Effluent and Waste Disposal

Semi-Annual Report

July 1 - December 31, 1982

Facility Indian Point 3

Licensee Power Authority of the State of New York

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 PASNY 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.

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:	$\overline{E}_\beta$ = 1.42 E-1 MeV/dis		$\overline{E}_\gamma$ = 1.98 E-2 MeV/dis
4th Quarter:	$\overline{E}_\beta$ = 2.28 E-1 MeV/dis		$\overline{E}_\gamma$ = 2.23 E-3 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

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.

5. Batch Releases

a. Liquid

	1982	
	3rd Quarter	4th Quarter
Number of Batch Releases	45	29
Total Time Period Batch Releases (Min.)	1.22 E+4	5.82 E+3
Maximum " " " " " "	5.50 E+2	3.80 E+2
Average " " " " " "	2.74 E+2	2.03 E+2
Minimum " " " " " "	7.50 E+1	1.00 E+1
Average Stream Flow (cfs)	6937	8380

b. Gaseous

Number of Batch Releases	0	2
Total Time Period Batch Releases (Min.)	NA	1.05 E+2
Maximum " " " " " "	NA	6.50 E+1
Average " " " " " "	NA	5.25 E+1
Minimum " " " " " "	NA	4.00 E+1

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, 1982

TABLE 1A

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (1982)

GASEOUS EFFLUENTS - SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR %
A. Fission & Activation Gases				
1. Total release	Ci	3.96E0	5.08E-3	2.50E+1
2. Average release rate for period	uCi/sec	4.98E-1	6.39E-4	
3. Percent of technical specification limit.	%	1.35E-2	3.22E-5	
B. Iodines				
1. Total iodine -131	Ci	≤9.10E-6	< 8.93E-6	2.50E+1
2. Average release rate for period	uCi/sec	< 1.14E-12	< 1.12E-12	
3. Percent of technical specification limit.	%	1.02E-3	9.27E-4	
C. Particulates				
1. Particulates with half-lives >8 days	Ci	1.07E-5	1.96E-5	2.50E+1
2. Average release rate for period	uCi/sec	1.35E-6	2.46E-6	
3. Percent of technical specification limit	%	1.02E-3	9.27E-4	
4. Gross alpha radioactivity	Ci	< 1.93E-7	< 2.29E-7	
D. Tritium				
1. Total release	Ci	2.46E-1	2.21E-1	2.50E+1
2. Average release rate for period	uCi/sec	3.09E-2	2.78E-2	
3. Percent of technical specification limit	%	NA	NA	

TABLE 1C

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (1982)

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				5.08E-3
Krypton (Kr) 85m	Ci				
Krypton (Kr) 87	Ci				
Krypton (Kr) 88	Ci				
Xenon (Xe) 133	Ci				
Xenon (Xe) 133m	Ci				
Xenon (Xe) 135	Ci				
Xenon (Xe) 135m	Ci				
Xenon (Xe) 138	Ci				
Xenon (Xe) 131m	Ci	3.96E0			
Unidentified	Ci				
TOTAL FOR PERIOD	Ci	3.96E0			5.08E-3
2. Iodines					
iodine (I) 131	Ci	<9.10E-6	<8.93E-6		
iodine (I) 133	Ci				
Iodine (I) 135					
TOTAL FOR PERIOD	Ci	<9.10E-6	<8.93E-6		

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				
Barium-Lanthanum 140	Ci				
Cadmium (Cd) 109	Ci		5.19E-7		
Cerium (Ce) 139	Ci				
Cerium (Ce) 141	Ci		1.43E-7		
Cerium (Ce) 144	Ci	1.94E-7	2.60E-6		
Cesium (Cs) 134	Ci				
Cesium (Cs) 137	Ci	8.43E-7	2.89E-7		
Cobalt (Co) 57	Ci				
Cobalt (Co) 58	Ci	4.61E-6			
Cobalt (Co) 60	Ci	4.54E-7			
Iron (Fe) 55	Ci	3.06E-6	1.61E-5		
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	1.56E-6			
others					
TOTAL	Ci	1.07E-5	1.96E-5		

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C. LIQUID EFFLUENTS
THIRD AND FOURTH
QUARTERS, 1982

TABLE 2A

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (1982)

LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR %
A. Fission and activation products				
1. Total release (not including tritium, gases, alpha)	Ci	1.62E-1	1.0E-1	2.5E+1
2. Average diluted concentration during period	uCi/ml	8.02E-10	4.05E-10	
3. Percent of applicable limit	%	2.49E-3	1.37E-3	
B. Tritium				
1. Total release	Ci	5.25E0	5.26E-1	2.5E+1
2. Average diluted concentration during period	uCi/ml	2.60E-8	8.06E-9	
3. Percent of applicable limit	%	8.67E-4	2.69E-4	
C. Dissolved and entrained gases				
1. Total release	Ci	5.39E-4	8.65E-5	2.5E+1
2. Average diluted concentration during period	uCi/ml	2.67E-12	1.33E-12	
3. percent of applicable limit	%	1.05E-7	5.20E-8	
D. Gross alpha radioactivity				
1. Total release	Ci	<9.52E-5	1.59E-4	2.5E+1
E. Volume of waste release (prior to dilution)	liters	1.51E+6	9.16E+5	1.0E+1
F. Volume of dilution water used during period	liters	2.02E+11	6.52E+10	1.0E+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			1.03E-3	1.87E-4
Antimony (sb) 124	Ci			1.45E-3	9.46E-4
Antimony (sb) 125	Ci			5.47E-2	5.11E-2
Barium/Lanthanum 140	Ci			9.92E-5	9.78E-4
Barium Ba 133	Ci				
Cadmium Cd 109	Ci				
Cerium Ce 139	Ci				7.85E-7
Cerium Ce 141	Ci			2.19E-5	1.43E-4
Cerium Ce 144	Ci			1.67E-5	2.12E-5
Cesium Cs 134	Ci			1.50E-3	2.77E-3
Cesium Cs 136	Ci			2.41E-4	4.85E-4
Cesium Cs 137	Ci			2.63E-2	4.80E-3
Chromium Cr 51	Ci			3.54E-3	3.03E-3
Cobalt Co 57	Ci			4.11E-5	6.12E-5
Cobalt Co 58	Ci			1.13E-2	6.19E-3
Cobalt Co 60	Ci			2.07E-2	1.08E-2
Iodine I 131	Ci			6.45E-5	4.25E-4
Iodine I 132	Ci				
Iodine I 133	Ci				
Iodine I 134	Ci				
Iodine I 135	Ci				
Iron Fe 55	Ci			1.23E-2	8.21E-3
Iron Fe 59	Ci			1.76E-4	2.54E-4
Mercury Hg 203	Ci			1.13E-6	
Neptunium Np 239	Ci				
Manganese Mn 54	Ci			1.83E-3	1.06E-3
Manganese Mn 56	Ci				

NUCLIDES			UNIT	Continuous Mode 3rd QUARTER	Continuous Mode 4th QUARTER	Batch Mode 3rd QUARTER	Batch Mode 4th QUARTER
Molybdenum	Mo	99	Ci			8.63E-5	3.61E-4
Nickel	Ni	63	Ci			2.18E-3	3.80E-3
Nickel	Ni	65	Ci				
Niobium	Nb	94	Ci				
Niobium	Nb	97	Ci			7.09E-3	6.28E-5
Phosphorus	P	32	Ci			1.14E-4	3.80E-3
Radium	Ra	226	Ci				
Rubidium	Rb	88	Ci				
Rhodium	Rh	106	Ci			3.83E-4	
Ruthenium	Ru	103	Ci			1.74E-5	
Silver	Ag	110m	Ci			2.19E-3	2.66E-4
Sodium	Na	24	Ci			2.11E-5	
Strontium	Sr	85	Ci			4.52E-6	
Strontium	Sr	89	Ci			1.98E-6	4.38E-6
Strontium	Sr	90	Ci			7.44E-7	7.31E-7
Strontium	Sr	91	Ci				
Strontium	Sr	92	Ci			3.03E-5	
Technetium	Tc	99m	Ci			1.08E-5	2.35E-5
Tin	Sn	113	Ci				
Tungsten	W	187	Ci				1.34E-5
Yttrium	Y	88	Ci				
Yttrium	Y	91m	Ci				
Yttrium	Y	92	Ci				
Zinc	Zn	65	Ci			2.17E-5	2.32E-4
Zirconium/Niobium		95	Ci			8.32E-4	3.89E-4
Zirconium	Zr	97	Ci				
TOTAL FOR PERIOD			Ci			1.62E-1	1.00E-1

