Effluent and Waste Disposal

Semi-Annual Report

Facility Indian Point Station

Licensee Consolidated Edison Company of New York, Inc.
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 1 and 2 are presently subject to Technical Specifications on radioactive release limits as specified in Appendix B to Facility Operating License DPR-26 entitled "Environmental Technical Specification Requirements for Once-Through Cooling". These limits are the same as those specified in Section 3.9 of Appendix A to Facility Operating License DPR-26.

Indian Point Units 1, 2 and 3 are also subject to limits on radioactive waste releases that are set forth in sections 2.4 and 3.4 of Appendix B, Environmental Technical Specifications (ETSR) to DPR-64. The percent of technical specification limit reported in Table 1A and the percent of applicable limit reported in Table 2A are the percent of the quarterly limit 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 isotopic analysis in Table 1B and the values in Table 2.4-5 were used to determine the K, L, M, N values for stack releases.

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2.b&c) Iodines

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 has been used as the maximum permissible concentration for the purpose of calculating the percent of technical specification limit.

2. d) Liquid Effluents

All liquid discharges from Indian Point are made through a common discharge canal after dilution with circulating water with a minimum of 100,000 gpm dilution water for all discharges. The isotopic content, excluding tritium and dissolved noble gas, of continuous and batch mode discharges from the site for each calender quarter 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 each 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} μCi/cc.

3. Average Energy

The average energy ($\bar{E}$) of the radionuclide mixture in releases of fission and activation gases for the third quarter was $\bar{E}_\gamma$ of 3.24×10^{-2} Mev/dis and $\bar{E}_\beta$ of 1.47×10^{-1} Mev/dis. The corresponding values for the fourth quarter were $\bar{E}_\gamma$ of 3.00×10^{-2} Mev/dis and $\bar{E}_\gamma$ of 1.46×10^{-1} Mev/dis.

4. Measurements and Approximations of Total Radioactivity

a) Fission and Activation Gases

Analysis of effluent gases has been performed in compliance with the requirements of Table 2.4.2 of the ETSR. In the case of isolated tanks (batch releases) the total activity discharged is based on an isotopic analysis of each batch and the volume of gas in that batch corrected to standard temperature and pressure.

Vapor containment ventilation discharges have been treated as a continuous release, 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 discharge. This information is combined with the volume of air in each discharge to calculate the radionuclide composition of these discharges.

Other reported continuous discharges are based on a monthly sample of ventilation air for isotopic content and radioactive concentration of ventilation air recorded by the ventilation radiation monitor. This information is combined with total air volume discharged to determine the amount of each isotope discharged by this route. The batch and containment ventilation releases are then subtracted to determine the balance of continuous discharges.

For this reporting period, the plant vent was the major source of gaseous discharges due to a primary to secondary leak on No. 24 Steam Generator. The Condenser Air Ejector, Steam Generator Blowdown Flash Tank Vents contributed considerably to the fourth quarter gaseous effluents.

4.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 for a monthly 24 hour sample is determined and 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.

4. 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 ETS. This isotopic concentration data is combined with information on volume discharged to determine the amount of each isotope discharged in the 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

	Third Qtr.	Fourth Qtr.
Number of Batch Releases	403	491
Total Time Period Batch Release (min)	41 772	53 001
Maximum " " " " "	185	215
Average " " " " "	104	108
Minimum " " " " "	15	5
Average Stream Flow (cfs)	15 955	23 703

b) Gaseous

Number of Batch Releases	42	95
Total Time Period for Batch Releases (min)	12 323	55 346
Maximum " " " " " "	2 880	43 200
Average " " " " " "	293	583
Minimum " " " " " "	5	23

6. Abnormal Releases

a) Liquid

None

b) Gaseous

None

EFFLUENT AND WASTE DISPOSAL

SEMI-ANNUAL REPORT

B. GASEOUS EFFLUENTS

TABLE 1A

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (1976)

GASEOUS EFFLUENTS—SUMMATION OF ALL RELEASES

Indian Point Station	Unit	Quarter Third	Quarter Fourth	Est. Total Error, %
A. Fission & activation gases				
1. Total release	Ci	3.36 E+2	4.14 E+3	5.0 E1
2. Average release rate for period	μCi/sec	4.22 E+1	5.21 E+2	
3. Percent of Technical specification limit	%	7.50 E-2	1.67 E 0	
B. Iodines				
1. Total iodine-131	Ci	4.62 E-4	1.05 E-1	5.0 E1
2. Average release rate for period	μCi/sec	5.81 E-5	1.35 E-2	
3. Percent of technical specification limit	%	1.68 E-3	3.07 E-1	
C. Particulates				
1. Particulates with half-lives >8 days	Ci	1.80 E-3	5.00 E-3	5.0 E1
2. Average release rate for period	μCi/sec	2.26 E-4	6.29 E-4	
3. Percent of technical specification limit	%	1.68 E-3	3.07 E-1	
4. Gross alpha radioactivity	Ci	9.2 E-7	5.34 E-7	
D. Tritium				
1. Total release	Ci	5.17 E 0	7.32 E 0	5.0 E1
2. Average release rate for period	μCi/sec	5.50 E-1	9.21 E-1	
3. Percent of technical specification limit	%	. E	. E	

TABLE 1B

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (1976)

GASEOUS EFFLUENTS—ELEVATED RELEASE

		CONTINUOUS MODE		BATCH MODE	
Nuclides Released	Unit	Third Quarter	Fourth Quarter	Quarter	Quarter
1. Fission gases					
krypton-85	Ci	. E	. E	. E	. E
krypton-85m	Ci	. E	. E	. E	. E
krypton-87	Ci	. E	. E	. E	. E
krypton-88	Ci	. E	. E	. E	. E
xenon-133	Ci	< 9.0 E+01	< 9.9 E+01	. E	. E
xenón-135	Ci	. E	. E	. E	. E
xenon-135m	Ci	. E	. E	. E	. E
xenon-138	Ci	. E	. E	. E	. E
Others (specify)	Ci	. E	. E	. E	. E
	Ci	. E	. E	. E	. E
	Ci	. E	. E	. E	. E
unidentified	Ci	. E	. E	. E	. E
Total for period	Ci	< 9.0 E+01	< 9.0 E+01	. E	. E
2. Iodines					
iodine-131	Ci	< 7.73 E-5	< 1.58 E-3	. E	. E
iodine-133	Ci	< 3.12 E-4	< 4.75 E-4	. E	. E
iodine-135	Ci	< 3.71 E-3	< 3.67 E-3	. E	. E
Total for period	Ci	< 4.10 E-3	< 5.72 E-3	. E	. E
3. Particulates					
strontium-89	Ci	< 4.54 E-6	3.40 E-5	. E	. E
strontium-90	Ci	1.21 E-6	6.58 E-7	. E	. E
cesium-134	Ci	1.14 E-4	3.88 E-5	. E	. E
cesium-137	Ci	9.97 E-5	8.29 E-5	. E	. E
barium-lanthanum-140	Ci	< 7.48 E-5	8.57 E-5	. E	. E
Others (specify) Co^{58}	Ci	4.24 E-5	6.65 E-5	. E	. E
Co^{60}	Ci	7.61 E-5	1.01 E-4	. E	. E
I^{131}	Ci	8.30 E-5	3.50 E-5	. E	. E
unidentified	Ci	. E	. E	. E	. E

TABLE 1C

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (1976)

