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IPN-01-033

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Mail Stop O-P1-17
Washington, D.C. 20555

SUBJECT: Indian Point 3 Nuclear Power Plant
Docket No. 50-286
License No. DPR-64
**Annual Radioactive Effluent Release Report -
For The Period January 1, 2000 Through December 31, 2000**


Dear Sir:

Enclosed is the Annual Report of Radioactivity in Solid Wastes and Releases of Radioactive Material in Liquid and Gaseous Effluents for Indian Point 3 as required by Technical Specifications Section 5.6.3. The enclosed report covers the period January 1, 2000 through December 31, 2000 for Indian Point 3. It would include those releases from Indian Point 1 or 2 resulting from processing waste from Indian Point 3, if this pathway were utilized. During this reporting period, no waste was transferred from Indian Point 3 to Indian Point 1 or 2.

Attachment I contains the Radioactive Effluent Release Report for 2000. Attachment II contains Revision 13 to the Offsite Dose Calculation Manual. Attachment III contains Revision 14 to the Offsite Dose Calculation Manual. Attachment IV contains Revision 6 to the Process Control Program and Attachment V contains Revision 7 to the Process Control Program.

Entergy is making no new commitments in this letter. If you have any questions, please contact Mr. Steve Sandike at (914) 736-8455.

Very truly yours,


R. J. Barrett
Vice President, Operations - IP3
Indian Point 3 Nuclear Power Plant

IE48

Attachments

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ATTACHMENT I TO IPN-01-033

RADIOACTIVE EFFLUENT RELEASE REPORT FOR 2000

**Entergy Nuclear Operations, Inc.
Indian Point 3 Nuclear Power Plant
Docket No. 50-286**

Radioactive Effluent Release Report: 2000

Facility Indian Point 3

Licensee Entergy Nuclear Northeast
Entergy Nuclear Operations, Inc.

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 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 the Offsite Dose Calculation Manual, Parts I and II, per the Technical Specifications. ODCM Part I, also known as the Radiological Effluent Controls (or RECS) is prescribed by Technical Specification Section 5.5.1, while the ODCM Part II is defined in Section 5.5.4. The percentages of the Technical Specification limits reported in Tables 1A and 2A are the percent of the ODCM quarterly limits. If more than one limit applies to the release, the most restrictive limit is reported.

2. Maximum Permissible Concentration

a) Airborne Releases

Maximum concentrations and compliance with 10CFR20 release rate limits are controlled by the application of Radiation Monitor setpoints, preliminary grab sampling, and conservative procedural guidance for batch and continuous releases. These measures, in conjunction with plant design, preclude approaching release rate limits, per the ODCM.

b) Liquid Effluents

Proximity to the 10 CFR 20 release rate limits is controlled for each release by the application of a calculated Allowed Diluted Concentration (ADC) and Radiation Monitor setpoints. The ADC is calculated as a function of the "10 times EC" limit, and includes limitations from Beta emitters. These measures, along with an administrative activity limit for effluent waste tanks, preclude approaching release rate limits, per the ODCM.

3. Average Energy

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

1st Quarter	$\bar{E}_\beta =$	2.87E-01 Mev/dis	$\bar{E}_\gamma =$	6.16E-01 Mev/dis
2nd Quarter	$\bar{E}_\beta =$	2.24E-01 Mev/dis	$\bar{E}_\gamma =$	3.76E-01 Mev/dis
3rd Quarter	$\bar{E}_\beta =$	2.21E-01 Mev/dis	$\bar{E}_\gamma =$	3.57E-01 Mev/dis
4th Quarter	$\bar{E}_\beta =$	1.47E-01 Mev/dis	$\bar{E}_\gamma =$	8.53E-02 Mev/dis

4. Measurements and Approximations of Total Radioactivity

a) Fission and Activation Gases

Analyses of effluent gases have been performed in compliance with the requirements of Table 3.4.1-1 of the RECS (ODCM Part I). In the case of isolated tanks (batch releases), 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 and pressure relief (vent) discharges routinely total less than 150 hours/quarter in duration have been treated as batch releases. However, both types of releases from the Vapor Containment are performed randomly with regard to time of day and duration (release periods were not dependant solely on time of day or atmospheric condition). Therefore, determination of doses due to Vapor Containment releases includes the use of annual average dispersion data, as defined in NUREG 0133, Section 3.3.

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 released from these discharges.

The continuous building discharges are based on weekly samples of ventilation air analyzed 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.

When no noble gas activity is identified for an entire quarter, a "less than" value is reported. This value is determined from the established Xe-133 minimum detectable concentration and the total volume of air released from all continuous release points.

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 weekly as required in Table 3.4.1-1 of the RECS. 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 quantity of activity discharged.

For other iodine isotopes, concentrations are determined monthly on a 24-hour sample. The concentration of each isotope is analytically determined by ratioing the activities with weekly media for I-131. This activity is combined with the volume of air discharged during the sampling period to calculate the quantity of activity discharged.

When no Gross Alpha or Iodine-131 is identified for an entire quarter, a "less than" value is reported (in curies) on Table 1A. This value is derived from established minimum detectable concentrations and the total volume of air released from all continuous release points. Midway through year 2000, a compositing method of analyzing for gross alpha was initiated as an improvement in efficiency. While this method resulted in an increase in the historically reported "less than" values, the method's MDC is still sufficiently low and does not challenge the RECS/ODCM required LLD for gross alpha.

d) Liquid Effluents

A sample of each batch discharge is taken and an isotopic analysis is performed in compliance with requirements specified in Table 3.3.1-1 of the RECS. Proportional composite samples of continuous discharges are taken and analyzed in compliance with this table as well. Isotopic concentration data are combined with the information on volume discharged to determine the amount of each isotope discharged.

5. Batch Releases

a) Liquid Releases	Qtr 1	Qtr 2	Qtr 3	Qtr 4	2000
Number of Batch Releases	22	13	28	24	87
Total Time Period (min)	2.49E+3	1.46E+3	3.12E+3	2.66E+3	9.73E+3
Maximum Time Period (min)	1.23E+2	1.20E+2	1.30E+2	1.25E+2	1.30E+2
Average Time Period (min)	1.13E+2	1.12E+2	1.11E+2	1.11E+2	1.12E+2
Minimum Time Period (min)	1.02E+2	1.05E+2	1.00E+2	8.00E+1	8.00E+1

Average Stream Flow :

Hudson River flow information is obtained from the Department of the Interior, United States Geological Survey (USGS). These data are received after review from the USGS, approximately 18 months after initial data collection. This information is included in the effluents report as the data become available.

Estimated Average Stream Flows of the Hudson River at Indian Point

Year	Quarter	Flow (cfs)
1998	Fourth	7,343
1999	First	26,033
1999	Second	13,387
1999	Third	8,030

b) Airborne Releases	Qtr 1	Qtr 2	Qtr 3	Qtr 4	2000
Number of Batch Releases	25	25	32	26	108
Total Time Period (min)	4.94E+03	4.65E+03	4.27E+03	5.78E+03	1.96E+04
Maximum Time Period (min)	3.25E+02	3.32E+02	3.44E+02	3.84E+02	3.84E+02
Average Time Period (min)	1.97E+02	1.86E+02	1.34E+02	2.22E+02	1.82E+02
Minimum Time Period (min)	5.00E+00	3.00E+00	2.00E+00	3.00E+00	2.00E+00

6. Abnormal Releases

- a) Liquid
None
- b) Gaseous
None

7. ODCM Reporting Requirements

The ODCM (RECS) Sections 2.1.B and 2.2.B require reporting of prolonged outages of effluent monitoring equipment. Also required in this report is notification of any changes in the land use census, the Radiological Environmental Monitoring Program (REMP), or exceeding the total curie content limitations in outdoor tanks (RECS 2.10 and 2.11).

