Indian Point 3
Nuclear Power Plant
P.O. Box 215
Buchanan, New York 10511
914 739.8200

NewYorkPower Authority

February 27, 1987
IP3-WAJ-015Z

Docket No. 50-286
License No. DPR-64

Dr. Thomas E. Murley
Regional Administrator
Region I
U.S. Nuclear Regulatory Commission
631 Park Avenue
King of Prussia, PA 19406

Dear Dr. Murley:

Enclosed is the Semi-Annual Report of Radioactivity in Solid Wastes and Releases of Radioactive Materials in Liquid and Gaseous Effluents for Indian Point 3 as required by Section 5.3.3.1 of the Environmental Technical Specifications.

The enclosed report covers the period July 1, 1986 through December 31, 1986 for Indian Point 3 and includes those releases from Indian Point 2 which resulted from processing liquid waste from Indian Point 3 when this pathway is utilized.

The effluent stream flow has not yet been received from the Department of the Interior and will be supplied when available.

Corrections to the first and second quarter 1986 semi-annual report and the third and fourth quarter 1985 semi-annual report are included.

Sincerely,

W. A. Josiger
Resident Manager
Indian Point 3 Nuclear Power Pl....

WAJ:lg

Enclosure

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cc: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Indian Point 3 Resident Inspector's Office

Corrections to the First and Second Quarter 1986 Semi-Annual Effluent Releases Report

Incorrect dilution flows (Table 2A.F) were used in the liquid release calculations. This required the recalculation of the average diluted concentration and the percent of the applicable limit. These corrections are attached on a revised Table 2A.

Corrections to the Third and Fourth Quarter 1985 Semi-Annual Effluent Release Report

Carbon 14 dose to the maximum exposed individual were inadvertently omitted in the final semi-annual report in 1985. These corrections are attached on the revised Radiological Impact on Man summary table.

TABLE 2A (corrected)

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (1986)

LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1st	QUARTER 2nd	EST.TOTAL ERROR %
A. Fission and activation products				
1. Total release (not including tritium, gases, alpha)	Ci	3.99E-2	7.90E-2	2.50E+1
2. Average diluted concentration during period	uCi/ml	2.76E-10	3.75E-10	
3. Percent of applicable limit	%	2.64E-1	3.74E-1	
B. Tritium				
1. Total release	Ci	1.95E+2	1.78E+2	2.50E+1
2. Average diluted concentration during period	uCi/ml	1.35E-6	8.44E-7	
3. Percent of applicable limit	%	2.64E-1	3.74E-1	
C. Dissolved and entrained gases				
1. Total release	Ci	1.16E+1	4.76E+0	2.50E+1
2. Average diluted concentration during period	uCi/ml	8.03E-8	2.26E-8	
3. Percent of applicable limit	%	2.64E-1	3.74E-1	
D. Gross alpha radioactivity				
1. Total release	Ci	<8.39E-5	<1.47E-4	2.50E+1
E. Volume of waste released (prior to dilution)	liters	1.48E+6	2.51E+6	1.00E+1
F. Volume of dilution water used during period	liters	1.44E+11	2.11E+11	1.00E+1

Corrected
Indian Point 3
Radiological Impact on Man
January - December 1985
(Reference: Indian Point 3 RETS, Section 5.3.3)

Maximum Exposed Individual Doses in mrem

	Total Body	Skin	Bone	Liver	Thyroid	Kidney	Lung	GI-LLI
A. Gaseous Pathway								
A.1 Noble Gases *	1.50E-1	9.10E-1						
A.2 Radioiodines, Particulates, and Tritium **	7.80E-4		4.90E-4	8.50E-4	2.90E-2	8.30E-4	7.50E-4	7.50E-4
A.3 Carbon-14 ***	3.30E-1		1.65E-0	3.30E-1	3.30E-1	3.30E-1	3.30E-1	3.30E-1
B. Liquid Pathway ****								
B.1 All Releases (w/o C-14)	3.00E-2		6.60E-2	5.30E-2	1.00E-2	8.90E-3	1.70E-2	1.30E-1
B.2 Carbon-14	1.70E-3		8.48E-3	1.70E-3	1.70E-3	1.70E-3	1.70E-3	1.70E-3
TOTALS	5.12E-1	9.10E-1	1.72E-0	3.86E-1	3.71E-1	3.41E-1	3.49E-1	4.62E-1

* Site Boundary, 350 meters, SW sector
** Infant, 8.1 km, SSW sector
*** Child, 1.3 km, S sector
**** Adult, 1.4 km, SW sector

Effluent and Waste Disposal

Semi-Annual Report

July 1 - December 31, 1986

Facility Indian Point 3

Licensee New York Power Authority

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

A. Supplemental Information

1. Regulatory Limits

Indian Point 3 is presently subject to limits on radioactive waste releases that are set forth in sections 2.3.1, 2.3.2, 2.3.3, 2.4.1, 2.4.2, 2.4.3 and 2.4.4 of Appendix B to Docket #50-286 entitled "Environmental Technical Specification Requirements Part II Radiological Environmental". The percentages of the technical specification limits reported in Tables 1A and 2A are the percent of the quarterly limits specified in the ETSR. If more than one limit applies to the release the most restrictive limit is applied.

2. Maximum Permissible Concentration

a. Fission and Activation Gases

The quarterly dose resulting from release of fission and activation gases is calculated in accordance with the methodology stated in the Off Site Dose Calculation Manual (ODCM). The specific isotopes listed in Table 1C are used to determine the effective dose factors for the time period.

b&c. Iodines, Tritium and Particulates

The quarterly organ dose limit for Iodine 131, tritium and particulates with half-lives greater than eight days is calculated in accordance with the methodology stated in the ODCM.

d. Liquid Effluents

The quarterly dose limit for liquid isotopic releases is calculated in accordance with the methodology stated in the ODCM. The instantaneous concentration limit for noble gases dissolved in liquid releases is calculated based upon a maximum permissible concentration of 2.00E-4 as required by section 2.3.1.A of the ETSR.

