

Effluent and Waste Disposal

Semi-Annual Report

January 1 - June 30, 1983

Facility Indian Point 3  
Licensee New York Power Authority

This information is provided in accordance with the requirements of Regulatory Guide 1.21. The numbered sections of this report reference corresponding sections of the subject Regulatory Guide, pages 1.21-10 to 12.

A. Supplemental Information

1. Regulatory Limits

Indian Point Unit 3 is presently subject to limits on radioactive waste releases that are set forth in sections 2.4 and 3.4 of Appendix B to Docket # 50-286 entitled "Environmental Technical Specification Requirements for Once-Through Cooling" (T.S.). The percentages of technical specification limits reported in Table 1A are the percent of one half of the quarterly limits specified in the ETSR.

2. Maximum Permissible Concentrations

a. Fission and Activation Gases

The quarterly limits for those specifications stated in the ETSR have been used to calculate the percent of technical specification limit. The K, L, M, N values for vent release points are based on the isotopic concentrations reported in Table 1C and on the individual isotopic K, L, M, N values in Table 2.4-5 of the ETSR. The percent of permissible discharges reported for IP-3 are based on assuming that IP-3 can use only 50% of the T.S. limits measured in Curies/ second and detailed in Memorandum of Understanding between NYPA and Con Edison.

b&c. Iodines & Particulates

The quarterly limits for iodine-131 and particulates with half-lives greater than 8 days in section 2.4.2.b.3 of the ETSR have been used as the maximum permissible concentration for the purpose of calculating the percent of technical specification limit. Again only one half of the permissible limit is used for IP-3 as stated in 2(a) above.

b&c Iodines and Particulates

Iodine-131 and particulate releases are quantified by collecting a continuous sample of ventilation air on a potassium-iodide impregnated activated charcoal cartridge and a glass-fiber filter paper. These samples are changed weekly as required in Table 2.4-2 of the ETSR and the concentration of isotopes found by analysis of these samples is combined with the volume of air discharged during the sampling period to calculate the amount of activity discharged.

For other iodine isotopes the ratio of each isotope to iodine-131 is determined for a monthly 24-hour sample. These ratios are then used, along with the total monthly discharge of iodine-131, to calculate the amount of these other isotopes discharged in this monthly period.

d. Liquid Effluents

A proportional composite sample of each batch discharge is taken and an isotopic analysis is performed in compliance with requirements specified in Table 2.4-1 of the ETSR. This isotopic concentration data is combined with information on volume discharged to determine the amount of each isotope discharged in this period.

Samples of continuous discharges have been taken and analyzed in compliance with Table 2.4-1 of the ETSR. This concentration data is combined with the volume discharged to calculate the total activity discharged.

d. Liquid Effluents

All liquid discharges from Indian Point are made through a common discharge canal with a minimum of 100,000 gpm dilution water. The isotopic content, excluding tritium and dissolved noble gas, of continuous and batch mode discharges from the site for the third and fourth calendar quarters have been added and a weighted average fraction of MPC has been calculated for this isotopic mixture as described in 10 CFR 20. The percent of applicable limit reported is the percent of MPC concentration of the time averaged diluted concentration for the calendar quarter.

The tritium limit has been established in the same manner as the other isotopes in liquid effluents.

Since there is no limit stated for dissolved noble gases in 10 CFR 20, we have established a limit of  $2.55 \times 10^{-3}$  uCi/cc based on a dose calculation that has been provided to USNRC inspectors.

3. Average Energy

The average energy (E) of the radionuclide mixture in releases of fission and activation gases was as follows:

1st Quarter:	$\bar{E}_Y = 2.23 \text{ E-3 MeV/dis}$	$\bar{E}_B = 2.28 \text{ E-1 MeV/dis}$
2nd Quarter:	$\bar{E}_Y = 4.62 \text{ E-2 MeV/dis}$	$\bar{E}_B = 1.50 \text{ E-1 MeV/dis}$

4. Measurements and Approximations of Total Radioactivity

a. Fission and Activation Gases

Analysis of effluent gases has been performed in compliance with the requirements of Table 2.4-2 of the ETSR. In the case of isolated tanks (batch release) the total activity discharged is based on an isotopic analysis of each batch and the volume of gas in the batch corrected to standard temperature and pressure.

Vapor containment purge and pressure relief discharges have been treated as batch releases. At least one complete isotopic concentration analysis of containment air is performed per month and this is applied to a gross analysis of the ventilation air performed prior to each pressure relief. Isotopic analyses for each vapor containment purge are taken prior to and during the purge. This information is combined with the volume of air in each discharge to calculate the radionuclide composition of these discharges.

The continuous discharges are based on weekly samples of ventilation air for isotopic content. This information is combined with total air volume discharged and the process radiation monitor readings to determine the continuous discharges.