NUCLIDES			UNIT	Continuous Mode 3rd QUARTER	Continuous Mode 4th QUARTER	Batch Mode 3rd QUARTER	Batch Mode 4th QUARTER
Xenon	Xe	133	Ci			5.26E-4	5.82E-5
Xenon	Xe	135	Ci			1.32E-5	2.83E-5

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D. SOLID WASTE
THIRD AND FOURTH
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TABLE 3

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (1982)

SOLID WASTE AND IRRADIATED FUEL SHIPMENTS

(July 1 - December 31, 1982)

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	1.91 E+1	
	Ci	4.79 E+0	1.00 E+2
b. Dry compressible waste, contaminated equip, etc.	m^3	1.39 E+2	
	Ci	2.07 E+0	1.00 E+2
c. Irradiated components, control rods, etc.	m^3	0. E	
	Ci	0. E	. E
d. Other (describe)	m^3	9.63 E+0	
Filter Cartridges	Ci	2.97 E+1	1.00 E+2

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

a.	Co-58	%	3.2 E+1
	Co-60	%	5.4 E+1
	Cs-134	%	5.0 E+0
	Cs-137	%	9.0 E+0
b.	Co-58	%	1.8 E+1
	Co-60	%	6.1 E+1
	Cs-134	%	5.0 E+0
	Cs-137	%	1.6 E+1
d.	Co-58	%	1.3 E+1
	Co-60	%	8.4 E+1
	Cr-51	%	1.7 E+0
	Mn-54	%	1.3 E+0

3. Solid Waste Disposition

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

B. IRRADIATED FUEL SHIPMENTS (Disposition)

Number of Shipments	Mode of Transportation	Destination
None		

Indian Point 3

EFFLUENT AND WASTE DISPOSAL

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E. RADIOLOGIAL IMPACT ON MAN
THIRD AND FOURTH
QUARTERS, 1982

RADIOLOGICAL IMPACT EVALUATION

Doses from noble gas immersion, inhalation, ground deposition, 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. In all cases, these evaluations were performed using the models presented in Regulatory Guide 1.109. Noble gas releases were considered to be either batch or continuous, while all iodine and particulate release were considered to be continuous. For the purpose of analysis, noble gas release from containment pressure reliefs and purges were treated as a continuous release, because of the large number of such releases. Other releases (e.g. gas decay tank releases) were considered as batch and were evaluated using actual meteorological conditions existing during the release period. Continuous releases were evaluated using average meteorological conditions based on the six month release period. Estimates of relative deposition per unit area were obtained from the numerical approximation presented in the NRC computer program XOQDOQ for ground releases. Values of atmospheric dispersion factors (X/Q) were computed using the Sagendorf straight line air flow model, assuming a ground level release, and the subroutine POLYN (from XOQDOQ) for computing standard deviations in the horizontal direction (σ y) and vertical direction (σ z).

Integrated doses for the population within 50 miles of Indian Point from gaseous effluents were computed based on linear interpolation of 1970 - 2010 population data contained in the Indian Point Unit No. 3 FSAR.

Dose calculations for liquid pathways to individuals and populations are computed for a year. The LADTAP computer program that is utilized for these calculations incorporated the calculational model and parameters that are presented in Regulatory Guide 1.109.

The fish, invertebrate, algae, drinking, 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 water consumption dose, the population recreation dose, and cost-benefit analysis.

NUREG-0017, "Calculation of Release of Radioactive Materials in Gaseous and Liquid effluents from Pressurized Water Reactors", assumes an annual release of 8.0 Ci/yr of Carbon-14. Therefore, to be consistent with NUREG-0017, a release of 4.0 curies of Carbon-14 was assumed for the six month period in addition to the radioactive materials measured in Indian Point gaseous effluents.

Indian Point Unit #3

RADIOLOGICAL IMPACT ON MAN

(Reference Regulatory Guide 1.21, Page 12)

A. Maximum Individual Doses

(1) Pathways (Gaseous)	Total Body (mr)	Skin (mr)	Thyroid (mr)	Bone (mr)
(a) Noble Gas Immersion				
(i) Batch Releases	0.102 E-06	0.111 E-04	N/A	N/A
(ii) Continuous Releases	0.644 E-04	0.541 E-03	N/A	N/A
(b) Inhalation	6.69 E-03**	N/A	6.78 E-03*	3.29 E-02*
(c) Ground Deposition	0.101 E-04	0.118 E-04	N/A	N/A
(d) Milk Ingestion*	2.16 E-03	N/A	2.17 E-03	1.01 E-02
(e) Meat Ingestion	3.32 E-04**	N/A	3.32 E-04**	1.66 E-03*
(f) Vegetable Ingestion	3.03 E-02**	N/A	3.01 E-02***	1.51 E-01***
(2) Pathways (Liquid)				
(a) All	See Attached "LADTAP" printout Attachment I			

* Infants are critical age group
** Adults are critical age group
*** Children are critical age group

NA = Not Applicable

B. Population

(1) Pathways (Gaseous)

	Total Body (man-rem)	Thyroid (man-thyroid rem)
(a) Noble Gas Immersion		
(i) Batch Release	0.247 E-06	N/A
(ii) Continuous Release	0.320 E-02	N/A
(b) Inhalation	0.229 E+00	0.232 E+00
(c) Ground Deposition	2.295 E-04	N/A
(d) Totals	0.232 E+00	0.232 E+00

(2) Pathways (Liquid)

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

C. Average Doses To Individuals

(1) Pathways

(a) Liquid-Total Body — 7.50 E-05 mRem

(b) Gaseous-Total Body — 1.21 E-05 mRem

N/A = Not Applicable

INDIAN POINT UNIT 3 2ND HALF 1982 SEMI-ANNUAL

DISCHARGE=5.93E+02 CFS SOURCE TERM MULTIPLIER=1.00E+00

50-MILE POPULATION=1.92E+07 FRACTION --- ADULT=0.66
TEENAGER=0.14
CHILD=0.20

FRESHWATER SITE

IHO226I CONVERT REAL NUMBER OUT OF RANGE1.78E-87

TRACEBACK	ROUTINE	CALLED FROM ISN	REG. 14	REG. 15	REG. 0	REG. 1
	IBCOM		00140A9E	0013F8C4	000004B0	00000001
	REDDF	0041	42116E7C	00117078	00000001	0011612C
	MAIN		000308A0	00115FD0	0064CC60	00114FF8

ENTRY POINT= 00115FD0

STANDARD FIXUP TAKEN , EXECUTION CONTINUING

IHO226I CONVERT REAL NUMBER OUT OF RANGE8.92E-88

TRACEBACK	ROUTINE	CALLED FROM ISN	REG. 14	REG. 15	REG. 0	REG. 1
	IBCOM		00140A9E	0013F8C4	000004B0	00000001
	REDDF	0041	42116E7C	00117078	00000001	0011612C
	MAIN		000308A0	00115FD0	0064CC60	00114FF8

ENTRY POINT= 00115FD0

STANDARD FIXUP TAKEN , EXECUTION CONTINUING
RELEASES FROM INDIAN POINT UNIT 2 2ND HALF 1982
GRIEF SB122 1.22E-03
GRIEF CE139 7.85E-07
GRIEF HG203 1.13E-06
GRIEF RH106 3.83E-04
GRIEF SR85 4.52E-06
GRIEF XE133 5.84E-04
GRIEF XE135 4.15E-05

NO RECONCENTRATION OF NUCLIDES

* * * ADULT DOSE FACTORS * * *

		INGESTION DOSE FACTORS (MREM/PCI INTAKE)							SHORELINE (MREM/HR)/(PCI/M**2)		
NUCLIDE	CURIE/YEAR	BONE	LIVER	TOTAL BODY	THYROID	KIDNEY	LUNG	GI-LLI	SKIN	TOTAL BODY	RECON
51SB 124	2.40E-03	2.81E-06	5.30E-08	1.11E-06	6.79E-09	0.0	2.18E-06	7.95E-05	1.50E-08	1.30E-08	1.00E+00
51SB 125	1.06E-01	2.23E-06	2.40E-08	4.48E-07	1.98E-09	0.0	2.33E-04	1.97E-05	3.50E-09	3.10E-09	1.00E+00
56BA 140	1.08E-03	2.03E-05	2.55E-08	1.34E-06	0.0	8.68E-09	1.46E-08	4.18E-05	2.40E-09	2.10E-09	1.00E+00
58CE 141	1.65E-04	9.37E-09	6.34E-09	7.18E-10	0.0	2.94E-09	0.0	2.42E-05	6.20E-10	5.50E-10	1.00E+00
58CE 144	3.79E-05	4.89E-07	2.04E-07	2.62E-08	0.0	1.21E-07	0.0	1.65E-04	3.70E-10	3.20E-10	1.00E+00
55CS 134	1.78E-02	6.22E-05	1.48E-04	1.21E-04	0.0	4.80E-05	1.59E-05	2.59E-06	1.40E-08	1.20E-08	1.00E+00
55CS 136	7.26E-04	6.51E-06	2.57E-05	1.85E-05	0.0	1.43E-05	1.96E-06	2.92E-06	1.70E-08	1.50E-08	1.00E+00