GASEOUS EFFLUENTS—GROUND-LEVEL RELEASES

Nuclides Released	Unit	CONTINUOUS MODE		BATCH MODE	
		Third Quarter	Fourth Quarter	Third Quarter	Fourth Quarter
1. Fission gases					
krypton-85	Ci	5.41 E+1	3.81 E+1	7.00 E-1	3.38 E 0
krypton-85m	Ci	8.76 E-1	4.94 E+1	2.35 E 0	2.43 E 0
krypton-87	Ci	7.18 E 0	3.11 E+1	3.20 E-1	1.10 E-1
krypton-88	Ci	3.46 E+1	7.89 E+1	2.61 E 0	1.56 E+1
xenon-133	Ci	4.18 E+1	1.00 E+3	3.23 E+1	1.76 E+3
xenon-135	Ci	6.12 E+1	9.47 E+2	2.00 E 0	2.39 E+1
xenon-135m	Ci	. E	2.64 E+1	4.00 E-2	1.00 E-2
xenon-138	Ci	. E	1.18 E+1	2.70 E-1	5.00 E-2
Others (specify)	Ci	. E	. E	. E	. E
	Ci	. E	. E	5.20 E 0	3.45 E 0
	Ci	. E	8.91 E 0	6.00 E-2	1.36 E+1
unidentified	Ci	. E	4.02 E+1	. E	. E
Total for period	Ci	2.00 E+2	2.23 E+3	4.58 E+1	1.82 E+3
2. Iodines					
iodine-131	Ci	1.98 E-4	1.05 E-1	. E	. E
iodine-133	Ci	< 6.51 E-4	4.38 E-3	. E	. E
iodine-135	Ci	< 9.79 E-3	<4.23 E-3	. E	. E
Total for period	Ci	1.06 E-2	1.13 E-1	. E	. E
3. Particulates					
strontium-89	Ci	<1.10 E-5	4.84 E-6	. E	. E
strontium-90	Ci	1.79 E-6	5.92 E-7	. E	. E
cesium-134	Ci	1.10 E-4	4.22 E-5	. E	. E
cesium-137	Ci	3.20 E-4	8.48 E-5	. E	. E
barium-lanthanum-140	Ci	2.44 E-4	2.45 E-4	. E	. E
Others (specify) Co^{58}	Ci	2.12 E-4	9.07 E-5	. E	. E
Co^{60}	Ci	3.05 E-4	1.91 E-5	. E	. E
I^{131}	Ci	1.04 E-4	4.07 E-3	. E	. E
unidentified	Ci	. E	. E	. E	. E

EFFLUENT AND WASTE DISPOSAL

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C. LIQUID EFFLUENTS

TABLE 2A

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (1976)

LIQUID EFFLUENTS--SUMMATION OF ALL RELEASES

	Unit	Quarter Third	Quarter Fourth	Est. Total Error, %
A. Fission and activation products				
1. Total release (not including tritium, gases, alpha)	Ci	6.93 E-1	2.64 E 0	2.5 E1
2. Average diluted concentration during period	μCi/ml	1.96 E-9	5.71 E-9	
3. Percent of applicable limit	%	3.17 E-2	3.15 E-1	
B. Tritium				
1. Total release	Ci	5.46 E+1	1.39 E+2	2.5 E1
2. Average diluted concentration during period	μCi/ml	1.55 E-7	3.00 E-7	
3. Percent of applicable limit	%	5.10 E-3	1.00 E-2	
C. Dissolved and entrained gases				
1. Total release	Ci	1.24 E-2	1.18 E+1	2.5 E1
2. Average diluted concentration during period	μCi/ml	3.52 E-11	2.56 E-8	
3. Percent of applicable limit	%	1.38 E-6	1.00 E-3	
D. Gross alpha radioactivity				
1. Total release	Ci	<4.27 E-4	<2.06 E-4	2.5 E1
E. Volume of waste released (prior to dilution)	liters	2.55 E+7	3.43 E+7	1.0 E1
F. Volume of dilution water used during period	liters	3.52 E+11	4.62 E11	1.0 E1

TABLE 2B

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (1976)

LIQUID EFFLUENTS

Nuclides Released	Unit	CONTINUOUS MODE		BATCH MODE	
		Third Quarter	Fourth Quarter	Third Quarter	Fourth Quarter
strontium-89	Ci	1.09 E-3	1.52 E-3	5.15 E-4	3.79 E-5
strontium-90	Ci	4.07 E-4	6.16 E-3	8.32 E-5	7.96 E-5
cesium-134	Ci	1.48 E-2	1.90 E-1	7.74 E-2	9.19 E-3
cesium-137	Ci	2.39 E-2	3.25 E-1	2.54 E-1	2.47 E-2
iodine-131	Ci	5.23 E-2	1.48 E 0	5.97 E-3	2.21 E-2
cobalt-58	Ci	2.20 E-3	3.69 E-2	4.01 E-2	1.15 E-1
cobalt-60	Ci	2.90 E-3	4.63 E-2	1.09 E-1	2.09 E-2
iron-59	Ci	<4.27 E-3	< 1.22 E-2	1.70 E-3	3.19 E-3
zinc-65	Ci	<4.09 E-3	< 9.82 E-3	< 2.88 E-3	<2.32 E-3
manganese-54	Ci	1.27 E-3	< 6.11 E-3	1.11 E-2	3.31 E-3
chromium-51	Ci	<1.33 E-2	< 8.00 E-2	1.92 E-2	1.90 E-2
zirconium-niobium-95	Ci	<1.95 E-3	< 8.39 E-3	1.41 E-3	<1.37 E-3
molybdenum-99	Ci	<1.31 E-2	< 1.20 E-1	<9.56 E-3	<1.55 E-2
technetium-99m	Ci	<1.09 E-3	< 1.89 E-2	1.94 E-3	<1.43 E-3
barium-lanthanum-140	Ci	<1.10 E-2	< 3.27 E-2	< 5.58 E-3	<8.71 E-3
cerium-141	Ci	1.82 E-3	< 1.30 E-2	< 2.51 E-3	<2.52 E-3
Other (specify)	Ci	. E	. E	. E	. E
	Ci	. E	. E	. E	. E
	Ci	. E	. E	. E	. E
	Ci	. E	. E	. E	. E
	Ci	. E	. E	. E	. E
unidentified	Ci	. E	. E	. E	. E
Total for period (above)	Ci	1.49 E-1	2.39 E 0	5.43 E-1	2.49 E-1
xenon-133	Ci	< 2.45 E-3	4.39 E 0	<2.61 E-3	2.26 E 0
xenon-135	Ci	2.69 E-3	5.17 E 0	4.64 E-3	<2.81 E-3

EFFLUENT AND WASTE DISPOSAL

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D. SOLID WASTE

TABLE 3

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (1976)

SOLID WASTE AND IRRADIATED FUEL SHIPMENTS

A. SOLID WASTE SHIPPED OFFSITE FOR BURIAL OR DISPOSAL (Not irradiated fuel)

1. Type of waste	Unit	2nd 6-month Period	Est. Total Error, %
a. Spent resins, filter sludges, evaporator bottoms, etc.	m^3	2.94 E+2	
	Ci	4.99 E+2	1.00 E+2
b. Dry compressible waste, contaminated equip, etc.	m^3	2.39 E+2	
	Ci	1.24 E+1	1.00 E+2
c. Irradiated components, control rods, etc.	m^3	. E	
	Ci	. E	. E
d. Other (describe)	m^3	. E	
	Ci	. E	. E

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

a.	Cesium - 134	%	2.07 E+1
	Cesium - 137	%	4.33 E+1
	Manganese - 54, Cobalt - 58 and 60	%	2.10 E+1
b.	Same as above	%	. E
		%	. E
		%	. E
c.		%	. E
		%	. E
		%	. E
d.		%	. E
		%	. E
		%	. E

3. Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
20	Truck	Sheffield, Illinois
14	Truck	Barnwell, South Carolina

B. IRRADIATED FUEL SHIPMENTS (Disposition)

Number of Shipments	Mode of Transportation	Destination
None		

EFFLUENT AND WASTE DISPOSAL

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E. RADIOLOGICAL IMPACT ON MAN

RADIOLOGICAL IMPACT EVALUATION

Doses from noble gas immersion, inhalation, ground deposition, and vegetation ingestion were evaluated at the residence located 730 meters east of Indian Point Unit No. 3, which is the point of maximum offsite concentration likely to be occupied. Doses from ingestion of milk and meat were evaluated for the cow located about 7.5 miles to the NNE. In all cases, these evaluations were performed using the model presented in Regulatory Guide 1.109.