5. Batch Releases

a. Liquid

1983

	<u>1st Quarter</u>	<u>2nd Quarter</u>
Number of Batch Releases	40	80
Total Time Period Batch Releases (Min.)	8.40E+3	1.65E+4
Maximum " " " " " "	5.05E+2	9.05E+2
Average " " " " " "	2.10E+2	2.06E+2
Minimum " " " " " "	1.05E+2	2.00E+1
Average Stream Flow (cfs)	2.60E+4	4.43E+4

b. Gaseous

Number of Batch Releases	0	20
Total Time Period Batch Releases (Min.)	N/A	5.13E+3
Maximum " " " " " "	N/A	2.76E+3
Average " " " " " "	N/A	2.57E+2
Minimum " " " " " "	N/A	3.00E+0

6. Abnormal Releases

a. Liquid  
None

b. Gaseous  
None

Indian Point 3  
EFFLUENT AND WASTE DISPOSAL  
SEMI - ANNUAL REPORT

B. GASEOUS EFFLUENTS  
FIRST AND SECOND  
QUARTERS, 1983

TABLE 1A

## EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (1983)

## GASEOUS EFFLUENTS - SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR %
A. Fission & Activation Gases				
1. Total release	Ci	2.95 E+1	5.30 E+2	2.50 E+1
2. Average release rate for period	uCi/sec	3.79 E0	6.74 E+1	
3. Percent of technical specification limit.	%	1.91 E-1	1.83 E+0	
B. Iodines				
1. Total iodine -131	Ci	<2.44 E-5	3.28 E-5	2.50 E+1
2. Average release rate for period	uCi/sec	<3.14 E-6	4.17 E-6	
3. Percent of technical specification limit.	%	5.73 E-4	4.36 E-3	
C. Particulates				
1. Particulates with half-lives > 8 days	Ci	5.91 E-6	4.55 E-5	2.50 E+1
2. Average release rate for period	uCi/sec	7.60 E-7	5.79 E-6	
3. Percent of technical specification limit	%	5.73 E-4	4.36 E-3	
4. Gross alpha radioactivity	Ci	<2.44 E-7	<3.16 E-7	
D. Tritium				
1. Total release	Ci	1.42 E-1	3.51 E-1	2.50 E+1
2. Average release rate for period	uCi/sec	1.83 E-2	4.47 E-2	
3. Percent of technical specification limit	%	NA	NA	

TABLE 1C  
EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (1983)  
GASEOUS EFFLUENTS-GROUND RELEASES

Nuclides Released	Unit	CONTINUOUS MODE		BATCH MODE	
		1st Quarter	2nd Quarter	1st Quarter	2nd Quarter
1. Fission Gases					
Krypton (Kr) 85	Ci	2.95 E+1			7.03 E-2
Krypton (Kr) 85m	Ci				6.89 E-4
Krypton (Kr) 87	Ci				
Krypton (Kr) 88	Ci				
Xenon (Xe) 133	Ci		4.71 E+2		5.74 E+1
Xenon (Xe) 133m	Ci				1.20 E+0
Xenon (Xe) 135	Ci				5.05 E-1
Xenon (Xe) 135m	Ci				
Xenon (Xe) 138	Ci				
Xenon (Xe) 131m	Ci				
Unidentified	Ci				
TOTAL FOR PERIOD	Ci	2.95 E+1	4.71 E+2		5.93 E+1
2. Iodines					
iodine (I) 131	Ci	<2.44 E-5	3.28 E-5		
iodine (I) 133	Ci				
Iodine (I) 135	Ci				
TOTAL FOR PERIOD	Ci	<2.44 E-5	3.28 E-5		

TABLE 1C -PAGE 2  
EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (1983)  
GASEOUS EFFLUENTS-GROUND RELEASES

Nuclides Released	Unit	CONTINUOUS MODE		BATCH MODE	
		1st Quarter	2nd Quarter	1st Quarter	2nd Quarter
3. Particulates					
Antimony (Sb) 125	Ci				
Barium-Lanthanum 140	Ci	2.49 E-7			
Cadmium (Cd) 109	Ci	7.20 E-7	2.79 E-6		
Cerium (Ce) 139	Ci				
Cerium (Ce) 141	Ci				
Cerium (Ce) 144	Ci	1.01 E-6			
Cesium (Cs) 134	Ci				
Cesium (Cs) 137	Ci	3.11 E-7	2.88 E-7		
Cobalt (Co) 57	Ci				
Cobalt (Co) 58	Ci				
Cobalt (Co) 60	Ci	1.39 E-7	2.17 E-6		
Iron (Fe) 55	Ci	3.48 E-6	6.02 E-6		
Manganese (Mn) 54	Ci				
Mercury (Hg) 203	Ci				
Neptunium (Np) 239	Ci				
Nickel (Ni) 63	Ci				
Strontium (Sr) 85	Ci				
Strontium (Sr) 89	Ci				
Strontium (Sr) 90	Ci				
Tin (Sn) 113	Ci				
Chromium (Cr) 51	Ci		1.46 E-6		
others					



