March 1, 1989

Re: Indian Point Unit Nos. 1 and 2
Docket Nos. 50-3 and 50-247

SEMI-ANNUAL

EFFLUENT AND WASTE DISPOSAL REPORT

JULY 1, 1988 - DECEMBER 31, 1988

FACILITY: Indian Point Station (Units 1 and 2)

LICENSEE: Consolidated Edison Company of New York, Inc.

This information is provided pursuant to 10 CFR 50.36a(a) (2), and employs certain guidance as set fourth in Regulatory Guide 1.21, Revision 1. The numbered sections of this part of the report reference corresponding sections of the subject Regulatory Guide, pages 1.21-10 through 1.21-12. This Semi-Annual Effluent and Waste Disposal Report for Indian Point Units 1 and 2 covers discharges for the third and fourth quarters of 1988. The New York Power Authority, licensee of Indian Point Unit 3, has chosen to issue a separate semi-annual report.

A. Supplemental Information

1. Regulatory Limits

Indian Point Units 1 and 2 are presently subject to radioactive waste release specifications that are set forth in Appendix A to Facility Operating Licenses DPR-5 and DPR-26 entitled "Technical Specifications and Bases".

2. Maximum Permissible Concentrations (MPC)

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 for each calendar quarter has been added, and a weighted average fraction of MPC has been calculated for this isotopic mixture. The percent of applicable limit reported in Table 2A of this document is the percent of MPC concentration of the time averaged diluted concentration for each calendar quarter.

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The tritium limit has been established in the same manner as the other isotopes in liquid effluents. A derived MPC of $2x10^{-4}$ uCi/ml for dissolved noble gases has been conservatively adopted for the liquid effluents due to swimming pathway.

3. Average Energy

The average energy ($\bar{E}$) of the radionuclide mixture in releases of fission and activation gases for the third quarter was 0.067 Mev/Dis. for E-Gamma and 0.203 Mev/Dis. for E-Beta. The corresponding values for the fourth quarter were 0.071 Mev/Dis., and 0.204 Mev/Dis., respectively.

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 4.10-3 of the Technical Specifications. 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 generally treated as batch releases. At least one complete isotopic concentration analysis of containment air is performed per week. This is applied to 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.

The continuous discharges are based on the isotopic content determined from weekly samples of ventilation air. This information is combined with total air volume discharged by this route. The accumulation of batch and containment ventilation releases is then used to determine total discharges.

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b&c. Iodines and Particulates

Iodine-131 and particulate releases are quantified by collecting a continuous sample of ventilation air on a potassium-iodine impregnated activated charcoal cartridge and a glass-fiber filter paper. These samples are obtained as required by Table 4.10-3 of the Technical Specifications, 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 by a monthly 24 hour composite sample. This ensures the proper identification of the short-lived I-133 and I-135 isotopes.

d. Liquid Effluents

A sample of each batch discharge is taken and an isotopic analysis is performed in compliance with requirements specified in Table 4.10-1 of the Technical Specifications. This isotopic concentration data is combined with information of 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 4.10-1 of the Technical Specifications. This concentration data is combined with the volume discharged to calculate the amount of each isotope discharged.

The above concentrations are used in conjunction with the dilution flow to calculate the fraction of maximum permissible concentration.

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5. Batch Releases:

a. Liquid	3rd Qtr.	4th Qtr.
Number of Batch Releases	44	24
Total Time Period Batch Releases (Minutes)	6400	2380
Maximum Time Period Batch Release (Minutes)	690	255
Average Time Period Batch Release (Minutes)	146	99
Minimum Time Period Batch Release (Minutes)	56	22
Average Stream Flow cfs (1)	N/A	N/A
b. Gaseous		
Number of Batch Releases	122	115
Total Time Period Batch Release (Minutes)	33100	15600
Maximum Time Period Batch Release (Minutes)	14100	1550
Average Time Period Batch Release (Minutes)	271	136
Minimum Time Period Batch Release (Minutes)	9	10

6. ABNORMAL RELEASES

a. Liquid - Two

b. Gaseous - None

(1) This information is obtained from the U.S. Department of Interior. It is not available at this time.

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B - GASEOUS EFFLUENTS

SECOND HALF 1988

CON EDISON
INDIAN POINT STATION UNIT II

DATE OF REPORT: JAN. 31. 1989

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1988

GASEOUS EFFLUENTS -- SUMMATION OF ALL RELEASES

	UNITS	QUARTER 3	QUARTER 4	EST. TOTAL ERROR. %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	1.17E 02	1.38E 01	5.00E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.47E 01	1.73E 00	
B. IODINES				
1. TOTAL IODINE-131	CI	4.51E-06	1.91E-05	5.00E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	5.67E-07	2.40E-06	
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES >8 DAYS	CI	5.43E-04	2.42E-03	5.00E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	6.84E-05	3.04E-04	
4. GROSS ALPHA RADIOACTIVITY	CI	0.00E 00	0.00E 00	
D. TRITIUM				
1. TOTAL RELEASE	CI	3.40E-01	3.09E-01	5.00E 01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	4.27E-02	3.89E-02	

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INDIAN POINT STATION UNIT II

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1988

GASEOUS EFFLUENTS FOR ALL RELEASE POINTS

DATE OF REPORT: JAN. 31. 1989

NUCLIDES RELEASED	UNITS	CONTINUOUS MODE QUARTER 3	CONTINUOUS MODE QUARTER 4	BATCH MODE QUARTER 3	BATCH MODE QUARTER 4
1. FISSION AND ACTIVATION GASES					
H3	CI	3.40E-01	3.09E-01	0.00E 00	0.00E 00
C14	CI	2.00E 00	2.00E 00	0.00E 00	0.00E 00
AR41	CI	1.50E-02	4.40E-02	3.92E-01	5.15E-02
KR85M	CI	0.00E 00	0.00E 00	2.11E-01	0.00E 00
KR87	CI	5.09E-03	4.68E-03	2.43E-02	0.00E 00
KR88	CI	9.57E-03	8.49E-03	2.38E-01	0.00E 00
XE133M	CI	0.00E 00	0.00E 00	4.34E-01	0.00E 00
XE133	CI	8.23E 01	3.99E 00	2.20E 01	6.41E 00
XE135M	CI	7.59E-02	1.37E-01	0.00E 00	0.00E 00
XE135	CI	2.59E 00	9.07E-01	6.64E 00	2.08E-01
XE138	CI	0.00E 00	3.52E-03	0.00E 00	0.00E 00
TOTAL FOR PERIOD (ABOVE)	CI	8.73E 01	7.40E 00	2.99E 01	6.67E 00

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GASEOUS EFFLUENTS FOR ALL RELEASE POINTS

DATE OF REPORT: JAN. 31. 1989

CONTINUOUS MODE

NUCLIDES RELEASED	UNITS	QUARTER 3	QUARTER 4
2. IODINES			
I131	CI	4.51E-06	1.91E-05
I133	CI	7.82E-05	1.32E-04
TOTAL FOR PERIOD (ABOVE)	CI	8.27E-05	1.51E-04

CONTINUOUS MODE

NUCLIDES RELEASED	UNITS	QUARTER 3	QUARTER 4
3. PARTICULATES			
MN54	CI	1.26E-04	4.36E-05
CO58	CI	1.01E-06	0.00E 00
CO60	CI	3.81E-04	2.29E-03
CS137	CI	3.39E-05	7.72E-05
FE55	CI	9.77E-07	0.00E 00
TOTAL FOR PERIOD (ABOVE)	CI	5.43E-04	2.42E-03

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C - LIQUID EFFLUENTS

SECOND HALF 1988

CON EDISON DATE OF REPORT: JAN. 31. 1989
INDIAN POINT STATION UNIT II

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1988

LIQUID EFFLUENTS -- SUMMATION OF ALL RELEASES

	UNITS	QUARTER 3	QUARTER 4	EST. TOTAL ERROR. %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (EXCL. TRIT., GASES, ALPHA)	CI	8.81E-01	3.81E-01	2.50E 01
2. AVERAGE DILUTED CONC. DURING PERIOD	UCI/ML	2.13E-09	1.54E-09	
3. PERCENT OF MPC	%	2.88E-03	1.89E-02	
B. TRITIUM				
1. TOTAL RELEASE	CI	2.49E 02	9.63E 01	2.50E 01
2. AVERAGE DILUTED CONC. DURING PERIOD	UCI/ML	6.03E-07	3.89E-07	
3. PERCENT OF MPC	%	2.01E-02	1.30E-02	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	4.76E-03	1.55E-02	2.50E 01
2. AVERAGE DILUTED CONC. DURING PERIOD	UCI/ML	1.15E-11	6.24E-11	
3. PERCENT OF MPC	%	5.76E-06	3.12E-05	
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	0.00E 00	0.00E 00	2.50E 01
E. VOLUME WASTE RELEASED (PRIOR TO DILUTION)	LITERS	5.04E 07	5.38E 07	1.00E 01
F. VOLUME DILUTION WATER USED DURING PERIOD	LITERS	4.13E 11	2.48E 11	1.00E 01

CON EDISON
INDIAN POINT STATION UNIT II

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1988

LIQUID EFFLUENTS FOR RELEASE POINT: 1

DATE OF REPORT: JAN. 31. 1989

NUCLIDES RELEASED	UNITS	CONTINUOUS MODE QUARTER 3	CONTINUOUS MODE QUARTER 4	BATCH MODE QUARTER 3	BATCH MODE QUARTER 4
H3	CI	6.60E-01	2.03E 00	2.48E 02	9.43E 01
CR51	CI	0.00E 00	0.00E 00	1.27E-01	1.41E-02
MN54	CI	0.00E 00	1.02E-04	3.09E-03	1.11E-04
FE55	CI	1.39E-01	0.00E 00	1.19E-01	1.44E-02
FE59	CI	0.00E 00	0.00E 00	5.60E-03	0.00E 00
CO58	CI	1.12E-03	1.77E-04	2.00E-01	9.15E-02
CO60	CI	1.06E-02	7.21E-03	1.36E-01	6.01E-02
NI63	CI	5.58E-03	0.00E 00	1.12E-02	5.29E-02
ZN65	CI	0.00E 00	0.00E 00	6.46E-05	0.00E 00
SR89	CI	0.00E 00	0.00E 00	7.48E-05	0.00E 00
SR90	CI	0.00E 00	0.00E 00	9.76E-06	0.00E 00
ZR95	CI	0.00E 00	0.00E 00	1.21E-03	3.87E-04
NB95	CI	0.00E 00	0.00E 00	8.26E-03	8.40E-04
RU103	CI	0.00E 00	0.00E 00	1.87E-04	0.00E 00
RU106	CI	0.00E 00	0.00E 00	2.89E-04	0.00E 00
AG110M	CI	0.00E 00	0.00E 00	3.20E-03	0.00E 00
I131	CI	8.09E-04	2.32E-03	0.00E 00	0.00E 00