Particulate and iodine releases were all considered as continuous releases; because of the large number of containment pressure reliefs and purges, these were also treated as continuous releases. Releases considered as batch releases (e.g., gas decay tank releases) were evaluated using the actual meteorological conditions during the time of release. Values of X/Q were computed using the straight line air flow model and assuming a ground level release and the NRC subroutine POLYN (from XOQDOQ) to compute values of σ_y and σ_z. Estimates of relative deposition per unit area (m^{-2}) were obtained from the numerical approximation presented in XOQDOQ for ground level releases.

Population integrated doses from gaseous effluents were computed based on linear interpolation of 1970 - 2010 population data contained in the Indian Point Unit No. 3 FSAR.

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

RADIOLOGICAL IMPACT ON MAN

(Reference Regulatory Guide 1.21, page 12)

A. Maximum Individual Doses

Pathways (Gaseous)	Total Body (mr)	Skin (mr)	Thyroid (mr)	Bone (mr)
Noble Gas Immersion				
a) Batch Releases	0.093	0.213	-	-
b) Continuous Releases	0.450	0.899	-	-
Inhalation	4.59×10^{-3}*	-	2.62×10^{-1}*	8.34×10^{-3}**
Ground Deposition	6.21×10^{-3}	7.31×10^{-3}	-	-
Milk Ingestion*	1.48×10^{-2}	-	1.93×10^{-1}	1.50×10^{-2}
Meat Ingestion	2.18×10^{-3}***	-	3.12×10^{-3}***	7.29×10^{-3}**
Vegetable Ingestion	1.61×10^{-2}***	-	5.25×10^{-1}***	4.64×10^{-2}**

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

Pathways (liquid)

All — See attached "LADTAP" printout
Attachment 1

B. Population Doses

Pathways (Gaseous)	Total Body (man-rem)	Thyroid (man-thyroid rem)
Noble Gas Immersion		
a) Batch Releases	4.55	-
b) Continuous Releases	22.9	-
Inhalation	0.225	10.5
Ground Deposition	0.125	-
Totals	27.8	10.5

Pathways (Liquid)	
All	See attached "LADTAP" printout Attachment 1

C. Average Doses to Individuals

1. Liquid-Total Body
   2.25×10^{-4}mr

2. Gaseous-Total Body
   1.4×10^{-3}mr

ATTACHMENT 2.

INDIAN POINT STATION - SECOND HALF 1976 SEMIANNUAL REPORT RELEASE EVALUATION

DISCHARGE=1.80E 03 CFS SOURCE TERM MULTIPLIER=1.00E 00

50-MILE POPULATION=1.90E 07 FRACTION -- ADULT=0.66
TEENAGER=0.14
CHILD=0.20

FRESHWATER SITE
RELEASES FROM ALL INDIAN POINT UNITS DURING SECOND HALF OF 1976

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
1H	3	1.94E 02	0.0	1.34E-07	1.34E-07	1.34E-07	1.34E-07	1.34E-07	1.34E-07	0.0	0.0	1.00E 00
24CR	51	1.31E-01	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
25MN	54	2.18E-02	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
27CO	58	1.93E-01	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	1.79E-01	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
26FE	59	2.14E-02	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
30ZN	65	1.91E-02	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
38SR	89	3.16E-03	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	6.73E-03	7.61E-03	0.0	1.86E-03	0.0	0.0	0.0	1.02E-04	0.0	0.0	1.00E 00
40ZR	95	1.31E-02	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
42MO	99	1.58E-01	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
43TC	99M	2.34E-02	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
53I	131	1.56E 00	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
55CS	134	2.91E-01	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	137	6.28E-01	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
56BA	140	5.80E-02	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	1.98E-02	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

* * * 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
1H	3	1.94E 02	0.0	1.06E-07	1.06E-07	1.06E-07	1.34E-07	1.06E-07	1.06E-07			
27CO	58	1.93E-01	0.0	9.92E-07	2.26E-06	0.0	0.0	0.0	1.34E-05			
27CO	60	1.79E-01	0.0	2.76E-06	6.30E-06	0.0	0.0	0.0	3.31E-05			
38SR	89	3.16E-03	4.60E-04	0.0	1.32E-05	0.0	0.0	0.0	4.99E-05			
38SR	90	6.73E-03	1.04E-02	0.0	2.57E-03	0.0	0.0	0.0	2.20E-04			
40ZR	95	1.31E-02	3.72E-08	1.24E-08	8.66E-09	0.0	1.54E-08	0.0	2.68E-05			
53I	131	1.56E 00	5.57E-06	7.87E-06	4.69E-06	2.27E-03	1.02E-05	0.0	1.49E-06			
55CS	134	2.91E-01	8.05E-05	1.94E-04	9.06E-05	0.0	4.80E-05	2.35E-05	2.24E-06			
55CS	137	6.28E-01	1.07E-04	1.44E-04	5.05E-05	0.0	3.71E-05	1.91E-05	1.92E-06			
56BA	140	5.80E-02	2.83E-05	3.48E-08	1.82E-06	0.0	8.68E-09	2.33E-08	4.14E-06			
58CE	141	1.98E-02	1.26E-08	8.46E-09	9.70E-10	0.0	2.94E-09	0.0	2.29E-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
1H	3	1.94E 02	0.0	2.03E-07	2.03E-07	2.03E-07	1.34E-07	2.03E-07	2.03E-07			
27CO	58	1.93E-01	0.0	1.85E-06	5.58E-06	0.0	0.0	0.0	1.10E-05			
27CO	60	1.79E-01	0.0	5.17E-06	1.55E-05	0.0	0.0	0.0	2.86E-05			
38SR	89	3.16E-03	1.38E-03	0.0	3.95E-05	0.0	0.0	0.0	5.15E-05			
38SR	90	6.73E-03	1.72E-02	0.0	4.36E-03	0.0	0.0	0.0	2.29E-04			
40ZR	95	1.31E-02	1.04E-07	2.42E-08	2.20E-08	0.0	1.54E-08	0.0	2.50E-05			
53I	131	1.56E 00	1.63E-05	1.67E-05	1.26E-05	5.43E-03	1.02E-05	0.0	1.43E-06			
55CS	134	2.91E-01	2.24E-04	3.77E-04	8.02E-05	0.0	4.80E-05	4.19E-05	2.04E-06			
55CS	137	6.28E-01	3.12E-04	3.02E-04	4.50E-05	0.0	3.71E-05	3.54E-05	1.84E-06			
56BA	140	5.80E-02	8.26E-05	7.25E-08	4.85E-06	0.0	8.68E-09	4.32E-08	4.21E-06			
58CE	141	1.98E-02	3.76E-08	1.88E-08	2.80E-09	0.0	2.94E-09	0.0	2.36E-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
1H	3	1.94E 02	0.0	3.07E-07	3.07E-07	3.07E-07	1.34E-07	3.07E-07	3.07E-07			
27CO	58	1.93E-01	0.0	3.78E-06	9.26E-06	0.0	0.0	0.0	9.79E-06			
27CO	60	1.79E-01	0.0	1.07E-05	2.56E-05	0.0	0.0	0.0	2.64E-05			
38SR	89	3.16E-03	2.93E-03	0.0	8.42E-05	0.0	0.0	0.0	5.48E-05			
38SR	90	6.73E-03	2.51E-02	0.0	6.40E-03	0.0	0.0	0.0	2.43E-04			
40ZR	95	1.31E-02	2.11E-07	5.32E-08	3.78E-08	0.0	1.54E-08	0.0	2.38E-05			
53I	131	1.56E 00	3.42E-05	4.07E-05	2.38E-05	1.31E-02	1.02E-05	0.0	1.53E-06			
55CS	134	2.91E-01	4.58E-04	8.24E-04	6.97E-05	0.0	4.80E-05	9.42E-05	1.96E-06			
55CS	137	6.28E-01	6.53E-04	7.31E-04	4.20E-05	0.0	3.71E-05	8.81E-05	1.89E-06			
56BA	140	5.80E-02	1.74E-04	1.75E-07	8.99E-06	0.0	8.68E-09	1.07E-07	4.43E-06			
58CE	141	1.98E-02	8.00E-08	4.91E-08	5.75E-09	0.0	2.94E-09	0.0	2.38E-05			

