a. First Quarter - No Releases
 - b. Second Quarter - 1.38 E2 minutes
5. Minimum time period for a batch release:
 - a. First Quarter - No Releases
 - b. Second Quarter - 5.30 E1 minutes
6. Average stream flow during periods of release of effluent in a flowing stream:
 - a. First Quarter - No Releases
 - b. Second Quarter - 2.20 E6 liters/minute

7. 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 1A
EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1986-2
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	< LLD	3.71 E1	3.0 E1
2. Average release rate for period	uCi/sec	-	1.34 E2	
3. Percent of Tech Spec limit	%	-	4.91 E-2	

B. Iodines

1. Total Iodine-131	Ci	< LLD	6.07 E-4	2.5 E1
2. Average release rate for period	uCi/sec	-	7.63 E-5	
3. Percent of Tech Spec limit	%	-	*	

C. Particulates

1. Particulates with half-lives > 8 days	Ci	1.34 E-4	3.12 E-4	2.5 E1
2. Average release rate for period	uCi/sec	1.68 E-5	3.92 E-5	
3. Percent of Tech Spec limit	%	4.20 E-4	*	
4. Gross alpha radioactivity	Ci	4.00 E-6	1.57 E-6	

D. Tritium

1. Total release	Ci	3.10	1.51	4.0 E1
2. Average release rate for period	uCi/sec	3.90 E-1	1.90 E-1	
3. Percent of Tech. Spec. Limit	%	-	*	

* See Radiological Impact on Man section of this report.

TABLE 1B
EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1986-2
GASEOUS EFFLUENTS-ELEVATED RELEASE

CONTINUOUS MODE

Nuclides Released	Unit	First Quarter	Second Quarter		LLD uCi/cc
1. Fission gases					
Krypton-85m	Ci	< LLD	2.86		4.24 E-8
Krypton-87	Ci	< LLD	7.64		7.42 E-8
Krypton-88	Ci	< LLD	9.09		1.34 E-7
Xenon-133	Ci	< LLD	< LLD		1.75 E-7
Xenon-135	Ci	< LLD	1.75 E1		3.63 E-8
Xenon-135m	Ci	< LLD	< LLD		6.36 E-8
Xenon-138	Ci	< LLD	< LLD		1.39 E-7
others					
Krypton-89	Ci	< LLD	< LLD		5.76 E-7
Xenon-133m	Ci	< LLD	< LLD		3.25 E-7
Xenon-137	Ci	< LLD	< LLD		4.28 E-7
Total for period	Ci	< LLD	3.71 E1		

2. Iodines

Iodine-131	Ci	< LLD	6.07 E-4		2.51 E-13
Iodine-133	Ci	< LLD	1.34 E-2		2.46 E-13
Iodine-135	Ci	< LLD	1.76 E-2		1.48 E-12
Total for period	Ci	< LLD	3.16 E-2		

TABLE 1C
EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1986-2
GASEOUS EFFLUENTS-ELEVATED RELEASE

Nuclides Released	Unit	First Quarter	Second Quarter		LLD uCi/cc
3. PARTICULATES					
Strontium-89	Ci	7.30 E-6	1.30 E-4		5.42 E-15
Strontium-90	Ci	< LLD	2.62 E-6		1.05 E-15
Cesium-134	Ci	< LLD	< LLD		3.49 E-13
Cesium-137	Ci	2.72 E-5	< LLD		3.97 E-13
Barium-140	Ci	< LLD	1.08 E-4		8.66 E-13
Lanthanum-140	Ci	< LLD	< LLD		5.95 E-13
OTHERS					
Manganese-54	Ci	< LLD	7.17 E-5		4.03 E-13
Cobalt-60	Ci	9.96 E-5	< LLD		6.83 E-13
Strontium-91	Ci	< LLD	1.56 E-3		9.62 E-13
Iodine-133	Ci	< LLD	3.17 E-4		2.43 E-13
TOTAL	Ci	1.34 E-4	2.19 E-3		

TABLE 1D
EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1986-2
GASEOUS EFFLUENTS - GROUND-LEVEL RELEASE

CONTINUOUS MODE

Nuclides Released	Unit	First Quarter	Second Quarter		LLD uCi/cc
1. Fission gases					
krypton-85m	Ci	< LLD	< LLD		5.13 E-8
krypton-87	Ci	< LLD	< LLD		1.12 E-7
krypton-88	Ci	< LLD	< LLD		1.98 E-7
xenon-133	Ci	< LLD	< LLD		1.22 E-7
xenon-135	Ci	< LLD	< LLD		4.39 E-8
xenon-135m	Ci	< LLD	< LLD		2.22 E-7
xenon-138	Ci	< LLD	< LLD		3.57 E-7
others					
krypton-89	Ci	< LLD	< LLD		1.31 E-5
xenon-133m	Ci	< LLD	< LLD		4.52 E-7
xenon-137	Ci	< LLD	< LLD		6.31 E-6
Total for period	Ci	< LLD	< LLD		

2. Iodines

Iodine-131	Ci	< LLD	< LLD		4.14 E-14
Iodine-133	Ci	< LLD	< LLD		5.51 E-14
Iodine-135	Ci	< LLD	< LLD		2.13 E-13
Total for period	Ci	< LLD	< LLD		

TABLE 1E
EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1986-2
GASEOUS EFFLUENTS - GROUND-LEVEL RELEASE

[illegible]

TABLE 2A
EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1986-2
LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

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

1. Total releases (not including tritium, gases, alpha)	Ci	*	**	3.0 E1
2. Average diluted concentration during period	uCi/ml	-	**	
3. Percent of applicable limit	%	-	**	

B. Tritium

1. Total release	Ci	*	1.07	3.0 E1
2. Average diluted concentration during period	uCi/ml	-	4.56 E-8	
3. Percent of applicable limit	%	-	1.52 E-3	

C. Dissolved and entrained gases

1. Total release	Ci	*	1.35 E-3	3.0 E1
2. Average diluted concentration during period	uCi/ml	-	5.76 E-11	
3. Percent of applicable limit	%	-	2.87 E-5	

D. Gross alpha radioactivity

1. Total release	Ci	-	< LLD	3.0 E1
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E. Volume of waste released (prior to dilution)	liters	0.00	6.69 E5	1.0 E1
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F. Volume of dilution water used during period	liters	5.53 E10	8.82 E10	1.0 E1
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* NO RELEASES THIS PERIOD.

The data base is not complete per this date. Delays were encountered in obtaining Strontium-89 and Strontium-90 data for liquid releases made in the second quarter. An addendum to this report updating this section shall be prepared and submitted as soon as the data are available.

TABLE 2B
EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1986-2
LIQUID EFFLUENTS

BATCH MODE					
Nuclides Released	Unit	First Quarter	Second Quarter		LLD uCi/ml
Strontium-89	Ci	*	**		**
Strontium-90	Ci	*	**		**
Cesium-134	Ci	*	< LLD		5.73 E-7
Cesium-137	Ci	*	< LLD		5.54 E-7
Iodine-131	Ci	*	< LLD		4.05 E-7
Cobalt-58	Ci	*	< LLD		4.68 E-7
Cobalt-60	Ci	*	< LLD		1.57 E-6
Iron-59	Ci	*	< LLD		8.04 E-7
Zinc-65	Ci	*	< LLD		7.18 E-7
Manganese-54	Ci	*	< LLD		6.29 E-7
Chromium-51	Ci	*	< LLD		3.42 E-6
Zirconium-95	Ci	*	< LLD		7.22 E-7
Niobium-95	Ci	*	< LLD		3.45 E-7
Molybdenum-99	Ci	*	< LLD		2.62 E-6
Technetium-99m	Ci	*	< LLD		3.83 E-7
Barium-140	Ci	*	< LLD		1.90 E-6
Lanthanum-140	Ci	*	< LLD		6.27 E-7
Cerium-141	Ci	*	< LLD		6.91 E-7
TOTAL FOR PERIOD	Ci	*	**		
Xenon-133	Ci	*	4.52 E-4		2.07 E-6
Xenon-135	Ci	*	8.95 E-4		4.59 E-7
TOTAL FOR PERIOD	Ci	*	1.35 E-3		

* NO RELEASES THIS PERIOD.

The data base is not complete per this date. Delays were encountered in obtaining Strontium-89 and Strontium-90 data for liquid releases made in the second quarter. An addendum to this report updating this section shall be prepared and submitted as soon as the data are available.

TABLE 3A
EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1986-2
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	1.01 E2 6.76 E2	2.5 E1
b. Dry compressible waste, contaminated equip., etc.	m ³ Ci	3.44 E2 1.82 E1	2.5 E1
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)	
a. Cobalt-60	3.56 E1	2.41 E2	
Iron-55	3.08 E1	2.08 E2	
Cesium-137	1.70 E1	1.15 E2	
Cesium-134	7.97	5.39 E1	
Nickel-63	2.16 E-1	1.46	
Iron-55	5.94 E1	1.08 E1	
Cobalt-60	3.20 E1	5.82	
Cesium-137	2.02	3.68 E-1	
Nickel-63	2.30 E-1	4.19 E-2	
Plutonium-241	2.14 E-1	3.89 E-2	
c.			
d.			

3. Solid Waste Disposition		
Number of Shipments	Mode of Transportation	Destination
35	Motor Vehicle	Barnwell, SC

B. Irradiated Fuel Shipments (Disposition)

Number of Shipments	Mode of Transportation	Destination
None	-	-

TABLE 3B

Effluent and Waste Disposal Semiannual Report 1986-2

Solid Waste

Physical Description of the Waste	Classification of the Waste (10 CFR 61)	Total Volume (m ³)	Total Activity (Ci)
SPENT RESIN	A	4.93 E1	2.62 E1
SPENT RESIN	B	3.37	2.38 E2
SPENT RESIN	C	3.37	3.20 E2
FILTER SLUDGE	A	2.01 E1	4.66 E1
EVAPORATOR BOTTOMS	A	2.51 E1	4.32 E1
DRY ACTIVATED WASTE	A	3.44 E2	1.82 E1

The solidification agent is cement.