55CS	137	3.11E-02	7.98E-05	1.09E-04	7.15E-05	0.0	3.71E-05	1.23E-05	2.10E-06	4.90E-09	4.20E-09	1.00E+00
24CR	51	6.57E-03	0.0	0.0	2.66E-09	1.59E-09	5.87E-10	3.53E-09	6.69E-07	2.60E-10	2.20E-10	1.00E+00
27CO	57	1.02E-04	0.0	1.75E-07	2.91E-07	0.0	0.0	0.0	4.44E-06	1.00E-09	9.10E-10	1.00E+00
27CO	58	1.75E-02	0.0	7.46E-07	1.67E-06	0.0	0.0	0.0	1.51E-05	8.20E-09	7.00E-09	1.00E+00
27CO	60	3.15E-02	0.0	2.15E-06	4.72E-06	0.0	0.0	0.0	4.02E-05	2.00E-08	1.70E-08	1.00E+00
53I	131	4.90E-04	4.16E-06	5.96E-06	3.41E-06	1.95E-03	1.02E-05	0.0	1.57E-06	3.40E-09	2.80E-09	1.00E+00
26FE	55	2.05E-02	6.20E-06	2.79E-05	7.33E-06	0.0	0.0	3.23E-05	1.09E-05	0.0	0.0	1.00E+00
26FE	59	4.30E-04	4.34E-06	1.03E-05	3.92E-06	0.0	0.0	2.86E-06	3.40E-05	9.40E-09	8.00E-09	1.00E+00
25MN	54	2.89E-03	0.0	4.57E-06	8.73E-07	0.0	1.36E-06	0.0	1.40E-05	6.80E-09	5.80E-09	1.00E+00
42MO	99	4.47E-04	0.0	4.31E-06	8.20E-07	0.0	9.77E-06	0.0	9.99E-06	2.20E-09	1.90E-09	1.00E+00
28NI	63	5.98E-03	1.30E-04	9.02E-06	4.36E-06	0.0	0.0	0.0	1.88E-06	0.0	0.0	1.00E+00
41NB	97	7.15E-03	5.23E-11	1.32E-11	4.82E-12	0.0	1.54E-11	0.0	4.87E-08	5.40E-09	4.60E-09	1.00E+00
15P	32	3.91E-03	1.93E-04	1.21E-05	7.47E-06	0.0	0.0	0.0	2.17E-05	0.0	0.0	1.00E+00
44RU	103	1.74E-05	1.85E-07	0.0	7.98E-08	0.0	7.07E-07	0.0	2.16E-05	4.20E-09	3.60E-09	1.00E+00
47AG	110M	2.46E-03	1.60E-07	1.48E-07	8.80E-08	0.0	2.91E-07	0.0	6.04E-05	2.10E-08	1.80E-08	1.00E+00
11NA	24	2.11E-05	2.26E-06	2.26E-06	2.26E-06	2.26E-06	2.26E-06	2.26E-06	2.26E-06	2.90E-08	2.50E-08	1.00E+00
38SR	89	6.36E-06	3.09E-04	0.0	8.85E-06	0.0	0.0	0.0	4.94E-05	6.50E-13	5.60E-13	1.00E+00
38SR	90	1.48E-06	7.61E-03	0.0	1.86E-03	0.0	0.0	0.0	1.02E-04	0.0	0.0	1.00E+00
38SR	92	3.03E-05	2.16E-06	0.0	9.31E-08	0.0	0.0	0.0	4.26E-05	1.00E-08	9.00E-09	1.00E+00
43TC	99M	3.43E-05	2.47E-10	6.98E-10	8.90E-09	0.0	1.06E-08	3.42E-10	4.13E-07	1.10E-09	9.60E-10	1.00E+00
74W	187	1.34E-05	1.03E-07	8.62E-08	3.02E-08	0.0	0.0	0.0	2.82E-05	3.60E-09	3.10E-09	1.00E+00
30ZN	65	2.54E-04	4.85E-06	1.54E-05	6.97E-06	0.0	1.03E-05	0.0	9.70E-06	4.60E-09	4.00E-09	1.00E+00
40ZR	95	1.22E-03	3.04E-08	9.76E-09	6.61E-09	0.0	1.54E-08	0.0	3.03E-05	5.80E-09	5.00E-09	1.00E+00

* * * TEENAGER DOSE FACTORS * * *

NUCLIDE	CURIE/YEAR	INGESTION DOSE FACTORS (MREM/PCI INTAKE) BONE	LIVER	TOTAL BODY	THYROID	KIDNEY	LUNG	GI-LLI	SHORELINE (MREM/HR)/(PCI/M**2) SKIN	TOTAL BODY	RECON
56BA 140	1.08E-03	2.83E-05	3.48E-08	1.82E-06	0.0	8.68E-09	2.33E-08	4.14E-06			
58CE 141	1.65E-04	1.26E-08	8.46E-09	9.70E-10	0.0	2.94E-09	0.0	2.29E-05			
58CE 144	3.79E-05	7.22E-07	2.96E-07	3.83E-08	0.0	1.21E-07	0.0	1.70E-04			
55CS 134	1.78E-02	8.05E-05	1.94E-04	9.06E-05	0.0	4.80E-05	2.35E-05	2.24E-06			
55CS 137	3.11E-02	1.07E-04	1.44E-04	5.05E-05	0.0	3.71E-05	1.91E-05	1.92E-06			
27CO 58	1.75E-02	0.0	9.92E-07	2.26E-06	0.0	0.0	0.0	1.34E-05			
27CO 60	3.15E-02	0.0	2.76E-06	6.30E-06	0.0	0.0	0.0	3.31E-05			
53I 131	4.90E-04	5.57E-06	7.87E-06	4.69E-06	2.27E-03	1.02E-05	0.0	1.49E-06			
44RU 103	1.74E-05	2.37E-07	0.0	1.06E-07	0.0	7.07E-07	0.0	1.85E-05			
38SR 89	6.36E-06	4.60E-04	0.0	1.32E-05	0.0	0.0	0.0	4.99E-05			
38SR 90	1.48E-06	1.04E-02	0.0	2.57E-03	0.0	0.0	0.0	2.20E-04			
40ZR 95	1.22E-03	3.72E-08	1.24E-08	8.66E-09	0.0	1.54E-08	0.0	2.68E-05			

* * * CHILD DOSE FACTORS * * *

NUCLIDE	CURIE/YEAR	INGESTION DOSE FACTORS (MREM/PCI INTAKE) BONE	LIVER	TOTAL BODY	THYROID	KIDNEY	LUNG	GI-LLI	SHORELINE (MREM/HR)/(PCI/M**2) SKIN	TOTAL BODY	RECON
56BA 140	1.08E-03	8.26E-05	7.25E-08	4.85E-06	0.0	8.68E-09	4.32E-08	4.21E-06			
58CE 141	1.65E-04	3.76E-08	1.88E-08	2.80E-09	0.0	2.94E-09	0.0	2.36E-05			
58CE 144	3.79E-05	2.14E-06	6.70E-07	1.14E-07	0.0	1.21E-07	0.0	1.74E-04			
55CS 134	1.78E-02	2.24E-04	3.77E-04	8.02E-05	0.0	4.80E-05	4.19E-05	2.04E-06			
55CS 137	3.11E-02	3.12E-04	3.02E-04	4.50E-05	0.0	3.71E-05	3.54E-05	1.84E-06			
27CO 58	1.75E-02	0.0	1.85E-06	5.58E-06	0.0	0.0	0.0	1.10E-05			
27CO 60	3.15E-02	0.0	5.17E-06	1.55E-05	0.0	0.0	0.0	2.86E-05			
53I 131	4.90E-04	1.63E-05	1.67E-05	1.26E-05	5.43E-03	1.02E-05	0.0	1.43E-06			
44RU 103	1.74E-05	6.78E-07	0.0	2.74E-07	0.0	7.07E-07	0.0	1.78E-05			
38SR 89	6.36E-06	1.38E-03	0.0	3.95E-05	0.0	0.0	0.0	5.15E-05			
38SR 90	1.48E-06	1.72E-02	0.0	4.36E-03	0.0	0.0	0.0	2.29E-04			
40ZR 95	1.22E-03	1.04E-07	2.42E-08	2.20E-08	0.0	1.54E-08	0.0	2.50E-05			