CON EDISON
INDIAN POINT STATION UNIT II

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1988

LIQUID EFFLUENTS FOR RELEASE POINT: 1

DATE OF REPORT: JAN. 31, 1989

NUCLIDES RELEASED	UNITS	CONTINUOUS MODE QUARTER 3	CONTINUOUS MODE QUARTER 4	BATCH MODE QUARTER 3	BATCH MODE QUARTER 4
LIQUID EFFLUENTS (CONTD)					
I132	CI	0.00E 00	1.57E-02	0.00E 00	0.00E 00
I133	CI	0.00E 00	2.64E-02	0.00E 00	0.00E 00
I134	CI	0.00E 00	8.60E-03	0.00E 00	0.00E 00
I135	CI	0.00E 00	2.07E-02	0.00E 00	0.00E 00
CS134	CI	0.00E 00	0.00E 00	6.18E-05	0.00E 00
CS137	CI	0.00E 00	0.00E 00	4.91E-03	2.62E-03
BA140	CI	0.00E 00	0.00E 00	1.43E-03	0.00E 00
LA140	CI	0.00E 00	0.00E 00	7.26E-03	0.00E 00
CO57	CI	0.00E 00	0.00E 00	7.31E-05	9.24E-05
SB125	CI	0.00E 00	0.00E 00	7.51E-02	5.05E-02
SB124	CI	0.00E 00	0.00E 00	2.00E-02	1.20E-02
TOTAL FOR PERIOD (ABOVE)	CI	8.17E-01	2.11E 00	2.49E 02	9.46E 01

NUCLIDES RELEASED	UNITS	CONTINUOUS MODE QUARTER 3	CONTINUOUS MODE QUARTER 4	BATCH MODE QUARTER 3	BATCH MODE QUARTER 4
XE133	CI	0.00E 00	1.59E-04	4.76E-03	3.39E-03
XE135	CI	0.00E 00	1.81E-03	0.00E 00	0.00E 00
XE135M	CI	0.00E 00	1.01E-02	0.00E 00	0.00E 00

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SEMI-ANNUAL EFFLUENT AND WASTE DISPOSAL REPORT

D - SOLID WASTE

SECOND HALF 1988

March 1, 1989

Re: Indian Point Unit No. 1 & 2
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Solid Radwaste Disposal Report July 1, 1988 through December 31, 1988.

Solid Radwaste Shipped Offsite for Burial or Disposal (No irradiated fuel).

6 MONTH PERIOD

1. Type of Waste	Units	Class A	Class B	Class C	Total Error, %
a. Spent Resins, sludges, etc.	m^3	6.82	3.41	--	--
	Ci	29.512	28.4	--	1.00E+2
b. DAW	m^3	84.55	--	--	--
	Ci	11.474	--	--	1.00E+2
c. Irradiated components control rods, etc.	m^3	--	--	--	--
	Ci	--	--	--	--

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

a.	Cs-137	-	23.17	Fe-55	-	3.57
	Co-60	-	15.43	Ni-63	-	2.03
	Co-58	-	52.33	Other*	-	3.47
b.	H-3	-	10.7	Co-60	-	25.9
	Fe-55	-	7.9	Zr-95	-	3.0
	Co-58	-	7.2	Cs-134	-	7.9
	Mn-54	-	3.1	Cs-137	-	17.4
	Nb-95	-	2.1	C-14	-	2.6
	Ni-63	-	8.4	Sr-90	-	1.6
	Pu-241	-	2.1			

* Other in Section 2.a include - Cs-134, Mn-54, Sb-124, Sb-125, Cr-51, Nb-95, I-129, Tc-99, Sr-90, Pu-241, C-14, H-3.

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3. Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
9	Truck	Barnwell, SC Channahon, Ill. Oakridge, Tenn.

4. Solid Waste Containers

a. 3 High Integrity Containers

b. 1 High Integrity Container
12 Steel Crates
1 Cargo Container
484 Steel Drums

5. Waste Class

Container	Class A	Class B	Class C
High Integrity Container	3	1	--
Steel Crates	12	--	--
Steel Drums	484	--	--
Cargo Container	1	--	--

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Indian Point Unit Nos. 1 and 2
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SEMI-ANNUAL EFFLUENT AND WASTE DISPOSAL REPORT

E - RADIOLOGICAL IMPACT ON MAN

SECOND HALF 1988

March 1, 1989

Re: Indian Point Unit No. 2
Docket No. 50-247

RADIOLOGICAL IMPACT EVALUATION

Doses from gaseous 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. Calculations were performed for members of the public on site for this reporting period. Doses to such individuals were found to be significantly less than one percent of the maximum individual offsite dose. Doses were also evaluated for an individual ingesting milk and meat from a cow located at a 5.0 mile distance, for all sectors. In all cases these evaluations were performed using the models presented in Regulatory Guide 1.109.

All releases were evaluated using actual meteorological conditions existing during the release period.

Integrated doses from the population within 50 miles of Indian Point from gaseous effluents were computed based on the most current population data.

Dose calculations for liquid pathways to individuals and populations are computed for a year. The LADTAP II computer program that is utilized for these calculations incorporated the calculation 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.

This impact evaluation demonstrates that the dose commitment to man from the operation of Indian Point Unit No. 2 is negligible, and is well below the levels set forth in 10 CFR 20, 10 CFR 50 and the Indian Point Unit No. 2 Technical Specifications.

Indian Point Units 1 & 2

RADIOLOGICAL IMPACT ON MAN

(Reference Regulatory Guide 1.21, Page 12)

A. Maximum Individual Doses

(1) Pathways (Gaseous)

	Total Body mRem	Skin mRem	Thyroid mRem	Bone
a) Noble Gas Immersion	8.87E-3	2.14E-2	N/A	N/A
b) Inhalation	2.90E-2	N/A	1.74E-3	1.63E-3
c) Ground Deposition	3.04E-2	5.60E-2	3.04E-2	3.04E-2
d) Milk Ingestion	3.52E-2	N/A	3.53E-2	1.65E-1
e) Meat Ingestion	5.41E-3	N/A	5.41E-3	2.70E-2
f) Vegetable Ingestion	3.63E-1	N/A	3.63E-1	1.81E-0

(2) Pathways (Liquid)

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

N/A = Not Applicable

B. Population

(1) Pathways (Gaseous)

	Total Body (man-rem)	Thyroid (man-rem)
a) Noble Gas Immersion	2.2E-1	2.2E-1
b) Inhalation	1.7E-1	1.7E-1
c) Ground Deposition	4.5E-1	4.5E-1
d) Totals	8.4E-1	8.5E-1

(2) Pathways (Liquid)

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

C. Average Doses to Individuals

(1) Pathways

a) Liquid-Total Body	1.50E-5	millirem
b) Gaseous-Total Body	4.06E-5	millirem

IP2 SEMI-ANNUAL EFFLUENT REPORT 2ND HALF 1988- USNRC LADTAP II CODE

DISCHARGE=1.47E+03 CFS SOURCE TERM MULTIPLIER=1.00E+00

50-MILE POPULATION=2.07E+07 FRACTION --- CATEGORY I=0.71
                                CATEGORY II=0.11
                                CATEGORY III=0.18

FRESHWATER SITE

SOURCE TERM FOLLOWS
NO INTERNAL RECONCENTRATION MODEL EMPLOYED

* * * CATEGORY I 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	3.45E+02	0.00E+00	1.05E-07	1.05E-07	1.05E-07	1.05E-07	1.05E-07	1.05E-07	0.00E+00	0.00E+00	1.00E+00
25MN	54	3.30E-03	0.00E+00	4.57E-06	8.72E-07	0.00E+00	1.36E-06	0.00E+00	1.40E-05	6.80E-09	5.80E-09	1.00E+00
24CR	51	1.41E-01	0.00E+00	0.00E+00	2.66E-09	1.59E-09	5.86E-10	3.53E-09	6.69E-07	2.60E-10	2.20E-10	1.00E+00
26FE	55	2.72E-01	2.75E-06	1.90E-06	4.43E-07	0.00E+00	0.00E+00	1.06E-06	1.09E-06	0.00E+00	0.00E+00	1.00E+00
26FE	59	5.60E-03	4.34E-06	1.02E-05	3.91E-06	0.00E+00	0.00E+00	2.85E-06	3.40E-05	9.40E-09	8.00E-09	1.00E+00
27CO	58	2.93E-01	0.00E+00	7.45E-07	1.67E-06	0.00E+00	0.00E+00	0.00E+00	1.51E-05	8.20E-09	7.00E-09	1.00E+00
27CO	60	2.14E-01	0.00E+00	2.14E-06	4.72E-06	0.00E+00	0.00E+00	0.00E+00	4.02E-05	2.00E-08	1.70E-08	1.00E+00
28NI	63	6.97E-02	1.30E-04	9.01E-06	4.36E-06	0.00E+00	0.00E+00	0.00E+00	1.88E-06	0.00E+00	0.00E+00	1.00E+00
30ZN	65	6.46E-05	4.84E-06	1.54E-05	6.96E-06	0.00E+00	1.03E-05	0.00E+00	9.70E-06	4.60E-09	4.00E-09	1.00E+00
38SR	89	7.48E-05	3.08E-04	0.00E+00	8.84E-06	0.00E+00	0.00E+00	0.00E+00	4.94E-05	6.50E-13	5.60E-13	1.00E+00
38SR	90	9.76E-06	3.84E-03	0.00E+00	1.03E-03	0.00E+00	0.00E+00	0.00E+00	2.19E-04	0.00E+00	0.00E+00	1.00E+00
40ZR	95	1.60E-03	3.04E-08	9.75E-09	6.60E-09	0.00E+00	1.53E-08	0.00E+00	3.09E-05	5.80E-09	5.00E-09	1.00E+00
41NB	95	9.07E-03	6.22E-09	3.46E-09	1.86E-09	0.00E+00	3.42E-09	0.00E+00	2.10E-05	5.10E-09	6.00E-09	1.00E+00
44RU	103	1.87E-04	1.85E-07	0.00E+00	7.97E-08	0.00E+00	7.06E-07	0.00E+00	2.16E-05	3.60E-09	4.20E-09	1.00E+00
44RU	106	2.89E-04	2.75E-06	0.00E+00	3.48E-07	0.00E+00	5.31E-06	0.00E+00	1.78E-04	1.50E-09	1.80E-09	1.00E+00
47AG	110M	3.20E-03	1.60E-07	1.48E-07	8.79E-08	0.00E+00	2.91E-07	0.00E+00	6.04E-05	2.10E-08	1.80E-08	1.00E+00
53I	131	3.13E-03	4.16E-06	5.95E-06	3.41E-06	1.95E-03	1.02E-05	0.00E+00	1.57E-06	3.40E-09	2.80E-09	1.00E+00
53I	132	1.57E-02	2.03E-07	5.43E-07	1.90E-07	1.90E-05	8.65E-07	0.00E+00	1.02E-07	1.70E-08	2.00E-08	1.00E+00
53I	133	2.64E-02	1.42E-06	2.47E-06	7.53E-07	3.63E-04	4.31E-06	0.00E+00	2.22E-06	4.50E-09	3.70E-09	1.00E+00
53I	134	8.60E-03	1.06E-07	2.88E-07	1.03E-07	4.99E-06	4.58E-07	0.00E+00	2.51E-10	1.90E-08	1.60E-08	1.00E+00
53I	135	2.07E-02	4.43E-07	1.16E-06	4.28E-07	7.65E-05	1.86E-06	0.00E+00	1.31E-06	1.20E-08	1.40E-08	1.00E+00
55CS	134	6.18E-05	6.22E-05	1.48E-04	1.21E-04	0.00E+00	4.79E-05	1.59E-05	2.59E-06	1.40E-08	1.20E-08	1.00E+00
55CS	137	7.53E-03	7.97E-05	1.09E-04	7.14E-05	0.00E+00	3.70E-05	1.23E-05	2.11E-06	4.90E-09	4.20E-09	1.00E+00
56BA	140	1.43E-03	2.03E-05	2.55E-08	1.33E-06	0.00E+00	8.67E-09	1.46E-08	4.18E-05	2.40E-09	2.10E-09	1.00E+00
57LA	140	7.26E-03	2.50E-09	1.26E-09	3.33E-10	0.00E+00	0.00E+00	0.00E+00	9.25E-05	1.50E-08	1.70E-08	1.00E+00
51SB	125	1.26E-01	1.79E-06	2.00E-08	4.26E-07	1.82E-09	0.00E+00	1.38E-06	1.97E-05	3.50E-09	3.10E-09	1.00E+00
51SB	124	3.20E-02	2.80E-06	5.29E-08	1.11E-06	6.79E-09	0.00E+00	2.18E-06	7.95E-05	1.50E-08	1.30E-08	1.00E+00
27CO	57	1.66E-04	0.00E+00	1.75E-07	2.91E-07	0.00E+00	0.00E+00	0.00E+00	4.44E-06	1.00E-09	9.10E-10	1.00E+00