Indian Point 3  
EFFLUENT AND WASTE DISPOSAL  
SEMI - ANNUAL REPORT

C. LIQUID EFFLUENTS  
FIRST AND SECOND  
QUARTERS, 1983

TABLE 2A

## EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (1983)

## LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR %
A. Fission and activation products				
1. Total release (not including tritium, gases, alpha)	Ci	6.04 E-2	1.99 E-1	2.50 E+1
2. Average diluted concentration during period	uCi/ml	4.07 E-10	6.14 E-10	
3. Percent of applicable limit	%	4.75 E-4	2.30 E-3	
B. Tritium				
1. Total release	Ci	6.08 E-1	2.16 E+1	2.50 E+1
2. Average diluted concentration during period	uCi/ml	4.08 E-9	6.67 E-8	
3. Percent of applicable limit	%	1.36 E-4	2.22 E-3	
C. Dissolved and entrained gases				
1. Total release	Ci	0.00 E0	7.16 E-2	2.50 E+1
2. Average diluted concentration during period	uCi/ml	0.00 E0	2.21 E-10	
3. percent of applicable limit	%	0.00 E0	8.67 E-6	
D. Gross alpha radioactivity				
1. Total release	Ci	< 1.18 E-4 < 5.73 E-4		2.50 E+1
E. Volume of waste release (prior to dilution)	liters	1.56 E+6	2.84 E+6	1.00 E+1
F. Volume of dilution water used during period	liters	1.49 E+11	3.24 E+11	1.00 E+1

TABLE 2B  
LIQUID EFFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT

NUCLIDES	UNIT	Continuous Mode		Batch Mode	
		1st QUARTER	2nd QUARTER	1st QUARTER	2nd QUARTER
Antimony (Sb) 122	Ci				2.21 E-4
Antimony (Sb) 124	Ci				
Antimony (Sb) 125	Ci		1.35 E-3	6.81 E-4	2.59 E-3
Barium/Lanthanum 140	Ci				1.69 E-3
Barium (Ba) 133	Ci		1.51 E-5		
Cadmium (Cd) 109	Ci		6.31 E-5	2.56 E-5	7.12 E-5
Cerium (Ce) 139	Ci		4.35 E-6	4.40 E-6	
Cerium (Ce) 141	Ci		3.85 E-6	3.11 E-6	3.04 E-4
Cerium (Ce) 144	Ci		2.92 E-5	2.25 E-5	7.48 E-6
Cesium (Cs) 134	Ci		9.40 E-5	3.52 E-4	4.98 E-3
Cesium (Cs) 136	Ci				5.05 E-4
Cesium (Cs) 137	Ci		2.77 E-4	9.33 E-4	1.01 E-2
Cesium (Cs) 138	Ci				6.18 E-5
Chromium (Cr) 51	Ci				2.22 E-3
Cobalt (Co) 57	Ci		4.75 E-5	3.54 E-5	1.96 E-4
Cobalt (Co) 58	Ci		2.97 E-3	3.56 E-3	3.00 E-3
Cobalt (Co) 60	Ci		2.73 E-2	1.26 E-2	4.77 E-2
Iodine (I) 131	Ci				8.12 E-4
Iodine (I) 132	Ci				
Iodine (I) 133	Ci				
Iodine (I) 134	Ci				
Iodine (I) 135	Ci				
Iron (Fe) 55	Ci			3.84 E-2	6.76 E-2
Iron (Fe) 59	Ci				6.26 E-4
Mercury (Hg) 203	Ci		9.01 E-6	1.24 E-5	
Neptunium(Np) 239	Ci				1.55 E-5
Manganese(Mn) 54	Ci		3.91 E-3	7.97 E-4	2.75 E-3
Manganese(Mn) 56	Ci				