3. Average Energy

The average energies ($\bar{E}$) of the radionuclide mixture in releases of fission and activation gases were as follows:

3rd Quarter	E_β = 1.44E-01 MeV/dis		E_γ = 5.58E-02 MeV/dis
4th Quarter	E_β = 1.63E-01 MeV/dis		E_γ = 7.72E-02 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 3.4-1 of the ETSR. In the case of isolated tanks (batch release) the total activity discharged is based on an isotopic analysis of each batch with the volume of gas in the batch corrected to standard temperature and pressure.

Vapor containment purge discharges have been treated as batch releases and pressure relief discharges have been treated as continuous releases (> 500 hrs/year as defined in NUREG 0133). At least one complete isotopic concentration analysis of containment air is performed monthly. This analysis is used in conjunction with a process monitor to obtain the isotopic mixture and quantification of each pressure relief. Isotopic analyses for each vapor containment purge are taken prior to and during the purge. This information is combined with the volume of air in each discharge to calculate the quantity of activity, from these discharges.

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

Carbon 14 releases are estimated from the data provided in the New York State Department of Health study performed at IP3. These values are then prorated for the unit's annual power history.

b&c. Iodines and Particulates

Iodine-131 and particulate releases are quantified by collecting a continuous sample of ventilation air on a TEDA impregnated activated charcoal cartridge and a glass-fiber filter paper. These samples are changed weekl·· as required in Table 3.4-1 of the ETSR and the concentration of isotopes found by analysis of these samples is combined with the volume or air discharged during the sampling period to calculate the quantity of activity discharged.

For other iodine isotopes the concentration of each isotope is determined monthly on a 24-hour sample. The concentration of the isotopes found by analysis is combined with the volume of air discharged during the sampling period to calculate the quantity of activity discharged.

d. Liquid Effluents

A sample of each batch discharge is taken and an isotopic analysis is performed in compliance with requirements specified in Table 3.3-1 of the ETSR. This isotopic concentration data is combined with information on volume discharged to determine the amount of each isotope discharged.

Proportional composite samples of continuous discharges are taken and analyzed in compliance with Table 3.3-1 of the ETSR. This concentration data is combined with the volume discharged to calculate the total activity discharged. Carbon 14 releases are estimated from the data provided in the New York State Department of Health study performed at IP3. These values are then prorated for the unit's annual power history.

5. Batch Releases

a. Liquid

	1986 3rd Quarter	1986 4th Quarter
Number of Batch Releases	41	57
Total Time Period Batch Releases (Min.)	8135	9676
Maximum " " " " " "	375	310
Average " " " " " "	198	170
Minimum " " " " " "	120	115
Average Stream Flow (cfs)	(not yet available)	

b. Gaseous

Number of Batch Releases	4	(none)
Total Time Period Batch Releases (Min.)	3422	
Maximum " " " " "	2690	
Average " " " " "	855	
Minimum " " " " "	112	

6. Abnormal Releases

a. Liquid
None

b. Gaseous
None

7.0 Radiological Environmental Technical Specifications

The Radiological Environmental Technical Specifications require reporting of prolonged outage of effluent monitoring equipment (Sections 2.1.C and 2.2.B) and significant changes in the land use census, Radiological Environmental Monitoring Program or exceeding the total curie content limitations in outdoor tanks. (Sections 2.8.A, 2.8.B, 2.7.C and 2.3.4.B). During this reporting period no reportable events occurred.

The RETS modified the content and format of the Semi-Annual Effluent Release Report (Section 5.3.3.1). A Section G "Offsite Dose Calculation Manual Changes", has been included. The ODCM was retyped to put the entire document on one word processing system, and a complete copy of the ODCM, Rev. 4 is enclosed. During this reporting period there were several changes to the Offsite Dose Calculation Manual. There were no changes in the Process Control Program.

Indian Point 3

EFFLUENT AND WASTE DISPOSAL

SEMI-ANNUAL REPORT

B. GASEOUS EFFLUENTS
THIRD AND FOURTH QUARTER 1986

TABLE 1A

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (1986)

GASEOUS EFFLUENTS - SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3rd	QUARTER 4th	EST. TOTAL Error %
A. Fission & Activation Gases				
1. Total release	Curies	7.83E+01	5.60E+02	2.50E+01
2. Average release rate for period	uCi/sec	9.85E-00	7.05E+01	
3. Percent of technical specification limit.	%	9.22E-01	5.97E-00	
B. Iodines				
1. Total iodine - 131	Ci	3.86E-04	5.57E-04	2.50E+01
2. Average release rate for period	uCi/sec	4.86E-05	7.01E-05	
3. Percent of technical specification limit.	%	4.15E-02	1.18E-01	
C. Particulates				
1. Particulates with half-lives >8 days	Ci	1.25E-04	3.21E-06	2.50E+01
2. Average release rate for period	uCi/sec	1.57E-05	4.04E-07	
3. Percent of technical specification limit.	%	4.15E-02	1.18E-01	
4. Gross alpha radioactivity	Ci	<3.45E-01	<4.30E-01	
D. Tritium				
1. Total release	Ci	1.31E-00	9.47E-01	2.50E+01
2. Average release rate for period	uCi/sec	1.64E-01	1.19E-01	
3. Percent of technical specification limit.	%	4.15E-02	1.18E-01	