* * * CATEGORY II 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	3.45E+02	0.00E+00	1.06E-07	1.06E-07	1.06E-07	1.06E-07	1.06E-07	1.06E-07			
25MN	54	3.30E-03	0.00E+00	5.90E-06	1.17E-06	0.00E+00	1.76E-06	0.00E+00	1.21E-05			
24CR	51	1.41E-01	0.00E+00	0.00E+00	3.60E-09	2.00E-09	7.89E-10	5.14E-09	6.05E-07			
26FE	55	2.72E-01	3.78E-06	2.68E-06	6.25E-07	0.00E+00	0.00E+00	1.70E-06	1.16E-06			
26FE	59	5.60E-03	5.87E-06	1.37E-05	5.29E-06	0.00E+00	0.00E+00	4.32E-06	3.24E-05			
27CO	58	2.93E-01	0.00E+00	9.72E-07	2.24E-06	0.00E+00	0.00E+00	0.00E+00	1.34E-05			
27CO	60	2.14E-01	0.00E+00	2.81E-06	6.33E-06	0.00E+00	0.00E+00	0.00E+00	3.66E-05			
28NI	63	6.97E-02	1.77E-04	1.25E-05	6.00E-06	0.00E+00	0.00E+00	0.00E+00	1.99E-06			
30ZN	65	6.46E-05	5.76E-06	2.00E-05	9.33E-06	0.00E+00	1.28E-05	0.00E+00	8.47E-06			
38SR	89	7.48E-05	4.40E-04	0.00E+00	1.26E-05	0.00E+00	0.00E+00	0.00E+00	5.24E-05			
38SR	90	9.76E-06	4.48E-03	0.00E+00	1.20E-03	0.00E+00	0.00E+00	0.00E+00	2.33E-04			
40ZR	95	1.60E-03	4.12E-08	1.30E-08	8.94E-09	0.00E+00	1.91E-08	0.00E+00	3.00E-05			
41NB	95	9.07E-03	8.22E-09	4.56E-09	2.51E-09	0.00E+00	4.42E-09	0.00E+00	1.95E-05			
44RU	103	1.87E-04	2.55E-07	0.00E+00	1.09E-07	0.00E+00	8.99E-07	0.00E+00	2.13E-05			
44RU	106	2.89E-04	3.92E-06	0.00E+00	4.94E-07	0.00E+00	7.56E-06	0.00E+00	1.88E-04			
47AG	110M	3.20E-03	2.05E-07	1.94E-07	1.18E-07	0.00E+00	3.70E-07	0.00E+00	5.45E-05			
53I	131	3.13E-03	5.85E-06	8.19E-06	4.40E-06	2.39E-03	1.41E-05	0.00E+00	1.62E-06			

53I	132	1.57E-02	2.79E-07	7.30E-07	2.62E-07	2.46E-05	1.15E-06	0.00E+00	3.18E-07
53I	133	2.64E-02	2.01E-06	3.41E-06	1.04E-06	4.76E-04	5.98E-06	0.00E+00	2.58E-06
53I	134	8.60E-03	1.46E-07	3.87E-07	1.39E-07	6.45E-06	6.10E-07	0.00E+00	5.10E-09
53I	135	2.07E-02	6.10E-07	1.57E-06	5.82E-07	1.01E-04	2.48E-06	0.00E+00	1.74E-06
55CS	134	6.18E-05	8.37E-05	1.97E-04	9.14E-05	0.00E+00	6.26E-05	2.39E-05	2.45E-06
55CS	137	7.53E-03	1.12E-04	1.49E-04	5.19E-05	0.00E+00	5.07E-05	1.97E-05	2.12E-06
56BA	140	1.43E-03	2.84E-05	3.48E-08	1.83E-06	0.00E+00	1.18E-08	2.34E-08	4.38E-05
57LA	140	7.26E-03	3.48E-09	1.71E-09	4.55E-10	0.00E+00	0.00E+00	0.00E+00	9.82E-05
51SB	125	1.26E-01	2.48E-06	2.71E-08	5.80E-07	2.37E-09	0.00E+00	2.18E-06	1.93E-05
51SB	124	3.20E-02	3.87E-06	7.13E-08	1.51E-06	8.78E-09	0.00E+00	3.38E-06	7.80E-05
27CO	57	1.66E-04	0.00E+00	2.38E-07	3.99E-07	0.00E+00	0.00E+00	0.00E+00	4.44E-06

* * * CATEGORY III 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	3.45E+02	0.00E+00	2.03E-07	2.03E-07	2.03E-07	2.03E-07	2.03E-07	2.03E-07			
25MN	54	3.30E-03	0.00E+00	1.07E-05	2.85E-06	0.00E+00	3.00E-06	0.00E+00	8.98E-06			
24CR	51	1.41E-01	0.00E+00	0.00E+00	8.90E-09	4.94E-09	1.35E-09	9.02E-09	4.72E-07			
26FE	55	2.72E-01	1.15E-05	6.10E-06	1.89E-06	0.00E+00	0.00E+00	3.45E-06	1.13E-06			
26FE	59	5.60E-03	1.65E-05	2.67E-05	1.33E-05	0.00E+00	0.00E+00	7.74E-06	2.78E-05			
27CO	58	2.93E-01	0.00E+00	1.80E-06	5.51E-06	0.00E+00	0.00E+00	0.00E+00	1.05E-05			
27CO	60	2.14E-01	0.00E+00	5.29E-06	1.56E-05	0.00E+00	0.00E+00	0.00E+00	2.93E-05			
28NI	63	6.97E-02	5.38E-04	2.88E-05	1.83E-05	0.00E+00	0.00E+00	0.00E+00	1.94E-06			
30ZN	65	6.46E-05	1.37E-05	3.65E-05	2.27E-05	0.00E+00	2.30E-05	0.00E+00	6.41E-06			
38SR	89	7.48E-05	1.32E-03	0.00E+00	3.77E-05	0.00E+00	0.00E+00	0.00E+00	5.11E-05			
38SR	90	9.76E-06	1.13E-02	0.00E+00	3.03E-03	0.00E+00	0.00E+00	0.00E+00	2.29E-04			
40ZR	95	1.60E-03	1.16E-07	2.55E-08	2.27E-08	0.00E+00	3.65E-08	0.00E+00	2.66E-05			
41NB	95	9.07E-03	2.25E-08	8.76E-09	6.26E-09	0.00E+00	8.23E-09	0.00E+00	1.62E-05			
44RU	103	1.87E-04	7.31E-07	0.00E+00	2.81E-07	0.00E+00	1.84E-06	0.00E+00	1.89E-05			
44RU	106	2.89E-04	1.17E-05	0.00E+00	1.46E-06	0.00E+00	1.58E-05	0.00E+00	1.82E-04			
47AG	110M	3.20E-03	5.39E-07	3.64E-07	2.91E-07	0.00E+00	6.78E-07	0.00E+00	4.33E-05			
53I	131	3.13E-03	1.72E-05	1.73E-05	9.83E-06	5.72E-03	2.84E-05	0.00E+00	1.54E-06			
53I	132	1.57E-02	8.00E-07	1.47E-06	6.76E-07	6.82E-05	2.25E-06	0.00E+00	1.73E-06			
53I	133	2.64E-02	5.92E-06	7.32E-06	2.77E-06	1.36E-03	1.22E-05	0.00E+00	2.95E-06			
53I	134	8.60E-03	4.19E-07	7.78E-07	3.58E-07	1.79E-05	1.19E-06	0.00E+00	5.16E-07			
53I	135	2.07E-02	1.75E-06	3.15E-06	1.49E-06	2.79E-04	4.83E-06	0.00E+00	2.40E-06			
55CS	134	6.18E-05	2.34E-04	3.84E-04	8.10E-05	0.00E+00	1.19E-04	4.27E-05	2.07E-06			
55CS	137	7.53E-03	3.27E-04	3.13E-04	4.62E-05	0.00E+00	1.02E-04	3.67E-05	1.96E-06			
56BA	140	1.43E-03	8.31E-05	7.28E-08	4.85E-06	0.00E+00	2.37E-08	4.34E-08	4.21E-05			
57LA	140	7.26E-03	1.01E-08	3.53E-09	1.19E-09	0.00E+00	0.00E+00	0.00E+00	9.84E-05			
51SB	125	1.26E-01	7.16E-06	5.52E-08	1.50E-06	6.63E-09	0.00E+00	3.99E-06	1.71E-05			
51SB	124	3.20E-02	1.11E-05	1.44E-07	3.89E-06	2.45E-08	0.00E+00	6.16E-06	6.94E-05			
27CO	57	1.66E-04	0.00E+00	4.93E-07	9.98E-07	0.00E+00	0.00E+00	0.00E+00	4.04E-06			