TOTAL NUMBER IN SOURCE TERM IS 17 TOTAL RELEASE IS 1.9693E 02

* * * AS LOW AS REASONABLY ACHIEVABLE * * *

ADULT DOSES

DOSE (MREM PER YEAR INTAKE)

PATHWAY	SKIN	BONE	LIVER	TOTAL BODY	THYROID	KIDNEY	LUNG	GI-LLI
FISH		3.61E-01	5.84E-01	4.20E-01	1.09E-01	1.96E-01	6.46E-02	1.39E-02
INVERTEBRATE		8.39E-03	1.49E-02	7.99E-03	8.66E-03	5.26E-03	9.02E-04	2.17E-02
ALGAE		7.82E-08	7.93E-08	6.20E-08	1.38E-07	3.06E-08	7.78E-09	1.99E-08
DRINKING		1.56E-12	1.80E-12	1.54E-12	2.56E-11	9.26E-13	4.76E-13	5.58E-13
SHORELINE	2.33E-03	1.99E-03	1.99E-03	1.99E-03	1.99E-03	1.99E-03	1.99E-03	1.99E-03
SWIMMING	0.0	2.54E-05	2.54E-05	2.54E-05	2.54E-05	2.54E-05	2.54E-05	2.54E-05
BOATING	0.0	2.54E-05	2.54E-05	2.54E-05	2.54E-05	2.54E-05	2.54E-05	2.54E-05
TOTAL	2.33E-03	3.71E-01	6.01E-01	4.30E-01	1.20E-01	2.04E-01	6.75E-02	3.77E-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		3.65E-01	5.86E-01	2.33E-01	9.66E-02	1.50E-01	7.50E-02	9.61E-03
INVERTEBRATE		8.39E-03	1.30E-02	5.30E-03	7.66E-03	4.00E-03	9.90E-04	1.62E-02
ALGAE		1.04E-07	1.01E-07	5.14E-08	1.61E-07	3.06E-08	1.18E-08	1.84E-08
DRINKING		2.10E-12	2.20E-12	1.28E-12	2.97E-11	9.26E-13	4.89E-13	4.55E-13
SHORELINE	3.12E-03	2.67E-03	2.67E-03	2.67E-03	2.67E-03	2.67E-03	2.67E-03	2.67E-03
SWIMMING	0.0	5.09E-05	5.09E-05	5.09E-05	5.09E-05	5.09E-05	5.09E-05	5.09E-05
BOATING	0.0	2.54E-05	2.54E-05	2.54E-05	2.54E-05	2.54E-05	2.54E-05	2.54E-05
TOTAL	3.12E-03	3.76E-01	6.02E-01	2.41E-01	1.07E-01	1.56E-01	7.87E-02	2.86E-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		4.51E-01	5.14E-01	8.99E-02	9.97E-02	6.45E-02	5.91E-02	3.92E-03
INVERTEBRATE		8.53E-03	9.07E-03	2.61E-03	8.19E-03	1.79E-03	7.76E-04	7.20E-03
ALGAE		2.43E-04	1.97E-04	5.62E-05	3.85E-04	3.06E-05	2.15E-05	1.81E-05
DRINKING		4.99E-09	4.45E-09	1.71E-09	7.09E-08	9.26E-10	9.16E-10	6.71E-10
SHORELINE	6.53E-04	5.58E-04	5.58E-04	5.58E-04	5.58E-04	5.58E-04	5.58E-04	5.58E-04
SWIMMING	0.0	1.27E-05	1.27E-05	1.27E-05	1.27E-05	1.27E-05	1.27E-05	1.27E-05
BOATING	0.0	2.54E-05	2.54E-05	2.54E-05	2.54E-05	2.54E-05	2.54E-05	2.54E-05
TOTAL	6.53E-04	5.61E-01	5.24E-01	9.32E-02	1.09E-01	6.69E-02	6.05E-02	3.17E-02

	USAGE (KG/YR,HR/YR)	DILUTION	TIME(HR)
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

SHOREWIDTH FACTOR=0.2

INFANT DOSES

DOSE (MREM PER YEAR INTAKE)

PATHWAY	SKIN	BONE	LIVER	TOTAL BODY	THYROID	KIDNEY	LUNG	GI-LLI
FISH		6.79E-02	8.70E-02	5.95E-03	1.74E-02	4.67E-03	1.03E-02	2.85E-04
INVERTEBRATE		9.39E-04	1.04E-03	1.73E-04	1.16E-03	1.05E-04	1.06E-04	4.22E-04
ALGAE		4.59E-07	4.47E-07	6.33E-08	9.29E-07	3.06E-08	5.16E-08	1.81E-08
DRINKING		9.50E-12	9.98E-12	2.25E-12	1.71E-10	9.26E-13	1.77E-12	9.17E-13
SHORELINE	1.40E-04	1.20E-04	1.20E-04	1.20E-04	1.20E-04	1.20E-04	1.20E-04	1.20E-04
SWIMMING	0.0	5.09E-12	5.09E-12	5.09E-12	5.09E-12	5.09E-12	5.09E-12	5.09E-12
BOATING	0.0	1.27E-07	1.27E-07	1.27E-07	1.27E-07	1.27E-07	1.27E-07	1.27E-07
TOTAL	1.40E-04	6.90E-02	8.81E-02	6.25E-03	1.87E-02	4.90E-03	1.09E-02	8.27E-04

	USAGE (KG/YR,HR/YR)	DILUTION	TIME(HR)
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

SHOREWIDTH FACTOR=0.2

* * * SELECTED LOCATION * * *

LOCATION IS DOWNSTREAM

ADULT DOSES

DOSE (MREM PER YEAR INTAKE)