TABLE 2B - Page 2

NUCLIDES				Continuous Mode		Batch Mode	
				1st QUARTER	2nd QUARTER	1st QUARTER	2nd QUARTER
Molybdenum	(Mo)	99	Ci				4.58 E-3
Nickel	(Ni)	63	Ci			2.59 E-3	2.93 E-3
Nickel	(Ni)	65	Ci				
Niobium	(Nb)	94	Ci				
Niobium	(Nb)	97	Ci				1.34 E-3
Phosphorus	(P)	32	Ci				
Radium	(Ra)	226	Ci				
Rubidium	(Rb)	88	Ci				
Rhodium	(Rh)	106	Ci				1.25 E-3
Ruthenium	(Ru)	103	Ci				3.41 E-6
Silver	(Ag)	110m	Ci			2.17 E-4	5.31 E-3
Sodium	(Na)	24	Ci				
Strontium	(Sr)	85	Ci			1.30 E-5	3.12 E-5
Strontium	(Sr)	89	Ci				7.16 E-6
Strontium	(Sr)	90	Ci				1.86 E-6
Strontium	(Sr)	91	Ci				
Strontium	(Sr)	92	Ci				9.74 E-6
Technetium	(Tc)	99m	Ci				4.05 E-4
Tin	(Sn)	113	Ci			9.15 E-6	4.54 E-5
Tungsten	(W)	187	Ci				
Yttrium	(Y)	88	Ci				
Yttrium	(Y)	91m	Ci				5.11 E-6
Yttrium	(Y)	92	Ci				
Zinc	(Zn)	65	Ci				5.68 E-4
Zirconium/Niobium		95	Ci			3.86 E-5	1.40 E-3
Zirconium	(Zr)	97	Ci				
TOTAL FOR PERIOD				Ci	3.61 E-2	6.04 E-2	1.63 E-1

NUCLIDES				Continuous Mode		Batch Mode	
				1st QUARTER	2nd QUARTER	1st Quarter	2nd QUARTER
Xenon	Xe	133	Ci	0.00 E0	1.82 E-5	0.00 E0	6.83 E-2
Xenon	Xe	135	Ci	0.00 E0	9.67 E-6	0.00 E0	3.29 E-3

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SEMI - ANNUAL REPORT

D. SOLID WASTE  
FIRST AND SECOND  
QUARTERS, 1983

TABLE 3

## EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT

## SOLID WASTE AND IRRADIATED FUEL SHIPMENTS

First and Second Quarter 1983

## 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 <sup>3</sup> Ci	1.82 E 1 7.04 E 2	1.00 E 2
b. Dry compressible waste, contaminated equip, etc.	m <sup>3</sup> Ci	2.13 E 2 2.62 E 0	1.00 E 2
c. Irradiated components, control rods, etc.	m <sup>3</sup> Ci	0. E 0. E	. E
d. Other (describe)	m <sup>3</sup> Ci	0. E 0. E	. E

## 2. Estimate of major nuclide composition (by type of waste)

a. CO-60	%	3.3 E 1
Cs-134	%	1.7 E 0
Cs-137	%	3.3 E 0
Fe-55	%	6.2 E 1
b. Co-60	%	5.1 E 1
Cs-134	%	4.0 E 0
Cs-137	%	1.0 E 1
Fe-55	%	3.5 E 1
	%	. E
	%	. E
	%	. E
	%	. E

## 3. Solid Waste Disposition

Number of Shipments10  
4Mode of TransportationTruck  
TruckDestinationBarnwell, South Carolina  
Richland, Washington

## B. IRRADIATED FUEL SHIPMENTS (Disposition)

Number of Shipments

NONE

Mode of TransportationDestination

Indian Point 3

EFFLUENT AND WASTE DISPOSAL

SEMI - ANNUAL REPORT

E. RADIOLOGICAL IMPACT ON MAN  
FIRST AND SECOND  
QUARTERS, 1983



Indian Point 3  
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F. METEOROLOGICAL DATA  
FIRST AND SECOND  
QUARTERS, 1983

IP DATA JAN-MAR 1983  
10 METER WIND SPEED & DIR. WITH 61-10 METER DELTA T  
PASQUILL CLASS A

WIND DIRECTION	01-03	04-07	08-12	13-18	19-24	>24	TOTAL
N	0.	19.	20.	4.	0.	0.	43.
NNE	1.	5.	3.	0.	0.	0.	9.
NE	0.	0.	0.	0.	0.	0.	0.
ENE	0.	0.	0.	0.	0.	0.	0.
E	0.	0.	0.	0.	0.	0.	0.
ESE	2.	1.	0.	0.	0.	0.	3.
SE	3.	2.	0.	0.	0.	0.	5.
SSE	9.	0.	0.	0.	0.	0.	9.
S	6.	5.	0.	0.	0.	0.	11.
SSW	2.	4.	0.	0.	0.	0.	6.
SW	0.	0.	0.	0.	0.	0.	0.
WSW	2.	2.	0.	0.	0.	0.	4.
W	1.	4.	2.	0.	0.	0.	7.
NNW	0.	11.	9.	0.	0.	0.	20.
NW	1.	14.	10.	3.	0.	0.	28.
NNW	0.	10.	7.	1.	0.	0.	18.

TOTAL 27. 77. 51. 8. 0. 0. 163.

CALM 0.