* * * CATEGORY IV 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	3.45E+02	0.00E+00	3.08E-07	3.08E-07	3.08E-07	3.08E-07	3.08E-07	3.08E-07			
25MN	54	3.30E-03	0.00E+00	1.99E-05	4.51E-06	0.00E+00	4.41E-06	0.00E+00	7.31E-06			
24CR	51	1.41E-01	0.00E+00	0.00E+00	1.41E-08	9.20E-09	2.01E-09	1.79E-08	4.11E-07			
26FE	55	2.72E-01	1.39E-05	8.98E-06	2.40E-06	0.00E+00	0.00E+00	4.39E-06	1.14E-06			
26FE	59	5.60E-03	3.08E-05	5.38E-05	2.12E-05	0.00E+00	0.00E+00	1.59E-05	2.57E-05			
27CO	58	2.93E-01	0.00E+00	3.60E-06	8.98E-06	0.00E+00	0.00E+00	0.00E+00	8.97E-06			
27CO	60	2.14E-01	0.00E+00	1.08E-05	2.55E-05	0.00E+00	0.00E+00	0.00E+00	2.57E-05			
28NI	63	6.97E-02	6.34E-04	3.92E-05	2.20E-05	0.00E+00	0.00E+00	0.00E+00	1.95E-06			
30ZN	65	6.46E-05	1.84E-05	6.31E-05	2.91E-05	0.00E+00	3.06E-05	0.00E+00	5.33E-05			

38SR	89	7.48E-05	2.51E-03	0.00E+00	7.20E-05	0.00E+00	0.00E+00	0.00E+00	5.16E-05
38SR	90	9.76E-06	1.25E-02	0.00E+00	3.37E-03	0.00E+00	0.00E+00	0.00E+00	2.31E-04
40ZR	95	1.60E-03	2.06E-07	5.02E-08	3.56E-08	0.00E+00	5.41E-08	0.00E+00	2.50E-05
41NB	95	9.07E-03	4.20E-08	1.73E-08	1.00E-08	0.00E+00	1.24E-08	0.00E+00	1.46E-05
44RU	103	1.87E-04	1.48E-06	0.00E+00	4.95E-07	0.00E+00	3.08E-06	0.00E+00	1.80E-05
44RU	106	2.89E-04	2.41E-05	0.00E+00	3.01E-06	0.00E+00	2.85E-05	0.00E+00	1.83E-04
47AG	110M	3.20E-03	9.96E-07	7.27E-07	4.81E-07	0.00E+00	1.04E-06	0.00E+00	3.77E-05
53I	131	3.13E-03	3.59E-05	4.23E-05	1.86E-05	1.39E-02	4.94E-05	0.00E+00	1.51E-06
53I	132	1.57E-02	1.66E-06	3.37E-06	1.20E-06	1.58E-04	3.76E-06	0.00E+00	2.73E-06
53I	133	2.64E-02	1.25E-05	1.82E-05	5.33E-06	3.31E-03	2.14E-05	0.00E+00	3.08E-06
53I	134	8.60E-03	8.69E-07	1.78E-06	6.33E-07	4.15E-05	1.99E-06	0.00E+00	1.84E-06
53I	135	2.07E-02	3.64E-06	7.24E-06	2.64E-06	6.49E-04	8.07E-06	0.00E+00	2.62E-06
55CS	134	6.18E-05	3.77E-04	7.03E-04	7.10E-05	0.00E+00	1.81E-04	7.42E-05	1.91E-06
55CS	137	7.53E-03	5.22E-04	6.11E-04	4.33E-05	0.00E+00	1.64E-04	6.64E-05	1.91E-06
56BA	140	1.43E-03	1.71E-04	1.71E-07	8.81E-06	0.00E+00	4.06E-08	1.05E-07	4.20E-05
57LA	140	7.26E-03	2.11E-08	8.32E-09	2.14E-09	0.00E+00	0.00E+00	0.00E+00	9.77E-05
51SB	125	1.26E-01	1.23E-05	1.19E-07	2.53E-06	1.54E-08	0.00E+00	7.12E-06	1.64E-05
51SB	124	3.20E-02	2.14E-05	3.15E-07	6.63E-06	5.68E-08	0.00E+00	1.34E-05	6.60E-05
27CO	57	1.66E-04	0.00E+00	1.15E-06	1.87E-06	0.00E+00	0.00E+00	0.00E+00	3.92E-06

TOTAL NUMBER IN SOURCE TERM IS 28 TOTAL RELEASE IS 3.4626E+02

* * * AS LOW AS REASONABLY ACHIEVABLE * * *

C A T E G O R Y I D O S E S

DOSE (MREM PER YEAR INTAKE)

PATHWAY	SKIN	BONE	LIVER	TOTAL BODY	THYROID	KIDNEY	LUNG	GI-LLI
FISH		7.03E-03	5.94E-03	3.99E-03	5.78E-04	1.92E-03	8.02E-04	2.06E-02
INVERTEBRATE		2.63E-03	2.68E-03	8.66E-04	6.28E-05	3.60E-04	7.75E-04	7.02E-03
ALGAE		3.13E-09	2.08E-09	1.43E-09	6.53E-10	3.64E-10	1.14E-09	2.14E-08
DRINKING		1.65E-13	5.93E-13	5.91E-13	6.17E-13	5.57E-13	5.61E-13	8.42E-13
SHORELINE	1.18E-03	1.00E-03	1.00E-03	1.00E-03	1.00E-03	1.00E-03	1.00E-03	1.00E-03
SWIMMING	0.00E+00	1.39E-05	1.39E-05	1.39E-05	1.39E-05	1.39E-05	1.39E-05	1.39E-05
BOATING	0.00E+00	1.39E-05	1.39E-05	1.39E-05	1.39E-05	1.39E-05	1.39E-05	1.39E-05
TOTAL	1.18E-03	1.07E-02	9.65E-03	5.88E-03	1.67E-03	3.31E-03	2.61E-03	2.86E-02

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

SHOREWIDTH FACTOR=0.2

C A T E G O R Y I I D O S E S

DOSE (MREM PER YEAR INTAKE)

PATHWAY	SKIN	BONE	LIVER	TOTAL BODY	THYROID	KIDNEY	LUNG	GI-LLI
FISH		7.42E-03	6.16E-03	2.42E-03	5.36E-04	1.98E-03	9.31E-04	1.45E-02
INVERTEBRATE		2.74E-03	2.75E-03	8.74E-04	5.55E-05	3.50E-04	9.31E-04	4.88E-03
ALGAE		4.30E-09	2.83E-09	1.67E-09	8.13E-10	4.73E-10	1.78E-09	2.08E-08
DRINKING		2.25E-13	6.14E-13	6.05E-13	6.38E-13	5.64E-13	5.72E-13	8.27E-13
SHORELINE	1.58E-03	1.34E-03	1.34E-03	1.34E-03	1.34E-03	1.34E-03	1.34E-03	1.34E-03
SWIMMING	0.00E+00	2.77E-05	2.77E-05	2.77E-05	2.77E-05	2.77E-05	2.77E-05	2.77E-05
BOATING	0.00E+00	1.39E-05	1.39E-05	1.39E-05	1.39E-05	1.39E-05	1.39E-05	1.39E-05
TOTAL	1.58E-03	1.15E-02	1.03E-02	4.68E-03	1.98E-03	3.71E-03	3.25E-03	2.08E-02

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

SHOREWIDTH FACTOR=0.2

C A T E G O R Y I I I D O S E S

DOSE (MREM PER YEAR INTAKE)

PATHWAY	SKIN	BONE	LIVER	TOTAL BODY	THYROID	KIDNEY	LUNG	GI-LLI
FISH		9.51E-03	5.59E-03	1.28E-03	5.78E-04	1.71E-03	7.57E-04	5.24E-03
INVERTEBRATE		3.72E-03	2.54E-03	1.03E-03	5.37E-05	2.72E-04	8.39E-04	1.73E-03
ALGAE		1.28E-05	5.96E-06	3.80E-06	2.08E-06	9.14E-07	3.40E-06	1.85E-05
DRINKING		6.82E-10	1.19E-09	1.18E-09	1.26E-09	1.08E-09	1.10E-09	1.29E-09
SHORELINE	3.30E-04	2.81E-04	2.81E-04	2.81E-04	2.81E-04	2.81E-04	2.81E-04	2.81E-04
SWIMMING	0.00E+00	6.93E-06	6.93E-06	6.93E-06	6.93E-06	6.93E-06	6.93E-06	6.93E-06
BOATING	0.00E+00	1.39E-05	1.39E-05	1.39E-05	1.39E-05	1.39E-05	1.39E-05	1.39E-05

TOTAL	3.30E-04	1.35E-02	8.43E-03	2.61E-03	9.40E-04	2.29E-03	1.90E-03	7.34E-03

	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

C A T E G O R Y I V D O S E S

DOSE (MREM PER YEAR INTAKE)

PATHWAY	SKIN	BONE	LIVER	TOTAL BODY	THYROID	KIDNEY	LUNG	GI-LLI
FISH		9.72E-04	7.73E-04	1.07E-04	9.73E-05	1.99E-04	9.41E-05	3.45E-04
INVERTEBRATE		2.68E-04	2.47E-04	8.73E-05	7.50E-06	2.37E-05	6.50E-05	9.34E-05
ALGAE		1.80E-08	1.03E-08	5.70E-09	4.96E-09	1.43E-09	5.52E-09	1.76E-08
DRINKING		8.36E-13	1.83E-12	1.79E-12	2.09E-12	1.64E-12	1.67E-12	1.82E-12
SHORELINE	7.07E-05	6.02E-05	6.02E-05	6.02E-05	6.02E-05	6.02E-05	6.02E-05	6.02E-05
SWIMMING	0.00E+00	2.77E-12	2.77E-12	2.77E-12	2.77E-12	2.77E-12	2.77E-12	2.77E-12
BOATING	0.00E+00	6.93E-08	6.93E-08	6.93E-08	6.93E-08	6.93E-08	6.93E-08	6.93E-08
TOTAL	7.07E-05	1.30E-03	1.08E-03	2.55E-04	1.65E-04	2.83E-04	2.19E-04	4.99E-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

C A T E G O R Y I D O S E S

DOSE (MREM PER YEAR INTAKE)