PATHWAY	SKIN	BONE	LIVER	TOTAL BODY	THYROID	KIDNEY	LUNG	GI-LL
FISH		1.64E-01	2.66E-01	1.91E-01	4.85E-02	8.92E-02	2.93E-02	6.33E-0
INVERTEBRATE		3.81E-03	6.75E-03	3.63E-03	3.85E-03	2.39E-03	4.10E-04	9.87E-0
ALGAE		3.55E-08	3.60E-08	2.82E-08	6.15E-08	1.39E-08	3.54E-09	8.99E-0
DRINKING		7.22E-11	8.35E-11	7.07E-11	1.62E-09	4.50E-11	2.17E-11	2.66E-1
SHORELINE	1.06E-03	9.06E-04	9.06E-04	9.06E-04	9.06E-04	9.06E-04	9.06E-04	9.06E-0
SWIMMING	0.0	1.15E-05	1.15E-05	1.15E-05	1.15E-05	1.15E-05	1.15E-05	1.15E-0
BOATING	0.0	1.15E-05	1.15E-05	1.15E-05	1.15E-05	1.15E-05	1.15E-05	1.15E-0
TOTAL	1.06E-03	1.69E-01	2.73E-01	1.96E-01	5.33E-02	9.25E-02	3.07E-02	1.71E-0

	USAGE (KG/YR,HR/YR)	DILUTION	TIME(HR)	SHOREWIDTH FACTOR=0.2
FISH	21.0	11.0	31.00	
INVERTEBRATE	5.0	11.0	31.00	
ALGAE	0.0	11.0	31.00	
DRINKING	0.0	11.0	19.00	
SHORELINE	50.0	11.0	7.00	
SWIMMING	50.0	11.0	7.00	
BOATING	100.0	11.0	7.00	

LOCATION IS DOWNSTREAM

TEENAGER DOSES

DOSE (MREM PER YEAR INTAKE)

PATHWAY	SKIN	BONE	LIVER	TOTAL BODY	THYROID	KIDNEY	LUNG	GI-LL
FISH		1.66E-01	2.66E-01	1.06E-01	4.30E-02	6.80E-02	3.41E-02	4.37E-0
INVERTEBRATE		3.81E-03	5.90E-03	2.41E-03	3.41E-03	1.81E-03	4.50E-04	7.35E-0
ALGAE		4.75E-08	4.61E-08	2.34E-08	7.16E-08	1.39E-08	5.37E-09	8.31E-0
DRINKING		9.71E-11	1.02E-10	5.92E-11	1.88E-09	4.50E-11	2.23E-11	2.16E-1
SHORELINE	1.42E-03	1.21E-03	1.21E-03	1.21E-03	1.21E-03	1.21E-03	1.21E-03	1.21E-0
SWIMMING	0.0	2.29E-05	2.29E-05	2.29E-05	2.29E-05	2.29E-05	2.29E-05	2.29E-0
BOATING	0.0	1.15E-05	1.15E-05	1.15E-05	1.15E-05	1.15E-05	1.15E-05	1.15E-0
TOTAL	1.42E-03	1.71E-01	2.73E-01	1.10E-01	4.76E-02	7.10E-02	3.58E-02	1.30E-0

	USAGE (KG/YR,HR/YR)	DILUTION	TIME(HR)	SHOREWIDTH FACTOR=0.2
FISH	16.0	11.0	31.00	
INVERTEBRATE	3.8	11.0	31.00	
ALGAE	0.0	11.0	31.00	
DRINKING	0.0	11.0	19.00	
SHORELINE	67.0	11.0	7.00	
SWIMMING	100.0	11.0	7.00	
BOATING	100.0	11.0	7.00	

LOCATION IS DOWNSTREAM

CHILD DOSES

DOSE (MREM PER YEAR INTAKE)

PATHWAY	SKIN	BONE	LIVER	TOTAL BODY	THYROID	KIDNEY	LUNG	GI-LL
FISH		2.05E-01	2.34E-01	4.09E-02	4.43E-02	2.93E-02	2.69E-02	1.78E-0
INVERTEBRATE		3.87E-03	4.12E-03	1.19E-03	3.64E-03	8.12E-04	3.93E-04	3.27E-0

ALGAE		1.11E-04	8.95E-05	2.55E-05	1.71E-04	1.39E-05	9.78E-06	8.18E-06
DRINKING		2.31E-07	2.06E-07	8.09E-08	4.49E-06	4.50E-08	4.17E-08	3.15E-08
SHORELINE	2.97E-04	2.54E-04	2.54E-04	2.54E-04	2.54E-04	2.54E-04	2.54E-04	2.54E-04
SWIMMING	0.0	5.73E-06	5.73E-06	5.73E-06	5.73E-06	5.73E-06	5.73E-06	5.73E-06
BOATING	0.0	1.15E-05	1.15E-05	1.15E-05	1.15E-05	1.15E-05	1.15E-05	1.15E-05
TOTAL	2.97E-04	2.09E-01	2.38E-01	4.24E-02	4.84E-02	3.04E-02	2.75E-02	5.33E-03

	USAGE (KG/YR,HR/YR)	DILUTION	TIME(HR)	SHOREWIDTH FACTOR=0.2
FISH	6.9	11.0	31.00	
INVERTEBRATE	1.7	11.0	31.00	
ALGAE	0.0	11.0	31.00	
DRINKING	0.0	11.0	19.00	
SHORELINE	14.0	11.0	7.00	
SWIMMING	25.0	11.0	7.00	
BOATING	100.0	11.0	7.00	

LOCATION IS DOWNSTREAM

INFANT DOSES

DOSE (MREM PER YEAR INTAKE)

PATHWAY	SKIN	BONE	LIVER	TOTAL BODY	THYROID	KIDNEY	LUNG	GI-LLI
FISH		3.09E-02	3.95E-02	2.71E-03	7.75E-03	2.12E-03	4.68E-03	1.29E-04
INVERTEBRATE		4.26E-04	4.71E-04	7.85E-05	5.17E-04	4.78E-05	4.81E-05	1.92E-04
ALGAE		2.09E-07	2.03E-07	2.88E-08	4.13E-07	1.39E-08	2.34E-08	8.16E-09
DRINKING		4.41E-10	4.64E-10	1.08E-10	1.08E-08	4.50E-11	8.04E-11	4.26E-11
SHORELINE	6.36E-05	5.43E-05	5.43E-05	5.43E-05	5.43E-05	5.43E-05	5.43E-05	5.43E-05
SWIMMING	0.0	2.29E-12	2.29E-12	2.29E-12	2.29E-12	2.29E-12	2.29E-12	2.29E-12
BOATING	0.0	5.73E-08	5.73E-08	5.73E-08	5.73E-08	5.73E-08	5.73E-08	5.73E-08
TOTAL	6.36E-05	3.14E-02	4.01E-02	2.84E-03	8.32E-03	2.23E-03	4.78E-03	3.75E-04

	USAGE (KG/YR,HR/YR)	DILUTION	TIME(HR)	SHOREWIDTH FACTOR=0.2
FISH	0.5	11.0	31.00	
INVERTEBRATE	0.1	11.0	31.00	
ALGAE	0.0	11.0	31.00	
DRINKING	0.0	11.0	19.00	
SHORELINE	3.0	11.0	7.00	
SWIMMING	0.0	11.0	7.00	
BOATING	0.5	11.0	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	5.55E-01	8.98E-01	6.46E-01	1.01E-01	3.01E-01	9.93E-02	2.12E-02
FISH	TEENAGER	1.16E 04	1.18E-01	1.89E-01	7.51E-02	1.87E-02	4.82E-02	2.42E-02	3.07E-03
FISH	CHILD	7.00E 03	2.04E-01	2.33E-01	4.06E-02	2.70E-02	2.91E-02	2.67E-02	1.76E-03
FISH	TOTAL	9.10E 04	8.77E-01	1.32E 00	7.62E-01	1.46E-01	3.79E-01	1.50E-01	2.60E-02