TABLE 1C
EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (1986)
GASEOUS EFFLUENTS-GROUND RELEASES

Nuclides Released	Unit	CONTINUOUS MODE 3rd Quarter	CONTINUOUS MODE 4th Quarter	BATCH MODE 3rd Quarter	BATCH MODE 4th Quarter
1. Fission Gases					
Krypton (Kr) 85m	Ci	8.72E-01	2.65E-01	4.98E-04	
Krypton (Kr) 85	Ci	3.96E-01	1.48E-00	1.45E+00	
Krypton (Kr) 87	Ci	3.36E-03	2.05E-02		
Krypton (Kr) 88	Ci	2.94E-02	2.28E-01		
Xenon (Xe) 131m	Ci	2.28E-01	3.55E-00	3.39E-01	
Xenon (Xe) 133m	Ci	6.62E-01	4.95E-00	5.81E-02	
Xenon (Xe) 133	Ci	1.00E+02	5.24E+02	1.64E+01	
Xenon (Xe) 135m	Ci				
Xenon (Xe) 135	Ci	1.76E+01	2.52E+01	9.81E-04	
Xenon (Xe) 138	Ci				
Argon (Ar) 41	Ci	4.48E-02	1.07E-01		
Unidentified	Ci				
TOTAL FOR PERIOD	Ci	1.20E+02	5.60E+02	1.82E+01	
2. Iodines					
iodine (I) 131	Ci	3.86E-04	5.57E-04		
iodine (1) 133	Ci	5.10E-05			
iodine (I) 135	Ci				
TOTAL FOR PERIOD	Ci	4.37E-04	5.57E-04		

TABLE 1C
EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (1986)
GASEOUS EFFLUENTS - GROUND RELEASES

Nuclides Released	Unit	CONTINUOUS MODE 3rd Quarter	CONTINUOUS MODE 4th Quarter	BATCH MODE 3rd Quarter	BATCH MODE 4th Quarter
3. Particulates					
Antimony (Sb) 125	Ci				
Barium (Ba) 133	Ci				
Cadmium (Cd) 109	Ci	1.20E-05			
Cerium (Ce) 139	Ci				
Cerium (Ce) 141	Ci	1.76E-07			
Cerium (Ce) 144	Ci				
Cesium (Cs) 134	Ci				
Cesium (Cs) 137	Ci	1.61E-06			
Cobalt (Co) 57	Ci	8.83E-07			
Cobalt (Co) 58	Ci	1.04E-04	2.25E-06		
Cobalt (Co) 60	Ci	5.86E-06			
Chromium (Cr) 51	Ci	1.09E-06			
Iron (Fe) 55	Ci				
Niobium (Nb) 95	Ci				
Strontium (Sr) 85	Ci		9.61E-07		
Strontium (Sr) 90	Ci				
Tin (Sn) 113	Ci				
TOTAL	Ci	1.26E-04	3.21E-06	0.00E-00	0.00E-00

Indian Point 3

EFFLUENT AND WASTE DISPOSAL

SEMI-ANNUAL REPORT

C. LIQUID EFFLUENTS
THIRD AND FOURTH
QUARTERS, 1986

TABLE 2A

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (1986)

LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3rd	QUARTER 4th	EST.TOTAL ERROR %
A. Fission and activation products				
1. Total release (not including tritium, gases, alpha)	Ci	5.08E-02	2.55E-02	2.50E+01
2. Average diluted concentration during period	uCi/ml	1.64E-10	8.61E-11	
3. Percent of applicable limit	%	1.99E-01	8.90E-02	
B. Tritium				
1. Total release	Ci	5.01E+01	1.44E+02	2.50E+01
2. Average diluted concentration during period	uCi/ml	1.62E-07	4.87E-07	
3. Percent of applicable limit	%	1.99E-01	8.90E-02	
C. Dissolved and entrained gases				
1. Total release	Ci	5.79E-01	7.59E-00	2.50E+01
2. Average diluted concentration during period	uCi/ml	1.87E-09	2.56E-08	
3. Percent of applicable limit	%	1.99E-01	8.90E-02	
D. Gross alpha radioactivity				
1. Total release	Ci	<9.82E-05	<1.54E-04	2.50E+01
E. Volume of waste released (prior to dilution)	liters	1.35E+06	1.93E+06	1.00E+01
F. Volume of dilution water used during period	liters	3.09E+11	2.96E+11	1.00E+01

TABLE 2B

LIQUID EFFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT (1986)

Nuclides Released	Unit	CONTINUOUS MODE 3rd Quarter	CONTINUOUS MODE 4th Quarter	BATCH MODE 3rd Quarter	BATCH MODE 4th Quarter
Antimony (Sb) 122	Ci				
Antimony (Sb) 124	Ci			1.17E-04	
Antimony (Sb) 125	Ci			1.82E-03	8.62E-04
Barium (Ba) 140	Ci				
Barium (Ba) 133	Ci				
Cadmium (Cd) 109	Ci				
Cerium (Ce) 139	Ci				
Cerium (Ce) 141	Ci			4.33E-06	
Cerium (Ce) 144	Ci				
Cesium (Cs) 134	Ci			1.06E-03	1.32E-05
Cesium (Cs) 137	Ci			1.55E-03	1.23E-04
Cesium (Cs) 138	Ci				
Chromium (Cr) 51	Ci			1.48E-04	3.26E-05
Cobalt (Co) 57	Ci			5.73E-06	
Cobalt (Co) 58	Ci			4.71E-03	2.37E-03
Cobalt (Co) 60	Ci			5.24E-03	1.21E-03
Iodine (I) 131	Ci			5.54E-04	1.84E-03
Iodine (I) 133	Ci			2.21E-05	7.74E-05
Iodine (I) 134	Ci			1.93E-04	
Iodine (I) 135	Ci				
Iron (Fe) 55	Ci			2.58E-02	1.55E-02
Iron (Fe) 59	Ci			2.81E-04	
Lanthanum(La) 140	Ci				3.12E-05
Mercury (Hg) 203	Ci			2.68E-06	