During this reporting period, no required ODCM or Technical Specification Effluent Monitoring equipment was out of service for periods greater than 30 consecutive days.

During this reporting period, no tank curie limits in outdoor tanks were exceeded.

The Offsite Dose Calculation Manual and the Process Control Program were updated during this reporting period. Changes are identified in Section G.

Indian Point 3
RADIOACTIVE EFFLUENT RELEASE REPORT

B. GASEOUS EFFLUENTS

2000

TABLE 1A
 RADIOACTIVE EFFLUENT REPORT (Jan - Dec 2000)
 GASEOUS EFFLUENTS - SUMMATION OF ALL RELEASES

A. Fission & Activation Gases	Units	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Year 2000	Est. Total % Error
1. Total Release	Ci	6.60E-02	1.00E-01	1.25E-01	1.51E+00	1.80E+00	± 25
2. Average release rate	uCi/sec	8.40E-03	1.28E-02	1.58E-02	1.90E-01	5.70E-02	
3. Percent of ODCM limit (Noble Gases only)	%	2.11E-04	2.55E-04	3.16E-04	3.44E-03	2.11E-03	

B. Iodines

1. Total Iodine-131	Ci	<3.00E-6	<2.98E-6	1.86E-06	1.73E-06	3.59E-06	± 25
2. Average release rate	uCi/sec	<3.812E-7	<3.79E-7	2.34E-07	2.18E-07	1.13E-07	

C. Particulates

1. Total Release, with half-life > 8 days	Ci	N/D	N/D	N/D	N/D	N/D	± 25
2. Average release rate	uCi/sec	N/D	N/D	N/D	N/D	N/D	
3. Gross Alpha	Ci	< 2.85E-7	< 3.40E-7	<1.47E-5	<2.23E-5	<3.73E-5	

D. Tritium

1. Total release	Ci	9.37E-01	1.19E+00	6.82E-01	6.42E-01	3.45E+00	± 25
2. Average release rate	uCi/sec	1.19E-01	1.52E-01	8.58E-02	8.08E-02	1.09E-01	

E. Percent ODCM limit, I&P with half-life > 8 days, H-3	%	1.82E-03	2.32E-03	1.57E-03	1.47E-03	3.59E-03	± 25
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N/D = None Detected

TABLE 1C

RADIOACTIVE EFFLUENT REPORT (Jan - Dec 2000)
 CONTINUOUS GASEOUS EFFLUENTS - GROUND RELEASES

Nuclides Released

1) Fission Gases		Units	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Year 2000
Kr-85m	Ci						
Kr-85	Ci						
Kr-87	Ci						
Kr-88	Ci						
Xe-131m	Ci						
Xe-133m	Ci						
Xe-133	Ci					1.21E+00	1.21E+00
Xe-135m	Ci						
Xe-135	Ci						
Xe-138	Ci						
Ar-41	Ci						
Total for Period		Ci	N/D	N/D	N/D	1.21E+00	1.21E+00

2) Iodines

I-131	Ci	<3.00E-6	<2.98E-6	1.86E-06	1.73E-06	3.59E-06	
I-133	Ci	N/D	N/D	N/D	N/D	N/D	
I-135	Ci	N/D	N/D	N/D	N/D	N/D	
Total for Period		Ci	<3.00E-6	<2.98E-6	1.86E-06	1.73E-06	3.59E-06

3) Particulates

Total for Period		Ci	N/D	N/D	N/D	N/D	N/D
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N/D= None Detected

TABLE 1C
 RADIOACTIVE EFFLUENT REPORT (Jan - Dec 2000)
 BATCH GASEOUS EFFLUENTS - GROUND RELEASES

Nuclides Released

1) Fission Gases	Units	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Year 2000
Kr-85m	Ci		3.40E-06	2.38E-07	6.19E-05	6.55E-05
Kr-85	Ci			8.38E-04	1.96E-02	2.04E-02
Kr-87	Ci					
Kr-88	Ci			2.28E-07	3.93E-05	3.95E-05
Xe-131m	Ci			1.41E-04	6.91E-04	8.32E-04
Xe-133m	Ci		5.82E-04	1.66E-04	8.77E-04	1.63E-03
Xe-133	Ci	3.55E-02	7.26E-02	9.04E-02	2.22E-01	4.20E-01
Xe-135m	Ci					
Xe-135	Ci		4.66E-04	2.51E-03	2.75E-03	5.73E-03
Xe-138	Ci					
Ar-41	Ci	3.05E-02	2.68E-02	3.11E-02	4.84E-02	1.37E-01
Total for Period	Ci	6.60E-02	1.00E-01	1.25E-01	2.94E-01	5.86E-01

2) Iodines	Ci	Analyzed as Continuous
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3) Particulates	Ci	Analyzed as Continuous
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Indian Point 3
RADIOACTIVE EFFLUENT REPORT
C. LIQUID EFFLUENTS
2000

TABLE 2A
 RADIOACTIVE EFFLUENT REPORT (Jan - Dec 2000)
 LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES

A. Fission & Activation Products	Units	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Year 2000	Est. Total % Error
1. Total Release (not including Tritium, Gr Alpha, & Gases)	Ci	1.70E-02	1.79E-02	2.08E-02	2.16E-02	7.73E-02	± 25
2. Average Diluted Conc	uCi/ml	7.31E-11	9.28E-11	6.69E-11	9.91E-11	8.10E-11	

B. Tritium

1. Total Release	Ci	1.39E+01	3.24E+01	3.53E+02	2.15E+02	6.15E+02	± 25
2. Average Diluted Conc	uCi/ml	5.97E-08	1.68E-07	1.14E-06	9.86E-07	6.44E-07	

C. Dissolved & Entrained Gases

1. Total Release	Ci	<3.39E-05	<2.00E-05	3.99E-04	5.68E-02	5.72E-02	± 25
2. Average Diluted Conc	uCi/ml	<1.45E-13	<1.04E-13	1.28E-12	2.60E-10	5.99E-11	

D. Gross Alpha

1. Total Release	Ci	< 3.14E-5	<1.21E-5	< 3.70E-5	< 3.25E-5	<1.13E-4	± 25
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E. Volume of Waste Released	liters	5.65E+05	3.34E+05	7.13E+05	6.05E+05	2.22E+06	± 25
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F. Volume of Dilution Water	liters	2.33E+11	1.93E+11	3.11E+11	2.18E+11	9.55E+11	± 10
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E. Percent of the ODCM Liquid Effluent limit	%	1.30E-02	2.25E-02	1.57E-02	1.86E-02	3.32E-02	± 25
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RADIOACTIVE EFFLUENT REPORT (Jan - Dec 2000)

TABLE 2B

BATCH LIQUID RADIOACTIVE EFFLUENT REPORT (Jan - Dec 2000)

Nuclides Released	Units	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Year 2000
Na-24	Ci	2.22E-05				2.22E-05
Cr-51	Ci	4.12E-05			3.88E-05	8.00E-05
Mn-54	Ci	1.51E-04	1.14E-04	3.65E-04	1.42E-04	7.72E-04
Fe-55	Ci	3.92E-03	6.25E-03	5.52E-03	6.58E-03	2.23E-02
Co-57	Ci			2.05E-06	3.83E-06	5.88E-06
Co-58	Ci	3.11E-03	1.63E-03	1.59E-03	5.67E-04	6.90E-03
Co-60	Ci	2.81E-03	3.38E-03	7.61E-03	4.03E-03	1.78E-02
Ni-63	Ci	2.24E-03	2.39E-03	2.46E-03	2.01E-03	9.10E-03
Nb-95	Ci	7.01E-05		2.34E-04	1.16E-04	4.20E-04
Ag-110m	Ci	1.16E-04		9.22E-04	7.63E-04	1.80E-03
Sb-124	Ci	1.60E-03	5.61E-04		1.07E-04	2.27E-03
Sb-125	Ci	2.74E-03	2.90E-03	1.96E-03	6.93E-03	1.45E-02
Te-123m	Ci	3.16E-05				3.16E-05
I-131	Ci				3.92E-05	3.92E-05
Cs-134	Ci	7.44E-06	9.98E-05		3.25E-05	1.40E-04
Cs-137	Ci	1.49E-04	5.95E-04	1.38E-04	2.50E-04	1.13E-03
Total for Period	Ci	1.70E-02	1.79E-02	2.08E-02	2.16E-02	7.73E-02