DILUTION 1.10E-01 CATCH 9.10E 04 TIME(HR)-INCLUDES FOOD PROCESSING TIME OF 1.68E 02 HR POPULATION=1.59E 04

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	8.65E 07	2.33E 00	3.78E 00	2.71E 00	3.27E-01	1.27E 00	4.17E-01	8.89E-02
FISH	TEENAGER	1.38E 07	4.96E-01	7.94E-01	3.16E-01	6.08E-02	2.02E-01	1.02E-01	1.29E-02
FISH	CHILD	8.36E 06	8.58E-01	9.77E-01	1.71E-01	8.79E-02	1.22E-01	1.12E-01	7.36E-03
FISH	TOTAL	1.09E 08	3.69E 00	5.55E 00	3.20E 00	4.76E-01	1.59E 00	6.31E-01	1.09E-01

DILUTION 1.10E 01 CATCH 1.55E 05 TIME(HR)-INCLUDES FOOD PROCESSING TIME OF 2.40E 02 HR 2.40E 02 POPULATION=1.90E 07

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	9.44E-01	1.53E 00	1.10E 00	1.32E-01	5.12E-01	1.69E-01	3.60E-02
FISH	TEENAGER	1.97E 04	2.01E-01	3.21E-01	1.28E-01	2.46E-02	8.19E-02	4.11E-02	5.21E-03
FISH	CHILD	1.19E 04	3.47E-01	3.96E-01	6.90E-02	3.56E-02	4.95E-02	4.55E-02	2.98E-03
FISH	TOTAL	1.55E 05	1.49E 00	2.24E 00	1.30E 00	1.92E-01	6.44E-01	2.55E-01	4.42E-02

* * * 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	5.90E-03	1.04E-02	5.63E-03	3.68E-03	3.68E-03	6.32E-04	1.51E-02
INVER	TEENAGER	1.26E 03	1.24E-03	1.91E-03	7.80E-04	6.81E-04	5.86E-04	1.46E-04	2.35E-03
INVER	CHILD	7.94E 02	1.76E-03	1.88E-03	5.38E-04	1.02E-03	3.68E-04	1.61E-04	1.47E-03
INVER	TOTAL	1.00E 04	8.89E-03	1.42E-02	6.95E-03	5.39E-03	4.63E-03	9.38E-04	1.89E-02

DILUTION 1.10E 01 CATCH 1.00E 04 TIME(HR)-INCLUDES FOOD PROCESSING TIME OF 1.68E 02 HR 1.68E 02 POPULATION=1.20E 04

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	1.25E 07	4.03E-03	7.11E-03	3.85E-03	1.95E-03	2.51E-03	4.31E-04	1.02E-02
INVER	TEENAGER	1.99E 06	8.44E-04	1.30E-03	5.33E-04	3.61E-04	4.00E-04	9.94E-05	1.60E-03
INVER	CHILD	1.25E 06	1.20E-03	1.28E-03	3.68E-04	5.43E-04	2.51E-04	1.10E-04	9.99E-04
INVER	TOTAL	1.58E 07	6.08E-03	V9.70E-03	4.75E-03	2.86E-03	3.16E-03	6.40E-04	1.28E-02

DILUTION 1.10E 01 CATCH 1.00E 03 TIME(HR)-INCLUDES FOOD PROCESSING TIME OF 2.40E 02 HR 2.40E 02 POPULATION=1.90E 07

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

NEPA DOSES

NOTE--TOATL NEPA DUSE MUST INCLUDE SPURT CATCH, DUSES BELUW 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	5.87E-04	1.04E-03	5.60E-04	2.85E-04	3.66E-04	6.27E-05	1.49E-03
INVER	TEENAGER	1.26E 02	1.23E-04	1.90E-04	7.77E-05	5.27E-05	5.82E-05	1.45E-05	2.33E-04
INVER	CHILD	7.94E 01	1.75E-04	1.87E-04	5.36E-05	7.91E-05	3.66E-05	1.60E-05	1.46E-04
INVER	TOTAL	1.00E 03	8.86E-04	1.41E-03	6.92E-04	4.16E-04	4.61E-04	9.33E-05	1.87E-03

* * * POPULATION WATER CONSUMPTION DOSES * * *

DOSE (MAN-REM)

PATHWAY	AGE GROUP	USAGE	BONE	LIVER	TOTAL BODY	THYROID	KIDNEY	LUNG	GI-LLI
DRINKING	ADULT	2.44E 02	1.05E-08	7.54E-09	6.21E-09	6.49E-11	2.61E-09	9.08E-10	2.77E-10
DRINKING	TEENAGER	3.64E 01	2.13E-09	1.48E-09	7.79E-10	7.65E-12	3.89E-10	2.03E-10	4.92E-11
DRINKING	CHILD	5.20E 01	7.00E-09	4.43E-09	1.30E-09	2.09E-11	5.55E-10	5.38E-10	8.03E-11
DRINKING	TOTAL	3.33E 02	1.97E-08	1.34E-08	8.28E-09	9.35E-11	3.55E-09	1.65E-09	4.06E-10

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	1.97E-08	1.34E-08	8.28E-09	9.35E-11	3.55E-09	1.65E-09	4.06E-10

HYDROSPHERE TRITIUM DOSE

PATHWAY	AGE GROUP	USAGE	BONE	LIVER	TOTAL BODY	THYROID	KIDNEY	LUNG	GI-LLI
WATER	TOTAL	2.20E 00	2.03E-03	2.03E-03	2.03E-03	2.03E-03	2.03E-03	2.03E-03	2.03E-03

* * * RECREATION POPULATION DOSES * * *

			DOSE (MAN-REM)		
PATHWAY	AGE GROUP	USAGE	SKIN	TOTAL BODY	THYROID
SHORELINE	TOTAL POPUL	1.66E 07	3.52E-01	3.01E-01	3.01E-01

LOCATION- DOWNSTREAM

DILUTION=0.11E 02 TRANSIT TIME=0.40E 01 HR SWF=0.2

			DOSE (MAN-REM)		
PATHWAY	AGE GROUP	USAGE	SKIN	TOTAL BODY	THYROID
SWIMMING	TOTAL POPUL	1.66E 07	0.0	3.82E-03	3.82E-03

LOCATION- DOWNSTREAM

DILUTION=0.11E 02 TRANSIT TIME=0.40E 01 HR

			DOSE (MAN-REM)		
PATHWAY	AGE GROUP	USAGE	SKIN	TOTAL BODY	THYROID
BOATING	TOTAL POPUL	1.66E 07	0.0	1.91E-03	1.91E-03

LOCATION- DOWNSTREAM

DILUTION=0.11E 02 TRANSIT TIME=0.40E 01 HR

* * * DOSE TO BIOTA * * *

MRADS PER YEAR

ILUTION= 1.10E 01 TRANSIT TIME= 4.00E 00 HR

	INTERNAL	EXTERNAL	TOTAL
FISH	5.29E-01	7.96E-01	1.32E 00
INVERTEBRATE	1.80E-01	1.59E 00	1.77E 00
ALGAE	2.91E-01	2.02E-03	2.93E-01
MUSKRAT	4.10E 00	5.30E-01	4.63E 00
RACCOON	1.86E-01	3.97E-01	5.83E-01
HERON	1.83E 01	5.30E-01	1.89E 01
DUCK	3.70E 00	7.95E-01	4.50E 00