Meteorological Data

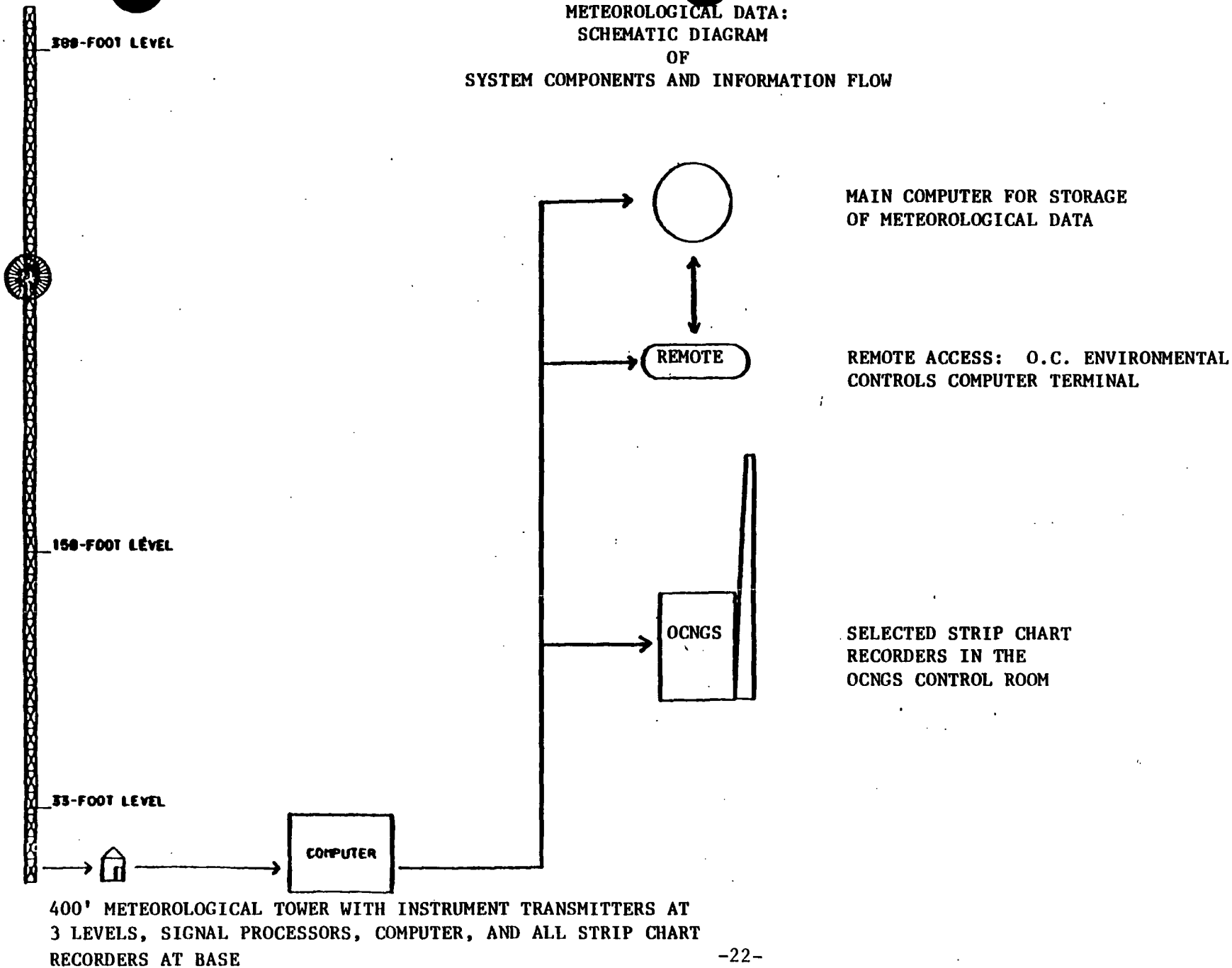
Summary

The Oyster Creek Nuclear Generating Station obtains meteorological data from the site meteorological instrument tower (Figure 1 - Page 22). The tower is 400 feet tall and located approximately west-northwest of the site at a distance of 2529 feet from the stack. The following instrumentation is located on the tower:

HEIGHT OF INSTRUMENT	INSTRUMENT
ABOVE GROUND	
33 feet (10 meters)	Wind Speed Wind Direction Temperature Dew Point
150 feet (46 meters)	Wind Speed Wind Direction Temperature
380 feet (116 meters)	Wind Speed Wind Direction Temperature Dew Point

There are redundant wind speed, wind direction, and temperature sensors at the 33 and 380 foot levels to insure an efficient percentage of data recovery and to comply with regulatory requirements. In addition, a processor calculates temperature differentials (ΔT) between

FIGURE 1
GPU NUCLEAR CORPORATION
OYSTER CREEK NUCLEAR GENERATING STATION
METEOROLOGICAL DATA:
SCHEMATIC DIAGRAM
OF
SYSTEM COMPONENTS AND INFORMATION FLOW



(150-33) and (380-33)-foot levels. These data are then recorded on charts and stored in an on-site computer and are used to determine atmospheric stability and, in turn, atmospheric dispersion. In addition, data is telemetered, monitored, and recorded at the Oyster Creek Control Room.

The meteorological tower sensors, chart recorders, and processors are calibrated four times a year, according to the draft NRC Regulatory Guide 1.23, Revision 1. Periodic tower inspections are done to insure maximum data integrity. The average data recovery is 97% for the six month period from July through December of 1986 (Table 9 - Page 63). Meteorological data are an integral part of the off-site dose assessment program.

Data Analysis

During the first quarter of the period (July through September) the predominant wind direction is from the west and southwest. Winds from the west are characteristic of a modified continental polar air mass that follows cold frontal passages. Winds from the southwest are usually associated with maritime tropical air normally present prior to cold frontal passages. The most frequent wind direction is from the south and is the end result of the sea-breeze phenomenon. At the height of this mesoscale effect (approximately 2:00 to 4:00 in the afternoon) the wind will parallel the coast - the result created from uneven heating between land and sea coupled with the natural rotation of the earth. The second quarter (October through December) is usually described as a transition period between the previously described summer patterns and those found in winter (winds from the west-northwest and north). However, the entire second quarter was slightly cooler than usual, and, as seen in the wind

roses, directions seemed to represent those conditions found during the winter months. The predominant wind direction during the second quarter was from the northwest.

Other characteristics for the entire six-month period include a small maxima of wind direction from the northeast, especially during the second quarter (Oct-Dec). This is due to the air flow around large high pressure systems. Periods with this onshore fetch have characteristic low clouds, drizzle and fog (stable atmospheres).

For the period of July through December, precipitation was above normal (36.30 inches). The six-month average total from the Atlantic City National Weather Service historical record is 22.0 inches (Figure 2, page 25).

During summer months precipitation is generally characterized by events of short duration but strong intensity (convective showers). With this type of precipitation event, there will be increased particulate fallout (washout) from the atmosphere, which has implications for radionuclide deposition. During the summer, marine air, which is stable, will generally suppress these convective-type storms and decrease precipitation at most coastal locations. The sea-breeze can produce the same result. This effect can occur along the coast up to 12 miles inland. Rainfall events during the six-month period were, for the most part, due to extratropical storms of light to moderate intensity and long duration, especially during the second quarter.