Xe-131m	Ci				3.59E-04	3.59E-04
Xe-133m	Ci				7.01E-04	7.01E-04
Xe-133	Ci	<3.39E-5	<2.00E-5	3.99E-04	5.52E-02	5.56E-02
Xe-135	Ci				4.89E-04	4.89E-04
Kr-85m	Ci				1.32E-05	1.32E-05
Total for Period	Ci	<3.39E-5	<2.00E-5	3.99E-04	5.68E-02	5.72E-02

Indian Point 3
RADIOACTIVE EFFLUENT REPORT

D. SOLID WASTE

2000

TABLE 3

SOLID WASTE and IRRADIATED COMPONENT SHIPMENTS

Class A Dry Volume Reduction

Estimated Total Error ±25%

Nuclide	% Abd	Shipment # ID 001 Activity, mCi	Shipment # ID 003 Activity, mCi	Shipment # ID 006 Activity, mCi	Shipment # ID007 Activity, mCi	Total Activity, mCi
H-3	0.00%					0.00E+00
C-14	0.00%					0.00E+00
Cr-51	0.94%	7.16E+00	2.39E-01	9.64E-01	3.41E-02	8.40E+00
Mn-54	0.38%	2.72E+00	1.71E-01	4.52E-01	1.25E-02	3.36E+00
Fe-55	2.68%	1.92E+01	1.27E+00	3.38E+00	8.83E-02	2.39E+01
Co-57	0.00%					0.00E+00
Co-58	2.94%	2.19E+01	1.08E+00	3.11E+00	1.02E-01	2.62E+01
Fe-59	0.00%					0.00E+00
Ni-59	0.00%					0.00E+00
Co-60	19.06%	1.36E+02	9.14E+00	2.43E+01	6.25E-01	1.70E+02
Ni-63	63.46%	4.52E+02	3.06E+01	8.16E+01	2.07E+00	5.66E+02
Zn-65	0.00%					0.00E+00
Sr-89	0.00%					0.00E+00
Sr-90	0.00%					0.00E+00
Nb-95	0.56%	4.21E+00	1.59E-01	5.67E-01	2.00E-02	4.96E+00
Zr-95	0.26%	1.93E+00	9.24E-02	2.70E-01	9.03E-03	2.30E+00
Tc-99	0.00%					0.00E+00
Ru-106	0.00%					0.00E+00
Ag-110m	0.00%					0.00E+00
Sn-113	0.00%					0.00E+00
Sb-124	0.00%					0.00E+00
Sb-125	0.00%					0.00E+00
I-129	0.00%					0.00E+00
Cs-134	0.42%	3.04E+00	2.00E-01	5.29E-01	1.39E-02	3.78E+00
Cs-137	9.24%	6.58E+01	4.45E+00	1.19E+01	3.01E-01	8.25E+01
Ce-144	0.02%	1.58E-01	9.87E-03	2.61E-02	7.28E-04	1.95E-01
Hg-203	0.00%					0.00E+00
Pu-238	0.00%					0.00E+00
Pu-239/40	0.03%	1.90E-01	1.29E-02	3.44E-02	8.72E-04	2.38E-01
Pu-241	0.00%					0.00E+00
Am-241	0.00%					0.00E+00
Cm-242	0.02%	6.86E-01	4.03E-02	1.07E-01	3.17E-03	8.36E-01
Cm-243/44	0.00%					0.00E+00
Totals	100.00%	7.15E+02	4.75E+01	1.27E+02	3.28E+00	8.93E+02

Container Type	Number of Containers			
Sealands	1	1	1	1
B-25 Boxes		5	4	

TABLE 3

SOLID WASTE and IRRADIATED COMPONENT SHIPMENTS

Class B Resin and Filters

Estimated Total Error ±25%

Nuclide	Nuclide Percent Abundance	Shipment # ID 002 Activity, in mCi	Shipment # ID 004 Activity, in mCi	Shipment # ID005 Activity, in mCi	Total Activity in mCi
H-3	0.04%	2.92E+00	5.82E+01		6.11E+01
C-14	0.10%	1.41E+02	7.97E-01		1.42E+02
Cr-51	0.01%		1.25E+01		1.25E+01
Mn-54	5.89%	4.76E+03	1.23E+02	3.52E+03	8.40E+03
Fe-55	11.80%	3.75E+03	8.95E+02	1.22E+04	1.68E+04
Co-57	0.33%	2.56E+02	1.67E+01	1.95E+02	4.68E+02
Co-58	40.65%	3.32E+04	1.63E+03	2.32E+04	5.80E+04
Fe-59	0.00%		2.27E+00		2.27E+00
Ni-59	0.18%	1.14E+02	5.54E+01	8.15E+01	2.51E+02
Co-60	15.53%	1.15E+04	1.64E+03	9.03E+03	2.22E+04
Ni-63	23.10%	1.65E+04	2.08E+03	1.44E+04	3.30E+04
Zn-65	0.01%		8.56E+00		8.56E+00
Sr-89	0.02%			2.27E+01	2.27E+01
Sr-90	0.02%	2.49E+00	2.37E-03	1.91E+01	2.16E+01
Nb-95	0.01%		1.32E+01		1.32E+01
Zr-95	0.02%		2.93E+01		2.93E+01
Tc-99	0.00%		6.56E+00		6.56E+00
Ru-103	0.00%		9.21E-02		9.21E-02
Ag-110m	0.01%		1.45E+01		1.45E+01
Sn-113	0.01%		8.00E+00		8.00E+00
Te-123m	0.00%		1.19E-01		1.19E-01
Sb-124	0.11%		4.08E+01	1.18E+02	1.59E+02
Sb-125	0.60%	4.43E+02	1.86E+02	2.27E+02	8.56E+02
I-129	0.00%				0.00E+00
Cs-134	0.30%	2.16E+02	2.59E+01	1.86E+02	4.28E+02
Cs-137	1.28%	1.05E+03	1.52E+02	6.30E+02	1.83E+03
Ce-144	0.00%	1.07E-01	2.09E+00	1.75E+00	3.95E+00
Np-237	0.00%		4.40E-04		4.40E-04
Pu-238	0.00%	2.04E-02	1.49E-02	7.83E-02	1.14E-01
Pu-239/40	0.00%	3.74E-03	1.48E-02	1.91E-02	3.76E-02
Pu-241	0.00%	5.10E-01	1.92E+00	2.10E+00	4.53E+00
Am-241	0.00%	3.32E-03	5.22E-03	3.40E-02	4.25E-02
Cm-242	0.00%	1.84E-02	3.63E-02	1.49E-02	6.96E-02
Am-243	0.00%		1.09E-03		1.09E-03
Cm-243/44	0.00%	1.87E-02	5.54E-02	9.49E-02	1.69E-01
Totals	100.00%	7.19E+04	7.00E+03	6.38E+04	1.43E+05

Container Type	Number of Containers	
HICS CNSI 8-120 FR	1	1
HICS TFC-120 DBR		1

Total Volume, Class B Resin/Filters (m ³)	1.13E+01
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TABLE 3

