Effluent and Waste Disposal

Semi-Annual Report

July 1, 1984 - December 31, 1984

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.

8503250463 850228
PDR ADOCK 05000286
R PDR

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 2.55×10^{-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:

3rd Quarter:	E_β = 1.54E-1 MeV/dis	E_γ = 1.72E-1 MeV/dis
4th Quarter:	E_β = 5.12E-2 MeV/dis	E_γ = 6.94E-2 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.

b&c Iodines and Particulates

Indine-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 taken and an isotopic analysis is performed in compliance with requirements specified in Table 2.4-1 of the ESTR. 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.

5. Batch Releases

a. Liquid

	1984	
	3rd Quarter	4th Quarter
Number of Batch Releases	113	58
Total Time Period Batch Releases (Min.)	17389	15677
Maximum " " " " " "	368	600
Average " " " " " "	154	270
Minimum " " " " " "	45	93
Average Stream Flow (cfs)	32950	37050

b. Gaseous

Number of Batch Releases	23	44
Total Time Period Batch Releases (Min.)	4856	23797
Maximum " " " " " "	388	8262
Average " " " " " "	211	541
Minimum " " " " " "	75	13

6. Abnormal Releases

a. Liquid
None

b. Gaseous
None

Indian Point 3

EFFLUENT AND WASTE DISPOSAL

SEMI - ANNUAL REPORT

B. GASEOUS EFFLUENTS
THIRD AND FOURTH
QUARTERS, 1984

TABLE 1A

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (1984)

GASEOUS EFFLUENTS - SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3rd	QUARTER 4th	EST. TOTAL ERROR %
A. Fission & Activation Gases				
1. Total release	Ci	6.11E+2	5.92E+2	2.50E+1
2. Average release rate for period	uCi/sec	7.69E+1	7.45E+1	
3. Percent of technical specification limit.	%	2.17E0	2.38E0	
B. Iodines				
1. Total iodine -131	Ci	2.98E-4	1.61E-2	2.50E+1
2. Average release rate for period	uCi/sec	3.75E-5	2.03E-3	
3. Percent of technical specification limit.	%	3.19E-2	1.54E0	
C. Particulates				
1. Particulates with half-lives 8 days	Ci	3.36E-4	1.62E-2	2.50E+1
2. Average release rate for period	uCi/sec	4.23E-5	2.04E-3	
3. Percent of technical specification limit	%	3.19E-2	1.54E0	
4. Gross alpha radioactivity	Ci	< 3.03E-1	< 3.23E-1	
D. Tritium				
1. Total release	Ci	3.83E-1	4.10E-1	2.50E+1
2. Average release rate for period	uCi/sec	4.82E-2	5.16E-2	
3. Percent of technical specification limit	%	NA	NA	

TABLE 1C
EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (1984)
GASEOUS EFFLUENTS-GROUND RELEASES

Nuclides Released	Unit	CONTINUOUS MODE 3rd Quarter	CONTINUOUS MODE 4th Quarter	BATCH MODE 3rd Quarter	BATCH MODE 4th Quarter
1. Fission Gases					
Krypton (Kr) 85	Ci			2.89E+0	1.28E+1
Krypton (Kr) 85m	Ci		4.68E+0	1.53E-1	3.00E-1
Krypton (Kr) 87	Ci			2.00E-2	4.00E-3
Krypton (Kr) 88	Ci			8.26E-2	3.81E-1
Xenon (Xe) 133	Ci	2.35E+2	1.00E+2	3.52E+2	3.86E+2
Xenon (Xe) 133m	Ci			1.90E+0	8.52E+0
Xenon (Xe) 135	Ci	1.28E+1	5.45E+1	3.09E+0	1.17E+1
Xenon (Xe) 135m	Ci			6.00E-2	
Xenon (Xe) 138	Ci				
Xenon (Xe) 131m	Ci		3.86E+0	2.80E+0	8.85E+0
Unidentified	Ci				
TOTAL FOR PERIOD	Ci	2.48E+2	1.63E+2	3.63E+2	4.29E+2
2. Iodines					
iodine (I) 131	Ci	2.98E-4	2.24E-3		
iodine (I) 133	Ci	6.09E-5	<2.00E-3		
Iodine (I) 135	Ci	<5.25E-4	1.39E-2		
TOTAL FOR PERIOD	Ci	3.59E-4	1.61E-2		

TABLE 1C -PAGE 2
EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (1984)
GASEOUS EFFLUENTS-GROUND RELEASES

Nuclides Released	Unit	CONTINUOUS MODE 3rd Quarter	CONTINUOUS MODE 4th Quarter	BATCH MODE 3rd Quarter	BATCH MODE 4th Quarter
3. Particulates					
Antimony (Sb) 125	Ci		7.16E-7		
Barium-Lanthanum 140	Ci				
Cadmium (Cd) 109	Ci	1.23E-5	1.94E-6		
Cerium (Ce) 139	Ci	1.27E-7	1.80E-8		
Cerium (Ce) 141	Ci				
Cerium (Ce) 144	Ci		1.36E-6		
Cesium (Cs) 134	Ci				
Cesium (Cs) 137	Ci	1.95E-6	2.56E-6		
Cobalt (Co) 57	Ci	3.77E-8	3.54E-7		
Cobalt (Co) 58	Ci		1.35E-5		
Cobalt (Co) 60	Ci	2.35E-5	3.09E-5		
Iodine (I) 131	Ci				
Iron (Fe) 55	Ci		1.47E-6		
Manganese (Mn) 54	Ci				
Mercury (Hg) 203	Ci	1.39E-7			
Neptunium (Np) 239	Ci				
Nickel (Ni) 63	Ci				
Strontium (Sr) 85	Ci				
Strontium (Sr) 89	Ci				
Strontium (Sr) 90	Ci	5.83E-8			
Tin (Sn) 113	Ci				
Chromium (Cr) 51	Ci				
Barium (Ba) 133	Ci		4.46E-8		
TOTAL	Ci	3.81E-5	5.29E-5		

Indian Point 3

EFFLUENT AND WASTE DISPOSAL

SEMI - ANNUAL REPORT

C. LIQUID EFFLUENTS
THIRD AND FOURTH
QUARTERS, 1984

TABLE 2A

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (1984)

LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3rd	QUARTER 4th	EST. TOTAL ERROR %
A. Fission and activation products				
1. Total release (not including tritium, gases, alpha)	Ci	4.53E-1	5.11E-1	2.50E+1
2. Average diluted concentration during period	uCi/ml	1.91E-9	2.85E-9	
3. Percent of applicable limit	%	1.02E-2	4.63E-2	
B. Tritium				
1. Total release	Ci	2.80E+2	6.86E+1	2.50E+1
2. Average diluted concentration during period	uCi/ml	1.18E-6	3.83E-7	
3. Percent of applicable limit	%	3.93E-2	1.28E-2	
C. Dissolved and entrained gases				
1. Total release	Ci	9.40E0	1.38E0	2.50E+1
2. Average diluted concentration during period	uCi/ml	3.97E-8	7.71E-9	
3. percent of applicable limit	%	1.56E-3	3.02E-4	
D. Gross alpha radioactivity				
1. Total release	Ci	<5.54E-3	<2.73E-3	2.50E+1
E. Volume of waste release (prior to dilution)	liters	8.78E+6	1.98E+6	1.00E+1
F. Volume of dilution water used during period	liters	2.37E+11	1.79E+11	1.00E+1