FIGURE 2

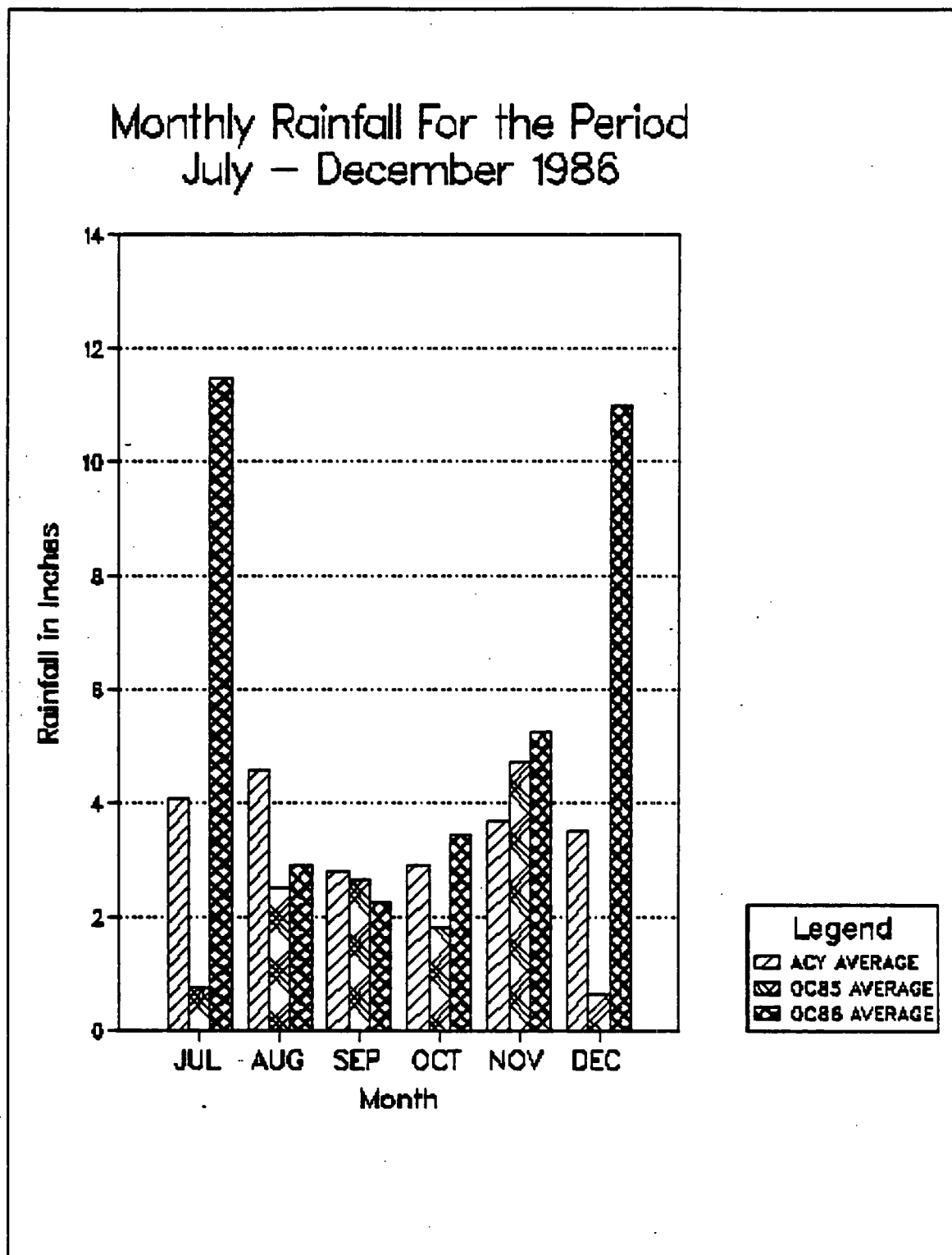


TABLE 4

METEOROLOGICAL CLASSIFICATIONS OF ATMOSPHERIC STABILITY

Stability Classification	Pasquill Categories	σ_{θ}^1 (degrees)	Temperature Change With Height ($^{\circ}\text{F}/100 \text{ ft}$)
Extremely Unstable	A	25.0	-1.0
Moderately Unstable	B	20.0	-1.0 to -0.9
Slightly Unstable	C	15.0	-0.9 to -0.8
Neutral	D	10.0	-0.8 to -0.3
Slightly Stable	E	5.0	-0.3 to 0.8
Moderately Stable	F	2.5	0.8 to 2.2
Extremely Stable	G	1.7	2.2

¹ Standard deviation of horizontal wind direction fluctuation over a period of 15 minutes to 1 hour. The values shown are average for each stability classification.

TABLE 5

Oyster Creek Meteorological Tower Joint Frequency Tables of Wind Speed
and Wind Direction 33ft versus Delta Temperature 150-33ft for
the period 7/1/86 - 9/30/86

PERIOD OF RECORD: 86070101-86093024

STABILITY CLASS: A DT/DZ

ELEVATION: SPEED: SPD33A DIRECTION: DIR33A LAPSE: DT150

WIND DIRECTION	WIND SPEED (mph)						TOTAL
	1-3	4-7	8-12	13-18	19-24	24	
N	2	6	5	0	0	0	13
NNE	0	7	0	0	0	0	7
NE	1	11	12	4	0	0	28
ENE	2	35	15	1	0	0	53
E	2	38	20	1	0	0	61
ESE	1	33	10	0	0	0	44
SE	0	31	30	0	0	0	61
SSE	2	10	43	3	0	0	58
S	0	4	59	17	0	0	80
SSW	0	6	27	6	0	0	39
SW	1	12	13	6	0	0	32
WSW	2	8	23	0	0	0	33
W	0	6	16	1	0	0	23
WNW	1	14	20	1	0	0	36
NW	1	18	17	6	0	0	42
NNW	5	23	23	6	0	0	57
TOTAL	20	262	333	52	0	0	667

PERIODS OF CALM (hours): 9

VARIABLE DIRECTION: 0

HOURS OF MISSING DATA: 68

TABLE 5 - continued

PERIOD OF RECORD: 86070101-86093024

STABILITY CLASS: B DT/DZ

ELEVATION: SPEED: SPD33A DIRECTION: DIR33A LAPSE: DT150

WIND DIRECTION	WIND SPEED (mph)						TOTAL
	1-3	4-7	8-12	13-18	19-24	24	
N	4	3	0	1	0	0	8
NNE	1	2	0	2	0	0	5
NE	0	3	0	0	0	0	3
ENE	0	0	0	0	0	0	0
E	0	5	1	0	0	0	6
ESE	0	10	0	0	0	0	10
SE	0	6	2	0	0	0	8
SSE	0	6	1	0	0	0	7
S	0	5	12	0	0	0	17
SSW	2	2	1	1	0	0	6
SW	0	0	4	0	0	0	4
WSW	2	1	1	0	0	0	4
W	1	4	2	0	0	0	7
WNW	1	4	1	1	0	0	7
NW	1	5	2	0	0	0	8
NNW	0	6	1	0	0	0	7
TOTAL	12	62	28	5	0	0	107

PERIODS OF CALM (hours): 9

VARIABLE DIRECTION: 0

HOURS OF MISSING DATA: 68

TABLE 5 - continued

PERIOD OF RECORD: 86070101-86093024

STABILITY CLASS: C DT/DZ

ELEVATION: SPEED: SPD33A DIRECTION: DIR33A LAPSE: DT150

WIND DIRECTION	WIND SPEED (mph)						TOTAL
	1-3	4-7	8-12	13-18	19-24	24	
N	0	0	1	0	0	0	1
NNE	0	0	0	0	0	0	0
NE	0	0	1	0	0	0	1
ENE	0	0	1	0	0	0	1
E	1	3	1	0	0	0	5
ESE	0	1	0	0	0	0	1
SE	1	4	0	0	0	0	5
SSE	1	2	1	0	0	0	4
S	1	3	3	0	0	0	7
SSW	1	2	3	1	0	0	7
SW	0	2	3	0	0	0	5
WSW	0	1	2	0	0	0	3
W	0	0	1	0	0	0	1
WNW	2	0	0	0	0	0	2
NW	0	3	0	0	0	0	3
NNW	1	1	1	1	0	0	4
TOTAL	8	22	18	2	0	0	50

PERIODS OF CALM (hours): 9

VARIABLE DIRECTION: 0

HOURS OF MISSING DATA: 68

TABLE 5 - continued

PERIOD OF RECORD: 86070101-86093024

STABILITY CLASS: D DT/DZ

ELEVATION: SPEED: SPD33A DIRECTION: DIR33A LAPSE: DT150

WIND DIRECTION	WIND SPEED (mph)						TOTAL
	1-3	4-7	8-12	13-18	19-24	24	
N	3	6	0	0	0	0	9
NNE	4	7	2	0	0	0	13
NE	3	11	12	0	0	0	26
ENE	0	14	8	0	0	0	22
E	5	23	13	0	0	0	41
ESE	4	16	3	0	0	0	23
SE	6	11	3	0	0	0	20
SSE	4	13	2	1	0	0	20
S	5	32	8	0	0	0	45
SSW	4	21	45	7	0	0	77
SW	6	15	9	0	0	0	30
WSW	4	14	5	0	0	0	23
W	10	3	2	0	0	0	15
WNW	5	5	1	0	0	0	11
NW	12	7	3	0	0	0	22
NNW	5	6	2	1	0	0	14
TOTAL	80	204	118	9	0	0	411

PERIODS OF CALM (hours): 9

VARIABLE DIRECTION: 0

HOURS OF MISSING DATA: 68

TABLE 5 - continued

PERIOD OF RECORD: 86070101-86093024

STABILITY CLASS: E DT/DZ

ELEVATION: SPEED: SPD33A DIRECTION: DIR33A LAPSE: DT150

WIND DIRECTION	WIND SPEED (mph)						TOTAL
	1-3	4-7	8-12	13-18	19-24	24	
N	7	4	0	0	0	0	11
NNE	1	0	0	0	0	0	1
NE	11	4	1	0	0	0	16
ENE	2	9	5	0	0	0	16
E	4	13	7	0	0	0	24
ESE	6	3	0	0	0	0	9
SE	4	3	0	0	0	0	7
SSE	13	9	1	0	0	0	23
S	15	21	1	0	0	0	37
SSW	22	31	6	0	0	0	59
SW	19	20	12	0	0	0	51
WSW	18	25	0	0	0	0	43
W	13	15	1	0	0	0	29
WNW	9	6	2	0	0	0	17
NW	14	13	0	0	0	0	27
NNW	7	12	1	0	0	0	20
TOTAL	165	188	37	0	0	0	390

PERIODS OF CALM (hours): 9

VARIABLE DIRECTION: 0

HOURS OF MISSING DATA: 68

TABLE 5 - continued

PERIOD OF RECORD: 86070101-86093024

STABILITY CLASS: F DT/DZ

ELEVATION: SPEED: SPD33A DIRECTION: DIR33A LAPSE: DT150

WIND DIRECTION	WIND SPEED (mph)						TOTAL
	1-3	4-7	8-12	13-18	19-24	24	
N	3	2	0	0	0	0	5
NNE	3	0	0	0	0	0	3
NE	2	2	0	0	0	0	4
ENE	1	1	0	0	0	0	2
E	0	0	0	0	0	0	0
ESE	0	0	0	0	0	0	0
SE	1	0	0	0	0	0	1
SSE	1	0	0	0	0	0	1
S	9	9	0	0	0	0	18
SSW	13	3	0	0	0	0	16
SW	10	2	0	0	0	0	12
WSW	14	13	0	0	0	0	27
W	11	9	0	0	0	0	20
WNW	14	5	0	0	0	0	19
NW	17	13	0	0	0	0	30
NNW	6	9	0	0	0	0	15
TOTAL	105	68	0	0	0	0	173

PERIODS OF CALM (hours): 9

VARIABLE DIRECTION: 0

HOURS OF MISSING DATA: 68

TABLE 5 - continued

PERIOD OF RECORD: 86070101-86093024

STABILITY CLASS: G DT/DZ

ELEVATION: SPEED: SPD33A DIRECTION: DIR33A LAPSE: DT150

WIND DIRECTION	WIND SPEED (mph)						TOTAL
	1-3	4-7	8-12	13-18	19-24	24	
N	6	1	0	0	0	0	7
NNE	1	0	0	0	0	0	1
NE	2	0	0	0	0	0	2
ENE	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0
ESE	0	0	0	0	0	0	0
SE	0	0	0	0	0	0	0
SSE	0	0	0	0	0	0	0
S	4	2	0	0	0	0	6
SSW	16	0	0	0	0	0	16
SW	16	3	0	0	0	0	19
WSW	55	34	0	0	0	0	89
W	59	20	0	0	0	0	79
WNW	41	18	0	0	0	0	59
NW	34	6	0	0	0	0	40
NNW	15	9	0	0	0	0	24
TOTAL	249	93	0	0	0	0	342