TABLE 2B

LIQUID EFFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT (1986)

Nuclides	Unit	CONTINUOUS MODE 3rd Quarter	CONTINUOUS MODE 4th Quarter	BATCH MODE 3rd Quarter	BATCH MODE 4th Quarter
Manganese (Mn) 54	Ci			5.57E-04	2.61E-05
Molybdenum(Mo) 99	Ci				3.31E-04
Nickel (Ni) 63	Ci			1.72E-03	2.09E-03
Copper (Cu) 64	Ci				
Niobium (Nb) 94	Ci				
Niobium (Nb) 95	Ci			1.90E-05	
Yttrium (Y) 88	Ci				
Rubidium (Rb) 88	Ci				3.92E-04
Ruthenium (Ru) 103	Ci				
Ruthenium (Ru) 105	Ci			7.85E-05	
Ruthenium (Ru) 106	Ci				
Silver (Ag)110m	Ci			6.57E-03	1.40E-04
Sodium (Na) 24	Ci				
Strontium (Sr) 85	Ci				4.25E-05
Technetium(Tc) 99m	Ci			1.72E-05	3.89E-04
Tin (Sn) 113	Ci			1.94E-05	
Tellurium (Te) 132	Ci				
Tungsten (W) 187	Ci			4.43E-05	
Yttrium (Y) 91m	Ci			5.12E-06	
Yttrium (Y) 92	Ci			2.15E-04	
Zinc (Zn) 65	Ci				
Zirconium (Zr) 95	Ci				
TOTAL FOR PERIOD				5.09E-02	2.55E-02

TABLE 2B

LIQUID EFFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT (1986)

Nuclides	Unit	CONTINUOUS MODE 3rd Quarter	CONTINUOUS MODE 4th Quarter	BATCH MODE 3rd Quarter	BATCH MODE 4th Quarter
Argon (Ar) 41	Ci			3.74E-05	
Xenon (Xe) 131m	Ci			2.94E-03	5.50E-02
Xenon (Xe) 133	Ci			5.53E-01	7.38E-00
Xenon (Xe) 133m	Ci			1.11E-02	1.09E-01
Xenon (Xe) 135	Ci			1.20E-02	4.17E-02
Krypton (Kr) 85m	Ci			1.88E-04	6.81E-04
Krypton (Kr) 85	Ci				9.69E-03
Krypton (Kr) 88	Ci			1.06E-05	
TOTAL DISSOLVED AND ENTRAINED GASES	Ci			5.79E-01	7.56E-00

Indian Point 3

EFFLUENT AND WASTE DISPOSAL

SEMI-ANNUAL REPORT

D. SOLID WASTE
THIRD AND FOURTH
QUARTERS, 1986

TABLE 3

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT

July 1 - December 31, 1986

SOLID WASTE SHIPMENTS

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

1. Type of Waste	Unit	6 Month Period Class A	Class B	Est. Total Error, %
a. Spent resins, filter sludges, etc.	m^3	0	4.81E+0	5.0E+1
	Ci	0	1.70E+1	
b. Dry compressible, contam. equipment for burial	m^3	2.97E+0	0	5.0E+1
	Ci	1.76E+0	0	
c. Irradiated Components	m^3	0	0	N/A
	Ci	0	0	
d. Other: Dry compressible, contaminated equip. for volume reduction at offsite facility	m^3	7.03E+1	0	5.0E+1
	Ci	8.94E-1	0	

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

NUCLIDE	UNIT	a. Resin CLASS B	b. Dry-Burial CLASS A	d. Dry-Vol. Reduction CLASS A
Fe-55	%	15	33	25
Co-58	%	32	19	12
Co-60	%	22	32	46
Ni-63	%	7	6	5
Sb-125	%	0	8	6
Cs-134	%	9	0	0
Cs-137	%	15	2	6

3. Solid Waste Disposition

Number of Shipments	Mode of Transport	Destination
2	Truck	Barnwell, SC
3	Truck	SEG, Oak Ridge, Tenn for Volume Reduction

4. Containers Shipped

Container	Class A Number	Class A Solid. Media	Class B Number	Class B Solid. Media
For Burial:				
Drums	14	none	N/A	N/A
Poly HIC	N/A	N/A	1	none
For Volume Reduction:				
Drums	174	none	N/A	N/A
Crates	12	none	N/A	N/A

Indian Point 3

EFFLUENT AND WASTE DISPOSAL

SEMI-ANNUAL REPORT

E. RADIOLOGICAL IMPACT ON MAN

January - December 1986

RADIOLOGICAL IMPACT ON MAN

The radiological impact on man is determined by conservatively calculating doses to a hypothetically maximum individual offsite based on plant effluents. These calculations are divided into 3 categories:

- Noble Gases
- Particulates and Iodine
- Liquid Releases (fish and invertebrate consumption)

An annual average dispersion factor is used in the calculations, the details of which are presented in the Offsite Dose Calculation Manual.

The computer code used to perform dose calculations incorporates the models and parameters presented in the Indian Point 3 ODCM which utilizes the assumptions in Regulatory Guide 1.109 and NUREG 0133. Carbon 14 release concentrations and resulting dose is estimated using data generated at Indian Point 3 by the New York State Department of Health. These estimates are consistent with the estimates in NUREG 0017, rev. 1.

Dose calculations from liquid pathways to individuals for the fish and invertebrate consumption pathways are computed using the methodology and parameters in the Indian Point 3 ODCM which incorporates the calculational models that are present in Regulatory Guide 1.109 and NUREG 0133.