* * * COST-BENEFIT ANALYSIS * * *

NUCLIDE	RELEASE	MAN-REM DOSE		MAN-REM PER CURIE	
	CI/YR	TOTAL BODY	THYROID	TOTAL BODY	THYROID
1H 3	1.94E 02	6.44E-04	6.44E-04	3.33E-06	3.33E-06
24CR 51	1.31E-01	2.31E-05	2.23E-05	1.76E-04	1.70E-04
25MN 54	2.18E-02	2.53E-03	7.58E-04	1.16E-01	3.48E-02
27CO 58	1.93E-01	2.65E-03	2.11E-03	1.37E-02	1.09E-02
27CO 60	1.79E-01	9.53E-02	9.38E-02	5.32E-01	5.24E-01
26FE 59	2.14E-02	5.95E-04	1.84E-04	2.79E-02	8.62E-03
30ZN 65	1.91E-02	8.40E-03	3.61E-04	4.40E-01	1.89E-02
38SR 89	3.16E-03	2.90E-05	1.53E-08	9.16E-03	4.83E-06
38SR 90	6.73E-03	1.27E-02	3.41E-09	1.89E 00	5.07E-07
40ZR 95	1.31E-02	9.78E-05	9.78E-05	7.46E-03	7.46E-03
42MO 99	1.58E-01	8.50E-05	8.15E-05	5.37E-04	5.15E-04
43TC 99M	2.34E-02	3.39E-06	3.39E-06	1.45E-04	1.45E-04
53I 131	1.56E 00	2.96E-03	6.31E-01	1.90E-03	4.05E-01
55CS 134	2.91E-01	1.79E 00	4.88E-02	6.13E 00	1.68E-01
55CS 137	6.28E-01	2.37E 00	1.57E-01	3.77E 00	2.49E-01
56BA 140	5.80E-02	7.27E-05	5.48E-05	1.25E-03	9.46E-04
58CE 141	1.98E-02	8.94E-06	8.93E-06	4.51E-04	4.50E-04
TOTAL		4.28E 00	9.35E-01		

EFFLUENT AND WASTE DISPOSAL

SEMI-ANNUAL REPORT

F. METEOROLOGICAL DATA

TABLE 4A

HOURS AT EACH WIND SPEED AND DIRECTION [a]

PERIOD OF RECORD: 3rd Quarter July 1st through September 30th

STABILITY CLASS: A

ELEVATION: 10 Meters

Wind Direction	Wind Speed (mph) at 10m Level						
	1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	9	11	0	0	0	0	20
NNE	10	67	0	0	0	0	77
NE	4	34	0	0	0	0	38
ENE	1	2	0	0	0	0	3
E	2	2	0	0	0	0	4
ESE	0	0	0	0	0	0	0
SE	0	1	0	0	0	0	1
SSE	4	0	0	0	0	0	4
S	13	2	0	0	0	0	15
SSW	36	39	0	0	0	0	75
SW	10	31	10	0	0	0	51
WSW	4	8	0	0	0	0	12
W	4	16	0	0	0	0	20
WNW	2	20	0	0	0	0	22
NW	2	27	0	0	0	0	29
NNW	7	18	2	0	0	0	27
VARIABLE	0	0	0	0	0	0	0
Total	109	278	12	0	0	0	398

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

[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: 3rd Quarter July 1st through September 30th

STABILITY CLASS: B

ELEVATION: 10 Meters

Wind Direction	Wind Speed (mph) at 10m Level						
	1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	1	3	1	0	0	0	5
NNE	3	11	0	0	0	0	14
NE	4	11	0	0	0	0	15
ENE	1	1	0	0	0	0	2
E	1	0	0	0	0	0	1
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	1	0	0	0	0	0	1
SSW	10	2	0	0	0	0	12
SW	9	11	5	0	0	0	25
WSW	1	6	0	0	0	0	7
W	3	2	0	0	0	0	5
WNW	1	7	0	0	0	0	8
NW	1	5	1	0	0	0	7
NNW	0	7	0	0	0	0	7
VARIABLE	0	0	0	0	0	0	0
Total	37	66	7	0	0	0	110

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

[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: 3rd Quarter July 1st through September 30th

STABILITY CLASS: C

ELEVATION: 10 Meters

Wind Direction	Wind Speed (mph) at 10m Level 1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	1	4	1	0	0	0	6
NNE	3	12	1	0	0	0	16
NE	4	11	0	0	0	0	15
ENE	5	4	0	0	0	0	9
E	3	0	0	0	0	0	3
ESE	3	0	0	0	0	0	3
SE	1	0	0	0	0	0	1
SSE	0	0	0	0	0	0	0
S	3	1	0	0	0	0	4
SSW	1	2	0	0	0	0	3
SW	14	13	4	0	0	0	31
WSW	1	8	0	0	0	0	9
W	2	2	0	0	0	0	4
WNW	2	2	0	0	0	0	4
NW	0	4	1	0	0	0	5
NNW	1	2	0	0	0	0	3
VARIABLE	0	0	0	0	0	0	0
Total	44	65	7	0	0	0	116

Periods of calm (hours): 0

Hours of missing data: 0

[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: 3rd Quarter July 1st through September 30th

STABILITY CLASS: D

ELEVATION: 10 Meters

Wind Direction	Wind Speed (mph) at 10m Level						
	1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	4	15	0	0	0	0	19
NNE	11	42	2	0	0	0	55
NE	42	89	6	2	0	0	139
ENE	13	18	0	0	0	0	31
E	15	2	0	0	0	0	17
ESE	9	0	0	0	0	0	9
SE	3	0	0	0	0	0	3
SSE	7	0	0	0	0	0	7
S	14	0	0	0	0	0	14
SSW	41	23	0	0	0	0	64
SW	29	50	12	0	0	0	91
WSW	10	10	0	0	0	0	20
W	10	6	0	0	0	0	16
WNW	2	21	4	0	0	0	27
NW	6	20	2	0	0	0	28
NNW	6	23	1	0	0	0	30
VARIABLE	0	0	0	0	0	0	0
Total	222	319	27	2	0	0	570

Periods of calm (hours): 0

Hours of missing data: 0

[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: 3rd Quarter July 1st through September 30th

STABILITY CLASS: E

ELEVATION: 10 Meters

Wind Direction	Wind Speed (mph) at 10m Level						
	1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	13	8	0	0	0	0	21
NNE	29	4	1	3	0	0	37
NE	56	77	0	0	0	0	133
ENE	37	26	0	0	0	0	63
E	20	7	0	0	0	0	27
ESE	12	0	0	0	0	0	12
SE	14	1	0	0	0	0	15
SSE	16	0	0	0	0	0	16
S	30	0	0	0	0	0	30
SSW	73	32	4	0	0	0	109
SW	69	41	1	0	0	0	111
WSW	29	2	0	0	0	0	31
W	20	6	1	0	0	0	27
WNW	9	6	6	0	0	0	21
NW	7	12	0	0	0	0	19
NNW	3	11	0	0	0	0	14
VARIABLE	0	0	0	0	0	0	0
Total	437	233	13	3	0	0	686

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

[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: 3rd Quarter July 1st through September 30th