PERIODS OF CALM (hours): 9

VARIABLE DIRECTION: 0

HOURS OF MISSING DATA: 68

TABLE 5 - continued

PERIOD OF RECORD: 86070101-86093024

STABILITY CLASS: ALL DT/DZ

ELEVATION: SPEED: SPD33A DIRECTION: DIR33A LAPSE: DT150

WIND DIRECTION	WIND SPEED (mph)						TOTAL
	1-3	4-7	8-12	13-18	19-24	24	
N	25	22	6	1	0	0	54
NNE	10	16	2	2	0	0	30
NE	19	31	26	4	0	0	80
ENE	5	59	29	1	0	0	94
E	12	82	42	1	0	0	137
ESE	11	63	13	0	0	0	87
SE	12	55	35	0	0	0	102
SSE	21	40	48	4	0	0	113
S	34	76	83	17	0	0	210
SSW	58	65	82	15	0	0	220
SW	52	54	41	6	0	0	153
WSW	95	96	31	0	0	0	222
W	94	57	22	1	0	0	174
WNW	73	52	24	2	0	0	151
NW	79	65	22	6	0	0	172
NNW	39	66	28	8	0	0	141
TOTAL	639	899	534	68	0	0	2140

PERIODS OF CALM (hours): 9

VARIABLE DIRECTION: 0

HOURS OF MISSING DATA: 68

TABLE 6

Oyster Creek Meteorological Tower Joint Frequency Tables of Wind Speed
and Wind Direction 33ft versus Delta Temperature 150-33ft for
the period 10/1/86 - 12/31/86

PERIOD OF RECORD: 86100101-86123124

STABILITY CLASS: A DT/DZ

ELEVATION: SPEED: SPD33A DIRECTION: DIR33A LAPSE: DT150

WIND DIRECTION	WIND SPEED (mph)						TOTAL
	1-3	4-7	8-12	13-18	19-24	24	
N	0	16	11	0	0	0	27
NNE	0	6	8	0	0	0	14
NE	1	11	12	0	0	0	24
ENE	0	14	15	0	0	0	29
E	0	10	1	0	0	0	11
ESE	1	5	3	0	0	0	9
SE	1	6	4	0	0	0	11
SSE	1	3	2	0	0	0	6
S	0	1	3	3	0	0	7
SSW	0	8	8	1	0	0	17
SW	0	4	4	0	0	0	8
WSW	0	11	8	4	0	0	23
W	0	16	12	1	0	0	29
WNW	0	12	22	5	0	0	39
NW	0	14	34	16	0	0	64
NNW	0	24	31	2	0	0	57
TOTAL	4	161	178	32	0	0	375

PERIODS OF CALM (hours): 13

VARIABLE DIRECTION: 33

HOURS OF MISSING DATA: 59

TABLE 6 - continued

PERIOD OF RECORD: 86100101-86123124

STABILITY CLASS: B DT/DZ

ELEVATION: SPEED: SPD33A DIRECTION: DIR33A LAPSE: DT150

WIND DIRECTION	WIND SPEED (mph)						TOTAL
	1-3	4-7	8-12	13-18	19-24	24	
N	0	2	0	0	0	0	2
NNE	0	6	0	0	0	0	6
NE	0	1	3	0	0	0	4
ENE	1	0	2	0	0	0	3
E	0	2	0	0	0	0	2
ESE	0	6	0	0	0	0	6
SE	0	2	1	1	0	0	4
SSE	0	3	1	0	0	0	4
S	0	2	0	0	0	0	2
SSW	0	0	0	0	0	0	0
SW	1	1	1	0	0	0	3
WSW	0	6	2	0	0	0	8
W	0	1	1	0	0	0	2
WNW	0	3	3	0	0	0	6
NW	1	7	5	1	0	0	14
NNW	0	7	2	0	0	0	9
TOTAL	3	49	21	2	0	0	75

PERIODS OF CALM (hours): 13

VARIABLE DIRECTION: 15

HOURS OF MISSING DATA: 59

TABLE 6 - continued

PERIOD OF RECORD: 86100101-86123124

STABILITY CLASS: C DT/DZ

ELEVATION: SPEED: SPD33A DIRECTION: DIR33A LAPSE: DT150

WIND DIRECTION	WIND SPEED (mph)						TOTAL
	1-3	4-7	8-12	13-18	19-24	24	
N	1	1	1	0	0	0	3
NNE	1	0	0	0	0	0	1
NE	0	1	1	0	0	0	2
ENE	0	1	3	1	0	0	5
E	0	0	0	0	0	0	0
ESE	0	1	0	0	0	0	1
SE	0	2	0	0	0	0	2
SSE	0	4	1	0	0	0	5
S	0	0	1	0	0	0	1
SSW	0	1	1	1	0	0	3
SW	2	0	0	0	0	0	2
WSW	0	2	0	0	0	0	2
W	0	4	1	0	0	0	5
WNW	1	1	2	0	0	0	4
NW	0	4	1	0	0	0	5
NNW	2	2	2	0	0	0	6
TOTAL	7	24	14	2	0	0	47

PERIODS OF CALM (hours): 13

VARIABLE DIRECTION: 14

HOURS OF MISSING DATA: 59

TABLE 6 - continued

PERIOD OF RECORD: 86040101-86063024

STABILITY CLASS: D DT/DZ

ELEVATION: SPEED: SPD33A DIRECTION: DIR33A LAPSE: DT150

WIND DIRECTION	WIND SPEED (mph)						TOTAL
	1-3	4-7	8-12	13-18	19-24	24	
N	5	11	9	0	0	0	25
NNE	10	15	7	0	0	0	32
NE	1	13	9	0	0	0	23
ENE	1	7	22	8	0	0	38
E	1	12	14	16	0	0	43
ESE	2	6	14	4	0	0	26
SE	1	7	8	2	0	0	18
SSE	2	4	7	1	0	0	14
S	1	4	9	1	0	0	15
SSW	3	9	9	2	0	0	23
SW	2	12	6	0	0	0	20
WSW	3	19	2	0	0	0	24
W	3	16	5	1	0	0	25
WNW	8	19	7	8	0	0	42
NW	9	23	7	2	1	0	42
NNW	4	20	13	0	0	0	37
TOTAL	56	197	148	45	1	0	447

PERIODS OF CALM (hours): 13

VARIABLE DIRECTION: 116

HOURS OF MISSING DATA: 59

TABLE 6 - continued

PERIOD OF RECORD: 86100101-86123124

STABILITY CLASS: E DT/DZ

ELEVATION: SPEED: SPD33A DIRECTION: DIR33A LAPSE: DT150

WIND DIRECTION	WIND SPEED (mph)						TOTAL
	1-3	4-7	8-12	13-18	19-24	24	
N	3	10	2	0	0	0	15
NNE	2	3	0	0	0	0	5
NE	3	9	3	0	0	0	15
ENE	1	5	6	1	0	0	13
E	6	7	4	4	0	0	21
ESE	4	6	3	0	0	0	13
SE	6	8	5	3	0	0	22
SSE	4	3	1	3	0	0	11
S	5	9	4	4	0	0	22
SSW	6	20	8	2	0	0	36
SW	10	18	14	2	0	0	44
WSW	10	34	9	0	0	0	53
W	11	47	17	0	0	0	75
WNW	10	44	17	5	0	0	76
NW	12	29	4	3	0	0	48
NNW	16	35	3	0	0	0	54
TOTAL	109	287	100	27	0	0	523

PERIODS OF CALM (hours): 13

VARIABLE DIRECTION: 139

HOURS OF MISSING DATA: 59

TABLE 6 - continued

PERIOD OF RECORD: 86100101-86123124

STABILITY CLASS: F DT/DZ

ELEVATION: SPEED: SPD33A DIRECTION: DIR33A LAPSE: DT150

WIND DIRECTION	WIND SPEED (mph)						TOTAL
	1-3	4-7	8-12	13-18	19-24	24	
N	2	0	1	0	0	0	3
NNE	1	1	0	0	0	0	2
NE	1	1	0	0	0	0	2
ENE	4	0	0	1	0	0	5
E	2	1	0	0	0	0	3
ESE	1	1	1	0	0	0	3
SE	3	0	0	0	0	0	3
SSE	1	2	0	0	0	0	3
S	2	1	0	0	0	0	3
SSW	8	3	0	0	0	0	11
SW	7	12	0	0	0	0	19
WSW	10	21	0	0	0	0	31
W	12	22	0	0	0	0	34
WNW	13	17	0	0	0	0	30
NW	14	17	2	0	0	0	33
NNW	5	20	0	0	0	0	25
TOTAL	86	119	4	1	0	0	210

PERIODS OF CALM (hours): 13

VARIABLE DIRECTION: 92

HOURS OF MISSING DATA: 59

TABLE 6 - continued

PERIOD OF RECORD: 86100101-86123124

STABILITY CLASS: G DT/DZ

ELEVATION: SPEED: SPD33A DIRECTION: DIR33A LAPSE: DT150

WIND DIRECTION	WIND SPEED (mph)						TOTAL
	1-3	4-7	8-12	13-18	19-24	24	
N	5	3	0	0	0	0	8
NNE	0	0	0	0	0	0	0
NE	2	0	0	0	0	0	2
ENE	0	0	0	0	0	0	0
E	1	0	0	0	0	0	1
ESE	3	0	0	0	0	0	3
SE	4	0	0	0	0	0	4
SSE	2	1	0	0	0	0	3
S	3	0	0	0	0	0	3
SSW	10	1	0	0	0	0	11
SW	28	18	0	0	0	0	47
WSW	47	42	0	0	0	0	92
W	78	38	0	0	0	0	116
WNW	49	16	1	0	0	0	66
NW	41	27	0	0	0	0	68
NNW	18	30	0	0	0	0	48
TOTAL	291	176	5	0	0	0	472