TABLE 2B

LIQUID EFFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT

NUCLIDES	UNIT	Continuous Mode 3rd QUARTER	Continuous Mode 4th QUARTER	Batch Mode 3rd QUARTER	Batch Mode 4th QUARTER
Antimony (Sb) 122	Ci			1.60E-4	8.49E-5
Antimony (Sb) 124	Ci			5.11E-4	1.52E-3
Antimony (Sb) 125	Ci		2.36E-4	2.02E-2	9.21E-3
Barium/Lanthanum 140	Ci			1.87E-5	9.02E-6
Barium (Ba) 133	Ci			2.21E-5	8.72E-6
Cadmium (Cd) 109	Ci			9.64E-5	5.63E-5
Cerium (Ce) 139	Ci			3.05E-3	2.32E-4
Cerium (Ce) 141	Ci			2.97E-6	
Cerium (Ce) 144	Ci			6.76E-5	6.59E-5
Cesium (Cs) 134	Ci		6.35E-6	5.71E-2	6.48E-2
Cesium (Cs) 136	Ci			9.93E-5	9.13E-4
Cesium (Cs) 137	Ci	7.44E-4	1.99E-5	1.11E-1	1.17E-1
Cesium (Cs) 138	Ci				
Chromium (Cr) 51	Ci			3.58E-4	1.50E-3
Cobalt (Co) 57	Ci			5.38E-5	8.89E-5
Cobalt (Co) 58	Ci		3.37E-4	5.39E-2	1.01E-1
Cobalt (Co) 60	Ci	3.18E-5	6.74E-3	6.58E-2	1.16E-2
Iodine (I) 131	Ci	3.11E-5	4.74E-5	2.04E-3	1.91E-2
Iodine (I) 132	Ci				
Iodine (I) 133	Ci	6.90E-6		6.91E-5	3.11E-4
Iodine (I) 134	Ci				
Iodine (I) 135	Ci				
Iron (Fe) 55	Ci			1.11E-1	7.04E-2
Iron (Fe) 59	Ci				3.33E-4
Mercury (Hg) 203	Ci			4.47E-6	
Neptunium (Np) 239	Ci				
Manganese (Mn) 54	Ci	1.65E-6	8.44E-5	2.01E-5	6.17E-5
Manganese (Mn) 56	Ci				2.32E-6

NUCLIDES			UNIT	Continuous Mode 3rd QUARTER	Continuous Mode 4th QUARTER	Batch Mode 3rd QUARTER	Batch Mode 4th QUARTER
Molybdenum	(Mo)	99	Ci				
Nickel	(Ni)	63	Ci			2.38E-2	1.03E-1
Nickel	(Ni)	65	Ci				
Niobium	(Nb)	94	Ci				
Niobium	(Nb)	97	Ci				
Phosphorus	(P)	32	Ci				
Radium	(Ra)	226	Ci				
Rubidium	(Rb)	88	Ci			4.91E-4	
Rhodium	(Rh)	106	Ci			3.95E-4	
Ruthenium	(Ru)	103	Ci			9.00E-6	6.93E-6
Silver	(Ag)	110m	Ci				1.47E-5
Sodium	(Na)	24	Ci			1.56E-5	1.23E-5
Strontium	(Sr)	85	Ci		5.03E-6	2.08E-4	5.47E-6
Strontium	(Sr)	89	Ci				
Strontium	(Sr)	90	Ci			1.04E-4	9.80E-6
Strontium	(Sr)	91	Ci				
Strontium	(Sr)	92	Ci				
Technetium	(Tc)	99m	Ci			3.92E-6	
Tin	(Sn)	113	Ci			5.49E-6	2.17E-5
Tungsten	(W)	187	Ci				
Yttrium	(Y)	88	Ci				
Yttrium	(Y)	91m	Ci				
Yttrium	(Y)	92	Ci			4.44E-5	3.46E-5
Zinc	(Zn)	65	Ci			1.67E-5	
Zirconium/Niobium		95	Ci			5.11E-6	2.11E-4
Zirconium	(Zr)	97	Ci				1.07E-5
Tellurium	(Te)	129	Ci			6.67E-4	1.55E-3

TABLE 2B

PAGE 3

NUCLIDES			UNIT	Continuous Mode 3rd QUARTER	Continuous Mode 4th QUARTER	Batch Mode 3rd QUARTER	Batch Mode 4th QUARTER
OTHERS							
Ruthenium	Ru	105	Ci				1.00E-4
Lanthanum	La	142	Ci			1.68E-5	
Praseodymium	Pr	144	Ci			7.50E-4	
Tellurium	Te	132	Ci			5.15E-6	
TOTAL FOR PERIOD				8.15E-4	7.48E-3	4.52E-1	5.03E-1
Xenon	Xe	133	Ci	7.38E-5	1.24E-4	9.37E0	1.37E0
Xenon	Xe	135	Ci	2.31E-6	8.24E-5	2.56E-2	1.35E-2

Indian Point 3

EFFLUENT AND WASTE DISPOSAL

SEMI - ANNUAL REPORT

D. SOLID WASTE
THIRD AND FOURTH
QUARTERS, 1984

TABLE 3

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (1984)

SOLID WASTE AND IRRADIATED FUEL SHIPMENTS

Third and Fourth Quarters, 1984

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	1.67E+1 9.62E+0	5.0E+1
b. Dry compressible waste, contaminated equip, etc.	m^3 Ci	8.17E+1 1.90E+0	5.0E+1
c. Irradiated components, control rods, etc.	m^3 Ci		
d. Other (describe)	m^3 Ci		

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

a.	Fe-55	%	2.9E+1
	Co-60	%	4.2E+1
	Ni-63	%	2.0E+0
	Cs-134	%	6.0E+0
	Cs-137	%	2.1E+1
		%	
b.	Fe-55	%	6.6E+1
	Co-60	%	3.2E+1
	Ni-63	%	1.0E+0
	Cs-137	%	1.0E+0
		%	
		%	

3. Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
1	Truck	Barnwell, South Carolina
8	Truck	Richland, Washington

B. IRRADIATED FUEL SHIPMENTS (Disposition)

NONE

Indian Point 3

EFFLUENT AND WASTE DISPOSAL

SEMI - ANNUAL REPORT

E. RADIOLOGIAL IMPACT ON MAN
THIRD AND FOURTH
QUARTERS, 1984

RADIOLOGICAL IMPACT EVALUATION

Doses from noble gas immersion, inhalation, ground desposition, and vegetation ingestion were evaluated for the nearest residence likely to be occupied in the critical sector for each pathway and were combined to provide a conservative determination of the maximum individual offsite radiation dose from these pathways. Doses were also evaluated for an individual ingesting milk and meat from a cow located about 8.9 miles to the ESE. The GASPAR computer code used to perform these calculations incorporates the models and parameters presented in Regulatory Guide 1.109. Noble gas releases were considered to be either batch or continuous. Noble gas releases from containment pressure reliefs and purges, and releases such as those from gas decay tanks, were treated as batch releases. Batch releases were evaluated using the appropriate dispersion parameters for intermittent releases as calculated by the NRC XOQDOQ computer program based on the actual meteorological conditions for the six month release period. Continuous releases of noble gas, iodines and particulates from ventillation air were evaluated using the appropriate XOQDOQ values for continuous releases, also based on the actual meterological conditions for the six month release period. Both batch and continuous releases were evaluated as ground level releases.

Integrated doses for the population within 50 miles of Indian Point from gaseous effluents were computed based on population data contained in the Indian Point Unit No.3 FSAR. The GASPAR computer code was used to perform these calculations.

Dose calculations for liquid pathways to individuals and populations are computed using the LADTAP computer program which incorporates the calculational model and parameters that are presented in Regulatory Guide 1.109.

The fish, invertebrate, algae, seafood, shoreline, swimming, and boating pathways are calculated for the adult, teenager, child and infant. These calculations are performed for reasons such as estimating the population seafood consumption dose, the population recreation dose, and cost-benefit analysis.

Gaseous releases of Carbon-14 were calculated based on a release rate of 9.5 Ci/GW(e) - yr, as determined by measurements performed specifically for Indian Point Unit 3. These releases were apportioned as 92% continuous releases and 8% batch releases. The total measured release rate is slightly higher than the 8.0 Ci/yr assumed by NUREG-0017, "Calculation Effluents from Pressurized Water Reactors."