STABILITY CLASS: F

ELEVATION: 10 Meters

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	27	0	0	0	0	0	27
NE	96	36	0	0	0	0	132
ENE	34	26	0	0	0	0	60
E	11	0	0	0	0	0	11
ESE	7	1	0	0	0	0	8
SE	9	0	0	0	0	0	9
SSE	7	0	0	0	0	0	7
S	11	0	0	0	0	0	11
SSW	9	3	0	0	0	0	12
SW	8	1	0	0	0	0	9
WSW	7	0	0	0	0	0	7
W	4	0	0	0	0	0	4
WNW	1	0	0	0	0	0	1
NW	3	0	0	0	0	0	3
NNW	3	0	0	0	0	0	3
VARIABLE	0	0	0	0	0	0	0
Total	244	67	0	0	0	0	311

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

[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: 3rd Quarter July 1st through September 30th

STABILITY CLASS: G

ELEVATION: 10 Meters

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	4	0	0	0	0	0	4
NE	3	4	0	0	0	0	7
ENE	1	1	0	0	0	0	2
E	0	1	0	0	0	0	1
ESE	0	0	0	0	0	0	0
SE	0	0	0	0	0	0	0
SSE	1	0	0	0	0	0	1
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	0	0	0	0	0	0	0
Total	11	6	0	0	0	0	17

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

[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: 4th Quarter October 1st through December 31st

STABILITY CLASS: A

ELEVATION: 10 Meters

Wind Direction	Wind Speed (mph) at 10m Level						
	1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	0	0	1	0	0	0	1
NNE	0	2	0	0	0	0	2
NE	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0
ESE	0	0	0	0	0	0	0
SE	0	0	0	0	0	0	0
SSE	1	1	0	0	0	0	2
S	2	8	0	0	0	0	10
SSW	1	9	1	0	0	0	11
SW	0	1	0	0	0	0	1
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	1	1	0	0	0	0
NNW	0	0	1	0	0	0	1
VARIABLE	0	0	0	0	0	0	0
Total	4	22	4	0	0	0	30

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

[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: 4th Quarter - October 1st through December 31st

STABILITY CLASS: B

ELEVATION: 10 Meters

Wind Direction	Wind Speed (mph) at 10m Level						
	1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	0	1	0	0	0	0	1
NNE	0	2	0	0	0	0	2
NE	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0
ESE	0	0	0	0	0	0	0
SE	0	0	0	0	0	0	0
SSE	0	0	0	0	0	0	0
S	2	0	0	0	0	0	2
SSW	2	8	0	0	0	0	10
SW	1	0	0	0	0	0	1
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	1	1	0	0	0	2
NNW	0	1	1	0	0	0	2
VARIABLE	0	0	0	0	0	0	0
Total	5	13	2	0	0	0	20

Periods of calm (hours): 0

Hours of missing data: 0

[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: 4th Quarter October 1st through December 31st

STABILITY CLASS: C

ELEVATION: 10 Meters

Wind Direction	Wind Speed (mph) at 10m Level						
	1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	0	1	0	0	0	0	1
NNE	0	0	2	0	0	0	2
NE	0	0	0	0	0	0	0
ENE	0	2	0	0	0	0	2
E	0	1	0	0	0	0	1
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	3	1	0	0	0	0	4
SSW	4	5	2	0	0	0	11
SW	2	3	1	0	0	0	6
WSW	1	0	0	0	0	0	1
W	1	1	0	0	0	0	2
WNW	0	2	0	0	0	0	2
NW	0	3	1	0	0	0	4
NNW	0	3	0	0	0	0	3
VARIABLE	0	0	0	0	0	0	0
Total	11	22	6	0	0	0	39

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

[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: 4th Quarter October 1st through December 31st

STABILITY CLASS: D

ELEVATION: 10 Meters

Wind Direction	Wind Speed (mph) at 10m Level						
	1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	2	14	4	0	0	0	20
NNE	6	25	17	4	0	0	52
NE	5	53	14	1	0	0	73
ENE	10	4	0	0	0	0	14
E	1	1	0	0	0	0	2
ESE	1	0	0	0	0	0	1
SE	1	0	0	0	0	0	1
SSE	0	0	0	0	0	0	0
S	10	5	0	0	0	0	15
SSW	10	22	2	0	0	0	34
SW	13	10	5	1	0	0	29
WSW	5	13	0	0	0	0	18
W	2	22	4	0	0	0	28
WNW	1	57	31	0	0	0	89
NW	4	37	35	1	0	0	77
NNW	1	22	32	0	0	0	55
VARIABLE	0	0	0	0	0	0	0
Total	72	285	144	7	0	0	508

Periods of calm (hours):

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: 4th Quarter October 1st through December 31st

STABILITY CLASS: E

ELEVATION: 10 Meters

Wind Direction	Wind Speed (mph) at 10m Level						
	1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	17	25	8	0	0	0	50
NNE	26	36	8	0	0	0	70
NE	53	60	15	1	0	0	129
ENE	45	27	0	0	0	0	72
E	20	0	0	0	0	0	20
ESE	12	1	0	0	0	0	13
SE	11	2	0	0	0	0	13
SSE	12	1	0	0	0	0	13
S	35	5	1	0	0	0	41
SSW	61	74	15	2	0	0	152
SW	60	74	10	1	0	0	145
WSW	34	36	2	0	0	0	72
W	28	31	3	0	0	0	62
WNW	25	72	10	2	0	0	109
NW	20	86	89	11	0	0	206
NNW	13	49	69	7	3	0	140
VARIABLE	0	0	0	0	0	0	0
Total	472	578	230	24	3	0	1307

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

[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: 4th Quarter October 1st through December 31st

STABILITY CLASS: F

ELEVATION: 10 Meters

Wind Direction	Wind Speed (mph) at 10m Level						
	1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	6	0	0	0	0	0	6
NNE	11	3	1	0	0	0	15
NE	27	14	4	0	0	0	45
ENE	26	22	0	0	0	0	48
E	7	0	0	0	0	0	7
ESE	4	0	0	0	0	0	4
SE	3	0	0	0	0	0	3
SSE	6	0	0	0	0	0	6
S	14	0	0	0	0	0	14
SSW	19	1	0	0	0	0	20
SW	34	5	0	0	0	0	39
WSW	9	4	0	0	0	0	13
W	9	0	0	0	0	0	9
WNW	4	0	0	0	0	0	4
NW	6	1	0	0	0	0	7
NNW	1	0	0	0	0	0	1
VARIABLE	0	0	0	0	0	0	0
Total	186	50	5	0	0	0	241

Periods of calm (hours): 0

Hours of missing data: 0

[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: 4th Quarter October 1st through December 31st

STABILITY CLASS: G

ELEVATION: 10 Meters

Wind Direction	Wind Speed (mph) at 10m Level						
	1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	3	0	0	0	0	0	3
NNE	10	0	0	0	0	0	10
NE	9	7	1	0	0	0	17
ENE	12	10	1	0	0	0	23
E	1	0	0	0	0	0	1
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	1	0	0	0	0	0	1
SSW	0	1	0	0	0	0	1
SW	0	1	0	0	0	0	1
WSW	3	1	0	0	0	0	4
W	1	0	0	0	0	0	1
WNW	0	0	0	0	0	0	0
NW	0	0	0	0	0	0	0
NNW	1	0	0	0	0	0	1
VARIABLE	0	0	0	0	0	0	0
Total	41	20	2	0	0	0	63

Periods of calm (hours): 0

Hours of missing data: 0

[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.