* * * INFANT DOSE FACTORS * * *

NUCLIDE	CURIE/YEAR	INGESTION DOSE FACTORS (MREM/PCI INTAKE) BONE	LIVER	TOTAL BODY	THYROID	KIDNEY	LUNG	GI-LLI	SHORELINE (MREM/HR)/(PCI/M**2) SKIN	TOTAL BODY	RECON
56BA 140	1.08E-03	1.74E-04	1.75E-07	8.99E-06	0.0	8.68E-09	1.07E-07	4.43E-06			
58CE 141	1.65E-04	8.00E-08	4.91E-08	5.75E-09	0.0	2.94E-09	0.0	2.38E-05			
58CE 144	3.79E-05	4.49E-06	1.77E-06	2.42E-07	0.0	1.21E-07	0.0	1.85E-04			
55CS 134	1.78E-02	4.58E-04	8.24E-04	6.97E-05	0.0	4.80E-05	9.42E-05	1.96E-06			
55CS 137	3.11E-02	6.53E-04	7.31E-04	4.20E-05	0.0	3.71E-05	8.81E-05	1.89E-06			
27CO 58	1.75E-02	0.0	3.78E-06	9.26E-06	0.0	0.0	0.0	9.79E-06			
27CO 60	3.15E-02	0.0	1.07E-05	2.56E-05	0.0	0.0	0.0	2.64E-05			
53I 131	4.90E-04	3.42E-05	4.07E-05	2.38E-05	1.31E-02	1.02E-05	0.0	1.53E-06			
44RU 103	1.74E-05	1.41E-06	0.0	4.85E-07	0.0	7.07E-07	0.0	1.76E-05			
38SR 89	6.36E-06	2.93E-03	0.0	8.42E-05	0.0	0.0	0.0	5.48E-05			
38SR 90	1.48E-06	2.51E-02	0.0	6.40E-03	0.0	0.0	0.0	2.43E-04			
40ZR 95	1.22E-03	2.11E-07	5.32E-08	3.78E-08	0.0	1.54E-08	0.0	2.38E-05			

TOTAL NUMBER IN SOURCE TERM IS 30 TOTAL RELEASE IS 2.6084E-01

* * * AS LOW AS REASONABLY ACHIEVABLE * * *

ADULT DOSES

DOSE (MREM PER YEAR INTAKE)

PATHWAY	SKIN	BONE	LIVER	TOTAL BODY	THYROID	KIDNEY	LUNG	GI-LLI
FISH		6.26E-01	1.32E-01	9.18E-02	1.04E-04	3.20E-02	1.13E-02	6.67E-02
INVERTEBRATE		2.87E-02	8.67E-03	3.33E-03	8.29E-06	1.10E-03	4.59E-03	1.23E-02
ALGAE		1.36E-06	9.93E-08	6.19E-08	1.33E-10	4.17E-09	1.44E-07	1.70E-07
DRINKING		2.03E-13	2.56E-13	1.82E-13	2.41E-14	7.64E-14	9.79E-13	1.69E-13
SHORELINE	7.83E-04	6.72E-04	6.72E-04	6.72E-04	6.72E-04	6.72E-04	6.72E-04	6.72E-04
SWIMMING	0.0	7.16E-06	7.16E-06	7.16E-06	7.16E-06	7.16E-06	7.16E-06	7.16E-06
BOATING	0.0	7.16E-06	7.16E-06	7.16E-06	7.16E-06	7.16E-06	7.16E-06	7.16E-06
TOTAL	7.83E-04	6.56E-01	1.41E-01	9.58E-02	7.99E-04	3.38E-02	1.66E-02	7.97E-02

	USAGE (KG/YR,HR/YR)	DILUTION	TIME(HR)	SHOREWIDTH FACTOR=0.2
FISH	21.0	5.0	25.00	
INVERTEBRATE	5.0	5.0	25.00	
ALGAE	0.0	5.0	25.00	
DRINKING	0.0	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	

TEENAGER DOSES

DOSE (MREM PER YEAR INTAKE)

PATHWAY	SKIN	BONE	LIVER	TOTAL BODY	THYROID	KIDNEY	LUNG	GI-LLI
FISH		4.91E-01	1.24E-01	5.56E-02	9.21E-05	2.44E-02	1.28E-02	5.06E-02
INVERTEBRATE		2.20E-02	6.87E-03	2.38E-03	7.33E-06	8.34E-04	3.54E-03	9.26E-03
ALGAE		1.37E-06	1.03E-07	5.97E-08	1.55E-10	4.17E-09	1.44E-07	1.69E-07
DRINKING		2.47E-13	3.29E-13	1.39E-13	2.81E-14	7.64E-14	9.92E-13	1.58E-13
SHORELINE	1.05E-03	9.01E-04	9.01E-04	9.01E-04	9.01E-04	9.01E-04	9.01E-04	9.01E-04
SWIMMING	0.0	1.43E-05	1.43E-05	1.43E-05	1.43E-05	1.43E-05	1.43E-05	1.43E-05
BOATING	0.0	7.16E-06	7.16E-06	7.16E-06	7.16E-06	7.16E-06	7.16E-06	7.16E-06
TOTAL	1.05E-03	5.14E-01	1.31E-01	5.89E-02	1.02E-03	2.62E-02	1.73E-02	6.08E-02

	USAGE (KG/YR,HR/YR)	DILUTION	TIME(HR)	SHOREWIDTH FACTOR=0.2
FISH	16.0	5.0	25.00	
INVERTEBRATE	3.8	5.0	25.00	
ALGAE	0.0	5.0	25.00	
DRINKING	0.0	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	

CHILD DOSES

DOSE (MREM PER YEAR INTAKE)

PATHWAY	SKIN	BONE	LIVER	TOTAL BODY	THYROID	KIDNEY	LUNG	GI-LLI
FISH		2.58E-01	9.59E-02	2.21E-02	9.50E-05	1.05E-02	9.86E-03	2.18E-02
INVERTEBRATE		1.04E-02	3.61E-03	1.09E-03	7.82E-06	3.73E-04	1.64E-03	4.12E-03
ALGAE		1.38E-03	1.18E-04	5.93E-05	3.69E-07	4.17E-06	1.46E-04	1.69E-04
DRINKING		5.86E-10	6.40E-10	1.39E-10	6.72E-11	7.64E-11	1.02E-09	1.51E-10
SHORELINE	2.19E-04	1.88E-04	1.88E-04	1.88E-04	1.88E-04	1.88E-04	1.88E-04	1.88E-04
SWIMMING	0.0	3.58E-06	3.58E-06	3.58E-06	3.58E-06	3.58E-06	3.58E-06	3.58E-06
BOATING	0.0	7.16E-06	7.16E-06	7.16E-06	7.16E-06	7.16E-06	7.16E-06	7.16E-06
TOTAL	2.19E-04	2.70E-01	9.98E-02	2.35E-02	3.02E-04	1.11E-02	1.18E-02	2.63E-02

	USAGE (KG/YR,HR/YR)	DILUTION	TIME(HR)	SHOREWIDTH FACTOR=0.2
FISH	6.9	5.0	25.00	
INVERTEBRATE	1.7	5.0	25.00	
ALGAE	0.0	5.0	25.00	
DRINKING	0.0	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	

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		2.43E-02	1.50E-02	1.50E-03	1.66E-05	7.63E-04	1.68E-03	1.58E-03
INVERTEBRATE		6.70E-04	2.94E-04	6.57E-05	1.11E-06	2.19E-05	1.06E-04	2.42E-04
ALGAE		1.41E-06	1.59E-07	5.91E-08	8.87E-10	4.17E-09	1.51E-07	1.69E-07
DRINKING		1.15E-12	1.45E-12	1.43E-13	1.62E-13	7.64E-14	1.12E-12	1.47E-13
SHORELINE	4.70E-05	4.03E-05	4.03E-05	4.03E-05	4.03E-05	4.03E-05	4.03E-05	4.03E-05
SWIMMING	0.0	1.43E-12	1.43E-12	1.43E-12	1.43E-12	1.43E-12	1.43E-12	1.43E-12
BOATING	0.0	3.58E-08	3.58E-08	3.58E-08	3.58E-08	3.58E-08	3.58E-08	3.58E-08
TOTAL	4.70E-05	2.50E-02	1.53E-02	1.61E-03	5.81E-05	8.25E-04	1.83E-03	1.86E-03