Indian Point 3
Radiological Impact on Man
January - December 1986
(Reference: Indian Point 3 RETS, Section 5.3.3)

Maximum Exposed Individual Doses in mrem

	Total Body	Skin	Bone	Liver	Thyroid	Kidney	Lung	GI-LLI
A. Gaseous Pathway								
A.1 Noble Gases *	2.30E-1	1.08E-0						
A.2 Radioiodines, Particulates, and Tritium **	4.92E-4		1.97E-4	6.00E-4	6.22E-2	6.29E-4	4.11E-4	4.17E-4
A.3 Carbon-14 ***	3.84E-1		1.92E-0	3.84E-1	3.84E-1	3.84E-1	3.84E-1	3.84E-1
B. Liquid Pathway ****								
B.1 All Releases (w/o C-14)	8.35E-3		3.05E-2	2.10E-2	2.22E-2	2.56E-3	1.08E-2	3.92E-2
B.2 Carbon-14	2.81E-3		1.40E-2	2.81E-3	2.81E-3	2.81E-3	2.81E-3	2.81E-3
TOTALS	6.26E-1	1.08E-0	1.96E-0	4.08E-1	4.71E-1	3.90E-1	3.98E-1	4.26E-1

* Site Boundary, 350 meters, SW sector
** Infant, 8.1 km, SSW sector
*** Child, 1.3 km, S sector
**** Adult, 1.4 km, SW sector

Indian Point 3

EFFLUENT AND WASTE DISPOSAL

SEMI-ANNUAL REPORT

F. METEROROLOGICAL DATA

January - December 1986

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

INDIAN POINT JULY-SEPT 1986
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	4.	67.	6.	0.	0.	0.	77.
NNE	1.	9.	1.	0.	0.	0.	11.
NE	1.	4.	2.	0.	0.	0.	7.
ENE	2.	1.	0.	0.	0.	0.	3.
E	0.	0.	0.	0.	0.	0.	0.
ESE	1.	0.	0.	0.	0.	0.	1.
SE	5.	2.	0.	0.	0.	0.	7.
SSE	11.	14.	0.	0.	0.	0.	25.
S	19.	72.	3.	0.	0.	0.	94.
SSW	7.	25.	8.	0.	0.	0.	40.
SW	3.	13.	0.	0.	0.	0.	16.
WSW	1.	7.	0.	0.	0.	0.	8.
W	6.	16.	0.	0.	0.	0.	22.
WNW	2.	5.	0.	0.	0.	0.	7.
NW	2.	16.	4.	0.	0.	0.	22.
NNW	5.	26.	6.	0.	0.	0.	37.
TOTAL	70.	277.	30.	0.	0.	0.	377.

CALM 0.

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

INDIAN POINT JULY-SEPT 1986
10 METER WIND SPEED & DIR. WITH 61-10 METER DELTA T
PASQUILL CLASS B

WIND DIRECTION	WIND SPEED (MPH) 01-03	04-07	08-12	13-18	19-24	>24	TOTAL
N	4.	18.	1.	0.	0.	0.	23.
NNE	3.	9.	1.	0.	0.	0.	13.
NE	0.	1.	0.	0.	0.	0.	1.
ENE	1.	0.	0.	0.	0.	0.	1.
E	1.	0.	0.	0.	0.	0.	1.
ESE	1.	0.	0.	0.	0.	0.	1.
SE	1.	0.	0.	0.	0.	0.	1.
SSE	1.	1.	0.	0.	0.	0.	2.
S	8.	18.	1.	0.	0.	0.	27.
SSW	2.	4.	0.	0.	0.	0.	6.
SW	1.	5.	0.	0.	0.	0.	6.
WSW	1.	1.	0.	0.	0.	0.	2.
W	3.	2.	0.	0.	0.	0.	5.
WNW	1.	2.	0.	0.	0.	0.	3.
NW	2.	0.	0.	0.	0.	0.	2.
NNW	1.	0.	0.	0.	0.	0.	1.
TOTAL	31.	61.	3.	0.	0.	0.	95.

CALM 0.

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

INDIAN POINT JULY-SEPT 1986
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	3.	21.	0.	0.	0.	0.	24.
NNE	2.	2.	0.	0.	0.	0.	4.
NE	4.	4.	1.	0.	0.	0.	9.
ENE	1.	0.	0.	0.	0.	0.	1.
E	1.	1.	0.	0.	0.	0.	2.
ESE	2.	0.	0.	0.	0.	0.	2.
SE	2.	0.	0.	0.	0.	0.	2.
SSE	3.	3.	0.	0.	0.	0.	6.
S	9.	15.	0.	0.	0.	0.	24.
SSW	3.	4.	1.	0.	0.	0.	8.
SW	1.	1.	0.	0.	0.	0.	2.
WSW	0.	1.	0.	0.	0.	0.	1.
W	3.	4.	0.	0.	0.	0.	7.
WNW	0.	0.	0.	0.	0.	0.	0.
NW	0.	2.	0.	0.	0.	0.	2.
NNW	4.	3.	0.	0.	0.	0.	7.
TOTAL	38.	61.	2.	0.	0.	0.	101.

CALM 0.