PATHWAY	SKIN	BONE	LIVER	TOTAL BODY	THYROID	KIDNEY	LUNG	GI-LLI
FISH		5.02E-03	4.24E-03	2.85E-03	3.81E-04	1.37E-03	5.73E-04	1.46E-02
INVERTEBRATE		1.88E-03	1.91E-03	6.18E-04	4.23E-05	2.57E-04	5.54E-04	4.99E-03
ALGAE		2.23E-09	1.49E-09	1.02E-09	4.26E-10	2.59E-10	8.15E-10	1.50E-03
DRINKING		1.18E-11	4.25E-11	4.23E-11	5.14E-11	3.99E-11	4.01E-11	6.10E-11
SHORELINE	8.41E-04	7.17E-04	7.17E-04	7.17E-04	7.17E-04	7.17E-04	7.17E-04	7.17E-04
SWIMMING	0.00E+00	9.78E-06	9.78E-06	9.78E-06	9.78E-06	9.78E-06	9.78E-06	9.78E-06
BOATING	0.00E+00	9.78E-06	9.78E-06	9.78E-06	9.78E-06	9.78E-06	9.78E-06	9.78E-06
TOTAL	8.41E-04	7.64E-03	6.89E-03	4.20E-03	1.16E-03	2.37E-03	1.86E-03	2.04E-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

C A T E G O R Y I I D O S E S

DOSE (MREM PER YEAR INTAKE)

PATHWAY	SKIN	BONE	LIVER	TOTAL BODY	THYROID	KIDNEY	LUNG	GI-LLI
FISH		5.30E-03	4.40E-03	1.73E-03	3.51E-04	1.41E-03	6.65E-04	1.03E-02
INVERTEBRATE		1.96E-03	1.96E-03	6.24E-04	3.71E-05	2.50E-04	6.65E-04	3.46E-03
ALGAE		3.07E-09	2.02E-09	1.19E-09	5.28E-10	3.37E-10	1.27E-09	1.46E-03
DRINKING		1.62E-11	4.39E-11	4.33E-11	5.50E-11	4.04E-11	4.09E-11	5.99E-11
SHORELINE	1.13E-03	9.61E-04	9.61E-04	9.61E-04	9.61E-04	9.61E-04	9.61E-04	9.61E-04
SWIMMING	0.00E+00	1.96E-05	1.96E-05	1.96E-05	1.96E-05	1.96E-05	1.96E-05	1.96E-05
BOATING	0.00E+00	9.78E-06	9.78E-06	9.78E-06	9.78E-06	9.78E-06	9.78E-06	9.78E-06
TOTAL	1.13E-03	8.25E-03	7.35E-03	3.34E-03	1.38E-03	2.65E-03	2.32E-03	1.48E-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 A T E G O R Y I I I D O S E S

DOSE (MREM PER YEAR INTAKE)

PATHWAY	SKIN	BONE	LIVER	TOTAL BODY	THYROID	KIDNEY	LUNG	GI-LLI
FISH		6.79E-03	3.99E-03	9.11E-04	3.75E-04	1.22E-03	5.41E-04	3.72E-03

INVERTEBRATE		2.66E-03	1.81E-03	7.33E-04	3.88E-05	1.94E-04	5.99E-04	1.26E-03
ALGAE		9.14E-06	4.26E-06	2.72E-06	1.34E-06	6.51E-07	2.43E-06	1.29E-05
DRINKING		4.89E-08	8.50E-08	8.45E-08	1.16E-07	7.74E-08	7.84E-08	9.30E-08
SHORELINE	2.35E-04	2.01E-04	2.01E-04	2.01E-04	2.01E-04	2.01E-04	2.01E-04	2.01E-04
SWIMMING	0.00E+00	4.89E-06	4.89E-06	4.89E-06	4.89E-06	4.89E-06	4.89E-06	4.89E-06
BOATING	0.00E+00	9.78E-06	9.78E-06	9.78E-06	9.78E-06	9.78E-06	9.78E-06	9.78E-06
TOTAL	2.35E-04	9.67E-03	6.02E-03	1.86E-03	6.30E-04	1.63E-03	1.36E-03	5.21E-03

	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

C A T E G O R Y I V D O S E S

DOSE (MREM PER YEAR INTAKE)

PATHWAY	SKIN	BONE	LIVER	TOTAL BODY	THYROID	KIDNEY	LUNG	GI-LLI
FISH		6.94E-04	5.52E-04	7.65E-05	6.28E-05	1.42E-04	6.72E-05	2.45E-04
INVERTEBRATE		1.91E-04	1.76E-04	6.23E-05	4.91E-06	1.69E-05	4.64E-05	6.61E-05
ALGAE		1.28E-08	7.34E-09	4.06E-09	3.19E-09	1.02E-09	3.94E-09	1.23E-08
DRINKING		6.01E-11	1.31E-10	1.28E-10	2.12E-10	1.18E-10	1.19E-10	1.31E-10
SHORELINE	5.05E-05	4.30E-05	4.30E-05	4.30E-05	4.30E-05	4.30E-05	4.30E-05	4.30E-05
SWIMMING	0.00E+00	1.96E-12	1.96E-12	1.96E-12	1.96E-12	1.96E-12	1.96E-12	1.96E-12
BOATING	0.00E+00	4.89E-08	4.89E-08	4.89E-08	4.89E-08	4.89E-08	4.89E-08	4.89E-08
TOTAL	5.05E-05	9.28E-04	7.71E-04	1.82E-04	1.11E-04	2.02E-04	1.57E-04	3.54E-04

	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

_____SPORT HARVEST_____

PATHWAY	AGE GROUP	USAGE	DOSE (MAN-REM) BONE	LIVER	TOTAL BODY	THYROID	KIDNEY	LUNG	GI-LLI
FISH	CATEGORY I	7.60E+04	1.78E-02	1.51E-02	1.01E-02	6.77E-04	4.88E-03	2.03E-03	4.70E-02
FISH	CATEGORY II	8.87E+03	2.89E-03	2.39E-03	9.39E-04	9.02E-05	7.68E-04	3.62E-04	5.09E-03
FISH	CATEGORY III	6.14E+03	5.94E-03	3.49E-03	7.92E-04	1.39E-04	1.07E-03	4.73E-04	2.94E-03
FISH	TOTAL	9.10E+04	2.67E-02	2.09E-02	1.18E-02	9.06E-04	6.71E-03	2.87E-03	5.50E-02

LOCATION	DILUTION	CATCH	TIME(HR)-INCLUDES FOOD PROCESSING TIME OF 1.68E+02 HR	POPULATION=1.55E+04
	7.00E+00	9.10E+04	1.68E+02	

AVERAGE INDIVIDUAL CONSUMPTION (KG/YR) CATEGORY I=6.90E+00 CATEGORY II=5.20E+00 CATEGORY IV=2.20E+00

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

_____COMMERCIAL HARVEST_____

PATHWAY	AGE GROUP	USAGE	BONE	LIVER	TOTAL BODY	THYROID	KIDNEY	LUNG	GI-LLI
			DOSE (MAN-REM)						
FISH	CATEGORY I	1.01E+08	8.39E-02	7.08E-02	4.75E-02	2.73E-03	2.29E-02	9.56E-03	2.10E-01
FISH	CATEGORY II	1.18E+07	1.36E-02	1.12E-02	4.41E-03	3.59E-04	3.61E-03	1.70E-03	2.27E-02
FISH	CATEGORY III	8.20E+06	2.79E-02	1.64E-02	3.72E-03	5.46E-04	5.01E-03	2.22E-03	1.31E-02
FISH	TOTAL	1.21E+08	1.25E-01	9.84E-02	5.56E-02	3.63E-03	3.15E-02	1.35E-02	2.46E-01

LOCATION	DILUTION	CATCH	TIME(HR)-INCLUDES FOOD PROCESSING TIME OF 2.40E+02 HR	POPULATION=2.07E+07
	7.00E+00	1.55E+05	2.40E+02	

AVERAGE INDIVIDUAL CONSUMPTION (KG/YR) CATEGORY I=6.90E+00 CATEGORY II=5.20E+00 CATEGORY IV=2.20E+00

_____NEPA DOSES_____

NOTE--TOTAL NEPA DOSE INCLUDES SPORT CATCH

PATHWAY	AGE GROUP	USAGE	BONE	LIVER	TOTAL BODY	THYROID	KIDNEY	LUNG	GI-LLI
			DOSE (MAN-REM)						
FISH	CATEGORY I	2.05E+05	4.82E-02	4.07E-02	2.73E-02	1.66E-03	1.32E-02	5.50E-03	1.23E-01
FISH	CATEGORY II	2.40E+04	7.80E-03	6.47E-03	2.54E-03	2.20E-04	2.08E-03	9.78E-04	1.33E-02
FISH	CATEGORY III	1.66E+04	1.61E-02	9.42E-03	2.14E-03	3.37E-04	2.88E-03	1.28E-03	7.70E-03
FISH	TOTAL	2.46E+05	7.21E-02	5.66E-02	3.20E-02	2.22E-03	1.81E-02	7.75E-03	1.44E-01

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

_____SPORT HARVEST_____

PATHWAY	AGE GROUP	USAGE	DOSE (MAN-REM) BONE	LIVER	TOTAL BODY	THYROID	KIDNEY	LUNG	GI-LLI
INVER	CATEGORY I	8.33E+03	3.06E-03	3.09E-03	9.98E-04	4.44E-05	4.16E-04	9.00E-04	7.68E-03
INVER	CATEGORY II	9.68E+02	4.88E-04	4.86E-04	1.54E-04	5.60E-06	6.18E-05	1.65E-04	8.10E-04
INVER	CATEGORY III	6.97E+02	1.07E-03	7.23E-04	2.91E-04	8.49E-06	7.73E-05	2.40E-04	4.70E-04
INVER	TOTAL	1.00E+04	4.62E-03	4.30E-03	1.44E-03	5.85E-05	5.55E-04	1.31E-03	8.96E-03

LOCATION DILUTION CATCH TIME(HR)-INCLUDES FOOD PROCESSING TIME OF 1.68E+02 HR POPULATION=1.17E+04
7.00E+00 1.00E+04 1.68E+02

AVERAGE INDIVIDUAL CONSUMPTION (KG/YR) CATEGORY I=1.00E+00 CATEGORY II=7.50E-01 CATEGORY IV=3.30E-01

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

_____COMMERCIAL HARVEST_____

PATHWAY	AGE GROUP	USAGE	DOSE (MAN-REM) BONE	LIVER	TOTAL BODY	THYROID	KIDNEY	LUNG	GI-LLI
INVER	CATEGORY I	1.47E+07	2.34E-03	2.36E-03	7.60E-04	3.13E-05	3.17E-04	6.87E-04	5.81E-03
INVER	CATEGORY II	1.71E+06	3.73E-04	3.70E-04	1.17E-04	3.90E-06	4.71E-05	1.26E-04	6.12E-04
INVER	CATEGORY III	1.23E+06	8.15E-04	5.51E-04	2.22E-04	5.83E-06	5.89E-05	1.83E-04	3.55E-04
INVER	TOTAL	1.76E+07	3.53E-03	3.28E-03	1.10E-03	4.11E-05	4.23E-04	9.97E-04	6.77E-03

LOCATION	DILUTION	CATCH	TIME(HR)-INCLUDES FOOD PROCESSING TIME OF 2.40E+02 HR	POPULATION=2.07E+07
	7.00E+00	1.00E+03	2.40E+02	