TOTAL HOURS IN MONTH = 2160

TOTAL DATA HOURS=TOTAL+CALM

IP DATA JAN-MAR 1983  
10 METER WIND SPEED & DIP. WITH 61-10 METER DELTA T  
PASQUILL CLASS B

WIND DIRECTION	01-03	04-07	08-12	13-18	19-24	>24	TOTAL
N	2.	11.	13.	1.	0.	0.	27.
NNE	1.	3.	3.	0.	0.	0.	7.
NNE	1.	1.	0.	0.	0.	0.	2.
ENE	0.	1.	0.	0.	0.	0.	1.
E	1.	0.	0.	0.	0.	0.	1.
ESE	0.	2.	0.	0.	0.	0.	2.
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	2.	1.	0.	0.	0.	0.	3.
W	1.	2.	1.	0.	0.	0.	4.
WNW	0.	4.	3.	0.	0.	0.	7.
NW	0.	9.	12.	1.	0.	0.	22.
NNW	0.	11.	4.	0.	0.	0.	15.

TOTAL 8. 45. 36. 2. 0. 0. 91.

CALM 0.

TOTAL HOURS IN MONTH = 2160

TOTAL DATA HOURS-TOTAL+CALM

IP DATA JAN-MAR 1983  
10 METER WIND SPEED & DIR. WITH 61-10 METER DELTA T  
PASQUILL CLASS C

WIND DIRECTION	01-03	04-07	08-12	13-18	19-24	>24	TOTAL
N	2.	10.	12.	0.	0.	0.	24.
NNE	2.	13.	10.	1.	0.	0.	26.
NE	2.	4.	0.	0.	0.	0.	6.
ENE	0.	0.	0.	0.	0.	0.	0.
E	0.	1.	0.	0.	0.	0.	1.
ESE	3.	0.	0.	0.	0.	0.	3.
SE	2.	1.	0.	0.	0.	0.	3.
SSE	3.	1.	0.	0.	0.	0.	4.
S	2.	1.	0.	0.	0.	0.	3.
SSW	2.	1.	0.	0.	0.	0.	3.
SW	2.	3.	0.	0.	0.	0.	5.
WSW	4.	2.	0.	0.	0.	0.	6.
W	2.	3.	1.	0.	0.	0.	6.
WNW	1.	4.	5.	0.	0.	0.	10.
NW	0.	4.	13.	1.	0.	0.	18.
NNW	1.	7.	13.	2.	0.	0.	23.

TOTAL 20. 55. 54. 4. 0. 0. 141.

CALM 0.

TOTAL HOURS IN MONTH = 2160

TOTAL DATA HOURS-TOTAL+CALM

\*\*\*\*\*NRC FORMAT FOR NUREG 1.21\*\*\*\*\*

IP DATA JAN-MAR 1983  
10 METER WIND SPEED & DIR. WITH 61-10 METER DELTA T  
PASQUILL CLASS D

WIND DIRECTION	WIND SPEED (MPH)						
	01-03	04-07	08-12	13-18	19-24	>24	TOTAL
N	24.	85.	48.	10.	0.	0.	167.
NNE	32.	161.	65.	1.	0.	0.	259.
NE	34.	47.	3.	0.	0.	0.	84.
ENE	11.	3.	1.	0.	0.	0.	15.
E	13.	4.	0.	0.	0.	0.	17.
ESE	10.	3.	0.	0.	0.	0.	13.
SE	8.	1.	0.	0.	0.	0.	9.
SSE	2.	5.	0.	0.	0.	0.	7.
S	6.	3.	0.	0.	0.	0.	9.
SSW	1.	0.	0.	0.	0.	0.	1.
SW	2.	5.	0.	0.	0.	0.	7.
WSW	5.	6.	0.	0.	0.	0.	11.
W	8.	33.	2.	0.	0.	0.	43.
WNW	10.	57.	19.	0.	0.	0.	86.
NW	1.	65.	67.	15.	0.	0.	148.
NNW	10.	59.	71.	7.	0.	0.	147.

TOTAL	177.	537.	276.	33.	0.	0.	1023.
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CALM 0.

TOTAL HOURS IN MONTH = 2160

TOTAL DATA HOURS=TOTAL+CALM

IP DATA JAN-MAR 1983  
10 METER WIND SPEED & DIR. WITH 61-10 METER DELTA T  
PASQUILL CLASS E

WIND DIRECTION	WIND SPEED (MPH)						
	01-03	04-07	08-12	13-18	19-24	>24	TOTAL
N	32.	37.	5.	15.	5.	0.	94.
NNE	57.	58.	16.	6.	1.	0.	138.
NE	40.	29.	1.	0.	0.	0.	70.
ENE	28.	1.	0.	0.	0.	0.	29.
E	21.	0.	0.	0.	0.	0.	21.
ESE	8.	2.	0.	0.	0.	0.	10.
SE	18.	1.	0.	0.	0.	0.	19.
SSE	12.	7.	0.	0.	0.	0.	19.
S	7.	0.	0.	0.	0.	0.	7.
SSW	3.	6.	0.	0.	0.	0.	9.
SW	3.	1.	0.	0.	0.	0.	4.
WSW	6.	2.	0.	0.	0.	0.	8.
W	3.	12.	0.	0.	0.	0.	15.
WNW	7.	8.	0.	0.	0.	0.	15.
NW	3.	1.	1.	0.	0.	0.	5.
NNW	5.	4.	4.	1.	0.	0.	14.