SOLID WASTE and IRRADIATED COMPONENT SHIPMENTS

SOLID WASTE DISPOSITION			
Number of Shipments	Mode of Transport	Destination	Disposition
2	Truck	CNS, Barnwell, SC	Direct Burial
	Truck	F.W. Hake, Memphis, TN	Volume Reduction
4	Truck	GTS/Duratek Oak Ridge, TN	Volume Reduction
	Truck	American Ecology, Oak Ridge, TN.	Volume Reduction
1	Truck	Studsvik, Erwin, TN.	Volume Reduction

CONTAINERS SHIPPED					
Solidified Media	Total	Container For Burial	Number of Containers For Waste Class		
			A	B	C
N/A	2	Poly HIC		2	
		Drums			
		Steel Liner			
		Crates			
Solidified Media	Total	Container For Volume Reduction	Number of Containers For Waste Class		
			A	B	C
N/A	4	Sea Land Container	4		
N/A	9	Crate	9		
N/A		Drum			
	1	Poly HIC		1	

Indian Point 3
RADIOACTIVE EFFLUENT REPORT
E. RADIOLOGICAL IMPACT ON MAN
Jan 1, 2000 - Dec 31, 2000

RADIOLOGICAL IMPACT ON MAN

The radiological impact on man is determined by conservatively calculating doses to a hypothetical maximally exposed 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 (ODCM).

The computer code used to perform gaseous 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.

These doses were calculated using radioactive releases from the Indian Point #3 Nuclear Power Plant. Indian Point is a multi-unit site, with Unit 3 owned and operated by Entergy Nuclear Northeast. Doses resulting from releases from Indian Point Units 1 and 2 are independently reported by the owner and licensee, Consolidated Edison.

Doses to individuals from liquid pathways 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 where site specific data do not exist.

Carbon 14 release concentration and resulting dose have been estimated using data generated at Indian Point 3 from August 1980 to June 1982 after a study conducted by the New York State Department of Health. These estimates are consistent with NUREG 0017, Rev. 1. The maximum expected annual dose from Carbon 14 releases at IP3 has been calculated using the maximum dependable gross electrical capacity of Indian Point 3, which is 1000 MW(e) maintained for the entire year. The resultant worst case doses are based upon site specific assumptions of source term released for an entire year at 1000 MW(e) output, as outlined in the ODCM.

The annual dose to the maximally exposed individual (child) from gaseous releases of Carbon-14 is 0.254 mRem to the critical organ (bone) and 0.0508 mRem to the total body. The annual dose to the maximally exposed individual (child) from liquid releases of Carbon-14 is 0.00583 mRem to the critical organ (bone) and 0.00117 mRem to the total body.

INDIAN POINT 3 NUCLEAR POWER PLANT
 RADIOLOGICAL IMPACT ON MAN
 JANUARY - DECEMBER 2000

Maximum exposed individual doses in mrem or mrad

A. LIQUID DOSES

		Qtr 1	Qtr 2	Qtr 3	Qtr 4	ANNUAL
Critical Organ	(mrem)	6.49E-04	1.13E-03	7.41E-04	9.32E-04	3.32E-03
Applicable Limit	(mrem)	5	5	5	5	10
Percent of Limit	(%)	1.30E-02	2.26E-02	1.48E-02	1.86E-02	3.32E-02
Age Group		Child	Child	Adult	Child	Child
Critical Organ		Bone	Bone	GILLI	Bone	Bone

Adult Total Body	(mrem)	9.20E-05	2.15E-04	2.36E-04	2.57E-04	8.00E-04
Applicable Limit	(mrem)	1.5	1.5	1.5	1.5	3
Percent of Limit	(%)	6.13E-03	1.43E-02	1.57E-02	1.71E-02	2.67E-02

B. NOBLE GAS DOSES

		Qtr 1	Qtr 2	Qtr 3	Qtr 4	ANNUAL
Gamma Air	(mrad)	2.05E-05	1.98E-05	2.37E-05	1.12E-04	1.76E-04
Applicable Limit	(mrad)	5	5	5	5	10
Percent of Limit	(%)	4.10E-04	3.96E-04	4.74E-04	2.24E-03	1.76E-03

Beta Air	(mrad)	2.11E-05	2.55E-05	3.16E-05	3.44E-04	4.22E-04
Applicable Limit	(mrad)	10	10	10	10	20
Percent of Limit	(%)	2.11E-04	2.55E-04	3.16E-04	3.44E-03	2.11E-03

C. IODINE and PARTICULATE DOSES

		Qtr 1	Qtr 2	Qtr 3	Qtr 4	ANNUAL
Iodine/Part	(mrem)	1.36E-04	1.74E-04	1.17E-04	1.10E-04	5.38E-04
Applicable Limit	(mrem)	7.5	7.5	7.5	7.5	15
Percent of Limit	(%)	1.82E-03	2.32E-03	1.56E-03	1.47E-03	3.59E-03

Age Group		Child	Child	Child	Child	Child
Critical Organ		Liver	Liver	Thyroid	Thyroid	Thyroid

Indian Point 3
RADIOLOGICAL EFFLUENT REPORT

F. METEOROLOGICAL DATA

Jan 1, 2000 - Dec 31, 2000

INDIAN POINT (UNITS 2 & 3) - JOINT FREQUENCY DISTRIBUTIONS - JAN/FEB/MAR 2000

BASIC METEOROLOGICAL OBSERVATIONS AT 10.0 (M)
 FOR PERIOD [Year/Month/Day/Hour]
 [2000/ 1/ 1/ 0] TO [2000/ 3/31/23]

PASQUILL STABILITY: A

WIND FROM	WIND SPEED (MPH)							TOTAL
	CALMS	.60 - 3.50	3.50 - 7.50	7.50 - 12.50	12.50 - 18.50	18.50 - 24.00	24.00 - 80.00	
N	.0	1.0	8.0	6.0	3.0	.0	.0	18.0
NNE	.0	.0	.0	.0	.0	.0	.0	.0
NE	.0	.0	.0	.0	.0	.0	.0	.0
ENE	.0	.0	.0	.0	.0	.0	.0	.0
E	.0	.0	.0	.0	.0	.0	.0	.0
ESE	.0	.0	.0	.0	.0	.0	.0	.0
SE	.0	.0	.0	.0	.0	.0	.0	.0
SSE	.0	.0	5.0	5.0	.0	.0	.0	10.0
S	.0	.0	2.0	7.0	.0	.0	.0	9.0
SSW	.0	.0	.0	.0	.0	.0	.0	.0
SW	.0	.0	1.0	.0	.0	.0	.0	1.0
WSW	.0	.0	2.0	1.0	.0	.0	.0	3.0
W	.0	.0	1.0	.0	.0	.0	.0	1.0
WNW	.0	1.0	4.0	8.0	.0	.0	.0	13.0
NW	.0	.0	15.0	12.0	.0	.0	.0	27.0
NNW	.0	.0	17.0	3.0	.0	.0	.0	20.0
TOTAL	.0	2.0	55.0	42.0	3.0	.0	.0	102.0

DATA MEASUREMENT HEIGHT (M ABOVE GRADE) 10.00
 TEMPERATURE SENSOR SEPARATION (METERS) 50.90
 MISSING OBS. DURING THIS PERIOD (ALL STABILITIES) 0
 VALID OBSER. DURING THIS PERIOD (ALL STABILITIES) 2184

NOTE: CALMS WERE DISTRIBUTED IN PROPORTION TO THE FREQUENCY OF WINDS IN THE LOWEST WIND SPEED GROUP WITH NON-ZERO ENTRIES IN EACH STABILITY.