Indian Point Unit 3
RADIOLOGICAL IMPACT ON MAN

July - December 1984

(Reference Regulatory Guide 1.21, page 12)

A. Maximum Individual Doses

(1) Pathways (Gaseous)	Total Body mRem	Skin mRem	Thyroid mRem	Bone mRem
(a) Noble Gas Immersion*				
(i) Batch Releases	5.40E-2	1.60E-1	N/A	N/A
(ii) Continuous Releases	2.42E-2	6.64E-2	N/A	N/A
(b) Inhalation*	8.42E-5(T)	N/A	5.98E-3(C)	2.01E-5(C)
(c) Ground Deposition	5.52E-4	6.50E-4	N/A	N/A
(d) Milk Ingestion **	1.24E-3(I)	N/A	2.22E-3(I)	5.82E-3(I)
(e) Meat Ingestion **	1.91E-4(C)	N/A	1.96E-4(C)	9.53E-4(C)
(f) Vegetable Ingestion *	3.23E-1(C)	N/A	3.37E-1(C)	1.16E+0(C)

(2) Pathways (Liquid)

(a) All — See Attached "LADTAP" printout Attachment I

(T) Teen is critical age group
(C) Child is critical age group
(I) Infant is critical age group

NA = Not Applicable

* Nearest resident used for calculations
** Nearest cow (8.9 miles ESE) used for calculations

B. Population Doses — Third and Fourth Quarters 1984

(1) Pathways (Gaseous)

	Total Body (man-rem)	Thyroid (man-throid rem)
(a) Noble Gas Immersion		
(i) Batch Release	9.24E-1	9.24E-1
(ii) Continuous Release	6.36E-1	6.36E-1
(b) Inhalation	4.47E-3	2.59E-1
(c) Ground Deposition	1.05E-2	1.05E-2
(d) Vegetables	2.55E-1	2.79E-1
(e) Milk	1.61E-1	2.03E-1
(f) Meat	1.63E-2	1.65E-2
TOTAL	2.01E+0	2.33E+0

(2) Pathways (Liquid)

(a) All 5.11E+0

See attached "LADTAP" printout
Attachment I

C. Average Doses to Individuals (1.92E+7 population from LADTAP)

(1) Pathways

(a) Liquid-Total Body 2.66E-4 mRem

(b) Gaseous-Total Body 1.05E-4 mRem

THIRD/FOURTH QUARTERS 1984

LADTAP Liquid Pathway Doses

* * * AS LOW AS REASONABLY ACHIEVABLE * * *

A D U L T D O S E S

DOSE (MREM PER YEAR INTAKE)

PATHWAY	SKIN	BONE	LIVER	TOTAL BODY	THYROID	KIDNEY	LUNG	GI-LLI
FISH		2.71E-01	4.37E-01	3.16E-01	2.87E-03	1.45E-01	4.83E-02	1.04E-02
INVERTEBRATE		5.23E-03	5.51E-03	4.03E-03	2.29E-04	1.77E-03	5.79E-04	1.89E-03
DRINKING		7.63E-05	7.84E-05	5.74E-05	4.87E-05	2.55E-05	8.45E-06	1.30E-05
SHORELINE	1.86E-03	1.59E-03	1.59E-03	1.59E-03	1.59E-03	1.59E-03	1.59E-03	1.59E-03
SWIMMING	.0	1.57E-05	1.57E-05	1.57E-05	1.57E-05	1.57E-05	1.57E-05	1.57E-05
BOATING	.0	1.57E-05	1.57E-05	1.57E-05	1.57E-05	1.57E-05	1.57E-05	1.57E-05
TOTAL	1.86E-03	2.77E-01	4.44E-01	3.22E-01	4.78E-03	1.49E-01	5.05E-02	1.39E-02

	USAGE (KG/YR,HR/YR)	DILUTION	TIME(HR)
FISH	21.0	5.0	25.00
INVERTEBRATE	5.0	5.0	25.00
DRINKING	730.0	500.0	112.00
SHORELINE	50.0	5.0	1.00
SWIMMING	50.0	5.0	1.00
BOATING	100.0	5.0	1.00

SHOREWIDTH FACTOR= .2

T E E N A G E R D O S E S

DOSE (MREM PER YEAR INTAKE)

PATHWAY	SKIN	BONE	LIVER	TOTAL BODY	THYROID	KIDNEY	LUNG	GI-LLI
FISH		2.86E-01	4.50E-01	1.79E-01	2.68E-03	1.49E-01	5.74E-02	7.67E-03
INVERTEBRATE		5.45E-03	5.66E-03	2.39E-03	2.13E-04	1.80E-03	6.87E-04	1.30E-03
DRINKING		7.31E-05	7.41E-05	3.07E-05	4.17E-05	2.39E-05	9.22E-06	8.36E-06
SHORELINE	2.50E-03	2.14E-03	2.14E-03	2.14E-03	2.14E-03	2.14E-03	2.14E-03	2.14E-03
SWIMMING	.0	3.13E-05	3.13E-05	3.13E-05	3.13E-05	3.13E-05	3.13E-05	3.13E-05
BOATING	.0	1.57E-05	1.57E-05	1.57E-05	1.57E-05	1.57E-05	1.57E-05	1.57E-05
TOTAL	2.50E-03	2.94E-01	4.58E-01	1.83E-01	5.12E-03	1.53E-01	6.03E-02	1.12E-02

	USAGE (KG/YR,HR/YR)	DILUTION	TIME(HR)
FISH	16.0	5.0	25.00
INVERTEBRATE	3.8	5.0	25.00
DRINKING	510.0	500.0	112.00
SHORELINE	67.0	5.0	1.00
SWIMMING	100.0	5.0	1.00
BOATING	100.0	5.0	1.00

SHOREWIDTH FACTOR= .2

C H I L D D O S E S

C H I L D D O S E S

DOSE (MREM PER YEAR INTAKE)

PATHWAY	SKIN	BONE	LIVER	TOTAL BODY	THYROID	KIDNEY	LUNG	GI-LLI
FISH		3.56E-01	3.96E-01	6.89E-02	2.77E-03	1.26E-01	4.54E-02	2.90E-03
INVERTEBRATE		7.15E-03	5.16E-03	1.16E-03	2.29E-04	1.58E-03	5.64E-04	4.64E-04
DRINKING		2.14E-04	1.52E-04	3.15E-05	9.97E-05	4.71E-05	1.69E-05	6.87E-06
SHORELINE	5.22E-04	4.46E-04	4.46E-04	4.46E-04	4.46E-04	4.46E-04	4.46E-04	4.46E-04
SWIMMING	.0	7.84E-06	7.84E-06	7.84E-06	7.84E-06	7.84E-06	7.84E-06	7.84E-06
BOATING	.0	1.57E-05	1.57E-05	1.57E-05	1.57E-05	1.57E-05	1.57E-05	1.57E-05
TOTAL	5.22E-04	3.64E-01	4.02E-01	7.06E-02	3.57E-03	1.28E-01	4.64E-02	3.85E-03

	USAGE (KG/YR,HR/YR)	DILUTION	TIME(HR)
FISH	6.9	5.0	25.00
INVERTEBRATE	1.7	5.0	25.00
DRINKING	510.0	500.0	112.00
SHORELINE	14.0	5.0	1.00
SWIMMING	25.0	5.0	1.00
BOATING	100.0	5.0	1.00

SHOREWIDTH FACTOR= .2

I N F A N T D O S E S

DOSE (MREM PER YEAR INTAKE)