AVERAGE INDIVIDUAL CONSUMPTION (KG/YR) CATEGORY I=1.00E+00 CATEGORY II=7.50E-01 CATEGORY IV=3.30E-01

_____NEPA DOSES_____

NOTE--TOTAL NEPA DOSE INCLUDES SPORT CATCH

PATHWAY	AGE GROUP	USAGE	DOSE (MAN-REM) BONE	LIVER	TOTAL BODY	THYROID	KIDNEY	LUNG	GI-LLI
INVER	CATEGORY I	9.17E+03	3.37E-03	3.40E-03	1.10E-03	4.85E-05	4.57E-04	9.90E-04	8.44E-03
INVER	CATEGORY II	1.07E+03	5.37E-04	5.34E-04	1.69E-04	6.11E-06	6.79E-05	1.82E-04	8.90E-04
INVER	CATEGORY III	7.67E+02	1.17E-03	7.95E-04	3.20E-04	9.25E-06	8.50E-05	2.64E-04	5.16E-04
INVER	TOTAL	1.10E+04	5.08E-03	4.73E-03	1.59E-03	6.39E-05	6.10E-04	1.43E-03	9.85E-03

* * * POPULATION WATER CONSUMPTION DOSES * * *

SUPPLIER-

PATHWAY	AGE GROUP	USAGE	BONE	LIVER	TOTAL BODY	THYROID	KIDNEY	LUNG	GI-LLI
			DOSE (MAN-REM)						
DRINKING	CATEGORY I	2.63E+02	8.05E-09	7.90E-10	4.66E-10	1.20E-10	1.60E-10	1.33E-10	2.37E-10
DRINKING	CATEGORY II	2.86E+01	1.19E-09	1.14E-10	5.94E-11	1.31E-11	1.92E-11	1.55E-11	2.67E-11
DRINKING	CATEGORY III	4.68E+01	5.93E-09	4.16E-10	2.50E-10	4.12E-11	6.10E-11	4.83E-11	6.27E-11
DRINKING	TOTAL	3.38E+02	1.52E-08	1.32E-09	7.75E-10	1.74E-10	2.40E-10	1.97E-10	3.27E-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) CATEGORY I =3.70E+02 CATEGORY II=2.60E+02 CATEGORY III=2.60E+02

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

PATHWAY	AGE GROUP	USAGE	BONE	LIVER	TOTAL BODY	THYROID	KIDNEY	LUNG	GI-LLI
DRINKING	CUMUL TOTAL	3.38E+02	1.52E-08	1.32E-09	7.75E-10	1.74E-10	2.40E-10	1.97E-10	3.27E-10

_____HYDROSPHERE TRITIUM DOSE_____

PATHWAY	AGE GROUP	USAGE	BONE	LIVER	TOTAL BODY	THYROID	KIDNEY	LUNG	GI-LLI
WATER	TOTAL	2.20E+00	2.83E-03	2.83E-03	2.83E-03	2.83E-03	2.83E-03	2.83E-03	2.83E-03

* * * RECREATION POPULATION DOSES * * *

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
SHORELINE	TOTAL POPUL	1.66E+07	2.79E-01	2.38E-01	2.38E-01

LOCATION- 0.2DO

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

PATHWAY	AGE GROUP	USAGE	DOSE(MAN-REM) SKIN	TOTAL BODY	THYROID
SWIMMING	TOTAL POPUL	1.66E+07	0.00E+00	3.26E-03	3.26E-03

LOCATION- 0.2DO

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	0.00E+00	1.63E-03	1.63E-03

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* * * DOSE TO BIOTA * * *

MRADS PER YEAR

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

	INTERNAL	EXTERNAL	TOTAL
FISH	6.94E-02	6.30E-01	6.99E-01
INVERTEBRATE	9.81E-02	1.26E+00	1.36E+00
ALGAE	1.97E-01	1.72E-03	1.99E-01
MUSKRAT	1.48E-01	4.20E-01	5.67E-01
RACCOON	3.62E-02	3.14E-01	3.50E-01
HERON	3.04E-01	4.19E-01	7.23E-01
DUCK	1.34E-01	6.29E-01	7.63E-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
1H 3	3.45E+02	1.99E-03	1.99E-03	5.76E-06	5.76E-06
25MN 54	3.30E-03	8.68E-04	2.21E-04	2.63E-01	6.70E-02
24CR 51	1.41E-01	4.89E-05	4.67E-05	3.46E-04	3.31E-04
26FE 55	2.72E-01	1.76E-03	3.15E-08	6.46E-03	1.16E-07
26FE 59	5.60E-03	3.58E-04	9.30E-05	6.40E-02	1.66E-02
27CO 58	2.93E-01	7.79E-03	6.12E-03	2.66E-02	2.09E-02
27CO 60	2.14E-01	2.19E-01	2.15E-01	1.02E+00	1.01E+00
28NI 63	6.97E-02	2.19E-03	0.00E+00	3.14E-02	0.00E+00
30ZN 65	6.46E-05	6.99E-05	2.37E-06	1.08E+00	3.66E-02
38SR 89	7.48E-05	1.36E-06	6.95E-10	1.82E-02	9.30E-06
38SR 90	9.76E-06	2.14E-05	9.52E-12	2.19E+00	9.76E-07
40ZR 95	1.60E-03	2.25E-05	2.25E-05	1.41E-02	1.41E-02
41NB 95	9.07E-03	9.56E-05	6.78E-05	1.05E-02	7.48E-03
44RU 103	1.87E-04	1.11E-06	1.09E-06	5.94E-03	5.85E-03
44RU 106	2.89E-04	6.94E-06	6.80E-06	2.40E-02	2.35E-02
47AG 110M	3.20E-03	5.42E-04	5.41E-04	1.69E-01	1.69E-01
53I 131	3.13E-03	1.14E-05	2.64E-03	3.65E-03	8.44E-01
53I 132	1.57E-02	3.20E-07	3.20E-07	2.04E-05	2.04E-05
53I 133	2.64E-02	4.27E-05	5.20E-05	1.62E-03	1.97E-03
53I 134	8.60E-03	2.75E-06	2.75E-06	3.20E-04	3.20E-04
53I 135	2.07E-02	1.86E-06	1.86E-06	8.97E-05	8.97E-05
55CS 134	6.18E-05	8.06E-04	1.99E-05	1.30E+01	3.23E-01
55CS 137	7.53E-03	6.04E-02	3.62E-03	8.02E+00	4.81E-01
56BA 140	1.43E-03	3.48E-06	2.61E-06	2.43E-03	1.82E-03
57LA 140	7.26E-03	6.87E-06	6.87E-06	9.46E-04	9.46E-04
51SB 125	1.26E-01	1.39E-02	1.39E-02	1.10E-01	1.10E-01
51SB 124	3.20E-02	1.10E-03	1.10E-03	3.44E-02	3.43E-02
27CO 57	1.66E-04	1.70E-06	1.52E-06	1.02E-02	9.16E-03
TOTAL		3.11E-01	2.46E-01		

NOTE ON AGE GROUP:

CATEGORY I (17 YEARS OLD OR OLDER)
CATEGORY II (11 TO 17 YEARS OLD)
CATEGORY III (1 TO 11 YEARS OLD)
CATEGORY IV (0 TO 1 YEAR OLD)

TABLE 4A

HOURS AT EACH WIND SPEED AND DIRECTION[a]

INDIAN POINT JULY-SEPT 1988
10 METER WIND SPEED & DIR. WITH 61-10 METER DELTA T
PASQUILL CLASS A

WIND DIRECTION	WIND SPEED (MPH)						
	01-03	04-07	08-12	13-18	19-24	>24	TOTAL
N	1.	20.	4.	0.	0.	0.	25.
NNE	1.	4.	1.	0.	0.	0.	6.
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	1.	0.	0.	0.	0.	0.	1.
SSE	3.	32.	0.	0.	0.	0.	35.
S	1.	19.	2.	0.	0.	0.	22.
SSW	0.	2.	1.	0.	0.	0.	3.
SW	0.	2.	0.	0.	0.	0.	2.
WSW	1.	0.	2.	0.	0.	0.	3.
W	4.	5.	0.	0.	0.	0.	9.
WNW	2.	12.	0.	0.	0.	0.	14.
NW	2.	13.	0.	0.	0.	0.	15.
NNW	5.	20.	0.	0.	0.	0.	25.
TOTAL	21.	129.	10.	0.	0.	0.	160.

Periods of calm (hours): 0
Hours of missing data: NONE

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[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]

INDIAN POINT JULY-SEPT 1988
10 METER WIND SPEED & DIR. WITH 61-10 METER DELTA T
PASQUILL CLASS B

WIND DIRECTION	WIND SPEED (MPH)						
	01-03	04-07	08-12	13-18	19-24	>24	TOTAL
N	7.	12.	0.	0.	0.	0.	19.
NNE	3.	3.	0.	0.	0.	0.	6.
NE	1.	1.	0.	0.	0.	0.	2.
ENE	1.	0.	0.	0.	0.	0.	1.
E	0.	1.	0.	0.	0.	0.	1.
ESE	1.	0.	0.	0.	0.	0.	1.
SE	2.	0.	0.	0.	0.	0.	2.
SSE	5.	19.	1.	0.	0.	0.	25.
S	3.	21.	10.	0.	0.	0.	34.
SSW	0.	4.	2.	0.	0.	0.	6.
SW	1.	2.	0.	0.	0.	0.	3.
WSW	2.	1.	1.	0.	0.	0.	4.
W	5.	1.	0.	0.	0.	0.	6.
WNW	1.	2.	0.	0.	0.	0.	3.
NW	3.	2.	0.	0.	0.	0.	5.
NNW	2.	2.	0.	0.	0.	0.	4.
TOTAL	37.	71.	14.	0.	0.	0.	122.

Periods of calm (hours): 0
Hours of missing data: NONE

[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]

INDIAN POINT JULY-SEPT 1988
10 METER WIND SPEED & DIR. WITH 61-10 METER DELTA T
PASQUILL CLASS C

WIND DIRECTION	WIND SPEED (MPH)						
	01-03	04-07	08-12	13-18	19-24	>24	TOTAL
N	8.	22.	0.	0.	0.	0.	30.
NNE	4.	6.	1.	0.	0.	0.	11.
NE	1.	0.	0.	0.	0.	0.	1.
ENE	1.	0.	0.	0.	0.	0.	1.
E	0.	0.	0.	0.	0.	0.	0.
ESE	3.	0.	0.	0.	0.	0.	3.
SE	4.	0.	0.	0.	0.	0.	4.
SSE	8.	7.	1.	0.	0.	0.	16.
S	12.	36.	2.	0.	0.	0.	50.
SSW	2.	8.	1.	0.	0.	0.	11.
SW	2.	1.	0.	0.	0.	0.	3.
WSW	3.	1.	0.	0.	0.	0.	4.
W	1.	2.	0.	0.	0.	0.	3.
WNW	2.	1.	0.	0.	0.	0.	3.
NW	0.	2.	1.	0.	0.	0.	3.
NNW	3.	2.	0.	0.	0.	0.	5.
TOTAL	54.	88.	6.	0.	0.	0.	148.