TOTAL	253.	169.	27.	22.	6.	0.	477.
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CALM 0.

TOTAL HOURS IN MONTH = 2160

TOTAL DATA HOURS=TOTAL+CALM

\*\*\*\*\*NRC FORMAT FOR NUREG 1.21\*\*\*\*\*

IP DATA JAN-MAR 1983  
10 METER WIND SPEED & DIR. WITH 61-10 METER DELTA T  
PASQUILL CLASS F

WIND DIRECTION	01-03	04-07	08-12	13-18	19-24	>24	TOTAL
N	9.	1.	1.	5.	0.	0.	16.
NNE	37.	16.	4.	5.	0.	0.	62.
NE	35.	22.	2.	0.	0.	0.	59.
ENE	14.	1.	0.	0.	0.	0.	15.
E	11.	0.	0.	0.	0.	0.	11.
ESE	2.	0.	0.	0.	0.	0.	2.
SE	6.	0.	0.	0.	0.	0.	6.
SSE	1.	0.	0.	0.	0.	0.	1.
S	1.	0.	0.	0.	0.	0.	1.
SSW	2.	0.	0.	0.	0.	0.	2.
SW	0.	0.	0.	0.	0.	0.	0.
WSW	1.	0.	0.	0.	0.	0.	1.
W	2.	0.	0.	0.	0.	0.	2.
WNW	0.	0.	0.	0.	0.	0.	0.
NW	1.	0.	0.	0.	0.	0.	1.
NNW	0.	0.	0.	0.	0.	0.	0.

TOTAL 122. 40. 7. 10. 0. 0. 179.

CALM 0.

TOTAL HOURS IN MONTH = 2160

TOTAL DATA HOURS=TOTAL+CALM

IP DATA JAN-MAR 1983  
10 METER WIND SPEED & DIR. WITH 61-10 METER DELTA T  
PASQUILL CLASS G

WIND DIRECTION	WIND SPEED (MPH)					TOTAL
	01-03	04-07	08-12	13-18	19-24	
N	3.	0.	0.	0.	0.	3.
NNE	5.	3.	0.	0.	0.	8.
NE	8.	14.	3.	0.	0.	25.
ENE	2.	0.	0.	0.	0.	2.
E	0.	0.	0.	0.	0.	0.
ESE	0.	0.	0.	0.	0.	0.
SE	0.	0.	0.	0.	0.	0.
SSE	0.	0.	0.	0.	0.	0.
S	0.	0.	0.	0.	0.	0.
SSW	0.	0.	0.	0.	0.	0.
SW	0.	0.	0.	0.	0.	0.
WSW	0.	0.	0.	0.	0.	0.
W	0.	0.	0.	0.	0.	0.
WNW	0.	0.	0.	0.	0.	0.
NW	0.	0.	0.	0.	0.	0.
NNW	0.	0.	0.	0.	0.	0.

TOTAL 16. 17. 3. 0. 0. 0. 36.

CALM 0.

TOTAL HOURS IN MONTH = 2160

TOTAL DATA HOURS=TOTAL+CALM



IP DATA APR-JUN 1983  
10 METER WIND SPEED & DIR. WITH 61-10 METER DELTA T  
PASQUILL CLASS A

WIND DIRECTION	WIND SPEED (MPH)						TOTAL
	01-03	04-07	08-12	13-18	19-24	>24	
N	6.	46.	28.	0.	0.	0.	80.
NNE	4.	9.	6.	0.	0.	0.	19.
NE	2.	5.	0.	0.	0.	0.	7.
ENE	1.	0.	0.	0.	0.	0.	1.
E	3.	4.	0.	0.	0.	0.	7.
ESE	3.	0.	0.	0.	0.	0.	3.
SE	13.	16.	0.	0.	0.	0.	29.
SSE	29.	47.	3.	0.	0.	0.	79.
S	27.	53.	1.	0.	0.	0.	81.
SSW	7.	20.	0.	0.	0.	0.	27.
SW	9.	10.	2.	0.	0.	0.	21.
WSW	1.	6.	2.	0.	0.	0.	9.
W	7.	5.	1.	0.	0.	0.	13.
WNW	3.	15.	3.	0.	0.	0.	21.
NW	0.	16.	11.	0.	0.	0.	27.
NNW	3.	18.	8.	0.	0.	0.	29.
TOTAL	118.	270.	65.	0.	0.	0.	453.