PERIODS OF CALM (hours): 13

VARIABLE DIRECTION: 162

HOURS OF MISSING DATA: 59

TABLE 6 - continued

PERIOD OF RECORD: 86100101-86123124

STABILITY CLASS: ALL DT/DZ

ELEVATION: SPEED: SPD33A DIRECTION: DIR33A LAPSE: DT150

WIND DIRECTION	WIND SPEED (mph)						TOTAL
	1-3	4-7	8-12	13-18	19-24	24	
N	16	43	24	0	0	0	83
NNE	14	31	15	0	0	0	60
NE	8	36	28	0	0	0	72
ENE	7	27	48	11	0	0	93
E	10	32	19	20	0	0	81
ESE	11	25	21	4	0	0	61
SE	15	25	18	6	0	0	64
SSE	10	20	12	4	0	0	46
S	11	17	17	8	0	0	53
SSW	27	42	26	6	0	0	101
SW	50	65	26	2	0	0	143
WSW	70	135	24	4	0	0	233
W	104	144	36	2	0	0	286
WNW	81	112	52	18	0	0	263
NW	77	121	53	22	1	0	274
NNW	45	138	51	2	0	0	236
TOTAL	556	1013	470	109	1	0	2149

PERIODS OF CALM (hours): 13

VARIABLE DIRECTION: 571

HOURS OF MISSING DATA: 59

TABLE 7

Oyster Creek Meteorological Tower Joint Frequency Tables of Wind Speed
and Wind Direction 380ft versus Delta Temperature 380-33ft for
the period 7/1/86 - 9/30/86

PERIOD OF RECORD: 86070101-86093024

STABILITY CLASS: A DT/DZ

ELEVATION: SPEED: SPD380A DIRECTION: DR380A LAPSE: DT380A

WIND DIRECTION	WIND SPEED (mph)						TOTAL
	1-3	4-7	8-12	13-18	19-24	24	
N	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
NE	0	0	0	4	0	0	4
ENE	0	0	7	4	0	0	11
E	0	1	4	3	0	0	8
ESE	0	0	2	0	0	0	2
SE	0	0	3	2	0	0	5
SSE	0	0	0	0	1	0	1
S	0	0	0	5	0	0	5
SSW	0	0	2	1	0	0	3
SW	0	0	0	0	0	0	0
WSW	0	0	0	3	0	0	3
W	0	1	0	2	0	0	3
WNW	0	0	2	4	1	0	7
NW	0	0	2	2	3	3	10
NNW	0	0	3	3	1	3	10
TOTAL	0	2	25	33	6	6	72

PERIODS OF CALM (hours): 0

VARIABLE DIRECTION: 0

HOURS OF MISSING DATA: 32

TABLE 7 - continued

PERIOD OF RECORD: 86070101-86093024

STABILITY CLASS: B DT/DZ

ELEVATION: SPEED: SPD380A DIRECTION: DR380A LAPSE: DT380A

WIND DIRECTION	WIND SPEED (mph)						TOTAL
	1-3	4-7	8-12	13-18	19-24	24	
N	0	0	2	0	0	0	2
NNE	0	0	1	3	1	0	2
NE	0	0	3	3	0	1	7
ENE	0	0	18	3	0	0	21
E	0	1	8	2	0	0	11
ESE	0	1	9	0	0	0	10
SE	0	2	11	6	0	0	19
SSE	0	0	4	11	0	0	15
S	0	0	8	14	2	0	24
SSW	0	0	3	7	3	0	13
SW	0	1	3	5	0	0	9
WSW	0	0	5	7	1	0	13
W	0	0	0	4	0	1	5
WNW	0	0	2	6	1	0	9
NW	0	0	4	5	1	1	11
NNW	0	2	5	3	1	2	13
TOTAL	0	7	86	76	10	5	184

PERIODS OF CALM (hours): 0

VARIABLE DIRECTION: 0

HOURS OF MISSING DATA: 32

TABLE 7 - continued

PERIOD OF RECORD: 86070101-86093024

STABILITY CLASS: C DT/DZ

ELEVATION: SPEED: SP380A DIRECTION: DR380A LAPSE: DT380A

WIND DIRECTION	WIND SPEED (mph)						TOTAL
	1-3	4-7	8-12	13-18	19-24	24	
N	0	0	0	0	0	0	0
NNE	0	1	3	0	0	0	4
NE	0	1	3	3	0	0	7
ENE	0	2	15	2	0	0	19
E	0	3	8	1	0	1	13
ESE	0	4	7	0	0	0	11
SE	0	2	13	2	0	0	17
SSE	0	2	11	13	0	0	26
S	0	0	5	14	2	0	21
SSW	0	0	3	5	1	0	9
SW	0	1	2	3	5	0	11
WSW	0	0	1	6	2	0	9
W	0	0	1	6	2	0	9
WNW	0	1	2	5	2	1	11
NW	0	5	6	1	1	1	14
NNW	0	3	7	4	0	1	15
TOTAL	0	25	87	65	15	4	196

PERIODS OF CALM (hours): 0

VARIABLE DIRECTION: 0

HOURS OF MISSING DATA: 32

TABLE 7 - continued

PERIOD OF RECORD: 86070101-86093024

STABILITY CLASS: D DT/DZ

ELEVATION: SPEED: SP380A DIRECTION: DR380A LAPSE: DT380A

WIND DIRECTION	WIND SPEED (mph)						TOTAL
	1-3	4-7	8-12	13-18	19-24	24	
N	1	6	6	6	3	0	22
NNE	0	5	8	3	1	0	17
NE	0	6	17	8	1	3	35
ENE	0	7	16	21	19	4	67
E	6	13	29	23	10	3	84
ESE	0	21	23	11	0	0	55
SE	3	16	25	6	1	0	51
SSE	3	13	31	7	1	0	55
S	0	9	31	35	2	0	77
SSW	3	7	14	32	42	2	100
SW	0	4	9	16	15	2	46
WSW	1	2	15	11	7	0	36
W	2	4	4	13	3	0	26
WNW	1	4	11	9	3	1	29
NW	0	11	10	9	5	2	37
NNW	4	10	3	9	9	2	37
TOTAL	24	138	252	219	122	19	774

PERIODS OF CALM (hours): 0

VARIABLE DIRECTION: 0

HOURS OF MISSING DATA: 32

TABLE 7 - continued

PERIOD OF RECORD: 86070101-86093024

STABILITY CLASS: E DT/DZ

ELEVATION: SPEED: SP380A DIRECTION: DR380A LAPSE: DT380A

WIND DIRECTION	WIND SPEED (mph)						TOTAL
	1-3	4-7	8-12	13-18	19-24	24	
N	0	5	1	15	0	0	21
NNE	2	7	6	2	0	0	17
NE	2	2	7	3	0	0	14
ENE	0	6	7	5	1	0	19
E	0	1	1	3	0	0	5
ESE	3	5	6	2	0	0	16
SE	1	3	6	1	0	0	11
SSE	2	4	13	4	0	0	23
S	1	13	20	27	0	0	61
SSW	3	11	21	34	15	0	84
SW	2	3	9	21	27	5	67
WSW	0	6	8	12	10	0	36
W	2	4	7	12	5	0	30
WNW	0	5	9	9	0	0	23
NW	0	11	3	7	14	1	36
NNW	1	3	1	13	6	1	25
TOTAL	19	89	125	170	78	7	488

PERIODS OF CALM (hours): 0

VARIABLE DIRECTION: 0

HOURS OF MISSING DATA: 32

TABLE 7 - continued

PERIOD OF RECORD: 86070101-86093024

STABILITY CLASS: F DT/DZ

ELEVATION: SPEED: SP380A DIRECTION: DR380A LAPSE: DT380A

WIND DIRECTION	WIND SPEED (mph)						TOTAL
	1-3	4-7	8-12	13-18	19-24	24	
N	0	1	4	10	3	0	18
NNE	0	2	3	4	0	0	9
NE	1	0	3	1	0	0	5
ENE	0	4	1	1	0	0	6
E	2	1	0	0	0	0	3
ESE	1	0	2	0	0	0	3
SE	1	5	0	0	0	0	6
SSE	0	2	0	0	0	0	2
S	0	3	9	7	0	0	19
SSW	1	5	16	12	0	0	34
SW	1	6	7	4	3	1	22
WSW	0	2	0	7	9	5	23
W	0	1	3	6	7	2	19
WNW	0	1	2	11	6	3	22
NW	1	3	7	6	12	1	30
NNW	0	2	2	17	20	2	43
TOTAL	8	38	59	86	60	14	265

PERIODS OF CALM (hours): 0

VARIABLE DIRECTION: 0

HOURS OF MISSING DATA: 32

TABLE 7 - continued

PERIOD OF RECORD: 86070101-86093024

STABILITY CLASS: G DT/DZ

ELEVATION: SPEED: SP380A DIRECTION: DR380A LAPSE: DT380A

WIND DIRECTION	WIND SPEED (mph)						TOTAL
	1-3	4-7	8-12	13-18	19-24	24	
N	0	3	6	5	2	0	16
NNE	0	2	4	5	0	0	11
NE	0	1	7	6	0	0	14
ENE	2	0	0	0	0	0	2
E	0	1	0	0	0	0	1
ESE	1	2	0	0	0	0	3
SE	1	2	3	0	0	0	6
SSE	1	0	0	0	0	0	1
S	1	5	2	3	0	0	11
SSW	0	1	4	3	0	0	8
SW	1	0	7	12	2	0	22
WSW	0	3	5	6	6	0	20
W	3	3	7	3	5	1	22
WNW	1	2	4	7	3	2	19
NW	1	4	5	4	7	1	22
NNW	0	1	7	4	5	2	19
TOTAL	12	30	61	58	30	6	197