	USAGE (KG/YR,HR/YR)	DILUTION	TIME(HR)	SHOREWIDTH FACTOR=0.2
FISH	0.5	5.0	25.00	
INVERTEBRATE	0.1	5.0	25.00	
ALGAE	0.0	5.0	25.00	
DRINKING	0.0	500.0	112.00	
SHORELINE	3.0	5.0	1.00	
SWIMMING	0.0	5.0	1.00	
BOATING	0.5	5.0	1.00	

* * * 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		4.42E-01	9.40E-02	6.54E-02	7.26E-05	2.29E-02	8.06E-03	4.71E-02
INVERTEBRATE		2.03E-02	6.17E-03	2.37E-03	5.79E-06	7.83E-04	3.28E-03	8.75E-03
ALGAE		9.62E-07	7.02E-08	4.38E-08	9.32E-11	2.97E-09	1.02E-07	1.20E-07
DRINKING		1.48E-11	1.84E-11	1.30E-11	2.41E-12	5.48E-12	7.01E-11	1.22E-11
SHORELINE	5.59E-04	4.80E-04	4.80E-04	4.80E-04	4.80E-04	4.80E-04	4.80E-04	4.80E-04
SWIMMING	0.0	5.05E-06	5.05E-06	5.05E-06	5.05E-06	5.05E-06	5.05E-06	5.05E-06
BOATING	0.0	5.05E-06	5.05E-06	5.05E-06	5.05E-06	5.05E-06	5.05E-06	5.05E-06
TOTAL	5.59E-04	4.63E-01	1.01E-01	6.82E-02	5.69E-04	2.41E-02	1.18E-02	5.64E-02

	USAGE (KG/YR,HR/YR)	DILUTION	TIME(HR)
FISH	21.0	7.0	31.00
INVERTEBRATE	5.0	7.0	31.00
ALGAE	0.0	7.0	31.00
DRINKING	0.0	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=0.2

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		3.47E-01	8.81E-02	3.95E-02	6.44E-05	1.74E-02	9.13E-03	3.57E-02
INVERTEBRATE		1.55E-02	4.89E-03	1.69E-03	5.12E-06	5.95E-04	2.53E-03	6.59E-03
ALGAE		9.63E-07	7.28E-08	4.22E-08	1.08E-10	2.97E-09	1.03E-07	1.20E-07
DRINKING		1.80E-11	2.36E-11	9.98E-12	2.80E-12	5.48E-12	7.11E-11	1.14E-11
SHORELINE	7.50E-04	6.44E-04	6.44E-04	6.44E-04	6.44E-04	6.44E-04	6.44E-04	6.44E-04
SWIMMING	0.0	1.01E-05	1.01E-05	1.01E-05	1.01E-05	1.01E-05	1.01E-05	1.01E-05
BOATING	0.0	5.05E-06	5.05E-06	5.05E-06	5.05E-06	5.05E-06	5.05E-06	5.05E-06
TOTAL	7.50E-04	3.63E-01	9.36E-02	4.19E-02	7.28E-04	1.87E-02	1.23E-02	4.30E-02

	USAGE (KG/YR,HR/YR)	DILUTION	TIME(HR)
FISH	16.0	7.0	31.00
INVERTEBRATE	3.8	7.0	31.00
ALGAE	0.0	7.0	31.00
DRINKING	0.0	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=0.2

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		1.83E-01	6.84E-02	1.58E-02	6.64E-05	7.52E-03	7.04E-03	1.54E-02
INVERTEBRATE		7.36E-03	2.57E-03	7.72E-04	5.47E-06	2.66E-04	1.17E-03	2.93E-03

ALGAE		9.76E-04	8.39E-05	4.19E-05	2.58E-07	2.97E-06	1.04E-04	1.20E-04
DRINKING		4.23E-08	4.59E-08	9.98E-09	6.70E-09	5.48E-09	7.33E-08	1.09E-08
SHORELINE	1.57E-04	1.34E-04	1.34E-04	1.34E-04	1.34E-04	1.34E-04	1.34E-04	1.34E-04
SWIMMING	0.0	2.52E-06	2.52E-06	2.52E-06	2.52E-06	2.52E-06	2.52E-06	2.52E-06
BOATING	0.0	5.05E-06	5.05E-06	5.05E-06	5.05E-06	5.05E-06	5.05E-06	5.05E-06
TOTAL	1.57E-04	1.91E-01	7.12E-02	1.67E-02	2.14E-04	7.93E-03	8.46E-03	1.86E-02

	USAGE (KG/YR,HR/YR)	DILUTION	TIME(HR)	SHOREWIDTH FACTOR=0.2
FISH	6.9	7.0	31.00	
INVERTEBRATE	1.7	7.0	31.00	
ALGAE	0.0	7.0	31.00	
DRINKING	0.0	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	

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		1.72E-02	1.07E-02	1.07E-03	1.16E-05	5.45E-04	1.20E-03	1.11E-03
INVERTEBRATE		4.74E-04	2.10E-04	4.67E-05	7.75E-07	1.57E-05	7.57E-05	1.72E-04
ALGAE		9.96E-07	1.13E-07	4.18E-08	6.20E-10	2.97E-09	1.08E-07	1.19E-07
DRINKING		8.25E-11	1.04E-10	1.03E-11	1.62E-11	5.48E-12	8.03E-11	1.06E-11
SHORELINE	3.36E-05	2.88E-05	2.88E-05	2.88E-05	2.88E-05	2.88E-05	2.88E-05	2.88E-05
SWIMMING	0.0	1.01E-12	1.01E-12	1.01E-12	1.01E-12	1.01E-12	1.01E-12	1.01E-12
BOATING	0.0	2.52E-08	2.52E-08	2.52E-08	2.52E-08	2.52E-08	2.52E-08	2.52E-08
TOTAL	3.36E-05	1.77E-02	1.09E-02	1.14E-03	4.12E-05	5.89E-04	1.31E-03	1.31E-03

	USAGE (KG/YR,HR/YR)	DILUTION	TIME(HR)	SHOREWIDTH FACTOR=0.2
FISH	0.5	7.0	31.00	
INVERTEBRATE	0.1	7.0	31.00	
ALGAE	0.0	7.0	31.00	
DRINKING	0.0	7.0	19.00	
SHORELINE	3.0	7.0	7.00	
SWIMMING	0.0	7.0	7.00	
BOATING	0.5	7.0	7.00	

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

SPORTFISH HARVEST

			DOSE (MAN-REM)						
PATHWAY	AGE GROUP	USAGE	BONE	LIVER	TOTAL BODY	THYROID	KIDNEY	LUNG	GI-LLI
FISH	ADULT	7.24E+04	1.17E+00	2.97E-01	2.08E-01	1.51E-04	7.73E-02	2.72E-02	1.23E-01
FISH	TEENAGER	1.16E+04	1.94E-01	5.92E-02	2.60E-02	2.80E-05	1.24E-02	6.48E-03	1.95E-02
FISH	CHILD	7.00E+03	1.51E-01	6.60E-02	1.44E-02	4.05E-05	7.46E-03	7.00E-03	1.17E-02
FISH	TOTAL	9.10E+04	1.52E+00	4.22E-01	2.49E-01	2.19E-04	9.71E-02	4.07E-02	1.54E-01

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

DOSE (MAN-REM)

PATHWAY	AGE GROUP	USAGE	BONE	LIVER	TOTAL BODY	THYROID	KIDNEY	LUNG	GI-LLI
FISH	ADULT	8.74E+07	4.39E+00	1.23E+00	8.62E-01	4.94E-04	3.28E-01	1.16E-01	4.55E-01
FISH	TEENAGER	1.40E+07	7.32E-01	2.45E-01	1.07E-01	9.20E-05	5.24E-02	2.75E-02	7.23E-02
FISH	CHILD	8.45E+06	5.83E-01	2.77E-01	5.91E-02	1.33E-04	3.17E-02	2.97E-02	4.35E-02
FISH	TOTAL	1.10E+08	5.70E+00	1.75E+00	1.03E+00	7.20E-04	4.12E-01	1.73E-01	5.71E-01

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

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

NEPA DOSES

NOTE--TOATL NEPA DOSE MUST INCLUDE SPORT CATCH, DOSES BELOW ARE FOR COMMERCIAL CATCH ONLY

DOSE (MAN-REM)

PATHWAY	AGE GROUP	USAGE	BONE	LIVER	TOTAL BODY	THYROID	KIDNEY	LUNG	GI-LLI
FISH	ADULT	1.23E+05	1.76E+00	4.91E-01	3.45E-01	1.98E-04	1.31E-01	4.63E-02	1.82E-01
FISH	TEENAGER	1.97E+04	2.93E-01	9.83E-02	4.28E-02	3.69E-05	2.10E-02	1.10E-02	2.89E-02
FISH	CHILD	1.19E+04	2.33E-01	1.11E-01	2.37E-02	5.33E-05	1.27E-02	1.19E-02	1.74E-02
FISH	TOTAL	1.55E+05	2.28E+00	7.00E-01	4.12E-01	2.88E-04	1.65E-01	6.93E-02	2.29E-01