Periods of calm (hours): 0
Hours of missing data: NONE

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[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]

INDIAN POINT JULY-SEPT 1988
10 METER WIND SPEED & DIR. WITH 61-10 METER DELTA T
PASQUILL CLASS D

WIND DIRECTION	WIND SPEED (MPH)						
	01-03	04-07	08-12	13-18	19-24	>24	TOTAL
N	38.	53.	2.	0.	0.	0.	93.
NNE	20.	41.	10.	0.	0.	0.	71.
NE	31.	17.	0.	0.	0.	0.	48.
ENE	17.	0.	0.	0.	0.	0.	17.
E	11.	0.	0.	0.	0.	0.	11.
ESE	13.	1.	0.	0.	0.	0.	14.
SE	16.	0.	0.	0.	0.	0.	16.
SSE	38.	48.	3.	0.	0.	0.	89.
S	54.	117.	11.	0.	0.	0.	182.
SSW	16.	31.	6.	0.	0.	0.	53.
SW	8.	2.	0.	0.	0.	0.	10.
WSW	8.	2.	0.	0.	0.	0.	10.
W	3.	5.	0.	0.	0.	0.	8.
WNW	3.	12.	1.	0.	0.	0.	16.
NW	4.	7.	0.	0.	0.	0.	11.
NNW	9.	19.	0.	0.	0.	0.	28.
TOTAL	289.	355.	33.	0.	0.	0.	677.

Periods of calm (hours): 2
Hours of missing data: NONE

[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]

INDIAN POINT JULY-SEPT 1988
10 METER WIND SPEED & DIR. WITH 61-10 METER DELTA T
PASQUILL CLASS E

WIND DIRECTION	WIND SPEED (MPH)						
	01-03	04-07	08-12	13-18	19-24	>24	TOTAL
N	36.	22.	3.	0.	0.	0.	61.
NNE	112.	25.	0.	0.	0.	0.	137.
NE	123.	37.	0.	0.	0.	0.	160.
ENE	39.	3.	0.	0.	0.	0.	42.
E	23.	0.	0.	0.	0.	0.	23.
ESE	28.	1.	0.	0.	0.	0.	29.
SE	37.	1.	1.	0.	0.	0.	39.
SSE	40.	19.	0.	0.	0.	0.	59.
S	67.	66.	5.	0.	1.	0.	139.
SSW	34.	28.	3.	0.	0.	0.	65.
SW	10.	1.	0.	0.	0.	0.	11.
WSW	6.	1.	0.	0.	0.	0.	7.
W	10.	1.	2.	0.	0.	0.	13.
WNW	12.	6.	0.	0.	0.	0.	18.
NW	18.	5.	0.	0.	0.	0.	23.
NNW	13.	14.	0.	0.	0.	0.	27.
TOTAL	608.	230.	14.	0.	1.	0.	853.

Periods of calm (hours): 43
Hours of missing data: NONE

[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]

INDIAN POINT JULY-SEPT 1988
10 METER WIND SPEED & DIR. WITH 61-10 METER DELTA T
PASQUILL CLASS F

WIND DIRECTION	WIND SPEED (MPH)						
	01-03	04-07	08-12	13-18	19-24	>24	TOTAL
N	6.	0.	0.	0.	0.	0.	6.
NNE	63.	10.	0.	0.	0.	0.	73.
NE	49.	17.	0.	0.	0.	0.	66.
ENE	8.	0.	0.	0.	0.	0.	8.
E	5.	0.	0.	0.	0.	0.	5.
ESE	7.	0.	0.	0.	0.	0.	7.
SE	4.	0.	0.	0.	0.	0.	4.
SSE	2.	0.	0.	0.	0.	0.	2.
S	3.	0.	0.	0.	0.	0.	3.
SSW	3.	0.	0.	0.	0.	0.	3.
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	1.	0.	0.	0.	0.	0.	1.
NNW	4.	0.	0.	0.	0.	0.	4.
TOTAL	155.	27.	0.	0.	0.	0.	182.

Periods of calm (hours): 18
Hours of missing data: NONE

[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]

INDIAN POINT JULY-SEPT 1988
10 METER WIND SPEED & DIR. WITH 61-10 METER DELTA T
PASQUILL CLASS G

WIND DIRECTION	WIND SPEED (MPH)						
	01-03	04-07	08-12	13-18	19-24	>24	TOTAL
N	0.	0.	0.	0.	0.	0.	0.
NNE	1.	0.	0.	0.	0.	0.	1.
NE	1.	0.	0.	0.	0.	0.	1.
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.	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.
TOTAL	3.	0.	0.	0.	0.	0.	3.

Periods of calm (hours): 0
Hours of missing data: NONE

[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]

INDIAN POINT OCT-DEC 1988
10 METER WIND SPEED & DIR. WITH 61-10 METER DELTA T
PASQUILL CLASS A

WIND DIRECTION	WIND SPEED (MPH)						
	01-03	04-07	08-12	13-18	19-24	>24	TOTAL
N	0.	11.	5.	0.	0.	0.	16.
NNE	0.	0.	0.	0.	0.	0.	0.
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.	5.	2.	0.	0.	0.	8.
S	0.	2.	1.	0.	0.	0.	3.
SSW	0.	0.	0.	0.	0.	0.	0.
SW	0.	3.	0.	0.	0.	0.	3.
WSW	0.	2.	0.	0.	0.	0.	2.
W	0.	9.	2.	0.	0.	0.	11.
WNW	0.	11.	3.	0.	0.	0.	14.
NW	2.	19.	5.	0.	0.	0.	26.
NNW	0.	9.	2.	0.	0.	0.	11.
TOTAL	3.	71.	20.	0.	0.	0.	94.

Periods of calm (hours): 0
Hours of missing data: NONE

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[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]

INDIAN POINT OCT-DEC 1988
10 METER WIND SPEED & DIR. WITH 61-10 METER DELTA T
PASQUILL CLASS B

WIND DIRECTION	WIND SPEED (MPH)						
	01-03	04-07	08-12	13-18	19-24	>24	TOTAL
N	1.	11.	0.	0.	0.	0.	12.
NNE	0.	1.	0.	0.	0.	0.	1.
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.	8.	0.	0.	0.	0.	9.
S	0.	4.	4.	0.	0.	0.	8.
SSW	0.	5.	0.	0.	0.	0.	5.
SW	0.	2.	0.	0.	0.	0.	2.
WSW	0.	1.	0.	0.	0.	0.	1.
W	0.	6.	2.	0.	0.	0.	8.
WNW	0.	6.	0.	0.	0.	0.	6.
NW	0.	7.	8.	0.	0.	0.	15.
NNW	1.	6.	2.	0.	0.	0.	9.
TOTAL	3.	57.	16.	0.	0.	0.	76.

Periods of calm (hours): 0
Hours of missing data: NONE

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[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]

INDIAN POINT OCT-DEC 1988
10 METER WIND SPEED & DIR. WITH 61-10 METER DELTA T
PASQUILL CLASS C

WIND DIRECTION	WIND SPEED (MPH)						
	01-03	04-07	08-12	13-18	19-24	>24	TOTAL
N	2.	11.	3.	0.	0.	0.	16.
NNE	1.	10.	0.	0.	0.	0.	11.
NE	1.	3.	0.	0.	0.	0.	4.
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	1.	0.	0.	0.	0.	0.	1.
SSE	1.	11.	2.	0.	0.	0.	14.
S	0.	4.	7.	0.	0.	0.	11.
SSW	0.	6.	0.	0.	0.	0.	6.
SW	0.	4.	0.	0.	0.	0.	4.
WSW	2.	1.	0.	0.	0.	0.	3.
W	0.	5.	2.	0.	0.	0.	7.
WNW	1.	9.	1.	0.	0.	0.	11.
NW	2.	9.	5.	0.	0.	0.	16.
NNW	0.	4.	2.	0.	0.	0.	6.
TOTAL	11.	77.	22.	0.	0.	0.	110.

Periods of calm (hours): 0
Hours of missing data: NONE

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[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]

INDIAN POINT OCT-DEC 1988
10 METER WIND SPEED & DIR. WITH 61-10 METER DELTA T
PASQUILL CLASS D

WIND DIRECTION	WIND SPEED (MPH)						
	01-03	04-07	08-12	13-18	19-24	>24	TOTAL
N	17.	50.	41.	1.	0.	0.	109.
NNE	20.	99.	14.	0.	0.	0.	133.
NE	19.	41.	2.	0.	0.	0.	62.
ENE	8.	5.	0.	0.	0.	0.	13.
E	10.	2.	0.	0.	0.	0.	12.
ESE	8.	4.	0.	0.	0.	0.	12.
SE	8.	3.	0.	0.	0.	0.	11.
SSE	11.	16.	6.	0.	0.	0.	33.
S	14.	53.	19.	1.	0.	0.	87.
SSW	14.	33.	6.	0.	0.	0.	53.
SW	4.	15.	1.	0.	0.	0.	20.
WSW	7.	26.	1.	0.	0.	0.	34.
W	6.	84.	10.	0.	0.	0.	100.
WNW	8.	57.	28.	0.	0.	0.	93.
NW	2.	48.	54.	4.	0.	0.	108.
NNW	5.	56.	20.	0.	0.	0.	81.
TOTAL	161.	592.	202.	6.	0.	0.	961.

Periods of calm (hours): 2
Hours of missing data: NONE

[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]

INDIAN POINT OCT-DEC 1988
10 METER WIND SPEED & DIR. WITH 61-10 METER DELTA T
PASQUILL CLASS E

WIND DIRECTION	WIND SPEED (MPH) 01-03	04-07	08-12	13-18	19-24	>24	TOTAL
N	29.	6.	1.	0.	0.	0.	36.
NNE	77.	21.	0.	0.	0.	0.	98.
NE	71.	33.	1.	0.	0.	0.	105.
ENE	22.	0.	0.	0.	0.	0.	22.
E	15.	2.	0.	0.	0.	0.	17.
ESE	18.	0.	0.	0.	0.	0.	18.
SE	14.	2.	0.	0.	0.	0.	16.
SSE	35.	32.	0.	0.	0.	0.	67.
S	24.	76.	11.	0.	0.	0.	111.
SSW	30.	27.	0.	0.	0.	0.	57.
SW	15.	5.	0.	0.	0.	0.	20.
WSW	16.	7.	3.	0.	0.	0.	26.
W	14.	19.	1.	0.	0.	0.	34.
WNW	11.	23.	2.	0.	0.	0.	36.
NW	7.	28.	1.	1.	0.	0.	37.
NNW	8.	10.	0.	0.	0.	0.	18.
TOTAL	406.	291.	20.	1.	0.	0.	718.