PATHWAY	SKIN	BONE	LIVER	TOTAL BODY	THYROID	KIDNEY	LUNG	GI-LLI
FISH		4.09E-02	5.46E-02	4.56E-03	4.88E-04	1.44E-02	5.86E-03	1.99E-04
INVERTEBRATE		6.01E-04	5.74E-04	7.25E-05	3.27E-05	1.47E-04	5.91E-05	2.41E-05
DRINKING		1.98E-04	1.85E-04	2.05E-05	1.57E-04	4.80E-05	1.95E-05	3.98E-06
SHORELINE	1.12E-04	9.57E-05	9.57E-05	9.57E-05	9.57E-05	9.57E-05	9.57E-05	9.57E-05
BOATING	.0	7.84E-08	7.84E-08	7.84E-08	7.84E-08	7.84E-08	7.84E-08	7.84E-08
TOTAL	1.12E-04	4.18E-02	5.54E-02	4.75E-03	7.73E-04	1.47E-02	6.03E-03	3.22E-04

	USAGE (KG/YR,HR/YR)	DILUTION	TIME(HR)
FISH	.5	5.0	25.00
INVERTEBRATE	.1	5.0	25.00
DRINKING	330.0	500.0	112.00
SHORELINE	3.0	5.0	1.00
BOATING	.5	5.0	1.00

SHOREWIDTH FACTOR= .2

* * * SELECTED LOCATION * * *

LOCATION IS DOWNSTREAM

A D U L T D O S E S

DOSE (MREM PER YEAR INTAKE)

PATHWAY	SKIN	BONE	LIVER	TOTAL BODY	THYROID	KIDNEY	LUNG	GI-LLI
FISH		1.93E-01	3.12E-01	2.26E-01	2.01E-03	1.04E-01	3.45E-02	7.43E-03
INVERTEBRATE		3.73E-03	3.93E-03	2.88E-03	1.60E-04	1.26E-03	4.14E-04	1.35E-03
DRINKING		5.46E-03	5.62E-03	4.11E-03	4.86E-03	1.83E-03	6.05E-04	9.39E-04
SHORELINE	1.33E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03
SWIMMING	.0	1.12E-05	1.12E-05	1.12E-05	1.12E-05	1.12E-05	1.12E-05	1.12E-05
BOATING	.0	1.12E-05	1.12E-05	1.12E-05	1.12E-05	1.12E-05	1.12E-05	1.12E-05
TOTAL	1.33E-03	2.04E-01	3.23E-01	2.34E-01	8.19E-03	1.08E-01	3.66E-02	1.09E-02

	USAGE (KG/YR,HR/YR)	DILUTION	TIME(HR)
FISH	21.0	7.0	31.00
INVERTEBRATE	5.0	7.0	31.00
DRINKING	730.0	7.0	19.00
SHORELINE	50.0	7.0	7.00
SWIMMING	50.0	7.0	7.00
BOATING	100.0	7.0	7.00

SHOREWIDTH FACTOR= .2

LOCATION IS DOWNSTREAM

T E E N A G E R D O S E S

DOSE (MREM PER YEAR INTAKE)

PATHWAY	SKIN	BONE	LIVER	TOTAL BODY	THYROID	KIDNEY	LUNG	GI-LLI
FISH		2.04E-01	3.22E-01	1.28E-01	1.88E-03	1.06E-01	4.10E-02	5.48E-03
INVERTEBRATE		3.89E-03	4.04E-03	1.71E-03	1.49E-04	1.29E-03	4.91E-04	9.27E-04
DRINKING		5.23E-03	5.31E-03	2.20E-03	4.16E-03	1.72E-03	6.60E-04	6.06E-04
SHORELINE	1.78E-03	1.53E-03	1.53E-03	1.53E-03	1.53E-03	1.53E-03	1.53E-03	1.53E-03
SWIMMING	.0	2.24E-05	2.24E-05	2.24E-05	2.24E-05	2.24E-05	2.24E-05	2.24E-05
BOATING	.0	1.12E-05	1.12E-05	1.12E-05	1.12E-05	1.12E-05	1.12E-05	1.12E-05
TOTAL	1.78E-03	2.15E-01	3.33E-01	1.33E-01	7.75E-03	1.11E-01	4.37E-02	8.57E-03

	USAGE (KG/YR,HR/YR)	DILUTION	TIME(HR)
FISH	16.0	7.0	31.00
INVERTEBRATE	3.8	7.0	31.00
DRINKING	510.0	7.0	19.00
SHORELINE	67.0	7.0	7.00
SWIMMING	100.0	7.0	7.00
BOATING	100.0	7.0	7.00

SHOREWIDTH FACTOR= .2

LOCATION IS DOWNSTREAM

C H I L D D O S E S

DOSE (MREM PER YEAR INTAKE)

PATHWAY	SKIN	BONE	LIVER	TOTAL BODY	THYROID	KIDNEY	LUNG	GI-LLI
FISH		2.54E-01	2.83E-01	4.92E-02	1.94E-03	9.02E-02	3.24E-02	2.07E-03
INVERTEBRATE		5.10E-03	3.69E-03	8.29E-04	1.60E-04	1.13E-03	4.03E-04	3.31E-04
DRINKING		1.53E-02	1.09E-02	2.26E-03	9.97E-03	3.38E-03	1.21E-03	4.98E-04
SHORELINE	3.73E-04	3.19E-04	3.19E-04	3.19E-04	3.19E-04	3.19E-04	3.19E-04	3.19E-04
SWIMMING	.0	5.59E-06	5.59E-06	5.59E-06	5.59E-06	5.59E-06	5.59E-06	5.59E-06
BOATING	.0	1.12E-05	1.12E-05	1.12E-05	1.12E-05	1.12E-05	1.12E-05	1.12E-05
TOTAL	3.73E-04	2.75E-01	2.98E-01	5.27E-02	1.24E-02	9.51E-02	3.44E-02	3.24E-03

	USAGE (KG/YR,HR/YR)	DILUTION	TIME(HR)
FISH	6.9	7.0	31.00
INVERTEBRATE	1.7	7.0	31.00
DRINKING	510.0	7.0	19.00
SHORELINE	14.0	7.0	7.00
SWIMMING	25.0	7.0	7.00
BOATING	100.0	7.0	7.00

SHOREWIDTH FACTOR= .2

LOCATION IS DOWNSTREAM

I N F A N T D O S E S

DOSE (MREM PER YEAR INTAKE)

PATHWAY	SKIN	BONE	LIVER	TOTAL BODY	THYROID	KIDNEY	LUNG	GI-LLI
FISH		2.92E-02	3.90E-02	3.25E-03	3.41E-04	1.03E-02	4.19E-03	1.42E-04
INVERTEBRATE		4.29E-04	4.10E-04	5.18E-05	2.28E-05	1.05E-04	4.22E-05	1.72E-05
DRINKING		1.42E-02	1.33E-02	1.48E-03	1.57E-02	3.45E-03	1.39E-03	2.88E-04
SHORELINE	7.99E-05	6.83E-05	6.83E-05	6.83E-05	6.83E-05	6.83E-05	6.83E-05	6.83E-05
BOATING	.0	5.59E-08	5.59E-08	5.59E-08	5.59E-08	5.59E-08	5.59E-08	5.59E-08
TOTAL	7.99E-05	4.39E-02	5.27E-02	4.85E-03	1.61E-02	1.39E-02	5.69E-03	5.16E-04

	USAGE (KG/YR,HR/YR)	DILUTION	TIME(HR)
FISH	.5	7.0	31.00
INVERTEBRATE	.1	7.0	31.00
DRINKING	330.0	7.0	19.00
SHORELINE	3.0	7.0	7.00
BOATING	.5	7.0	7.00

SHOREWIDTH FACTOR= .2

* * * FISH CONSUMPTION POPULATION DOSES * * *
MAN-REM

!!!!!!!!!!!SPORT HARVEST!!!!!!!!!!!