PERIODS OF CALM (hours): 0

VARIABLE DIRECTION: 0

HOURS OF MISSING DATA: 32

TABLE 7 - continued

PERIOD OF RECORD: 86070101-86093024

STABILITY CLASS: ALL DT/DZ

ELEVATION: SPEED: SP380A DIRECTION: DR380A LAPSE: DT380A

WIND DIRECTION	WIND SPEED (mph)						TOTAL
	1-3	4-7	8-12	13-18	19-24	24	
N	1	15	19	36	8	0	79
NNE	2	17	25	14	2	0	60
NE	3	10	40	28	1	4	86
ENE	2	19	64	36	20	4	145
E	8	21	50	32	10	4	125
ESE	5	33	49	13	0	0	100
SE	6	30	61	17	1	0	115
SSE	6	21	59	35	2	0	123
S	2	30	75	105	6	0	218
SSW	7	24	63	94	61	2	251
SW	4	15	37	61	52	8	177
WSW	1	13	34	52	35	5	140
W	7	13	22	46	22	4	114
WNW	2	13	32	51	16	7	121
NW	2	34	37	34	43	10	160
NNW	5	21	28	53	42	13	162
TOTAL	63	329	695	707	321	61	2176

PERIODS OF CALM (hours): 0

VARIABLE DIRECTION: 0

HOURS OF MISSING DATA: 32

TABLE 8

Oyster Creek Meteorological Tower Joint Frequency Tables of Wind Speed
and Wind Direction 380ft versus Delta Temperature 350-33ft for
the period 10/1/86 - 12/31/86

PERIOD OF RECORD: 86100101-86123124

STABILITY CLASS: A DT/DZ

ELEVATION: SPEED: SP380A DIRECTION: DR380A LAPSE: DT380A

WIND DIRECTION	WIND SPEED (mph)						TOTAL
	1-3	4-7	8-12	13-18	19-24	24	
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	3	2	0	0	5
E	0	0	0	0	0	0	0
ESE	0	0	0	0	0	0	0
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	0	0	0	0
W	0	0	1	0	0	0	1
WNW	0	0	0	3	1	1	5
NW	0	0	2	6	0	1	9
NNW	0	0	0	2	0	0	2
TOTAL	0	0	7	15	1	2	25

PERIODS OF CALM (hours): 1

VARIABLE DIRECTION: 0

HOURS OF MISSING DATA: 44

TABLE 8 - continued

PERIOD OF RECORD: 86100101-86123124

STABILITY CLASS: B DT/DZ

ELEVATION: SPEED: SP380A DIRECTION: DR380A LAPSE: DT380A

WIND DIRECTION	WIND SPEED (mph)						TOTAL
	1-3	4-7	8-12	13-18	19-24	24	
N	0	0	3	3	1	0	7
NNE	0	1	0	4	0	0	5
NE	0	0	1	2	1	0	4
ENE	0	0	2	3	1	0	6
E	0	1	0	0	0	0	1
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	1	0	0	1
SSW	0	0	1	3	2	0	6
SW	0	0	1	1	0	0	2
WSW	0	1	4	0	1	1	7
W	0	0	6	1	0	0	7
WNW	0	0	1	6	1	3	11
NW	0	0	2	11	1	4	18
NNW	0	0	3	8	5	1	17
TOTAL	0	3	25	43	13	9	93

PERIODS OF CALM (hours): 1

VARIABLE DIRECTION: 1

HOURS OF MISSING DATA: 44

TABLE 8 - continued

PERIOD OF RECORD: 86100101-86123124

STABILITY CLASS: C DT/DZ

ELEVATION: SPEED: SP380A DIRECTION: DR380A LAPSE: DT380A

WIND DIRECTION	WIND SPEED (mph)						TOTAL
	1-3	4-7	8-12	13-18	19-24	24	
N	0	3	1	0	2	0	6
NNE	0	2	2	1	0	0	5
NE	0	2	4	3	1	0	10
ENE	0	1	2	2	2	0	7
E	0	2	1	0	1	0	4
ESE	0	2	1	0	0	0	3
SE	0	1	3	0	0	0	4
SSE	0	0	4	0	0	0	4
S	0	0	1	1	0	0	2
SSW	0	0	2	6	0	0	8
SW	0	1	2	1	0	0	4
WSW	0	0	4	3	0	0	7
W	0	0	3	4	2	1	10
WNW	0	1	5	3	1	1	11
NW	0	1	3	5	6	8	23
NNW	0	1	7	4	2	0	14
TOTAL	0	17	45	33	17	10	122

PERIODS OF CALM (hours): 1

VARIABLE DIRECTION: 2

HOURS OF MISSING DATA: 44

TABLE 8 - continued

PERIOD OF RECORD: 86100101-86123124

STABILITY CLASS: D DT/DZ

ELEVATION: SPEED: SP380A DIRECTION: DR380A LAPSE: DT380A

WIND DIRECTION	WIND SPEED (mph)						TOTAL
	1-3	4-7	8-12	13-18	19-24	24	
N	0	7	10	10	10	0	37
NNE	0	11	9	8	2	0	30
NE	1	4	12	17	9	0	43
ENE	0	4	9	6	20	23	62
E	0	5	2	5	10	25	47
ESE	2	6	7	4	16	5	40
SE	1	3	7	3	4	4	22
SSE	0	5	10	3	2	0	20
S	0	2	5	6	3	0	16
SSW	0	2	15	18	10	1	46
SW	1	2	8	11	10	4	36
WSW	1	4	14	13	6	2	40
W	0	0	22	13	7	0	42
WNW	0	5	17	25	15	23	85
NW	0	3	27	26	13	17	86
NNW	1	4	18	21	16	7	67
TOTAL	7	67	192	189	153	111	719

PERIODS OF CALM (hours): 1

VARIABLE DIRECTION: 15

HOURS OF MISSING DATA: 44

TABLE 8 - continued

PERIOD OF RECORD: 86100101-86123124

STABILITY CLASS: E DT/DZ

ELEVATION: SPEED: SP380A DIRECTION: DR380A LAPSE: DT380A

WIND DIRECTION	WIND SPEED (mph)						TOTAL
	1-3	4-7	8-12	13-18	19-24	24	
N	0	2	10	18	14	2	46
NNE	0	3	6	4	0	0	13
NE	1	1	7	4	7	0	20
ENE	1	3	2	3	1	2	12
E	0	3	7	7	2	8	27
ESE	0	5	5	7	9	3	29
SE	0	2	5	9	5	4	25
SSE	1	2	6	0	2	4	15
S	0	4	6	9	2	2	23
SSW	1	0	6	9	12	8	36
SW	0	5	8	12	22	3	50
WSW	0	2	6	16	22	6	52
W	1	4	3	8	24	3	43
WNW	0	1	8	21	44	2	76
NW	0	4	9	21	21	6	61
NNW	0	3	9	27	16	3	58
TOTAL	5	44	103	175	203	56	586

PERIODS OF CALM (hours): 1

VARIABLE DIRECTION: 8

HOURS OF MISSING DATA: 44

TABLE 8 - continued

PERIOD OF RECORD: 86100101-86123124

STABILITY CLASS: F DT/DZ

ELEVATION: SPEED: SP380A DIRECTION: DR380A LAPSE: DT380A

WIND DIRECTION	WIND SPEED (mph)						TOTAL
	1-3	4-7	8-12	13-18	19-24	24	
N	0	0	5	6	17	1	29
NNE	1	0	3	11	0	0	15
NE	2	4	4	11	0	0	11
ENE	0	2	4	3	0	0	9
E	0	3	1	1	0	0	5
ESE	0	1	6	2	0	0	9
SE	0	6	1	0	0	0	7
SSE	1	3	4	0	0	0	8
S	0	2	3	3	0	0	8
SSW	0	1	1	2	3	0	7
SW	0	1	4	4	11	1	21
WSW	0	0	2	8	12	4	26
W	0	0	5	7	13	6	31
WNW	1	1	4	8	12	2	28
NW	0	4	5	17	21	1	48
NNW	0	1	3	16	24	3	47
TOTAL	5	29	55	89	113	18	309

PERIODS OF CALM (hours): 1

VARIABLE DIRECTION: 1

HOURS OF MISSING DATA: 44

TABLE 8 - continued

PERIOD OF RECORD: 86100101-86123124

STABILITY CLASS: G DT/DZ

ELEVATION: SPEED: SP380A DIRECTION: DR380A LAPSE: DT380A

WIND DIRECTION	WIND SPEED (mph)						TOTAL
	1-3	4-7	8-12	13-18	19-24	24	
N	0	0	12	17	11	0	40
NNE	1	1	5	4	5	0	16
NE	1	4	3	8	1	0	17
ENE	1	4	4	5	0	0	14
E	1	1	1	1	1	0	5
ESE	0	6	0	0	0	0	6
SE	1	4	1	1	0	0	7
SSE	3	4	9	0	0	0	16
S	0	1	3	0	0	0	4
SSW	2	0	1	3	1	0	7
SW	0	5	3	8	3	1	20
WSW	1	1	5	6	8	10	30
W	1	3	1	8	5	2	20
WNW	0	5	7	11	8	2	33
NW	0	2	7	13	5	0	27
NNW	0	2	15	21	8	2	48
TOTAL	12	43	77	106	55	17	310

PERIODS OF CALM (hours): 1

VARIABLE DIRECTION: 2

HOURS OF MISSING DATA: 44

TABLE 8 - continued

PERIOD OF RECORD: 86100101-86123124

STABILITY CLASS: ALL DT/DZ

ELEVATION: SPEED: SP380A DIRECTION: DR380A LAPSE: DT380A

WIND DIRECTION	WIND SPEED (mph)						TOTAL
	1-3	4-7	8-12	13-18	19-24	24	
N	0	12	41	54	55	3	165
NNE	2	18	25	32	7	0	84
NE	5	15	32	37	19	0	108
ENE	2	14	26	24	24	25	115
E	1	15	12	14	14	33	89
ESE	2	20	19	13	25	8	87
SE	2	16	18	13	9	8	66
SSE	5	14	33	3	4	4	63
S	0	9	18	20	5	2	54
SSW	3	3	26	41	28	9	110
SW	1	4	26	37	46	9	133
WSW	2	8	35	46	48	23	162
W	2	7	41	41	51	12	154
WNW	1	13	42	77	82	34	249
NW	0	14	55	99	67	37	272
NNW	1	11	55	99	71	16	253
TOTAL	29	203	504	650	555	223	2164