INDIAN POINT (UNITS 2 & 3) - JOINT FREQUENCY DISTRIBUTIONS - JAN/FEB/MAR 2000

BASIC METEOROLOGICAL OBSERVATIONS AT 10.0 (M)
 FOR PERIOD [Year/Month/Day/Hour]
 [2000/ 1/ 1/ 0] TO [2000/ 3/31/23]

PASQUILL STABILITY: B

WIND FROM	WIND SPEED (MPH)							TOTAL
	CALMS	.60 - 3.50	3.50 - 7.50	7.50 - 12.50	12.50 - 18.50	18.50 - 24.00	24.00 - 80.00	
N	.0	.0	8.0	6.0	1.0	.0	.0	15.0
NNE	.0	.0	.0	1.0	.0	.0	.0	1.0
NE	.0	.0	.0	.0	.0	.0	.0	.0
ENE	.0	.0	.0	.0	.0	.0	.0	.0
E	.0	.0	.0	.0	.0	.0	.0	.0
ESE	.0	1.0	.0	.0	.0	.0	.0	1.0
SE	.0	.0	.0	.0	.0	.0	.0	.0
SSE	.0	.0	9.0	2.0	.0	.0	.0	11.0
S	.0	.0	1.0	5.0	.0	.0	.0	6.0
SSW	.0	.0	1.0	.0	.0	.0	.0	1.0
SW	.0	.0	1.0	.0	.0	.0	.0	1.0
WSW	.0	.0	.0	.0	.0	.0	.0	.0
W	.0	.0	4.0	4.0	.0	.0	.0	8.0
WNW	.0	.0	7.0	3.0	.0	.0	.0	10.0
NW	.0	.0	7.0	17.0	4.0	.0	.0	28.0
NNW	.0	.0	8.0	5.0	.0	.0	.0	13.0
TOTAL	.0	1.0	46.0	43.0	5.0	.0	.0	95.0

DATA MEASUREMENT HEIGHT (M ABOVE GRADE) 10.00
 TEMPERATURE SENSOR SEPARATION (METERS) 50.90

MISSING OBS. DURING THIS PERIOD (ALL STABILITIES) 0
 VALID OBSER. DURING THIS PERIOD (ALL STABILITIES) 2184

NOTE: CALMS WERE DISTRIBUTED IN PROPORTION TO THE FREQUENCY OF WINDS IN THE LOWEST WIND SPEED GROUP WITH NON-ZERO ENTRIES IN EACH STABILITY.

INDIAN POINT (UNITS 2 & 3) - JOINT FREQUENCY DISTRIBUTIONS - JAN/FEB/MAR 2000

BASIC METEOROLOGICAL OBSERVATIONS AT 10.0 (M)
 FOR PERIOD [Year/Month/Day/Hour]
 [2000/ 1/ 1/ 0] TO [2000/ 3/31/23]

PASQUILL STABILITY: C

WIND FROM	WIND SPEED (MPH)							TOTAL
	CALMS	.60 - 3.50	3.50 - 7.50	7.50 - 12.50	12.50 - 18.50	18.50 - 24.00	24.00 - 80.00	
N	.0	.0	8.0	3.0	.0	.0	.0	11.0
NNE	.0	.0	1.0	.0	.0	.0	.0	1.0
NE	.0	.0	.0	.0	.0	.0	.0	.0
ENE	.0	.0	.0	.0	.0	.0	.0	.0
E	.0	.0	1.0	.0	.0	.0	.0	1.0
ESE	.0	.0	.0	.0	.0	.0	.0	.0
SE	.0	.0	.0	.0	.0	.0	.0	.0
SSE	.0	1.0	4.0	2.0	.0	.0	.0	7.0
S	.0	.0	9.0	3.0	.0	.0	.0	12.0
SSW	.0	.0	.0	.0	.0	.0	.0	.0
SW	.0	.0	2.0	.0	.0	.0	.0	2.0
WSW	.0	.0	1.0	4.0	.0	.0	.0	5.0
W	.0	.0	.0	3.0	.0	.0	.0	3.0
WNW	.0	.0	8.0	6.0	.0	.0	.0	14.0
NW	.0	.0	4.0	20.0	2.0	.0	.0	26.0
NNW	.0	.0	4.0	5.0	.0	.0	.0	9.0
TOTAL	.0	1.0	42.0	46.0	2.0	.0	.0	91.0

DATA MEASUREMENT HEIGHT (M ABOVE GRADE) 10.00
 TEMPERATURE SENSOR SEPARATION (METERS) 50.90

MISSING OBS. DURING THIS PERIOD (ALL STABILITIES) 0
 VALID OBSER. DURING THIS PERIOD (ALL STABILITIES) 2184

NOTE: CALMS WERE DISTRIBUTED IN PROPORTION TO THE FREQUENCY OF WINDS IN THE LOWEST WIND SPEED GROUP WITH NON-ZERO ENTRIES IN EACH STABILITY.

INDIAN POINT (UNITS 2 & 3) - JOINT FREQUENCY DISTRIBUTIONS - JAN/FEB/MAR 2000

BASIC METEOROLOGICAL OBSERVATIONS AT 10.0 (M)
 FOR PERIOD [Year/Month/Day/Hour]
 [2000/ 1/ 1/ 0] TO [2000/ 3/31/23]

PASQUILL STABILITY: D

WIND FROM	WIND SPEED (MPH)							TOTAL
	CALMS	.60 - 3.50	3.50 - 7.50	7.50 - 12.50	12.50 - 18.50	18.50 - 24.00	24.00 - 80.00	
N	.0	18.0	95.0	50.0	24.0	.0	.0	187.0
NNE	.0	25.0	74.0	16.0	5.0	.0	.0	120.0
NE	.0	8.0	41.0	10.0	.0	.0	.0	59.0
ENE	.0	9.0	9.0	.0	.0	.0	.0	18.0
E	.0	7.0	2.0	.0	.0	.0	.0	9.0
ESE	.0	7.0	4.0	.0	.0	.0	.0	11.0
SE	.0	13.0	.0	.0	.0	.0	.0	13.0
SSE	.0	8.0	29.0	3.0	.0	.0	.0	40.0
S	.0	30.0	28.0	17.0	.0	.0	.0	75.0
SSW	.0	17.0	18.0	1.0	.0	.0	.0	36.0
SW	.0	12.0	9.0	2.0	.0	.0	.0	23.0
WSW	.0	11.0	9.0	4.0	.0	.0	.0	24.0
W	.0	8.0	34.0	17.0	.0	.0	.0	59.0
WNW	.0	5.0	66.0	31.0	.0	.0	.0	102.0
NW	.0	3.0	96.0	111.0	10.0	.0	.0	220.0
NNW	.0	6.0	77.0	48.0	6.0	.0	.0	137.0
TOTAL	.0	187.0	591.0	310.0	45.0	.0	.0	1133.0

DATA MEASUREMENT HEIGHT (M ABOVE GRADE) 10.00
 TEMPERATURE SENSOR SEPARATION (METERS) 50.90

MISSING OBS. DURING THIS PERIOD (ALL STABILITIES) 0
 VALID OBSER. DURING THIS PERIOD (ALL STABILITIES) 2184

NOTE: CALMS WERE DISTRIBUTED IN PROPORTION TO THE FREQUENCY OF WINDS IN THE LOWEST WIND SPEED GROUP WITH NON-ZERO ENTRIES IN EACH STABILITY.