PATHWAY	AGE GROUP	USAGE	BONE	LIVER	TOTAL BODY	THYROID	KIDNEY	LUNG	GI-LLI
			DOSE (MAN-REM)						
FISH	ADULT	7.24E+04	6.52E-01	1.05E+00	7.61E-01	2.27E-03	3.50E-01	1.16E-01	2.45E-02
FISH	TEENAGER	1.16E+04	1.45E-01	2.28E-01	9.02E-02	4.45E-04	7.52E-02	2.90E-02	3.79E-03
FISH	CHILD	7.00E+03	2.53E-01	2.80E-01	4.87E-02	6.44E-04	8.95E-02	3.21E-02	2.02E-03
FISH	TOTAL	9.10E+04	1.05E+00	1.56E+00	9.00E-01	3.36E-03	5.15E-01	1.77E-01	3.03E-02

LOCATION	DILUTION	CATCH	TIME(HR)-INCLUDES FOOD PROCESSING TIME OF 1.68E+02 HR	POPULATION=1.59E+04
DOWNSTREAM	7.00E+00	9.10E+04	3.36E+02	

AVERAGE INDIVIDUAL CONSUMPTION (KG/YR) ADULT=6.90E+00 TEEN=5.20E+00 CHILD=2.20E+00

* * * FISH CONSUMPTION POPULATION DOSES * * *
MAN-REM

!!!!!!!!!!COMMERCIAL HARVEST!!!!!!!!!!

PATHWAY	AGE GROUP	USAGE	BONE	LIVER	TOTAL BODY	THYROID	KIDNEY	LUNG	GI-LLI
			DOSE (MAN-REM)						
FISH	ADULT	8.74E+07	2.77E+00	4.47E+00	3.23E+00	5.76E-03	1.48E+00	4.93E-01	1.03E-01
FISH	TEENAGER	1.40E+07	6.14E-01	9.65E-01	3.82E-01	1.13E-03	3.19E-01	1.23E-01	1.60E-02
FISH	CHILD	8.45E+06	1.07E+00	1.19E+00	2.07E-01	1.63E-03	3.80E-01	1.36E-01	8.49E-03
FISH	TOTAL	1.10E+08	4.46E+00	6.62E+00	3.82E+00	8.53E-03	2.18E+00	7.52E-01	1.27E-01

LOCATION	DILUTION	CATCH	TIME(HR)=INCLUDES FOOD PROCESSING TIME OF 2.40E+02 HR	POPULATION=1.92E+07
DOWNSTREAM	7.00E+00	1.55E+05	4.80E+02	

AVERAGE INDIVIDUAL CONSUMPTION (KG/YR) ADULT=6.90E+00 TEEN=5.20E+00 CHILD=2.20E+00

!!!!!!!!!!NEPA DOSES!!!!!!!!!!

NOTE--TOTAL NEPA DOSE INCLUDES SPORT CATCH

PATHWAY	AGE GROUP	USAGE	BONE	LIVER	TOTAL BODY	THYROID	KIDNEY	LUNG	GI-LLI
			DOSE (MAN-REM)						
FISH	ADULT	1.96E+05	1.76E+00	2.84E+00	2.05E+00	4.58E-03	9.44E-01	3.14E-01	6.58E-02
FISH	TEENAGER	3.13E+04	3.91E-01	6.14E-01	2.43E-01	8.98E-04	2.03E-01	7.83E-02	1.02E-02
FISH	CHILD	1.89E+04	6.82E-01	7.57E-01	1.31E-01	1.30E-03	2.41E-01	8.68E-02	5.42E-03
FISH	TOTAL	2.46E+05	2.83E+00	4.21E+00	2.43E+00	6.78E-03	1.39E+00	4.79E-01	8.14E-02

* * * INVERTEBRATE CONSUMPTION POPULATION DOSES * * *
MAN-REM

!!!!!!!!!!SPORT HARVEST!!!!!!!!!!

PATHWAY	AGE GROUP	USAGE	BONE	LIVER	TOTAL BODY	THYROID	KIDNEY	LUNG	GI-LLI
			DOSE (MAN-REM)						
INVERTEBRATE	ADULT	7.94E+03	5.81E-03	6.10E-03	4.46E-03	8.32E-05	1.95E-03	6.42E-04	1.97E-03
INVERTEBRATE	TEENAGER	1.26E+03	1.27E-03	1.31E-03	5.53E-04	1.62E-05	4.17E-04	1.59E-04	2.84E-04
INVERTEBRATE	CHILD	7.94E+02	2.34E-03	1.68E-03	3.75E-04	2.44E-05	5.14E-04	1.84E-04	1.43E-04
INVERTEBRATE	TOTAL	1.00E+04	9.42E-03	9.09E-03	5.39E-03	1.24E-04	2.88E-03	9.85E-04	2.39E-03

LOCATION	DILUTION	CATCH	TIME(HR)-INCLUDES FOOD PROCESSING TIME OF 1.68E+02 HR	POPULATION=1.20E+04
DOWNSTREAM	7.00E+00	1.00E+04	3.36E+02	

AVERAGE INDIVIDUAL CONSUMPTION (KG/YR) ADULT=1.00E+00 TEEN=7.50E-01 CHILD=3.30E-01

* * * INVERTEBRATE CONSUMPTION POPULATION DOSES * * *
MAN-REM

!!!!!!!!!!COMMERCIAL HARVEST!!!!!!!!!!

PATHWAY	AGE GROUP	USAGE	BONE	LIVER	TOTAL BODY	THYROID	KIDNEY	LUNG	GI-LLI
			DOSE (MAN-REM)						
INVERTEBRATE	ADULT	1.27E+07	4.02E-03	4.22E-03	3.08E-03	3.44E-05	1.35E-03	4.44E-04	1.33E-03
INVERTEBRATE	TEENAGER	2.02E+06	8.79E-04	9.07E-04	3.82E-04	6.70E-06	2.88E-04	1.10E-04	1.93E-04
INVERTEBRATE	CHILD	1.27E+06	1.62E-03	1.16E-03	2.58E-04	1.01E-05	3.56E-04	1.27E-04	9.71E-05
INVERTEBRATE	TOTAL	1.60E+07	6.52E-03	6.29E-03	3.72E-03	5.12E-05	1.99E-03	6.81E-04	1.62E-03

LOCATION	DILUTION	CATCH	TIME(HR)-INCLUDES FOOD PROCESSING TIME OF 2.40E+02 HR	POPULATION=1.92E+07
DOWNSTREAM	7.00E+00	1.00E+03	4.80E+02	

AVERAGE INDIVIDUAL CONSUMPTION (KG/YR) ADULT=1.00E+00 TEEN=7.50E-01 CHILD=3.30E-01

!!!!!!!!!!NEPA DOSES!!!!!!!!!!

NOTE--TOTAL NEPA DOSE INCLUDES SPORT CATCH

PATHWAY	AGE GROUP	USAGE	BONE	LIVER	TOTAL BODY	THYROID	KIDNEY	LUNG	GI-LLI
			DOSE (MAN-REM)						
INVERTEBRATE	ADULT	8.74E+03	6.39E-03	6.71E-03	4.90E-03	8.81E-05	2.14E-03	7.06E-04	2.16E-03
INVERTEBRATE	TEENAGER	1.39E+03	1.40E-03	1.44E-03	6.08E-04	1.72E-05	4.58E-04	1.75E-04	3.12E-04
INVERTEBRATE	CHILD	8.74E+02	2.57E-03	1.85E-03	4.12E-04	2.59E-05	5.66E-04	2.02E-04	1.57E-04
INVERTEBRATE	TOTAL	1.10E+04	1.04E-02	1.00E-02	5.92E-03	1.31E-04	3.17E-03	1.08E-03	2.63E-03

* * * RECREATION POPULATION DOSES * * *

LOCATION= DOWNSTREAM

DILUTION= .70E+01 TRANSIT TIME= .40E+01 HR SWF= .2

DOSE(MAN-REM)