Periods of calm (hours): 10
Hours of missing data: NONE

[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]

INDIAN POINT OCT-DEC 1988
10 METER WIND SPEED & DIR. WITH 61-10 METER DELTA T
PASQUILL CLASS F

WIND DIRECTION	WIND SPEED (MPH)						
	01-03	04-07	08-12	13-18	19-24	>24	TOTAL
N	15.	0.	0.	0.	0.	0.	15.
NNE	84.	10.	0.	0.	0.	0.	94.
NE	36.	14.	0.	0.	0.	0.	50.
ENE	10.	1.	0.	0.	0.	0.	11.
E	2.	0.	0.	0.	0.	0.	2.
ESE	1.	0.	0.	0.	0.	0.	1.
SE	0.	0.	0.	0.	0.	0.	0.
SSE	3.	1.	0.	0.	0.	0.	4.
S	8.	6.	0.	0.	0.	0.	14.
SSW	1.	0.	0.	0.	0.	0.	1.
SW	3.	0.	0.	0.	0.	0.	3.
WSW	3.	0.	0.	0.	0.	0.	3.
W	1.	0.	1.	0.	0.	0.	2.
WNW	1.	0.	0.	0.	0.	0.	1.
NW	3.	0.	0.	0.	0.	0.	3.
NNW	1.	0.	0.	0.	0.	0.	1.
TOTAL	172.	32.	1.	0.	0.	0.	205.

Periods of calm (hours): 0
Hours of missing data: NONE

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[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]

INDIAN POINT OCT-DEC 1988
10 METER WIND SPEED & DIR. WITH 61-10 METER DELTA T
PASQUILL CLASS G

WIND DIRECTION	WIND SPEED (MPH)						
	01-03	04-07	08-12	13-18	19-24	>24	TOTAL
N	7.	0.	0.	0.	0.	0.	7.
NNE	15.	4.	0.	0.	0.	0.	19.
NE	2.	3.	0.	0.	0.	0.	5.
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	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	1.	0.	0.	0.	0.	0.	1.
TOTAL	25.	7.	0.	0.	0.	0.	32.

Periods of calm (hours): 0
Hours of missing data: NONE

[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.

March 1, 1989

Re: Indian Point Unit Nos. 1 and 2
Docket No. 50-247

SEMI-ANNUAL EFFLUENT AND WASTE DISPOSAL REPORT

F - REPORTABLE CHANGES

TO THE PROCESS CONTROL ROOM (PCP)

OFFSITE DOSE CALCULATION MANUAL (ODCM)

AND RADIOACTIVE WASTE SYSTEMS

G - REPORTABLE ITEMS

THE RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

H - UNPLANNED RELEASES

SECOND HALF - 1988

March 1, 1989

Re: Indian Point Unit Nos. 1 and 2
Docket Nos. 50-03 and 50-247

SECTION F

Reportable Changes

A. Process Control Program (PCP)

Section 6.14.1 of the Indian Point Unit No. 2 Technical Specifications require that licensee initiated changes to PCP be reported to the Commission in the Semi-Annual Radioactive Effluent Release Report. During the 2nd half of 1988, the following change was made.

A switch in water processing vendors took place November 1, 1988. Duratek Corporation has been awarded a two year contract to process our waste water. There is no change to the technique used to process the waste water, however, there is a change to the method used to dewater the filter media to meet burial requirements. The new method uses forced warm air to dry the media versus the old water vacuum process. The new system has been reviewed by the NRC and is deemed acceptable for meeting the requirements of the burial site criteria. A safety evaluation was completed (NS-2-88-076) on 10/31/88. The Radwaste procedure (TS-SQ-4, 202 Rev.0) was approved by SNCS (Mtg # 1268) on 11/7/88 and issued on 11/10/88, prior to the start of operation with the new system.

B. Offsite Dose Calculation Manual (ODCM)

Section 6.15.2 of the Indian Point Unit No. 2 Technical Specifications require that changes to ODCM be reported to the Commission in the Semi-Annual Radioactive Effluent Release Report. During the 2nd half of 1988, there were no changes made.

C. Radioactive Waste Systems (RWS)

Section 6.16.1 of the Indian Point Unit No. 2 Technical Specifications require that major changes to RWS be reported to the Commission in the Semi-Annual Radioactive Effluent Release Report. During the 2nd half of 1988, there were no change was made.

March 1, 1989

Re: Indian Point Unit Nos. 1 and 2
Docket Nos. 50-03 and 50-247

SECTION G

Reportable Items

A. Radioactive Liquid Effluent Monitoring Instrumentation

(i) Unit # 1's* Chemical Service Building (CSB) Sewage Discharge Monitor has been out of service for twenty-four weeks during the second half of 1988. This is due to the unavailability of spare parts.

The discharge line, which are monitored by the CSB Sewage Detector, have been flanged to terminate discharges of fluids via the pathway.

(ii) Unit # 1's* Nuclear Service Building (NSB) Sewage Discharge Monitor has been out of service for eight weeks during the third and fourth quarters of 1988. Although the unit was repaired and returned to service, a new monitor is being installed in the Station's Sewage Discharge System and will remove the need for the NSB Sewage Discharge Monitor. The new unit will be placed in service during the second/third quarter of 1989.

(iii) Unit # 1's* Secondary Boiler Blowdown Purification System (SBBPS) Monitor has been out of service for nine weeks during the reporting cycle. The unit has been repaired and returned to service.

Although the SBBPS, through which plant effluents may be discharged, is available for use, no effluents have been discharged through this pathway during the reporting cycle.

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* Available replacement parts for Unit # 1 monitors have long lead times.

B. Radioactive Gaseous Effluent Monitoring Instrumentation

(i) Unit # 1's* Stack Monitor was out of service during the last six weeks of 1988. The pump/compressor was replaced and the unit has been returned to service.

(ii) Radiation monitor R-20 for the Waste Gas Decay Tanks has been out of service since March 21, 1988. It is not receiving sample flow due to a defective pressure control valve PCV-1069. A new valve has been ordered, and the expected date of return to service is March 31, 1989.

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* Available replacement parts for Unit # 1 monitors have long lead times.

March 1, 1989

Re: Indian Point Unit Nos. 1 and 2
Docket Nos. 50-03 and 50-247

SECTION H

Unplanned Releases

A. Unplanned Liquid Releases

There were two unplanned liquid releases during the 3rd quarter of 1988, due to a steam coil leak in the Refueling Water Storage Tank. The contaminated steam condensate was returned to the service boilers and discharged via blowdown. The values have been integrated into the releases reported for this period. This release was less than 0.1% of MPC as per 10 CFR 20 Appendix B, Table II, Column 2.

B. Unplanned Gaseous Releases

During this reporting period there were no unplanned gaseous releases.

March 1, 1989

Re: Indian Point Unit Nos. 1 and 2
Docket Nos. 50-03 and 50-247

SEMI-ANNUAL EFFLUENT AND WASTE DISPOSAL REPORT

Addendum to 1st and 2nd

Quarter 1988

Changes to the report are indicated by margin bars

bar 1 - The missing subscripts for the average beta and gamma energies are included.

bar 2 - The gaseous and liquid effluent summary tables have been revised to include a footnote regarding the reporting of data for the lower limit of detection.

August 31, 1988

Re: Indian Point Unit Nos. 1 and 2
Docket Nos. 50-3 and 50-247

The tritium limit has been established in the same manner as the other isotopes in liquid effluents. A derived MPC of 2×10^{-4} uCi/ml for dissolved noble gases has been conservatively adopted for the liquid effluents due to swimming pathway.

3. Average Energy

The average energy ($\bar{E}$) of the radionuclide mixture in releases of fission and activation gases for the first quarter was .049 Mev/Dis. for E_{γ} and .194 Mev/Dis. for E_{β}. The corresponding values for the second quarter were .051 Mev/Dis., and .195 Mev/Dis., respectively. 1

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 4.10-3 of the Technical Specifications. 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 generally treated as batch releases. At least one complete isotopic concentration analysis of containment air is performed per week. This is applied to 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.

The continuous discharges are based on the isotopic content determined from weekly samples of ventilation air. This information is combined with total air volume discharged by this route. The accumulation of batch and containment ventilation releases is then used to determine total discharges.

NUCLIDES RELEASED	UNITS	CONTINUOUS MODE QUARTER 1	CONTINUOUS MODE QUARTER 2	BATCH MODE QUARTER 1	BATCH MODE QUARTER 2
LIQUID EFFLUENTS CONTINUED					
CO57	CI			1.02E-04	1.03E-04
SB125	CI			1.57E-01	1.18E-02
SB124	CI			1.27E-02	
TOTAL FOR: PERIOD (ABOVE)	CI	1.46E 00	5.00E 00	1.95E 01	6.91E 01
XE133	CI			3.89E-03	2.08E-03
XE135	CI	1.17E-04	1.30E-03		
XE135M	CI	4.73E-03	6.73E-03		

ote: Blanks denote samples with activity levels less than the lower limit of detection as defined by Tech. Spec. Table 4.10-1

2

NUCLIDES RELEASED	UNITS	CONTINUOUS MODE QUARTER 1	CONTINUOUS MODE QUARTER 2	BATCH MODE QUARTER 1	BATCH MODE QUARTER 2
1. FISSION AND ACTIVATION GASES					
H3	CI	4.34E-02	9.98E-01		
AR41	CI	8.43E-02	3.58E-02	3.57E-02	8.17E-02
KR85M	CI		1.80E-03		2.87E-03
KR87	CI	5.21E-03	4.62E-03		1.77E-03
KR88	CI	1.05E-02	1.10E-02		7.91E-03
XE133	CI	2.89E 01	2.88E 01	9.14E-01	3.20E 01
XE135M	CI	1.22E-01	1.13E-01		5.07E-02
XE135	CI	9.95E-02	1.14E-01	7.87E-02	6.35E-01
C14	CI	2.00E 00	2.00E 00		
TOTAL FOR PERIOD (ABOVE)	CI	3.13E 01	3.20E 01	1.03E 00	3.29E 01
2. IODINES					
I131	CI	6.98E-06	9.58E-06		
I133	CI	8.08E-05	2.68E-03		
TOTAL FOR PERIOD (ABOVE)	CI	8.78E-05	2.69E-03		
3. PARTICULATES					
MN54	CI	3.80E-04	1.01E-03		
CO58	CI	5.42E-05	9.63E-06		
CO60	CI	6.87E-04	2.29E-03		
SR90	CI	1.09E-08			
CS137	CI	5.51E-05	1.60E-03		
FE55	CI	2.16E-06			
NI63	CI	5.95E-07	1.88E-08		
TOTAL FOR PERIOD (ABOVE)	CI	1.18E-03	5.00E-03		

Note: Blanks denote samples with activity levels less than the lower limit of detection as defined by Tech. Spec. Table 4.10-3.