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

INDIAN POINT JULY-SEPT 1986
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	11.	77.	7.	0.	0.	0.	95.
NNE	21.	36.	2.	0.	0.	0.	59.
NE	34.	22.	0.	0.	0.	0.	56.
ENE	34.	5.	0.	0.	0.	0.	39.
E	20.	6.	0.	0.	0.	0.	26.
ESE	5.	2.	0.	0.	0.	0.	7.
SE	22.	0.	0.	0.	0.	0.	22.
SSE	13.	4.	0.	0.	0.	0.	17.
S	43.	86.	5.	0.	0.	0.	134.
SSW	15.	39.	4.	0.	0.	0.	58.
SW	11.	3.	0.	0.	0.	0.	14.
WSW	12.	2.	0.	0.	0.	0.	14.
W	6.	8.	0.	0.	0.	0.	14.
WNW	2.	3.	1.	0.	0.	0.	6.
NW	2.	8.	1.	0.	0.	0.	11.
NNW	5.	13.	1.	0.	0.	0.	19.
TOTAL	256.	314.	21.	0.	0.	0.	591.

CALM 0.

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

INDIAN POINT JULY-SEPT 1986
10 METER WIND SPEED & DIR. WITH 61-10 METER DELTA T
PASQUILL CLASS E

WIND DIRECTION	WIND SPEED (MPH) 01-03	04-07	03-12	13-18	19-24	>24	TOTAL
N	31.	41.	0.	0.	0.	0.	72.
NNE	52.	49.	0.	0.	0.	0.	101.
NE	56.	38.	0.	0.	0.	0.	94.
ENE	26.	3.	0.	0.	0.	0.	29.
E	23.	2.	0.	0.	0.	0.	25.
ESE	19.	0.	0.	0.	0.	0.	19.
SE	36.	0.	0.	0.	0.	0.	36.
SSE	31.	2.	0.	0.	0.	0.	33.
S	76.	95.	2.	0.	0.	0.	173.
SSW	55.	42.	2.	0.	0.	0.	99.
SW	18.	3.	1.	0.	0.	0.	22.
WSW	9.	3.	0.	0.	0.	0.	12.
W	11.	4.	0.	0.	0.	0.	15.
WNW	10.	4.	0.	0.	0.	0.	14.
NW	19.	6.	0.	0.	0.	0.	25.
NNW	14.	18.	0.	0.	0.	0.	32.
TOTAL	486.	310.	5.	0.	0.	0.	801.

CALM 14.

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

INDIAN POINT JULY-SEPT 1986
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	21.	2.	0.	0.	0.	0.	23.
NNE	32.	6.	0.	0.	0.	0.	38.
NE	43.	24.	1.	0.	0.	0.	68.
ENE	15.	0.	0.	0.	0.	0.	15.
E	17.	0.	0.	0.	0.	0.	17.
ESE	6.	0.	0.	0.	0.	0.	6.
SE	8.	0.	0.	0.	0.	0.	8.
SSE	12.	0.	0.	0.	0.	0.	12.
S	6.	1.	0.	0.	0.	0.	7.
SSW	4.	0.	0.	0.	0.	0.	4.
SW	2.	0.	0.	0.	0.	0.	2.
WSW	1.	0.	0.	0.	0.	0.	1.
W	2.	0.	0.	0.	0.	0.	2.
WNW	2.	0.	0.	0.	0.	0.	2.
NW	5.	0.	0.	0.	0.	0.	5.
NNW	2.	0.	0.	0.	0.	0.	2.
TOTAL	178.	33.	1.	0.	0.	0.	212.

CALM 4.

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

INDIAN POINT JULY-SEPT 1986
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	2.	0.	0.	0.	0.	0.	2.
NNE	1.	0.	0.	0.	0.	0.	1.
NE	3.	3.	0.	0.	0.	0.	6.
ENE	1.	0.	0.	0.	0.	0.	1.
E	0.	0.	0.	0.	0.	0.	0.
ESE	1.	0.	0.	0.	0.	0.	1.
SE	0.	0.	0.	0.	0.	0.	0.
SSE	0.	0.	0.	0.	0.	0.	0.
S	2.	0.	0.	0.	0.	0.	2.
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	10.	3.	0.	0.	0.	0.	13.

CALM 0.

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

INDIAN POINT OCT-DEC 1986
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.	22.	6.	0.	0.	0.	29.
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.	1.	0.	0.	0.	0.	1.
SE	0.	0.	0.	0.	0.	0.	0.
SSE	3.	9.	0.	0.	0.	0.	12.
S	6.	16.	4.	0.	0.	0.	26.
SSW	1.	4.	5.	0.	0.	0.	10.
SW	0.	8.	0.	0.	0.	0.	8.
WSW	0.	1.	0.	0.	0.	0.	1.
W	1.	6.	1.	0.	0.	0.	8.
WNW	0.	11.	1.	0.	0.	0.	12.
NW	0.	16.	6.	0.	0.	0.	22.
NNW	1.	12.	2.	0.	0.	0.	15.
TOTAL	13.	106.	25.	0.	0.	0.	144.

CALM 0.

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

INDIAN POINT OCT-DEC 1986
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	0.	16.	6.	0.	0.	0.	22.
NNE	0.	1.	1.	0.	0.	0.	2.
NE	0.	0.	0.	0.	0.	0.	0.
ENE	0.	1.	0.	0.	0.	0.	1.
E	0.	0.	0.	0.	0.	0.	0.
ESE	0.	2.	0.	0.	0.	0.	2.
SE	1.	0.	0.	0.	0.	0.	1.
SSE	1.	2.	0.	0.	0.	0.	3.
S	4.	10.	1.	0.	0.	0.	15.
SSW	2.	2.	1.	0.	0.	0.	5.
SW	0.	1.	0.	0.	0.	0.	1.
WSW	2.	0.	0.	0.	0.	0.	2.
W	0.	0.	0.	0.	0.	0.	0.
WNW	1.	3.	0.	0.	0.	0.	4.
NW	1.	4.	5.	1.	0.	0.	11.
NNW	2.	8.	5.	0.	0.	0.	15.
TOTAL	14.	50.	19.	1.	0.	0.	84.