PATHWAY	AGE GROUP	USAGE	SKIN	TOTAL BODY	THYROID
SHORELINE	TOTAL POPUL	1.66E+07	4.42E-01	3.78E-01	3.78E-01

LOCATION= DOWNSTREAM

DILUTION= .70E+01 TRANSIT TIME= .40E+01 HR

DOSE(MAN-REM)

PATHWAY	AGE GROUP	USAGE	SKIN	TOTAL BODY	THYROID
SWIMMING	TOTAL POPUL	1.66E+07	.0	3.71E-03	3.71E-03

LOCATION= DOWNSTREAM

DILUTION= .70E+01 TRANSIT TIME= .40E+01 HR

DOSE(MAN-REM)

PATHWAY	AGE GROUP	USAGE	SKIN	TOTAL BODY	THYROID
BOATING	TOTAL POPUL	1.66E+07	.0	1.86E-03	1.86E-03

* * * DOSE TO BIOTA * * *

MRADS PER YEAR

DOWNSTREAM DILUTION= 7.00E+00 TRANSIT TIME= 4.00E+00 HR

	INTERNAL	EXTERNAL	TOTAL
FISH	6.11E-01	9.99E-01	1.61E+00
INVERTEBRATE	9.40E-02	2.00E+00	2.09E+00
ALGAE	1.95E-01	1.96E-03	1.97E-01
MUSKRAT	3.60E+00	6.66E-01	4.26E+00
RACCOON	1.48E-01	4.99E-01	6.47E-01
HERON	2.15E+01	6.66E-01	2.21E+01
DUCK	3.17E+00	9.99E-01	4.16E+00

* * * COST-BENEFIT ANALYSIS * * *

NUCLIDE	RELEASE CI/YR	MAN-REM DOSE TOTAL BODY	MAN-REM DOSE THYROID	MAN-REM PER CURIE TOTAL BODY	MAN-REM PER CURIE THYROID
28NI 63	1.27E-01	6.03E-03	.0	4.75E-02	.0
37RB 88	4.19E-04	1.30E-10	1.30E-10	3.10E-07	3.10E-07
44RU 103	1.59E-05	1.50E-07	1.48E-07	9.42E-03	9.30E-03
47AG 110M	1.47E-05	3.95E-06	3.95E-06	2.69E-01	2.69E-01
11NA 24	2.79E-05	5.40E-07	5.40E-07	1.94E-02	1.94E-02
38SR 90	1.04E-04	5.87E-04	1.61E-10	5.65E+00	1.55E-06
43TC 99M	3.92E-06	1.74E-09	1.74E-09	4.43E-04	4.43E-04
39Y 91M	1.98E-04	5.91E-11	5.91E-11	2.98E-07	2.98E-07
39Y 92	7.90E-05	4.83E-08	4.83E-08	6.11E-04	6.11E-04
30ZN 65	1.67E-05	2.67E-05	9.72E-07	1.60E+00	5.82E-02
40ZR 97	1.07E-05	4.11E-08	4.11E-08	3.84E-03	3.84E-03
52TE 129	2.22E-03	1.11E-07	1.11E-07	5.02E-05	5.02E-05
51SB 124	2.03E-04	1.11E-05	1.11E-05	5.46E-02	5.45E-02
51SB 125	2.96E-02	5.18E-03	5.18E-03	1.75E-01	1.75E-01
56BA 140	2.77E-05	9.68E-08	8.03E-08	3.49E-03	2.90E-03
58CE 141	2.97E-06	4.10E-09	4.09E-09	1.38E-03	1.38E-03
58CE 144	1.34E-04	7.35E-07	7.21E-07	5.48E-03	5.38E-03
55CS 134	1.22E-01	2.29E+00	6.26E-02	1.88E+01	5.13E-01
55CS 136	1.01E-03	1.30E-03	2.29E-05	1.28E+00	2.27E-02
55CS 137	2.28E-01	2.66E+00	1.74E-01	1.17E+01	7.64E-01
24CR 51	1.86E-03	9.98E-07	9.62E-07	5.36E-04	5.17E-04
27CO 57	1.43E-05	2.31E-07	2.08E-07	1.61E-02	1.45E-02
27CO 58	1.55E-01	6.37E-03	5.14E-03	4.11E-02	3.32E-02
27CO 60	8.41E-02	1.37E-01	1.35E-01	1.63E+00	1.60E+00
53I 131	2.11E-02	9.42E-05	1.21E-02	4.46E-03	5.75E-01
53I 133	3.87E-04	9.95E-07	9.96E-07	2.57E-03	2.57E-03
26FE 55	1.81E-04	1.80E-06	3.33E-11	9.93E-03	1.84E-07
26FE 59	3.33E-04	3.00E-05	8.78E-06	9.01E-02	2.64E-02
25MN 54	1.68E-04	6.82E-05	1.79E-05	4.06E-01	1.06E-01
25MN 56	2.32E-06	7.29E-09	7.29E-09	3.14E-03	3.14E-03
44RU 105	1.00E-04	1.87E-07	1.87E-07	1.87E-03	1.87E-03
57LA 142	1.68E-05	3.60E-08	3.60E-08	2.15E-03	2.15E-03
59PR 144	7.50E-04	7.91E-12	7.91E-12	1.05E-08	1.05E-08
52TE 132	5.15E-06	1.16E-07	1.35E-07	2.25E-02	2.62E-02
41NB 95	2.16E-04	3.40E-06	2.57E-06	1.57E-02	1.19E-02
TOTAL		5.11E+00	3.94E-01		

Indian Point 3

EFFLUENT AND WASTE DISPOSAL

SEMI - ANNUAL REPORT

F. METEOROLOGICAL DATA
THIRD AND FOURTH
QUARTERS, 1984

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

IP DATA JUL-SEP 1984
10 METER WIND SPEED & DIR. WITH 61-10 METER DELTA T
PASQUILL CLASS A

WIND DIRECTION	WIND SPEED (MPH) 01-03	04-07	08-12	13-18	19-24	>24	TOTAL
N	24.	110.	7.	0.	0.	0.	141.
NNE	11.	19.	4.	0.	0.	0.	34.
NE	6.	5.	0.	0.	0.	0.	11.
ENE	2.	0.	0.	0.	0.	0.	2.
E	0.	0.	0.	0.	0.	0.	0.
ESE	5.	0.	0.	0.	0.	0.	5.
SE	10.	2.	0.	0.	0.	0.	12.
SSE	34.	10.	0.	0.	0.	0.	44.
S	32.	32.	0.	0.	0.	0.	64.
SSW	16.	17.	0.	0.	0.	0.	33.
SW	8.	11.	0.	0.	0.	0.	19.
WSW	5.	1.	0.	0.	0.	0.	6.
W	7.	7.	0.	0.	0.	0.	14.
WNW	3.	1.	0.	0.	0.	0.	4.
NW	5.	4.	0.	0.	0.	0.	9.
NNW	5.	8.	0.	0.	0.	0.	13.
TOTAL	173.	227.	11.	0.	0.	0.	411.

CALM 0.

TOTAL HOURS IN MONTH = 2208

TOTAL DATA HOURS=TOTAL+CALM

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

IP DATA OCT-DEC 1984
10 METER WIND SPEED & DIR. WITH 61-10 METER DELTA T
PASQUILL CLASS A

WIND DIRECTION	WIND SPEED (MPH) 01-03	04-07	08-12	13-18	19-24	>24	TOTAL
N	0.	19.	9.	0.	0.	0.	28.
NNE	0.	0.	2.	0.	0.	0.	2.
NE	0.	0.	1.	0.	0.	0.	1.
ENE	0.	1.	0.	0.	0.	0.	1.
E	0.	0.	0.	0.	0.	0.	0.
ESE	0.	0.	0.	0.	0.	0.	0.
SE	9.	5.	0.	0.	0.	0.	14.
SSE	14.	8.	0.	0.	0.	0.	22.
S	12.	16.	0.	0.	0.	0.	28.
SSW	4.	12.	0.	0.	0.	0.	16.
SW	1.	1.	0.	0.	0.	0.	2.
WSW	0.	3.	0.	0.	0.	0.	3.
W	1.	4.	2.	0.	0.	0.	7.
WNW	0.	3.	2.	0.	0.	0.	5.
NW	0.	4.	6.	0.	0.	0.	10.
NNW	0.	9.	4.	0.	0.	0.	13.
TOTAL	41.	85.	26.	0.	0.	0.	152.