CALM 0.

TOTAL HOURS IN MONTH = 2184

TOTAL DATA HOURS=TOTAL+CALM

\*\*\*\*\*NRC FORMAT FOR NUREG 1.21\*\*\*\*\*

IP DATA APR-JUN 1983  
10 METER WIND SPEED & DIR. WITH 61-10 METER DELTA T  
PASQUILL CLASS B

WIND DIRECTION	01-03	04-07	08-12	13-18	19-24	>24	TOTAL
N	6.	17.	2.	0.	0.	0.	25.
NNE	5.	4.	2.	0.	0.	0.	11.
NE	2.	3.	0.	0.	0.	0.	5.
ENE	1.	0.	0.	0.	0.	0.	1.
E	0.	0.	0.	0.	0.	0.	0.
ESE	2.	0.	0.	0.	0.	0.	2.
SE	3.	2.	0.	0.	0.	0.	5.
SSE	8.	4.	0.	0.	0.	0.	12.
S	3.	1.	0.	0.	0.	0.	4.
SSW	0.	4.	0.	0.	0.	0.	4.
SH	2.	2.	0.	0.	0.	0.	4.
WSW	3.	2.	0.	0.	0.	0.	5.
W	3.	2.	0.	0.	0.	0.	5.
WNW	0.	4.	2.	0.	0.	0.	6.
NW	0.	4.	4.	0.	0.	0.	8.
NNW	2.	6.	2.	0.	0.	0.	10.

TOTAL 40. 55. 12. 0. 0. 0. 107.

CALM 0.

TOTAL HOURS IN MONTH = 2164

TOTAL DATA HOURS=TOTAL+CALM

\*\*\*\*\*NRC FORMAT FOR N'REG 1.21\*\*\*\*\*

IP DATA APR-JUN 1983  
10 METER WIND SPEED & DIR. WITH 61-10 METER DELTA T  
PASQUILL CLASS C

WIND DIRECTION	WIND SPEED (MPH)							TOTAL
	01-03	04-07	08-12	13-18	19-24	>24		
N	8.	10.	3.	0.	0.	0.	21.	
NNE	9.	4.	4.	0.	0.	0.	17.	
NE	4.	2.	0.	0.	0.	0.	6.	
ENE	1.	0.	0.	0.	0.	0.	1.	
E	1.	0.	0.	0.	0.	0.	1.	
ESE	1.	0.	0.	0.	0.	0.	1.	
SE	4.	4.	0.	0.	0.	0.	8.	
SSE	3.	4.	0.	0.	0.	0.	7.	
S	1.	0.	0.	0.	0.	0.	1.	
SSW	0.	3.	0.	0.	0.	0.	3.	
SW	3.	4.	0.	0.	0.	0.	7.	
WSW	1.	2.	0.	0.	0.	0.	3.	
W	0.	0.	0.	0.	0.	0.	0.	
WNW	0.	2.	2.	0.	0.	0.	4.	
NW	0.	6.	1.	0.	0.	0.	7.	
NNW	0.	5.	2.	0.	0.	0.	7.	

TOTAL 36. 46. 12. 0. 0. 0. 94.

CALM 0.

TOTAL HOURS IN MONTH = 2184

TOTAL DATA HOURS=TOTAL+CALM

\*\*\*\*\*NRC FORMAT FOR NUREG 1.2\*\*\*\*\*

IP DATA APR-JUN 1983  
10 METER WIND SPEED & DIR. WITH 61-10 METER DELTA T  
PASQUILL CLASS D

WIND DIRECTION	01-03	04-07	08-12	13-16	19-24	>24	TOTAL
N	23.	67.	27.	7.	0.	0.	124.
NNE	29.	71.	53.	3.	0.	0.	156.
NE	29.	18.	0.	0.	0.	0.	47.
ENE	26.	6.	0.	0.	0.	0.	32.
E	28.	11.	1.	0.	0.	0.	40.
ESE	23.	6.	0.	0.	0.	0.	29.
SE	57.	14.	0.	0.	0.	0.	71.
SSE	35.	22.	0.	0.	0.	0.	57.
S	14.	14.	0.	0.	0.	0.	28.
SSW	8.	8.	0.	0.	0.	0.	16.
SH	9.	2.	0.	0.	0.	0.	11.
WSW	3.	8.	0.	0.	0.	0.	11.
W	4.	7.	0.	0.	0.	0.	11.
WNW	2.	22.	6.	0.	0.	0.	30.
NW	1.	16.	4.	0.	0.	0.	21.
NNW	6.	39.	9.	0.	0.	0.	54.

TOTAL 297. 331. 100. 10. 0. 0. 738.