CALM 0.

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

INDIAN POINT CCT-LEC 1986
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	3.	14.	6.	1.	0.	0.	24.
NNE	1.	4.	0.	0.	0.	0.	5.
NE	0.	1.	0.	0.	0.	0.	1.
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	2.	1.	0.	0.	0.	0.	3.
S	5.	3.	0.	0.	0.	0.	8.
SSW	7.	3.	1.	0.	0.	0.	11.
SW	1.	0.	0.	0.	0.	0.	1.
WSW	0.	0.	0.	0.	0.	0.	0.
W	1.	1.	1.	0.	0.	0.	3.
WNW	1.	2.	3.	0.	0.	0.	6.
NW	2.	2.	3.	0.	0.	0.	7.
NNW	4.	7.	5.	0.	0.	0.	16.
TOTAL	28.	40.	19.	1.	0.	0.	88.

CALM 0.

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

INDIAN POINT OCT-DEC 1986
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	45.	127.	41.	8.	0.	0.	221.
NNE	29.	91.	26.	1.	0.	0.	147.
NE	19.	32.	2.	0.	0.	0.	53.
ENE	16.	13.	0.	0.	0.	0.	29.
E	8.	2.	0.	0.	0.	0.	10.
ESE	9.	0.	0.	0.	0.	0.	9.
SE	10.	3.	0.	0.	0.	0.	13.
SSE	14.	2.	0.	0.	0.	0.	16.
S	33.	48.	0.	0.	0.	0.	81.
SSW	28.	13.	1.	0.	0.	0.	42.
SW	13.	1.	0.	0.	0.	0.	14.
WSW	8.	4.	1.	0.	0.	0.	13.
W	10.	15.	5.	0.	0.	0.	30.
WNW	4.	21.	7.	2.	0.	0.	34.
NW	7.	46.	28.	2.	0.	0.	83.
NNW	14.	47.	28.	4.	0.	0.	93.
TOTAL	267.	465.	139.	17.	0.	0.	888.

CALM 0.

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

INDIAN POINT OCT-DEC 1986
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	41.	26.	0.	0.	0.	0.	67.
NNE	59.	37.	2.	0.	0.	0.	98.
NE	58.	28.	0.	0.	0.	0.	86.
ENE	17.	4.	1.	0.	0.	0.	22.
E	17.	1.	0.	0.	0.	0.	18.
ESE	13.	1.	0.	0.	0.	0.	14.
SE	22.	0.	0.	0.	0.	0.	22.
SSE	33.	2.	0.	0.	0.	0.	35.
S	60.	55.	2.	0.	0.	0.	117.
SSW	30.	17.	0.	0.	0.	0.	47.
SW	23.	10.	0.	0.	0.	0.	33.
WSW	22.	4.	1.	0.	0.	0.	27.
W	18.	32.	1.	0.	0.	0.	51.
WNW	16.	19.	0.	0.	0.	0.	35.
NW	14.	19.	4.	0.	0.	0.	37.
NNW	20.	10.	4.	0.	0.	0.	34.
TOTAL	463.	265.	15.	0.	0.	0.	743.

CALM 0.

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

INDIAN POINT OCT-DEC 1936
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	25.	2.	0.	0.	0.	0.	27.
NNE	47.	4.	0.	0.	0.	0.	51.
NE	46.	30.	0.	0.	0.	0.	76.
ENE	13.	2.	0.	0.	0.	0.	15.
E	9.	0.	0.	0.	0.	0.	9.
ESE	0.	0.	0.	0.	0.	0.	0.
SE	5.	0.	0.	0.	0.	0.	5.
SSE	6.	0.	0.	0.	0.	0.	6.
S	10.	2.	0.	0.	0.	0.	12.
SSW	6.	0.	0.	0.	0.	0.	6.
SW	3.	0.	0.	0.	0.	0.	3.
WSW	6.	0.	0.	0.	0.	0.	6.
W	3.	0.	0.	0.	0.	0.	3.
WNW	2.	0.	0.	0.	0.	0.	2.
NW	4.	0.	0.	0.	0.	0.	4.
NNW	11.	0.	0.	0.	0.	0.	11.
TOTAL	196.	40.	0.	0.	0.	0.	236.

CALM 0.

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

INDIAN POINT OCT-DEC 1996
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	6.	0.	0.	0.	0.	0.	6.
NNE	3.	1.	0.	0.	0.	0.	4.
NE	4.	5.	0.	0.	0.	0.	9.
ENE	1.	0.	0.	0.	0.	0.	1.
E	0.	0.	0.	0.	0.	0.	0.
ESE	0.	0.	0.	0.	0.	0.	0.
SE	0.	0.	0.	0.	0.	0.	0.
SSE	1.	0.	0.	0.	0.	0.	1.
S	0.	0.	0.	0.	0.	0.	0.
SSW	1.	0.	0.	0.	0.	0.	1.
SW	0.	0.	0.	0.	0.	0.	0.
WSW	0.	0.	0.	0.	0.	0.	0.
W	0.	0.	0.	0.	0.	0.	0.
WNW	1.	0.	0.	0.	0.	0.	1.
NW	0.	0.	0.	0.	0.	0.	0.
NNW	2.	0.	0.	0.	0.	0.	2.
TOTAL	19.	6.	0.	0.	0.	0.	25.

CALM 0.

Indian Point 3

EFFLUENT AND WASTE DISPOSAL

SEMI-ANNUAL REPORT

G. OFFSITE DOSE CALCULATION MANUAL CHANGES
THIRD AND FOURTH
QUARTERS, 1986

ODCM CHANGES SINCE JUNE 1986

NOTE: "NO IMPACT" is to be interpreted as meaning no impact relative to offsite dose assessment or setpoint determination.