CALM 0.

TOTAL HOURS IN MONTH = 2208

TOTAL DATA HOURS=TOTAL+CALM

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

IP DATA OCT-DEC 1984
10 METER WIND SPEED & DIR. WITH 61-10 METER DELTA T
PASQUILL CLASS B

WIND DIRECTION	WIND SPEED (MPH) 01-03	04-07	08-12	13-18	19-24	>24	TOTAL
N	4.	7.	5.	1.	0.	0.	17.
NNE	2.	5.	2.	0.	0.	0.	9.
NE	0.	2.	0.	0.	0.	0.	2.
ENE	0.	0.	0.	0.	0.	0.	0.
E	0.	1.	0.	0.	0.	0.	1.
ESE	0.	0.	0.	0.	0.	0.	0.
SE	3.	0.	0.	0.	0.	0.	3.
SSE	5.	1.	0.	0.	0.	0.	6.
S	4.	2.	0.	0.	0.	0.	6.
SSW	2.	0.	0.	0.	0.	0.	2.
SW	0.	0.	0.	0.	0.	0.	0.
WSW	0.	0.	0.	0.	0.	0.	0.
W	1.	4.	0.	0.	0.	0.	5.
WNW	0.	5.	1.	0.	0.	0.	6.
NW	1.	5.	6.	0.	0.	0.	12.
NNW	0.	4.	2.	1.	0.	0.	7.
TOTAL	22.	36.	16.	2.	0.	0.	76.

CALM 0.

TOTAL HOURS IN MONTH = 2208

TOTAL DATA HOURS=TOTAL+CALM

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

IP DATA JUL-SEP 1984
10 METER WIND SPEED & DIR. WITH 61-10 METER DELTA T
PASQUILL CLASS B

WIND DIRECTION	WIND SPEED (MPH) 01-03	04-07	08-12	13-18	19-24	>24	TOTAL
N	10.	22.	1.	0.	0.	0.	33.
NNE	5.	14.	1.	0.	0.	0.	20.
NE	3.	0.	0.	0.	0.	0.	3.
ENE	1.	1.	0.	0.	0.	0.	2.
E	3.	0.	0.	0.	0.	0.	3.
ESE	5.	0.	0.	0.	0.	0.	5.
SE	2.	0.	0.	0.	0.	0.	2.
SSE	4.	1.	0.	0.	0.	0.	5.
S	6.	3.	0.	0.	0.	0.	9.
SSW	2.	7.	1.	0.	0.	0.	10.
SW	0.	1.	0.	0.	0.	0.	1.
WSW	1.	0.	0.	0.	0.	0.	1.
W	4.	0.	0.	0.	0.	0.	4.
WNW	4.	0.	0.	0.	0.	0.	4.
NW	0.	0.	0.	0.	0.	0.	0.
NNW	2.	6.	0.	0.	0.	0.	8.
TOTAL	52.	55.	3.	0.	0.	0.	110.

CALM 0.

TOTAL HOURS IN MONTH = 2208

TOTAL DATA HOURS=TOTAL+CALM

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

IP DATA JUL-SEP 1984
10 METER WIND SPEED & DIR. WITH 61-10 METER DELTA T
PASQUILL CLASS C

WIND DIRECTION	WIND SPEED (MPH) 01-03	04-07	08-12	13-18	19-24	>24	TOTAL
I	4.	15.	1.	0.	0.	0.	20.
NE	8.	6.	0.	0.	0.	0.	14.
E	9.	2.	0.	0.	0.	0.	11.
NE	5.	0.	0.	0.	0.	0.	5.
	3.	0.	0.	0.	0.	0.	3.
SE	3.	0.	0.	0.	0.	0.	3.
E	4.	0.	0.	0.	0.	0.	4.
SE	3.	0.	0.	0.	0.	0.	3.
	5.	8.	0.	0.	0.	0.	13.
SW	1.	5.	1.	0.	0.	0.	7.
W	0.	0.	0.	0.	0.	0.	0.
SW	0.	0.	0.	0.	0.	0.	0.
I	3.	0.	0.	0.	0.	0.	3.
NW	1.	1.	0.	0.	0.	0.	2.
W	1.	1.	0.	0.	0.	0.	2.
NW	2.	1.	0.	0.	0.	0.	3.
OTAL	52.	39.	2.	0.	0.	0.	93.

ALM 0.

TOTAL HOURS IN MONTH = 2208

TOTAL DATA HOURS=TOTAL+CALM

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

IP DATA OCT-DEC 1984
10 METER WIND SPEED & DIR. WITH 61-10 METER DELTA T
PASQUILL CLASS C

WIND DIRECTION	WIND SPEED (MPH) 01-03	04-07	08-12	13-18	19-24	>24	TOTAL
N	1.	7.	0.	0.	0.	0.	8.
NNE	0.	16.	2.	0.	0.	0.	18.
NE	1.	2.	1.	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	5.	1.	0.	0.	0.	0.	6.
SSE	0.	1.	0.	0.	0.	0.	1.
S	3.	2.	0.	0.	0.	0.	5.
SSW	2.	3.	1.	0.	0.	0.	6.
SW	0.	0.	0.	0.	0.	0.	0.
WSW	1.	0.	0.	0.	0.	0.	1.
W	3.	3.	0.	0.	0.	0.	6.
WNW	0.	7.	2.	0.	0.	0.	9.
NW	0.	2.	3.	0.	1.	0.	6.
NNW	2.	8.	5.	0.	0.	0.	15.
TOTAL	19.	53.	14.	0.	1.	0.	87.

CALM 0.

TOTAL HOURS IN MONTH = 2208

TOTAL DATA HOURS=TOTAL+CALM

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

IP DATA OCT-DEC 1984
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	32.	92.	26.	0.	0.	0.	150.
NNE	28.	124.	57.	0.	0.	0.	209.
NE	38.	39.	0.	0.	0.	0.	77.
ENE	34.	3.	0.	0.	0.	0.	37.
E	18.	2.	0.	0.	0.	0.	20.
ESE	19.	2.	0.	0.	0.	0.	21.
SE	10.	7.	0.	0.	0.	0.	17.
SSE	10.	14.	0.	0.	0.	0.	24.
S	10.	28.	2.	0.	0.	0.	40.
SSW	6.	7.	2.	0.	0.	0.	15.
SW	1.	3.	1.	0.	0.	0.	5.
WSW	2.	2.	0.	0.	0.	0.	4.
W	6.	22.	2.	0.	0.	0.	30.
WNW	5.	54.	28.	5.	0.	0.	92.
NW	4.	34.	23.	2.	0.	0.	63.
NNW	6.	50.	39.	1.	0.	0.	96.
TOTAL	229.	483.	180.	8.	0.	0.	900.

CALM 0.