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

SPORTFISH HARVEST

			DOSE (MAN-REM)						
PATHWAY	AGE GROUP	USAGE	BONE	LIVER	TOTAL BODY	THYROID	KIDNEY	LUNG	GI-LLI
INVER	ADULT	7.94E+03	2.44E-02	9.13E-03	3.40E-03	5.54E-06	1.21E-03	5.10E-03	1.27E-02
INVER	TEENAGER	1.26E+03	3.93E-03	1.52E-03	5.05E-04	1.03E-06	1.93E-04	8.23E-04	2.00E-03
INVER	CHILD	7.94E+02	2.66E-03	1.13E-03	3.25E-04	1.54E-06	1.21E-04	5.35E-04	1.25E-03
INVER	TOTAL	1.00E+04	3.10E-02	1.18E-02	4.23E-03	8.10E-06	1.52E-03	6.46E-03	1.60E-02

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

DOSE (MAN-REM)

PATHWAY	AGE GROUP	USAGE	BONE	LIVER	TOTAL BODY	THYROID	KIDNEY	LUNG	GI-LLI
INVER	ADULT	1.27E+07	1.48E-02	6.18E-03	2.27E-03	2.97E-06	8.36E-04	3.53E-03	8.54E-03
INVER	TEENAGER	2.02E+06	2.39E-03	1.03E-03	3.37E-04	5.50E-07	1.33E-04	5.70E-04	1.35E-03
INVER	CHILD	1.27E+06	1.63E-03	7.68E-04	2.16E-04	8.23E-07	8.36E-05	3.70E-04	8.40E-04
INVER	TOTAL	1.60E+07	1.88E-02	7.98E-03	2.83E-03	4.35E-06	1.05E-03	4.47E-03	1.07E-02

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

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

NEPA DOSES

NOTE--TOATL NEPA DOSE MUST INCLUDE SPORT CATCH, DOSES BELOW ARE FOR COMMERCIAL CATCH ONLY

DOSE (MAN-REM)

PATHWAY	AGE GROUP	USAGE	BONE	LIVER	TOTAL BODY	THYROID	KIDNEY	LUNG	GI-LLI
INVER	ADULT	7.94E+02	2.14E-03	8.91E-04	3.28E-04	4.29E-07	1.20E-04	5.09E-04	1.23E-03
INVER	TEENAGER	1.26E+02	3.44E-04	1.48E-04	4.85E-05	7.93E-08	1.92E-05	8.22E-05	1.94E-04
INVER	CHILD	7.94E+01	2.35E-04	1.11E-04	3.12E-05	1.19E-07	1.20E-05	5.34E-05	1.21E-04
INVER	TOTAL	1.00E+03	2.72E-03	1.15E-03	4.07E-04	6.27E-07	1.52E-04	6.45E-04	1.55E-03

* * * POPULATION WATER CONSUMPTION DOSES * * *

PATHWAY	AGE GROUP	USAGE	DOSE (MAN-REM) BONE	LIVER	TOTAL BODY	THYROID	KIDNEY	LUNG	GI-LLI
DRINKING	ADULT	2.44E+02	2.45E-09	1.24E-09	7.93E-10	0.0	3.83E-10	1.27E-10	4.52E-11
DRINKING	TEENAGER	3.64E+01	4.07E-10	2.38E-10	8.59E-11	0.0	5.70E-11	2.94E-11	6.46E-12
DRINKING	CHILD	5.20E+01	1.03E-09	6.87E-10	1.11E-10	0.0	8.15E-11	7.77E-11	9.06E-12
DRINKING	TOTAL	3.33E+02	3.89E-09	2.16E-09	9.89E-10	0.0	5.21E-10	2.34E-10	6.07E-11

POPULATION=1.00E+00 DILUTION=1.00E+02 TRANSIT TIME=1.00E+06 HR (INCLUDING 24 HR FOR TREATMENT FACILITY)

AVERAGE INDIVIDUAL CONSUMPTION (L/YR) ADULT=3.70E+02 TEEN=2.60E+02 CHILD=2.60E+02

-----CUMULATIVE TOTAL-----

PATHWAY	AGE GROUP	USAGE	BONE	LIVER	TOTAL BODY	THYROID	KIDNEY	LUNG	GI-LLI
DRINKING	CUMUL TOTAL	3.33E+02	3.89E-09	2.16E-09	9.89E-10	0.0	5.21E-10	2.34E-10	6.07E-11

HYDROSPHERE TRITIUM DOSE

PATHWAY	AGE GROUP	USAGE	BONE	LIVER	TOTAL BODY	THYROID	KIDNEY	LUNG	GI-LLI

* * * RECREATION POPULATION DOSES * * *

PATHWAY	AGE GROUP	USAGE	DOSE(MAN-REM) SKIN	TOTAL BODY	THYROID
SHORELINE	TOTAL POPUL	1.66E+07	1.86E-01	1.59E-01	1.59E-01

LOCATION- DOWNSTREAM

DILUTION=0.70E+01 TRANSIT TIME=0.40E+01 HR SWF=0.2

PATHWAY	AGE GROUP	USAGE	DOSE(MAN-REM) SKIN	TOTAL BODY	THYROID
SWIMMING	TOTAL POPUL	1.66E+07	0.0	1.68E-03	1.68E-03

LOCATION- DOWNSTREAM

DILUTION=0.70E+01 TRANSIT TIME=0.40E+01 HR

PATHWAY	AGE GROUP	USAGE	DOSE(MAN-REM) SKIN	TOTAL BODY	THYROID
BOATING	TOTAL POPUL	1.66E+07	0.0	8.40E-04	8.40E-04

LOCATION- DOWNSTREAM

DILUTION=0.70E+01 TRANSIT TIME=0.40E+01 HR

* * * DOSE TO BIOTA * * *

MRADS PER YEAR

ILUTION= 7.00E+00 TRANSIT TIME= 4.00E+00 HR

	INTERNAL	EXTERNAL	TOTAL
FISH	1.56E+00	4.22E-01	1.98E+00
INVERTEBRATE	3.65E-01	8.42E-01	1.21E+00
ALGAE	6.98E+00	8.86E-04	6.98E+00
MUSKRAT	1.09E+01	2.81E-01	1.12E+01
RACCOON	1.67E-01	2.10E-01	3.77E-01
HERON	7.33E+00	2.81E-01	7.61E+00
DUCK	1.08E+01	4.21E-01	1.12E+01

* * * 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
51SB 124	2.40E-03	2.04E-04	2.04E-04	8.51E-02	8.49E-02
51SB 125	1.06E-01	2.85E-02	2.85E-02	2.69E-01	2.69E-01
56BA 140	1.08E-03	6.47E-06	4.87E-06	5.99E-03	4.51E-03
58CE 141	1.65E-04	3.55E-07	3.54E-07	2.15E-03	2.15E-03
58CE 144	3.79E-05	3.23E-07	3.17E-07	8.52E-03	8.36E-03
55CS 134	1.78E-02	5.25E-01	1.42E-02	2.95E+01	7.99E-01
55CS 136	7.26E-04	2.09E-03	2.55E-05	2.88E+00	3.52E-02
55CS 137	3.11E-02	5.64E-01	3.70E-02	1.81E+01	1.19E+00
24CR 51	6.57E-03	5.51E-06	5.32E-06	8.39E-04	8.10E-04
27CO 57	1.02E-04	2.51E-06	2.30E-06	2.47E-02	2.26E-02
27CO 58	1.75E-02	1.15E-03	9.11E-04	6.56E-02	5.21E-02
27CO 60	3.15E-02	8.00E-02	7.87E-02	2.54E+00	2.50E+00
53I 131	4.90E-04	4.44E-06	9.53E-04	9.07E-03	1.95E+00
26FE 55	2.05E-02	4.04E-03	5.87E-09	1.97E-01	2.86E-07
26FE 59	4.30E-04	5.74E-05	1.77E-05	1.34E-01	4.11E-02
25MN 54	2.89E-03	1.61E-03	4.79E-04	5.55E-01	1.66E-01
42MO 99	4.47E-04	1.15E-06	1.10E-06	2.56E-03	2.46E-03
28NI 63	5.98E-03	3.42E-04	0.0	5.72E-02	0.0
41NB 97	7.15E-03	4.02E-06	4.02E-06	5.62E-04	5.62E-04
15P 32	3.91E-03	2.36E-01	1.11E-07	6.05E+01	2.84E-05
44RU 103	1.74E-05	2.91E-07	2.87E-07	1.67E-02	1.65E-02
47AG 110M	2.46E-03	1.03E-03	1.03E-03	4.20E-01	4.20E-01
11NA 24	2.11E-05	6.37E-07	6.37E-07	3.02E-02	3.02E-02
38SR 89	6.36E-06	2.80E-07	1.46E-10	4.40E-02	2.30E-05
38SR 90	1.48E-06	1.35E-05	3.58E-12	9.10E+00	2.42E-06
38SR 92	3.03E-05	1.28E-07	1.28E-07	4.21E-03	4.21E-03
43TC 99M	3.43E-05	2.37E-08	2.37E-08	6.92E-04	6.92E-04
74W 187	1.34E-05	4.77E-08	4.76E-08	3.56E-03	3.55E-03
30ZN 65	2.54E-04	5.37E-04	2.29E-05	2.11E+00	9.02E-02
40ZR 95	1.22E-03	4.34E-05	4.34E-05	3.56E-02	3.56E-02
TOTAL		1.44E+00	1.62E-01		