CALM 0.

TOTAL HOURS IN MONTH = 2184

TOTAL DATA HOURS=TOTAL+CALM

\*\*\*\*\*NRC FORMAT FOR NUREG 1.21\*\*\*\*\*

IP DATA APR-JUN 1983  
10 METER WIND SPEED & DIR. WITH 61-10 METER DELTA T  
PASQUILL CLASS E

WIND DIRECTION	01-03	04-07	08-12	13-18	19-24	>24	TOTAL
N	17.	13.	0.	0.	0.	0.	30.
NNE	38.	42.	0.	0.	0.	0.	80.
NE	69.	13.	0.	0.	0.	0.	82.
ENE	69.	1.	0.	0.	0.	0.	70.
E	51.	0.	0.	0.	0.	0.	51.
ESE	28.	2.	0.	0.	0.	0.	30.
SE	43.	2.	0.	0.	0.	0.	45.
SSE	45.	11.	0.	0.	0.	0.	56.
S	12.	22.	0.	0.	0.	0.	34.
SSW	8.	13.	1.	0.	0.	0.	22.
SH	1.	1.	0.	0.	0.	0.	2.
WSW	2.	1.	0.	0.	0.	0.	3.
W	2.	2.	0.	0.	0.	0.	4.
WNW	0.	2.	0.	0.	0.	0.	2.
NW	0.	1.	0.	0.	0.	0.	1.
NNW	6.	1.	0.	0.	0.	0.	7.

TOTAL 391. 127. 1. 0. 0. 0. 519.

CALM 1.

TOTAL HOURS IN MONTH = 2184

TOTAL DATA HOURS=TOTAL+CALM

\*\*\*\*\*NRC FORMAT FOR NUREG 1.21\*\*\*\*\*

IP DATA APR-JUN 1983  
10 METER WIND SPEED & DIR. WITH 61-10 METER DELTA T  
PASQUILL CLASS F

WIND DIRECTION	01-03	04-07	08-12	13-18	19-24	>24	TOTAL
N	3.	0.	0.	0.	0.	0.	3.
NNE	46.	9.	0.	0.	0.	0.	55.
NE	88.	16.	0.	0.	0.	0.	104.
ENE	30.	0.	0.	0.	0.	0.	30.
E	14.	0.	0.	0.	0.	0.	14.
ESE	7.	0.	0.	0.	0.	0.	7.
SE	2.	0.	0.	0.	0.	0.	2.
SSE	5.	0.	0.	0.	0.	0.	5.
S	3.	0.	0.	0.	0.	0.	3.
SSW	1.	1.	0.	0.	0.	0.	2.
SW	0.	0.	0.	0.	0.	0.	0.
WSW	1.	0.	0.	0.	0.	0.	1.
W	0.	0.	0.	0.	0.	0.	0.
WNW	1.	0.	0.	0.	0.	0.	1.
W	1.	0.	0.	0.	0.	0.	1.
NNW	1.	0.	0.	0.	0.	0.	1.

TOTAL 203. 26. 0. 0. 0. 0. 229.

CALM 0.

TOTAL HOURS IN MONTH = 2184

TOTAL DATA HOURS=TOTAL+CALM



\*\*\*\*\*NRC FORMAT FOR NUREG 1.21\*\*\*\*\*

IP DATA APR-JUN 1983  
10 METER WIND SPEED & DIR. WITH 61-10 METER DELTA T  
PASQUILL CLASS G

WIND DIRECTION	WIND SPEED (MPH)							TOTAL
	01-03	04-07	08-12	13-18	19-24	>24		
N	2.	0.	0.	0.	0.	0.	2.	
NNE	5.	1.	0.	0.	0.	0.	6.	
NE	7.	8.	0.	0.	0.	0.	15.	
ENE	4.	0.	0.	0.	0.	0.	4.	
E	0.	0.	0.	0.	0.	0.	0.	
ESE	1.	0.	0.	0.	0.	0.	1.	
SE	0.	0.	0.	0.	0.	0.	0.	
SSE	0.	0.	0.	0.	0.	0.	0.	
S	0.	0.	0.	0.	0.	0.	0.	
SSW	0.	0.	0.	0.	0.	0.	0.	
SW	0.	0.	0.	0.	0.	0.	0.	
WSW	0.	0.	0.	0.	0.	0.	0.	
W	0.	0.	0.	0.	0.	0.	0.	
WNW	0.	0.	0.	0.	0.	0.	0.	
WW	0.	0.	0.	0.	0.	0.	0.	
NNW	0.	0.	0.	0.	0.	0.	0.	

TOTAL 19. 9. 0. 0. 0. 0. 28.

CALM 0.

TOTAL HOURS IN MONTH = 2184

TOTAL DATA HOURS=TOTAL+CALM