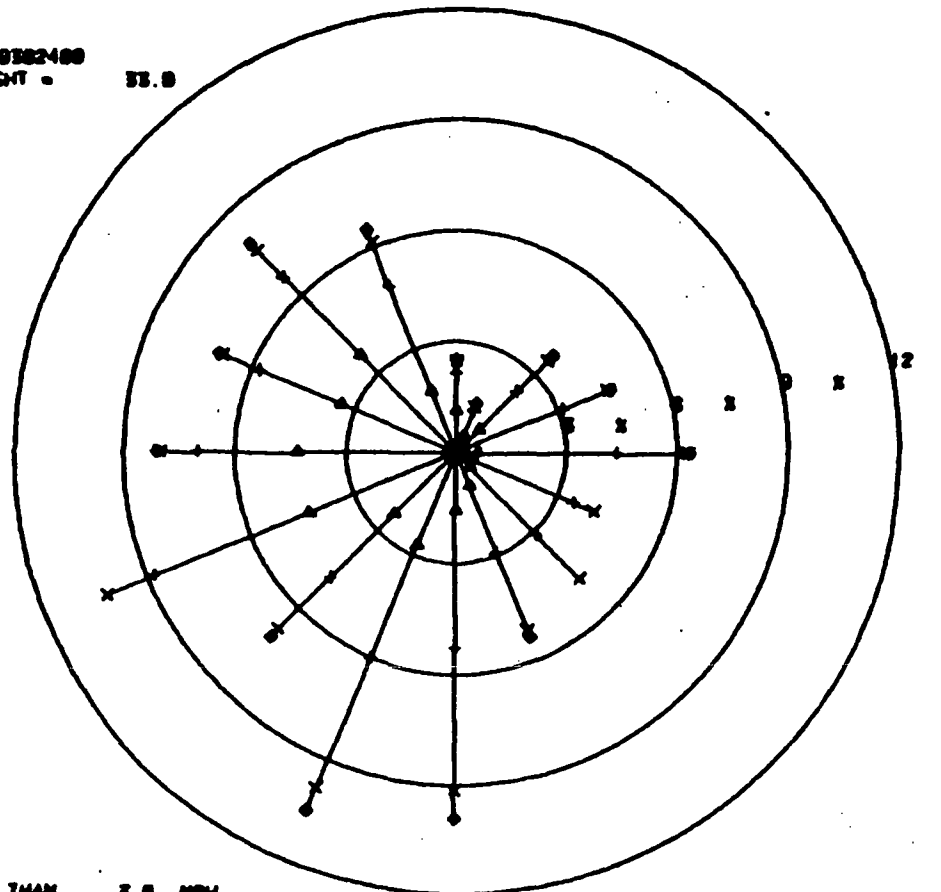
PERIODS OF CALM (hours): 1

VARIABLE DIRECTION: 29

HOURS OF MISSING DATA: 44

FIGURE 3
GPU NUCLEAR CORPORATION
OYSTER CREEK NUCLEAR GENERATING STATION
JULY 1986 - SEPTEMBER 1986 (33' LEVEL)

0007010100 0000102400
SPEED SENSOR HEIGHT = 33.0



WIND ROSE
(WINDS FROM)
N
↑

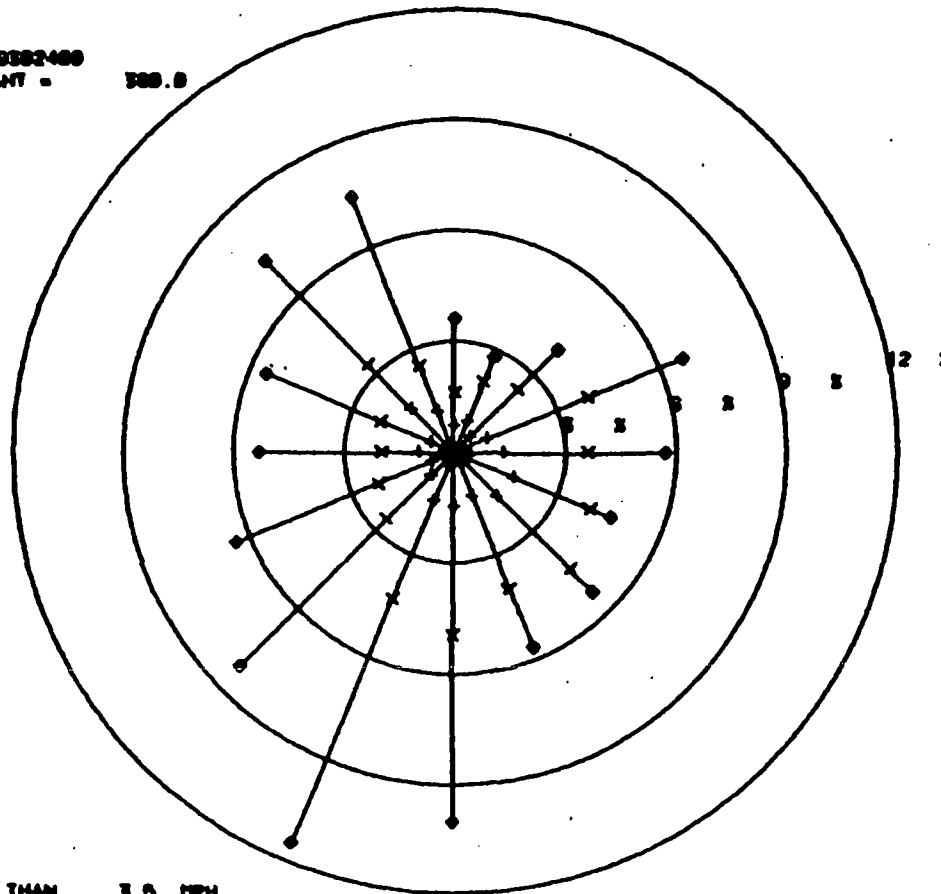
△ WIND SPEED LESS THAN 3.0 MPH
+ WIND SPEED LESS THAN 7.5 MPH
x WIND SPEED LESS THAN 12.5 MPH
◊ WIND SPEED GREATER THAN 12.5 MPH

0.4 PERCENT CALMS

SITE, OYSTER CREEK

FIGURE 4
GPU NUCLEAR CORPORATION
OYSTER CREEK NUCLEAR GENERATING STATION
JULY 1986 - SEPTEMBER 1986 (380' LEVEL)

000701000 0000002400
SPEED SENSOR HEIGHT = 300.0



WIND ROSE
(WINDS FROM)
N
↑

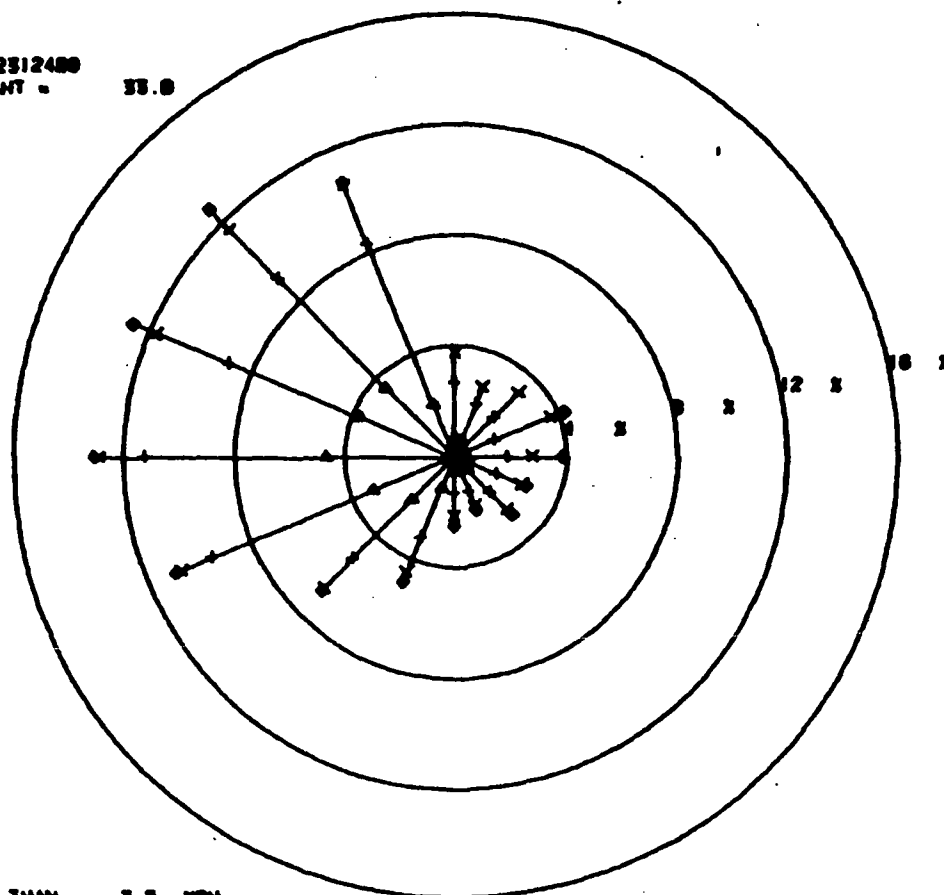
△ WIND SPEED LESS THAN 3.0 MPH
+ WIND SPEED LESS THAN 7.5 MPH
x WIND SPEED LESS THAN 12.0 MPH
◊ WIND SPEED GREATER THAN 12.0 MPH