Indian Point 3

EFFLUENT AND WASTE DISPOSAL

SEMI - ANNUAL REPORT

F. METEOROLOGICAL DATA
THIRD AND FOURTH
QUARTERS, 1982

TABLE 4A

HOURS [redacted] EACH WIND SPEED AND DIRE[redacted]ON [a]

PERIOD OF RECORD: July-September 1982

STABILITY CLASS: A

ELEVATION: 10 Meter

Wind Direction	Wind Speed (mph) at 10m Level						
	1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	18	53	8	0	0	0	79
NNE	11	16	3	0	0	0	30
NE	7	0	0	0	0	0	7
ENE	3	1	0	0	0	0	4
E	2	0	0	0	0	0	2
ESE	5	0	0	0	0	0	5
SE	5	1	0	0	0	0	6
SSE	38	6	0	0	0	0	44
S	48	27	1	0	0	0	76
SSW	10	9	2	0	0	0	21
SW	11	5	1	0	0	0	17
WSW	11	3	0	0	0	0	14
W	10	8	0	0	0	0	18
WNW	9	9	0	0	0	0	18
NW	4	6	0	0	0	0	10
NNW	12	7	0	0	0	0	19
VARIABLE							
Total	204	151	15	0	0	0	370

Periods of calm (hours): 1

Hours of missing data: TOTAL MISSING HOURS FOR ALL STABILITY CLASSES DURING THIRD QUARTER = 2

[a] In the table, record the total number of hours of each category of wind direction for each calendar quarter. Provide similar tables separately for each atmospheric stability class and elevation.

TABLE 4A

HOURS EACH WIND SPEED AND DIRECTION [a]

PERIOD OF RECORD: July-September 1982

STABILITY CLASS: B

ELEVATION: 10 Meter

Wind Direction	Wind Speed (mph) at 10m Level						
	1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	13	14	1	0	0	0	28
NNE	12	20	1	0	0	0	33
NE	5	0	0	0	0	0	5
ENE	3	0	0	0	0	0	3
E	2	0	0	0	0	0	2
ESE	2	0	0	0	0	0	2
SE	7	0	0	0	0	0	7
SSE	4	1	0	0	0	0	5
S	8	3	0	0	0	0	11
SSW	7	2	0	0	0	0	9
SW	1	4	0	0	0	0	5
WSW	1	0	0	0	0	0	1
W	3	2	0	0	0	0	5
WNW	3	2	0	0	0	0	5
NW	3	3	0	0	0	0	6
NNW	3	6	0	0	0	0	9
VARIABLE							
Total	77	57	2	0	0	0	136

Periods of calm (hours): 0
Hours of missing data:

[a] In the table, record the total number of hours of each category of wind direction for each calendar quarter. Provide similar tables separately for each atmospheric stability class and elevation.

TABLE 4A

HOURS [redacted] EACH WIND SPEED AND DIRE[redacted]ON [a]

PERIOD OF RECORD: July-September 1982

STABILITY CLASS: C

ELEVATION: 10 Meter

Wind Direction	Wind Speed (mph) at 10m Level						
	1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	16	9	1	0	0	0	26
NNE	12	6	2	0	0	0	20
NE	9	3	0	0	0	0	12
ENE	5	0	0	0	0	0	5
E	1	0	0	0	0	0	1
ESE	1	0	0	0	0	0	1
SE	3	0	0	0	0	0	3
SSE	6	1	0	0	0	0	7
S	4	2	0	0	0	0	6
SSW	1	4	0	0	0	0	5
SW	5	5	0	0	0	0	10
WSW	2	1	0	0	0	0	3
W	7	1	0	0	0	0	8
WNW	3	2	0	0	0	0	5
NW	1	2	0	0	0	0	3
NNW	4	0	0	0	0	0	4
VARIABLE							
Total	80	36	3	0	0	0	119

Periods of calm (hours): 0

Hours of missing data:

[a] In the table, record the total number of hours of each category of wind direction for each calendar quarter. Provide similar tables separately for each atmospheric stability class and elevation.

TABLE 4A

HOURS AT EACH WIND SPEED AND DIRECTION [a]

PERIOD OF RECORD: July-September 1982

STABILITY CLASS: D

ELEVATION: 10 Meter

Wind Direction	Wind Speed (mph) at 10m Level						
	1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	33	31	12	0	0	0	76
NNE	61	83	30	0	0	0	174
NE	55	10	0	0	0	0	65
ENE	25	1	0	0	0	0	26
E	12	0	0	0	0	0	12
ESE	15	0	0	0	0	0	15
SE	14	0	0	0	0	0	14
SSE	27	3	0	0	0	0	30
S	19	10	0	0	0	0	29
SSW	10	24	1	0	0	0	35
SW	6	9	0	0	0	0	15
WSW	7	2	0	0	0	0	9
W	10	4	1	0	0	0	14
WNW	8	0	0	0	0	0	8
NW	11	2	1	0	0	0	14
NNW	5	8	2	0	0	0	15
VARIABLE							
Total	318	187	46	0	0	0	551

Periods of calm (hours): 2

Hours of missing data:

[a] In the table, record the total number of hours of each category of wind direction for each calendar quarter. Provide similar tables separately for each atmospheric stability class and elevation.

TABLE 4A

HOURS [redacted] EACH WIND SPEED AND DIREC[redacted]ON [a]

PERIOD OF RECORD: July-September 1982

STABILITY CLASS: E

ELEVATION: 10 Meter

Wind Direction	Wind Speed (mph) at 10m Level						
	1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	22	21	0	0	0	0	43
NNE	56	38	1	0	0	0	95
NE	128	23	0	0	0	0	151
ENE	77	1	0	0	0	0	78
E	32	0	0	0	0	0	32
ESE	22	0	0	0	0	0	22
SE	29	0	0	0	0	0	29
SSE	19	0	0	0	0	0	19
S	42	14	0	0	0	0	56
SSW	29	20	0	0	0	0	49
SW	3	3	0	0	0	0	6
WSW	5	0	0	0	0	0	5
W	9	4	0	0	0	0	13
WNW	2	10	1	0	0	0	13
NW	3	8	0	0	0	0	11
NNW	13	10	3	0	0	0	26
VARIABLE							
Total	491	152	5	0	0	0	648

Periods of calm (hours): 25
Hours of missing data:

[a] In the table, record the total number of hours of each category of wind direction for each calendar quarter. Provide similar tables separately for each atmospheric stability class and elevation.

TABLE 4A

HOURS AT EACH WIND SPEED AND DIRECTION [a]

PERIOD OF RECORD: July-September 1982

STABILITY CLASS: F

ELEVATION: 10 Meter

Wind Direction	Wind Speed (mph) at 10m Level						
	1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	7	0	0	0	0	0	7
NNE	77	7	0	0	0	0	84
NE	106	38	0	0	0	0	144
ENE	29	3	0	0	0	0	32
E	19	0	0	0	0	0	19
ESE	5	0	0	0	0	0	5
SE	6	0	0	0	0	0	6
SSE	4	0	0	0	0	0	4
S	6	0	0	0	0	0	6
SSW	3	1	0	0	0	0	4
SW	0	0	0	0	0	0	0
WSW	1	0	0	0	0	0	1
W	1	0	0	0	0	0	1
WNW	2	0	0	0	0	0	2
NW	0	0	0	0	0	0	0
NNW	3	0	0	0	0	0	3
VARIABLE							
Total	269	49	0	0	0	0	318

Periods of calm (hours): 11
Hours of missing data:

[a] In the table, record the total number of hours of each category of wind direction for each calendar quarter. Provide similar tables separately for each atmospheric stability class and elevation.