INDIAN POINT (UNITS 2 & 3) - JOINT FREQUENCY DISTRIBUTIONS - JAN/FEB/MAR 2000

BASIC METEOROLOGICAL OBSERVATIONS AT 10.0 (M)
 FOR PERIOD [Year/Month/Day/Hour]
 [2000/ 1/ 1/ 0] TO [2000/ 3/31/23]

PASQUILL STABILITY: E

WIND FROM	WIND SPEED (MPH)							TOTAL
	CALMS	.60 - 3.50	3.50 - 7.50	7.50 - 12.50	12.50 - 18.50	18.50 - 24.00	24.00 - 80.00	
N	.0	13.0	24.0	.0	.0	.0	.0	37.0
NNE	.0	34.0	42.0	1.0	.0	.0	.0	77.0
NE	.0	23.0	22.0	.0	.0	.0	.0	45.0
ENE	.0	10.0	1.0	.0	.0	.0	.0	11.0
E	.0	9.0	.0	.0	.0	.0	.0	9.0
ESE	.0	14.0	.0	.0	.0	.0	.0	14.0
SE	.0	11.0	.0	.0	.0	.0	.0	11.0
SSE	.0	32.0	28.0	1.0	.0	.0	.0	61.0
S	.0	32.0	55.0	11.0	.0	.0	.0	98.0
SSW	.0	35.0	15.0	2.0	.0	.0	.0	52.0
SW	.0	21.0	8.0	1.0	.0	.0	.0	30.0
WSW	.0	13.0	5.0	1.0	.0	.0	.0	19.0
W	.0	6.0	14.0	2.0	.0	.0	.0	22.0
WNW	.0	12.0	9.0	1.0	.0	.0	.0	22.0
NW	.0	7.0	13.0	.0	.0	.0	.0	20.0
NNW	.0	9.0	10.0	.0	.0	.0	.0	19.0
TOTAL	.0	281.0	246.0	20.0	.0	.0	.0	547.0

DATA MEASUREMENT HEIGHT (M ABOVE GRADE) 10.00
 TEMPERATURE SENSOR SEPARATION (METERS) 50.90

MISSING OBS. DURING THIS PERIOD (ALL STABILITIES) 0
 VALID OBSER. DURING THIS PERIOD (ALL STABILITIES) 2184

NOTE: CALMS WERE DISTRIBUTED IN PROPORTION TO THE FREQUENCY OF WINDS IN THE LOWEST WIND SPEED GROUP WITH NON-ZERO ENTRIES IN EACH STABILITY.

INDIAN POINT (UNITS 2 & 3) - JOINT FREQUENCY DISTRIBUTIONS - JAN/FEB/MAR 2000

BASIC METEOROLOGICAL OBSERVATIONS AT 10.0 (M)
 FOR PERIOD [Year/Month/Day/Hour]
 [2000/ 1/ 1/ 0] TO [2000/ 3/31/23]

PASQUILL STABILITY: F

WIND FROM	WIND SPEED (MPH)							TOTAL
	CALMS	.60 - 3.50	3.50 - 7.50	7.50 - 12.50	12.50 - 18.50	18.50 - 24.00	24.00 - 80.00	
N	.0	21.0	.0	.0	.0	.0	.0	21.0
NNE	.0	36.0	13.0	.0	.0	.0	.0	49.0
NE	.0	17.0	10.0	.0	.0	.0	.0	27.0
ENE	.0	4.0	1.0	.0	.0	.0	.0	5.0
E	.0	2.0	.0	.0	.0	.0	.0	2.0
ESE	.0	.0	.0	.0	.0	.0	.0	.0
SE	.0	4.0	.0	.0	.0	.0	.0	4.0
SSE	.0	5.0	2.0	.0	.0	.0	.0	7.0
S	.0	8.0	2.0	2.0	.0	.0	.0	12.0
SSW	.0	8.0	1.0	.0	.0	.0	.0	9.0
SW	.0	6.0	.0	.0	.0	.0	.0	6.0
WSW	.0	3.0	.0	.0	.0	.0	.0	3.0
W	.0	2.0	2.0	.0	.0	.0	.0	4.0
WNW	.0	3.0	1.0	.0	.0	.0	.0	4.0
NW	.0	3.0	.0	.0	.0	.0	.0	3.0
NNW	.0	11.0	.0	.0	.0	.0	.0	11.0
TOTAL	.0	133.0	32.0	2.0	.0	.0	.0	167.0

DATA MEASUREMENT HEIGHT (M ABOVE GRADE) 10.00
 TEMPERATURE SENSOR SEPARATION (METERS) 50.90
 MISSING OBS. DURING THIS PERIOD (ALL STABILITIES) 0
 VALID OBSER. DURING THIS PERIOD (ALL STABILITIES) 2184

NOTE: CALMS WERE DISTRIBUTED IN PROPORTION TO THE FREQUENCY OF WINDS IN THE LOWEST WIND SPEED GROUP WITH NON-ZERO ENTRIES IN EACH STABILITY.

INDIAN POINT (UNITS 2 & 3) - JOINT FREQUENCY DISTRIBUTIONS - JAN/FEB/MAR 2000

BASIC METEOROLOGICAL OBSERVATIONS AT 10.0 (M)
 FOR PERIOD [Year/Month/Day/Hour]
 [2000/ 1/ 1/ 0] TO [2000/ 3/31/23]

PASQUILL STABILITY: G

WIND FROM	WIND SPEED (MPH)							TOTAL
	CALMS	.60 - 3.50	3.50 - 7.50	7.50 - 12.50	12.50 - 18.50	18.50 - 24.00	24.00 - 80.00	
N	.0	13.0	.0	.0	.0	.0	.0	13.0
NNE	.0	16.0	6.0	.0	.0	.0	.0	22.0
NE	.0	3.0	5.0	.0	.0	.0	.0	8.0
ENE	.0	.0	.0	.0	.0	.0	.0	.0
E	.0	.0	.0	.0	.0	.0	.0	.0
ESE	.0	.0	.0	.0	.0	.0	.0	.0
SE	.0	1.0	.0	.0	.0	.0	.0	1.0
SSE	.0	.0	.0	.0	.0	.0	.0	.0
S	.0	.0	.0	.0	.0	.0	.0	.0
SSW	.0	1.0	.0	.0	.0	.0	.0	1.0
SW	.0	.0	.0	.0	.0	.0	.0	.0
WSW	.0	.0	.0	.0	.0	.0	.0	.0
W	.0	.0	.0	.0	.0	.0	.0	.0
WNW	.0	.0	.0	.0	.0	.0	.0	.0
NW	.0	1.0	.0	.0	.0	.0	.0	1.0
NNW	.0	3.0	.0	.0	.0	.0	.0	3.0
TOTAL	.0	38.0	11.0	.0	.0	.0	.0	49.0

DATA MEASUREMENT HEIGHT (M ABOVE GRADE) 10.00
 TEMPERATURE SENSOR SEPARATION (METERS) 50.90
 MISSING OBS. DURING THIS PERIOD (ALL STABILITIES) 0
 VALID OBSER. DURING THIS PERIOD (ALL STABILITIES) 2184

NOTE: CALMS WERE DISTRIBUTED IN PROPORTION TO THE FREQUENCY OF WINDS IN THE LOWEST WIND SPEED GROUP WITH NON-ZERO ENTRIES IN EACH STABILITY.