0.0 PERCENT CALMS

SITE, OYSTER CREEK

FIGURE 5
GPU NUCLEAR CORPORATION
OYSTER CREEK NUCLEAR GENERATING STATION
OCTOBER 1986 - DECEMBER 1986 (33' LEVEL)

0010010100 0012312400
SPEED SENSOR HEIGHT = 33.0



WIND ROSE
(WINDS FROM)
N
↑

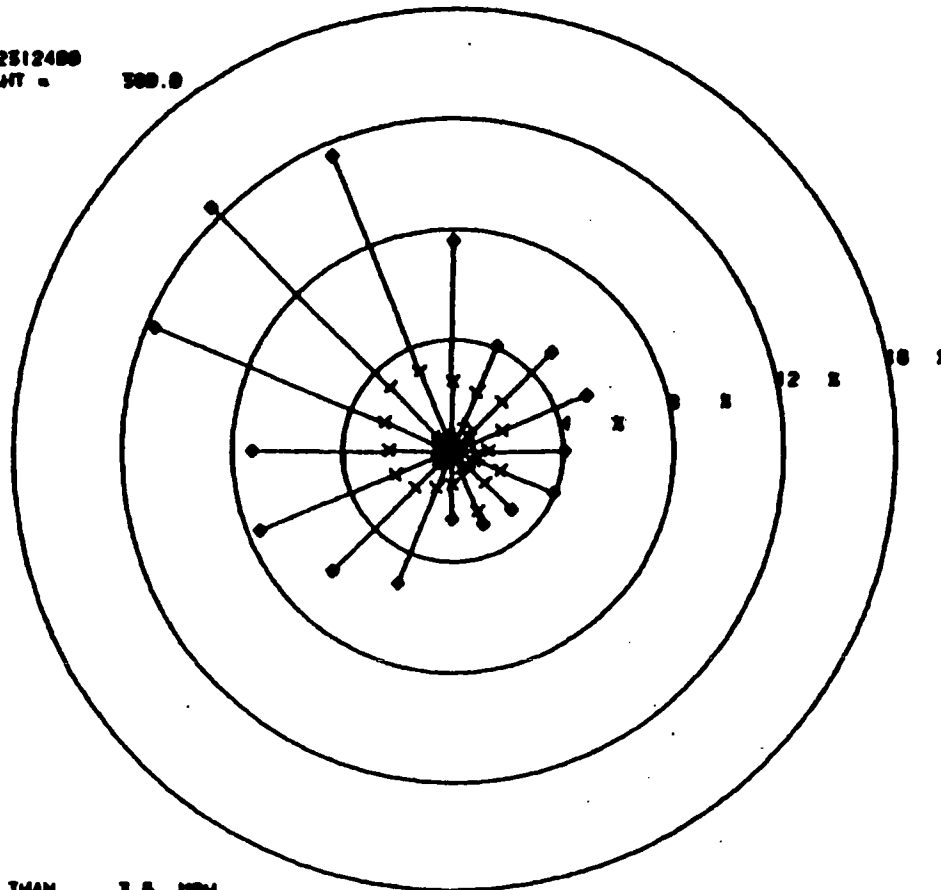
△ WIND SPEED LESS THAN 5.5 MPH
+ WIND SPEED LESS THAN 7.5 MPH
× WIND SPEED LESS THAN 12.5 MPH
◆ WIND SPEED GREATER THAN 12.5 MPH

0.8 PERCENT CALMS

SITE, OYSTER CREEK

FIGURE 6
GPU NUCLEAR CORPORATION
OYSTER CREEK NUCLEAR GENERATING STATION
OCTOBER 1986 - DECEMBER 1986 (380' LEVEL)

0610010100 0612312400
SPEED SENSOR HEIGHT = 300.0



WIND ROSE
(WINDS FROM)
N
↑

▲ WIND SPEED LESS THAN 3.5 MPH
+ WIND SPEED LESS THAN 7.5 MPH
x WIND SPEED LESS THAN 12.5 MPH
◆ WIND SPEED GREATER THAN 12.5 MPH

0.0 PERCENT CALMS

SITE: OYSTER CREEK

TABLE 9
 METEOROLOGICAL DATA RECOVERY PERCENTAGE
 FOR THE OYSTER CREEK NUCLEAR GENERATING STATION
 METEOROLOGICAL TOWER

MONTH	33' RECOVERY (%)	380' RECOVERY (%)
JUL 86	98	98
AUG 86	99	99
SEP 86	94	98
OCT 86	99	96
NOV 86	99	99
DEC 86	<u>95</u>	<u>95</u>
SIX MONTH AVERAGE	97	98

III. RADIOLOGICAL IMPACT ON MAN

RADIOLOGICAL IMPACT ON MAN

Two principle exposure pathways, inhalation and ingestion, are available to gaseous and liquid effluent isotopes, respectively, in the vicinity of Oyster Creek. Intakes via the inhalation pathway are from gaseous effluents, while the ingestion pathway is via consumption of shellfish and fish from Oyster Creek's discharge canal and Barnegat Bay as well as the consumption of garden vegetables. Additionally, a third means of exposure is from direct radiation from Oyster Creek effluents. The maximum hypothetical exposure to any individual from liquid pathways would occur to someone standing at the offsite boundary on the shore of the discharge canal (direct exposure) and who consumes shellfish and fish (ingestion). For purposes of this report this hypothetical individual is designated as Receptor #1. Maximum exposure due to gaseous pathways (inhalation, ingestion, and direct radiation) would depend on the predominant wind direction and the location of persons living in a sector around the plant. The direction and distance for this individual is given in Tables 10 and 11, pages 67 and 68.

The following tables represent the offsite dose summary for the two quarters of the six-month reporting period. The information provided was calculated using the models and methodology outlined in NRC Regulatory Guide 1.109 and proposed NRC Regulatory Guide 1.111. The analysis herein represents the maximum hypothetical liquid and gaseous pathway individual doses (Tables 10, 11, and 12, pages 67, 68, and 69). Also included are the dose limits as given in the Oyster Creek Technical Specifications, the age group, and the receptor location.

For both quarterly periods, the maximum individual exposures resulting from OCNGS operation from all pathways are below the Technical Specification limits.

TABLE 10
SUMMARY OF MAXIMUM INDIVIDUAL DOSES FOR THE
PERIOD FROM JULY 1, 1986 THROUGH SEPTEMBER 30, 1986

EFFLUENT	APPLICABLE ORGAN	ESTIMATED DOSE (mRem)	AGE GROUP	LOCATION	
				DIST (m)	DIR (TOWARD)
LIQUID*	-	-	-	-	-
LIQUID*	-	-	-	-	-
NOBLE GAS*	AIR DOSE (γ -mRAD)	-	-	-	-
NOBLE GAS*	AIR DOSE (β -mRAD)	-	-	-	-
IODINE & PARTICULATE	BONE	1.11 E-4	CHILD	966	SE

* NO RELEASES DURING THIS PERIOD.

TABLE 11
SUMMARY OF MAXIMUM INDIVIDUAL DOSES FOR THE
PERIOD FROM OCTOBER 1, 1986 THROUGH DECEMBER 31, 1986

REPORTING PERIOD - OCTOBER 1, 1986 THROUGH NOVEMBER 19, 1986

EFFLUENT	APPLICABLE ORGAN	ESTIMATED DOSE (mRem)	AGE GROUP	LOCATION DIST DIR (m) (TOWARD)
LIQUID	TOTAL BODY	6.71 E-6	ADULT	RECEPTOR 1
LIQUID	LIVER	6.71 E-6	ADULT	RECEPTOR 1
NOBLE GAS*	AIR DOSE (γ -mRAD)	-	-	- -
NOBLE GAS*	AIR DOSE (β -mRAD)	-	-	- -
IODINE & * PARTICULATE	-	-	-	- -

* NO RELEASES DURING THIS PERIOD.

REPORTING PERIOD - NOVEMBER 20, 1986 THROUGH DECEMBER 31, 1986

EFFLUENT	APPLICABLE ORGAN	ESTIMATED DOSE (mRem)	AGE GROUP	LOCATION DIST DIR (m) (TOWARD)	TECH SPEC LIMIT
LIQUID**	-	-	-	-	1.5 mRem/quarter
LIQUID**	-	-	-	-	5 mRem/quarter
NOBLE GAS	AIR DOSE (γ -mRAD)	1.35 E-3	γ -AIR DOSE	430 ESE	5 mRAD/quarter
NOBLE GAS	AIR DOSE (β -mRAD)	1.15 E-4	β -AIR DOSE	522 SE	10 mRAD/quarter
I-131, I-133 PARTICULATE	THYROID	9.47 E-4	INFANT	966 SE	7.5 mRem/quarter

** The data base is not complete per this date. Delays were encountered in obtaining Strontium-89 and Strontium-90 data for liquid releases made in the second quarter. An addendum to this report updating this section shall be prepared and submitted as soon as the data are available.

TABLE 12
SUMMARY OF MAXIMUM INDIVIDUAL DOSES FOR THE
PERIOD FROM JULY 1, 1986 THROUGH DECEMBER 31, 1986

EFFLUENT	APPLICABLE ORGAN	ESTIMATED SEMIANNUAL DOSE (mRem)	TECH SPEC LIMIT
LIQUID*	-	-	3 mRem/year
LIQUID*	-	-	10 mRem/year
NOBLE GAS	TOTAL BODY	2.75 E-3	500 mRem/year
NOBLE GAS	SKIN	2.83 E-3	3000 mRem/year
NOBLE GAS	AIR DOSE - γ (mRad)	1.35 E-3	10 mRAD/year
NOBLE GAS	AIR DOSE - β (mRad)	1.15 E-4	20 mRAD/year
H-3, I-131, I-133 & PARTICULATES	BONE/THYROID	1.06 E-3	1500 mRem/year
I-131, I-133 & PARTICULATES	BONE/THYROID	1.06 E-3	15 mRem/year

* The data base is not complete per this date. Delays were encountered in obtaining Strontium-89 and Strontium-90 data for liquid releases made in the second quarter. An addendum to this report updating this section shall be prepared and submitted as soon as the data are available.