TABLE 4A

HOURS AT EACH WIND SPEED AND DIRECTION [a]

PERIOD OF RECORD: July-September 1982

STABILITY CLASS: G

ELEVATION: 10 Meter

Wind Direction	Wind Speed (mph) at 10m Level						
	1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	0	0	0	0	0	0	0
NNE	6	0	0	0	0	0	6
NE	10	4	0	0	0	0	14
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
NW	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0
VARIABLE							
Total	21	4	0	0	0	0	25

Periods of calm (hours): 0
Hours of missing data:

[a] In the table, record the total number of hours of each category of wind direction for each calendar quarter. Provide similar tables separately for each atmospheric stability class and elevation.

TABLE 4A

HOURS EACH WIND SPEED AND DIRECTION [a]

PERIOD OF RECORD: October-December 1982

STABILITY CLASS: A

ELEVATION: 10 Meter

Wind Direction	Wind Speed (mph) at 10m Level 1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	6	20	3	0	0	0	29
NNE	3	11	3	0	0	0	17
NE	2	2	0	0	0	0	4
ENE	3	0	0	0	0	0	3
E	2	0	0	0	0	0	2
ESE	2	0	0	0	0	0	2
SE	9	4	0	0	0	0	13
SSE	14	3	0	0	0	0	17
S	19	12	0	0	0	0	31
SSW	8	3	0	0	0	0	11
SW	4	0	0	0	0	0	4
WSW	2	1	2	0	0	0	5
W	2	6	0	0	0	0	8
WNW	1	10	2	0	0	0	13
NW	0	8	2	0	0	0	10
NNW	0	15	4	0	0	0	19
VARIABLE							
Total	77	95	16	0	0	0	188

Periods of calm (hours): 0

Hours of missing data: TOTAL MISSING HOURS FOR ALL STABILITY CLASSES DURING FOURTH QUARTER = 2

[a] In the table, record the total number of hours of each category of wind direction for each calendar quarter. Provide similar tables separately for each atmospheric stability class and elevation.

TABLE 4A

HOURS OF EACH WIND SPEED AND DIRECTION [a]

PERIOD OF RECORD: October-December 1982

STABILITY CLASS: B

ELEVATION: 10 Meter

Wind Direction	Wind Speed (mph) at 10m Level						
	1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	1	5	0	0	0	0	6
NNE	0	4	2	0	0	0	6
NE	2	2	0	0	0	0	4
ENE	1	0	0	0	0	0	1
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	4	1	0	0	0	0	5
S	1	4	0	0	0	0	5
SSW	3	0	0	0	0	0	3
SW	1	5	0	0	0	0	6
WSW	2	0	0	0	0	0	2
W	2	0	0	0	0	0	2
WNW	2	5	1	0	0	0	8
NW	0	5	3	1	0	0	9
NNW	0	7	5	0	0	0	12
VARIABLE							
Total	27	38	11	1	0	0	77

Periods of calm (hours): 0

Hours of missing data:

[a] In the table, record the total number of hours of each category of wind direction for each calendar quarter. Provide similar tables separately for each atmospheric stability class and elevation.

TABLE 9A

HOURS AT EACH WIND SPEED AND DIRECTION [a]

PERIOD OF RECORD: October-December 1982

STABILITY CLASS: C

ELEVATION: 10 Meter

Wind Direction	Wind Speed (mph) at 10m Level						
	1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	6	7	2	2	0	0	17
NNE	3	5	2	0	0	0	10
NE	1	1	0	0	0	0	2
ENE	0	1	0	0	0	0	1
E	1	0	0	0	0	0	1
ESE	4	0	0	0	0	0	4
SE	3	1	0	0	0	0	4
SSE	0	2	0	0	0	0	2
S	3	2	0	0	0	0	5
SSW	1	1	0	0	0	0	2
SW	0	1	0	0	0	0	1
WSW	0	1	0	0	0	0	1
W	0	2	0	0	0	0	2
WNW	1	2	1	0	0	0	4
NW	1	5	6	0	0	0	12
NNW	2	4	3	1	0	0	10
VARIABLE							
Total	26	35	14	3	0	0	78

Periods of calm (hours): 0

Hours of missing data:

[a] In the table, record the total number of hours of each category of wind direction for each calendar quarter. Provide similar tables separately for each atmospheric stability class and elevation.

TABLE 4A

HOURS[redacted] EACH WIND SPEED AND DIRE[redacted]ON [a]

PERIOD OF RECORD: October-December 1982

STABILITY CLASS: D

ELEVATION: 10 Meter

Wind Direction	Wind Speed (mph) at 10m Level						
	1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	43	69	19	5	1	0	137
NNE	63	86	43	2	0	0	194
NE	68	26	2	0	0	0	96
ENE	30	2	0	0	0	0	32
E	17	1	0	0	0	0	18
ESE	18	0	0	0	0	0	18
SE	28	2	0	0	0	0	30
SSE	23	10	1	0	0	0	34
S	20	16	0	0	0	0	36
SSW	15	6	0	0	0	0	21
SW	9	1	1	0	0	0	11
WSW	6	6	0	0	0	0	12
W	9	16	0	0	0	0	25
WNW	7	51	6	0	0	0	64
NW	5	43	38	2	0	0	88
NNW	7	50	24	0	0	0	81
VARIABLE							
Total	368	385	134	9	1	0	897

Periods of calm (hours): 3
Hours of missing data:

[a] In the table, record the total number of hours of each category of wind direction for each calendar quarter. Provide similar tables separately for each atmospheric stability class and elevation.

TABLE 4A

HOURS AT EACH WIND SPEED AND DIRECTION [a]

PERIOD OF RECORD: October-December 1982

STABILITY CLASS: E

ELEVATION: 10 Meter

Wind Direction	Wind Speed (mph) at 10m Level						
	1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	32	4	0	0	0	0	36
NNE	80	16	1	0	0	0	97
NE	143	26	0	0	0	0	169
ENE	44	2	0	0	0	0	46
E	19	1	0	0	0	0	20
ESE	13	0	0	0	0	0	13
SE	21	0	0	0	0	0	21
SSE	36	16	0	0	0	0	52
S	29	35	6	0	0	0	70
SSW	22	10	0	0	0	0	32
SW	8	5	0	0	0	0	13
WSW	6	2	0	0	0	0	8
W	19	12	0	0	0	0	31
WNW	11	15	2	0	0	0	28
NW	5	4	0	0	0	0	9
NNW	12	4	1	0	0	0	17
VARIABLE							
Total	500	152	10	0	0	0	662

Periods of calm (hours): 10

Hours of missing data:

[a] In the table, record the total number of hours of each category of wind direction for each calendar quarter. Provide similar tables separately for each atmospheric stability class and elevation.

TABLE 4A

HOURS AT EACH WIND SPEED AND DIRECTION [a]

PERIOD OF RECORD: October-December 1982

STABILITY CLASS: F

ELEVATION: 10 Meter

Wind Direction	Wind Speed (mph) at 10m Level						
	1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	5	1	0	0	0	0	6
NNE	78	3	0	0	0	0	81
NE	69	31	0	0	0	0	100
ENE	18	0	0	0	0	0	18
E	12	1	0	0	0	0	13
ESE	5	0	0	0	0	0	5
SE	7	0	0	0	0	0	7
SSE	2	1	0	0	0	0	3
S	2	3	0	0	0	0	5
SSW	3	0	0	0	0	0	3
SW	2	0	0	0	0	0	2
WSW	1	0	0	0	0	0	1
W	2	0	0	0	0	0	2
WNW	2	0	0	0	0	0	2
NW	2	0	0	0	0	0	2
NNW	1	0	0	0	0	0	1
VARIABLE							
Total	211	40	0	0	0	0	251

Periods of calm (hours): 5
Hours of missing data:

[a] In the table, record the total number of hours of each category of wind direction for each calendar quarter. Provide similar tables separately for each atmospheric stability class and elevation.

TABLE 4A

HOURS AT EACH WIND SPEED AND DIRECTION [a]

PERIOD OF RECORD: October-December 1982

STABILITY CLASS: G

ELEVATION: 10 Meter

Wind Direction	Wind Speed (mph) at 10m Level						
	1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	2	0	0	0	0	0	2
NNE	14	1	0	0	0	0	15
NE	5	9	0	0	0	0	14
ENE	3	0	0	0	0	0	3
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
VARIABLE							
Total	25	10	0	0	0	0	35

Periods of calm (hours): 0
Hours of missing data:

[a] In the table, record the total number of hours of each category of wind direction for each calendar quarter. Provide similar tables separately for each atmospheric stability class and elevation.