INDIAN POINT (UNITS 2 & 3) - JOINT FREQUENCY DISTRIBUTIONS - JAN/FEB/MAR 2000

BASIC METEOROLOGICAL OBSERVATIONS AT 10.0 (M)
 FOR PERIOD [Year/Month/Day/Hour]
 [2000/ 1/ 1/ 0] TO [2000/ 3/31/23]

PASQUILL STABILITY: ALL

WIND FROM	WIND SPEED (MPH)							TOTAL
	CALMS	.60 - 3.50	3.50 - 7.50	7.50 - 12.50	12.50 - 18.50	18.50 - 24.00	24.00 - 80.00	
N	.0	66.0	143.0	65.0	28.0	.0	.0	302.0
NNE	.0	111.0	136.0	18.0	5.0	.0	.0	270.0
NE	.0	51.0	78.0	10.0	.0	.0	.0	139.0
ENE	.0	23.0	11.0	.0	.0	.0	.0	34.0
E	.0	18.0	3.0	.0	.0	.0	.0	21.0
ESE	.0	22.0	4.0	.0	.0	.0	.0	26.0
SE	.0	29.0	.0	.0	.0	.0	.0	29.0
SSE	.0	46.0	77.0	13.0	.0	.0	.0	136.0
S	.0	70.0	97.0	45.0	.0	.0	.0	212.0
SSW	.0	61.0	35.0	3.0	.0	.0	.0	99.0
SW	.0	39.0	21.0	3.0	.0	.0	.0	63.0
WSW	.0	27.0	17.0	10.0	.0	.0	.0	54.0
W	.0	16.0	55.0	26.0	.0	.0	.0	97.0
WNW	.0	21.0	95.0	49.0	.0	.0	.0	165.0
NW	.0	14.0	135.0	160.0	16.0	.0	.0	325.0
NNW	.0	29.0	116.0	61.0	6.0	.0	.0	212.0
TOTAL	.0	643.0	1023.0	463.0	55.0	.0	.0	2184.0

DATA MEASUREMENT HEIGHT (M ABOVE GRADE) 10.00
 TEMPERATURE SENSOR SEPARATION (METERS) 50.90

MISSING OBS. DURING THIS PERIOD (ALL STABILITIES) 0
 VALID OBSER. DURING THIS PERIOD (ALL STABILITIES) 2184

NOTE: CALMS WERE DISTRIBUTED IN PROPORTION TO THE FREQUENCY OF WINDS IN THE LOWEST WIND SPEED GROUP WITH NON-ZERO ENTRIES IN EACH STABILITY.

INDIAN POINT (UNITS 2 & 3) - JOINT FREQUENCY DISTRIBUTIONS - APR/MAY/JUN 2000

BASIC METEOROLOGICAL OBSERVATIONS AT 10.0 (M)
 FOR PERIOD [Year/Month/Day/Hour]
 [2000/ 4/ 1/ 0] TO [2000/ 6/30/23]

PASQUILL STABILITY: A

WIND FROM	WIND SPEED (MPH)							TOTAL
	CALMS	.60 - 3.50	3.50 - 7.50	7.50 - 12.50	12.50 - 18.50	18.50 - 24.00	24.00 - 80.00	
N	.0	.0	12.0	16.0	.0	.0	.0	28.0
NNE	.0	.0	1.0	2.0	1.0	.0	.0	4.0
NE	.0	.0	.0	.0	.0	.0	.0	.0
ENE	.0	.0	2.0	.0	.0	.0	.0	2.0
E	.0	.0	.0	.0	.0	.0	.0	.0
ESE	.0	.0	.0	.0	.0	.0	.0	.0
SE	.0	.0	.0	.0	.0	.0	.0	.0
SSE	.0	.0	36.0	21.0	3.0	.0	.0	60.0
S	.0	.0	16.0	3.0	.0	.0	.0	19.0
SSW	.0	.0	2.0	3.0	.0	.0	.0	5.0
SW	.0	.0	5.0	1.0	.0	.0	.0	6.0
WSW	.0	.0	9.0	.0	.0	.0	.0	9.0
W	.0	.0	8.0	2.0	.0	.0	.0	10.0
WNW	.0	.0	10.0	5.0	.0	.0	.0	15.0
NW	.0	.0	22.0	13.0	.0	.0	.0	35.0
NNW	.0	.0	21.0	9.0	.0	.0	.0	30.0
TOTAL	.0	.0	144.0	75.0	4.0	.0	.0	223.0

DATA MEASUREMENT HEIGHT (M ABOVE GRADE) 10.00
 TEMPERATURE SENSOR SEPARATION (METERS) 50.90

MISSING OBS. DURING THIS PERIOD (ALL STABILITIES) 11
 VALID OBSER. DURING THIS PERIOD (ALL STABILITIES) 2173

NOTE: CALMS WERE DISTRIBUTED IN PROPORTION TO THE FREQUENCY OF WINDS IN THE LOWEST WIND SPEED GROUP WITH NON-ZERO ENTRIES IN EACH STABILITY.

INDIAN POINT (UNITS 2 & 3) - JOINT FREQUENCY DISTRIBUTIONS - APR/MAY/JUN 2000

BASIC METEOROLOGICAL OBSERVATIONS AT 10.0 (M)
 FOR PERIOD [Year/Month/Day/Hour]
 [2000/ 4/ 1/ 0] TO [2000/ 6/30/23]

PASQUILL STABILITY: B

WIND FROM	WIND SPEED (MPH)							TOTAL
	CALMS	.60 - 3.50	3.50 - 7.50	7.50 - 12.50	12.50 - 18.50	18.50 - 24.00	24.00 - 80.00	
N	.0	.0	10.0	5.0	.0	.0	.0	15.0
NNE	.0	.0	4.0	1.0	.0	.0	.0	5.0
NE	.0	.0	.0	1.0	.0	.0	.0	1.0
ENE	.0	.0	.0	.0	.0	.0	.0	.0
E	.0	.0	.0	.0	.0	.0	.0	.0
ESE	.0	.0	.0	.0	.0	.0	.0	.0
SE	.0	1.0	1.0	.0	.0	.0	.0	2.0
SSE	.0	.0	12.0	2.0	.0	.0	.0	14.0
S	.0	1.0	19.0	4.0	.0	.0	.0	24.0
SSW	.0	.0	9.0	4.0	.0	.0	.0	13.0
SW	.0	.0	6.0	.0	.0	.0	.0	6.0
WSW	.0	1.0	6.0	.0	.0	.0	.0	7.0
W	.0	2.0	1.0	.0	.0	.0	.0	3.0
WNW	.0	.0	4.0	8.0	.0	.0	.0	12.0
NW	.0	.0	1.0	3.0	1.0	.0	.0	5.0
NNW	.0	.0	7.0	1.0	.0	.0	.0	8.0
TOTAL	.0	5.0	80.0	29.0	1.0	.0	.0	115.0

DATA MEASUREMENT HEIGHT (M ABOVE GRADE) 10.00
 TEMPERATURE SENSOR SEPARATION (METERS) 50.90

MISSING OBS. DURING THIS PERIOD (ALL STABILITIES) 11
 VALID OBSER. DURING THIS PERIOD (ALL STABILITIES) 2173

NOTE: CALMS WERE DISTRIBUTED IN PROPORTION TO THE FREQUENCY OF WINDS IN THE LOWEST WIND SPEED GROUP WITH NON-ZERO ENTRIES IN EACH STABILITY.

INDIAN POINT (UNITS 2 & 3) - JOINT FREQUENCY DISTRIBUTIONS - APR/MAY/JUN 2000

BASIC METEOROLOGICAL OBSERVATIONS AT 10.0 (M)
 FOR PERIOD [Year/Month/Day/Hour]
 [2000/ 4/ 1/ 0] TO [2000/ 6/30/23]

PASQUILL STABILITY: C

WIND FROM	WIND SPEED (MPH)							TOTAL
	CALMS	.60 - 3.50	3.50 - 7.50	7.50 - 12.50	12.50 - 18.50	18.50 - 24.00	24.00 - 80.00	
N	.0	.0	16.0	5.0	.0	.0	.0	21.0
NNE	.0	.0	8.0	4.0	.0	.0	.0	12.0
NE	.0	1.0	2.0	1.0	.0	.0	.0	4.0
ENE	.0	.0	.0	.0	.0	.0	.0	.0
E	.0	1.0	.0	.0	.0	.0	.0	1.0
ESE	.0	.0	.0	.0	.0	.0	.0	.0
SE	.0	1.0	.0	.0	.0	.0	.0	1.0
SSE	.0	1.0	16.0	.0	.0	.0	.0	17.0
S	.0	1.0	22.0	7.0	.0	.0	.0	30.0
SSW	.0	1.0	10.0	3.0	.0	.0	.0	14.0
SW	.0	.0	6.0	.0	.0	.0	.0	6.0
WSW	.0	1.0	2.0	1.0	.0	.0	.0	4.0
W	.0	2.0	2.0	.0	.0	.0	.0	4.0
WNW	.0	1.0	2.0	3.0	.0	.0	.0	6.0
NW	.0	.0	5.0	1.0	.0	.0	.0	6.0
NNW	.0	1.0	7.0	3.0	.0	.0	.0	11.0
TOTAL	.0	11.0	98.0	28.0	.0	.0	.0	137.0