1. Description: This fourth revision to the ODCM is a completely retyped version. The overall format and content remains the same with the exception of the changes noted below and the equations in Chapters 3 and 4. The equations in the body of the document are mathematically equivalent to those in the previous submittal, but the algebraic variables now employ the standard english alphabet as opposed to the many Greek symbols and subscripted references previously employed.

   Justification: The purpose of this change was to increase readability and add administrative efficiency to reviewing and or future editing of the document. The text was retyped so that the major sections could all be accessed utilizing one word processing system.

   Impact: No impact relative to offsite dose assessment.

2. Description: Table 1-1 was updated to indicate that the Gas Disposal System Monitor does have a setpoint which is used to ensure that the gas decay tank activity limit is not exceeded.

   Justification: This change is a correction to the previously submitted table.

   Impact: Results in a more accurate summary of our effluent monitors. There is no impact on dose assessments or setpoint determination.

3. Description: The reference to continuous releases in Section 2.1.6 which appears in the last ODCM submittal is removed from this current revision.

   Justification: This is a clarification which makes Section 2.1.6 more in agreement with the intent of 2.1.2 which refers to any radioactive waste.

   Impact: No impact.

4. Description: The Service Water Radiation Monitor, R-16, is added to Section 2.1.13.

   Justification: This change addresses the redundant monitoring capability for this system.

   Impact: No impact.

5. Description: The definition of dilution flow in the discharge canal eliminates the statement "Unit 3 circulators only" in Section 2.2.5.

Justification: This change was necessary to make 2.2.5 consistent with 2.1.8 which discusses partitioning of full site dilution flow.

Impact: No impact.

6. Description: Section 2.5.2 has been revised to indicate that 95% of the doses from liquid releases will be accounted for by using the backup dose methodology. As a consequence the correction factor to account for the remainder of the dose is changed from 1.2 to 1.1.

Justification: This method provides a more accurate hand calculation methodology which is still manageable without a computer.

Impact: This change increases the accuracy of offsite dose calculations using the manual method for liquid releases. Setpoint determination is unaffected.

7. Description: Section 2.5.3 is corrected to include the silver bioaccummulation factors as indicated as well as a discussion of these factors. (NOTE: This change was discussed in the 1984 ODCM Rev. 2 change package, Item No. 6.)

Justification: The indicated text was inadvertently left out of the last revision. This change is a typographical correction.

Impact: Increased dose assessment accuracy, setpoints are unaffected.

8. Description: Sections 2.4.3 and 2.5.3 now include more reasonable bioaccumulation factors for Niobium. The values are now 300 and 100 for fresh water fish and marine invertebrates respectively. Table 2-1 is also effected.

Justification: International Atomic Energy Agency Report No. 57 provides more recent data then that presented in Regulatory Guide 1.109 which was the original source of data for the bioaccumulation factors. A review of this document indicates that the R.G. 1.109 values are substantially over conservative and therefore the more recent IAEA information is incorporated in this ODCM revision.

Impact: More accurate dose assessment for liquid effluents with no impact on setpoints.

9. Description: The previous gas activity value of 430 uCi/cc has been changed to 300 uCi/cc to ensure the maintenance of the 50,000 Ci limit in the gas storage tank. This affects Section 3.1.12.

Justification: This change considers the pressure relief valve which would allow pressurization of the tank. Since a sample would be at atmospheric pressure, the activity concentration is corrected for the maximum allowable pressure (valve release point).

Impact: This change eliminates the potential for under estimating total activity in the storage tank.

10. Description: Section 3.3.13 is changed to include the proper design flow rate for ventillation of the Radioactive Machine Shop, 24,750 cfm.

Justification: Another set of fans (weld station fans at 3000 cfm each) are not routinely operated and the previous flow rate listed at 33,750 cfm included these fans. Therefore, the correct flow rates to use are now indicated, normally 24,750 cfm without the weld station fans and 33,750 cfm if they are all operating.

Impact: This will increase the accuracy of any required offsite dose assessments should this release path become important. This change will increase the associated setpoint.

11. Description: Appendix B has been added to the ODCM to include a discussion of detection limit application at Indian Point No. 3. It includes both the critical level and lower limit of detection concepts.

Justification: The RETS refers to lower limits of detection as defined in the ODCM. This change incorporates the required section. (Ref: NUREG/CR-4007, "Lower Limit of Detection: Definition and Elaboration of a Proposed Position for Radiological Effluent and Environmental Measurements".)

Impact: No impact.

12. Description: The control function previously listed in Table 1-1 for component cooling monitors, R-17A and B, has been removed from the table.

Justification: The isolation of the surge tank vents from the atmosphere is not a RETS requirement and this function no longer applies to these monitors.

Impact: No impact.

13. Description: The procedural information (in 2.3.4.2.a) relative to recording tank information such as volume, times, etc. has been deleted.

Justification: This information is covered by plant procedure and is inappropriate for inclusion in the ODCM.

Impact: No impact.

14. Description: The Hot Lab tanks in the Administration Building have been deleted from Figure 2-1 and the component cooling system has been added.

Justification: Figure 2-1 is updated to properly reflect the release points identified in RETS Table 2.1-1.

Impact: No impact.

15. Description: Figure 3-1 was changed to correct the radiation monitor designations for the Radioactive Machine Shop and the Administration Building.

Justification: The proper designations for these monitors are RE 59 and RE 46 as indicated. This represents a typographical correction.

Impact: No impact.

16. Description: The blowdown flash tank and condenser air ejector are removed from the description of release points in the last paragraph of Section 1.2.1.

Justification: This change clarifies the statement that the total discharge rate for all release points must remain less than the permissible discharge rate.

Impact: No impact, clarification only.