TOTAL HOURS IN MONTH = 2208

TOTAL DATA HOURS=TOTAL+CALM

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

IP DATA JUL-SEP 1984
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.	90.	4.	0.	0.	0.	118.
NNE	47.	120.	14.	0.	0.	0.	181.
NE	51.	24.	0.	0.	0.	0.	75.
ENE	51.	2.	0.	0.	0.	0.	53.
E	30.	2.	0.	0.	0.	0.	32.
ESE	10.	0.	0.	0.	0.	0.	10.
SE	7.	0.	0.	0.	0.	0.	7.
SSE	13.	7.	0.	0.	0.	0.	20.
S	18.	29.	0.	0.	0.	0.	47.
SSW	9.	31.	6.	0.	0.	0.	46.
SW	5.	6.	0.	0.	0.	0.	11.
WSW	4.	1.	0.	0.	0.	0.	5.
W	5.	2.	0.	0.	0.	0.	7.
WNW	4.	1.	0.	0.	0.	0.	5.
NW	3.	0.	0.	0.	0.	0.	3.
NNW	3.	6.	0.	0.	0.	0.	9.
TOTAL	284.	321.	24.	0.	0.	0.	629.

CALM 0.

TOTAL HOURS IN MONTH = 2208

TOTAL DATA HOURS=TOTAL+CALM

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

IP DATA JUL-SEP 1984
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	23.	20.	0.	0.	0.	0.	43.
NNE	124.	54.	0.	0.	0.	0.	178.
NE	122.	34.	0.	0.	0.	0.	156.
ENE	96.	0.	0.	0.	0.	0.	96.
E	38.	0.	0.	0.	0.	0.	38.
ESE	19.	0.	0.	0.	0.	0.	19.
SE	24.	0.	0.	0.	0.	0.	24.
[illegible]	26.	3.	0.	0.	0.	0.	29.
[illegible]	41.	34.	0.	0.	0.	0.	75.
SSW	18.	15.	0.	0.	0.	0.	33.
SW	5.	0.	0.	0.	0.	0.	5.
WSW	2.	0.	0.	0.	0.	0.	2.
W	3.	3.	0.	0.	0.	0.	6.
WNW	2.	2.	0.	0.	0.	0.	4.
NW	2.	0.	0.	0.	0.	0.	2.
NNW	3.	2.	0.	0.	0.	0.	5.
TOTAL	548.	167.	0.	0.	0.	0.	715.

CALM 0.

TOTAL HOURS IN MONTH = 2208

TOTAL DATA HOURS=TOTAL+CALM

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

IP DATA OCT-DEC 1984
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	30.	12.	0.	0.	0.	0.	42.
NNE	65.	32.	4.	0.	0.	0.	101.
NE	107.	42.	1.	0.	0.	0.	150.
ENE	71.	5.	0.	0.	0.	0.	76.
E	32.	1.	0.	0.	0.	0.	33.
ESE	29.	1.	1.	0.	0.	0.	31.
SE	32.	5.	0.	0.	0.	0.	37.
SSE	28.	12.	0.	0.	0.	0.	40.
S	34.	26.	1.	0.	0.	0.	61.
SSW	10.	6.	1.	0.	0.	0.	17.
SW	4.	3.	0.	0.	0.	0.	7.
WSW	3.	2.	0.	0.	0.	0.	5.
W	9.	13.	1.	0.	0.	0.	23.
WNW	11.	18.	1.	0.	0.	0.	30.
NW	4.	8.	1.	0.	0.	0.	13.
NNW	11.	12.	0.	0.	0.	0.	23.
TOTAL	480.	198.	11.	0.	0.	0.	689.

CALM 0.

TOTAL HOURS IN MONTH = 2208

TOTAL DATA HOURS=TOTAL+CALM

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

IP DATA OCT-DEC 1984
10 METER WIND SPEED & DIR. WITH 61-10 METER DELTA T
PASQUILL CLASS F

WIND DIRECTION	WIND SPEED (MPH) 01-03	04-07	08-12	13-18	19-24	>24	TOTAL
N	8.	1.	0.	0.	0.	0.	9.
NNE	44.	9.	0.	0.	0.	0.	53.
NE	71.	40.	0.	0.	0.	0.	111.
ENE	15.	1.	0.	0.	0.	0.	16.
E	14.	0.	0.	0.	0.	0.	14.
ESE	10.	1.	0.	0.	0.	0.	11.
SE	5.	1.	0.	0.	0.	0.	6.
SSE	1.	0.	0.	0.	0.	0.	1.
S	2.	1.	0.	0.	0.	0.	3.
SSW	2.	2.	0.	0.	0.	0.	4.
SW	2.	0.	0.	0.	0.	0.	2.
WSW	1.	0.	0.	0.	0.	0.	1.
W	1.	0.	0.	0.	0.	0.	1.
WNW	1.	0.	0.	0.	0.	0.	1.
NW	0.	0.	0.	0.	0.	0.	0.
NNW	1.	0.	0.	0.	0.	0.	1.
TOTAL	178.	56.	0.	0.	0.	0.	234.

CALM 0.

TOTAL HOURS IN MONTH = 2208

TOTAL DATA HOURS=TOTAL+CALM

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

IP DATA JUL-SEP 1984
10 METER WIND SPEED & DIR. WITH 61-10 METER DELTA T
PASQUILL CLASS F

WIND DIRECTION	WIND SPEED (MPH) 01-03	04-07	08-12	13-18	19-24	>24	TOTAL
N	9.	1.	0.	0.	0.	0.	10.
NE	65.	8.	0.	0.	0.	0.	73.
E	81.	16.	0.	0.	0.	0.	97.
ENE	26.	0.	0.	0.	0.	0.	26.
E	11.	0.	0.	0.	0.	0.	11.
ESE	5.	0.	0.	0.	0.	0.	5.
SE	4.	0.	0.	0.	0.	0.	4.
SSE	4.	0.	0.	0.	0.	0.	4.
S	1.	2.	0.	0.	0.	0.	3.
SSW	0.	0.	0.	0.	0.	0.	0.
SW	1.	0.	0.	0.	0.	0.	1.
WSW	2.	0.	0.	0.	0.	0.	2.
W	3.	0.	0.	0.	0.	0.	3.
WNW	0.	0.	0.	0.	0.	0.	0.
NW	0.	0.	0.	0.	0.	0.	0.
NNW	0.	0.	0.	0.	0.	0.	0.
TOTAL	212.	27.	0.	0.	0.	0.	239.

CALM 0.

TOTAL HOURS IN MONTH = 2208

TOTAL DATA HOURS=TOTAL+CALM

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

IP DATA JUL-SEP 1984
10 METER WIND SPEED & DIR. WITH 61-10 METER DELTA T
PASQUILL CLASS G

WIND DIRECTION	WIND SPEED (MPH) 01-03	04-07	08-12	13-18	19-24	>24	TOTAL
N	0.	0.	0.	0.	0.	0.	0.
NNE	4.	0.	0.	0.	0.	0.	4.
NE	5.	0.	0.	0.	0.	0.	5.
ENE	2.	0.	0.	0.	0.	0.	2.
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.	0.	0.	0.	0.	0.
WNW	0.	0.	0.	0.	0.	0.	0.
NW	0.	0.	0.	0.	0.	0.	0.
NNW	0.	0.	0.	0.	0.	0.	0.
TOTAL	11.	0.	0.	0.	0.	0.	11.

CALM 0.

TOTAL HOURS IN MONTH = 2208

TOTAL DATA HOURS=TOTAL+CALM

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

IP DATA OCT-DEC 1984
10 METER WIND SPEED & DIR. WITH 61-10 METER DELTA T
PASQUILL CLASS G

WIND DIRECTION	WIND SPEED (MPH) 01-03	04-07	08-12	13-18	19-24	>24	TOTAL
N	1.	0.	0.	0.	0.	0.	1.
NNE	14.	2.	0.	0.	0.	0.	16.
NE	7.	8.	0.	0.	0.	0.	15.
ENE	1.	0.	0.	0.	0.	0.	1.
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	1.	0.	0.	0.	0.	0.	1.
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.
NW	0.	0.	0.	0.	0.	0.	0.
NNW	0.	0.	0.	0.	0.	0.	0.
TOTAL	24.	10.	0.	0.	0.	0.	34.

CALM 0.

TOTAL HOURS IN MONTH = 2208

TOTAL DATA HOURS=TOTAL+CALM