DATA MEASUREMENT HEIGHT (M ABOVE GRADE) 10.00
 TEMPERATURE SENSOR SEPARATION (METERS) 50.90

MISSING OBS. DURING THIS PERIOD (ALL STABILITIES) 11
 VALID OBSER. DURING THIS PERIOD (ALL STABILITIES) 2173

NOTE: CALMS WERE DISTRIBUTED IN PROPORTION TO THE FREQUENCY OF WINDS IN THE LOWEST WIND SPEED GROUP WITH NON-ZERO ENTRIES IN EACH STABILITY.

INDIAN POINT (UNITS 2 & 3) - JOINT FREQUENCY DISTRIBUTIONS - APR/MAY/JUN 2000

BASIC METEOROLOGICAL OBSERVATIONS AT 10.0 (M)
 FOR PERIOD [Year/Month/Day/Hour]
 [2000/ 4/ 1/ 0] TO [2000/ 6/30/23]

PASQUILL STABILITY: D

WIND FROM	WIND SPEED (MPH)							TOTAL
	CALMS	.60 - 3.50	3.50 - 7.50	7.50 - 12.50	12.50 - 18.50	18.50 - 24.00	24.00 - 80.00	
N	.0	13.0	72.0	37.0	2.0	.0	.0	124.0
NNE	.0	23.0	76.0	53.0	1.0	.0	.0	153.0
NE	.0	35.0	37.0	3.0	.0	.0	.0	75.0
ENE	.0	29.0	10.0	.0	.0	.0	.0	39.0
E	.0	33.0	1.0	.0	.0	.0	.0	34.0
ESE	.0	28.0	9.0	.0	.0	.0	.0	37.0
SE	.0	23.0	8.0	.0	.0	.0	.0	31.0
SSE	.0	34.0	65.0	8.0	1.0	.0	.0	108.0
S	.0	36.0	84.0	11.0	2.0	.0	.0	133.0
SSW	.0	18.0	41.0	7.0	1.0	.0	.0	67.0
SW	.0	12.0	8.0	.0	.0	.0	.0	20.0
WSW	.0	6.0	15.0	.0	.0	.0	.0	21.0
W	.0	5.0	11.0	2.0	.0	.0	.0	18.0
WNW	.0	1.0	27.0	7.0	.0	.0	.0	35.0
NW	.0	4.0	19.0	6.0	.0	.0	.0	29.0
NNW	.0	10.0	29.0	5.0	.0	.0	.0	44.0
TOTAL	.0	310.0	512.0	139.0	7.0	.0	.0	968.0

DATA MEASUREMENT HEIGHT (M ABOVE GRADE) 10.00
 TEMPERATURE SENSOR SEPARATION (METERS) 50.90

MISSING OBS. DURING THIS PERIOD (ALL STABILITIES) 11
 VALID OBSER. DURING THIS PERIOD (ALL STABILITIES) 2173

NOTE: CALMS WERE DISTRIBUTED IN PROPORTION TO THE FREQUENCY OF WINDS IN THE LOWEST WIND SPEED GROUP WITH NON-ZERO ENTRIES IN EACH STABILITY.

INDIAN POINT (UNITS 2 & 3) - JOINT FREQUENCY DISTRIBUTIONS - APR/MAY/JUN 2000

BASIC METEOROLOGICAL OBSERVATIONS AT 10.0 (M)
 FOR PERIOD [Year/Month/Day/Hour]
 [2000/ 4/ 1/ 0] TO [2000/ 6/30/23]

PASQUILL STABILITY: E

WIND FROM	WIND SPEED (MPH)							TOTAL
	CALMS	.60 - 3.50	3.50 - 7.50	7.50 - 12.50	12.50 - 18.50	18.50 - 24.00	24.00 - 80.00	
N	.0	16.0	12.0	.0	.0	.0	.0	28.0
NNE	.0	41.0	54.0	2.0	.0	.0	.0	97.0
NE	.0	17.0	14.0	.0	.0	.0	.0	31.0
ENE	.0	14.0	1.0	.0	.0	.0	.0	15.0
E	.0	15.0	.0	.0	.0	.0	.0	15.0
ESE	.0	10.0	2.0	.0	.0	.0	.0	12.0
SE	.0	11.0	1.0	.0	.0	.0	.0	12.0
SSE	.0	44.0	14.0	.0	.0	.0	.0	58.0
S	.0	84.0	46.0	4.0	.0	.0	.0	134.0
SSW	.0	30.0	5.0	.0	.0	.0	.0	35.0
SW	.0	25.0	4.0	.0	.0	.0	.0	29.0
WSW	.0	9.0	2.0	1.0	.0	.0	.0	12.0
W	.0	11.0	6.0	1.0	.0	.0	.0	18.0
WNW	.0	6.0	9.0	1.0	.0	.0	.0	16.0
NW	.0	3.0	7.0	.0	.0	.0	.0	10.0
NNW	.0	7.0	6.0	3.0	.0	.0	.0	16.0
TOTAL	.0	343.0	183.0	12.0	.0	.0	.0	538.0

DATA MEASUREMENT HEIGHT (M ABOVE GRADE) 10.00
 TEMPERATURE SENSOR SEPARATION (METERS) 50.90

MISSING OBS. DURING THIS PERIOD (ALL STABILITIES) 11
 VALID OBSER. DURING THIS PERIOD (ALL STABILITIES) 2173

NOTE: CALMS WERE DISTRIBUTED IN PROPORTION TO THE FREQUENCY OF WINDS IN THE LOWEST WIND SPEED GROUP WITH NON-ZERO ENTRIES IN EACH STABILITY.

INDIAN POINT (UNITS 2 & 3) - JOINT FREQUENCY DISTRIBUTIONS - APR/MAY/JUN 2000

BASIC METEOROLOGICAL OBSERVATIONS AT 10.0 (M)
 FOR PERIOD [Year/Month/Day/Hour]
 [2000/ 4/ 1/ 0] TO [2000/ 6/30/23]

PASQUILL STABILITY: F

WIND FROM	WIND SPEED (MPH)							TOTAL
	CALMS	.60 - 3.50	3.50 - 7.50	7.50 - 12.50	12.50 - 18.50	18.50 - 24.00	24.00 - 80.00	
N	.0	11.0	1.0	.0	.0	.0	.0	12.0
NNE	.0	38.0	17.0	.0	.0	.0	.0	55.0
NE	.0	14.0	2.0	.0	.0	.0	.0	16.0
ENE	.0	3.0	.0	.0	.0	.0	.0	3.0
E	.0	3.0	.0	.0	.0	.0	.0	3.0
ESE	.0	5.0	.0	.0	.0	.0	.0	5.0
SE	.0	4.0	.0	.0	.0	.0	.0	4.0
SSE	.0	8.0	.0	.0	.0	.0	.0	8.0
S	.0	11.0	4.0	.0	.0	.0	.0	15.0
SSW	.0	7.0	.0	.0	.0	.0	.0	7.0
SW	.0	9.0	1.0	.0	.0	.0	.0	10.0
WSW	.0	2.0	.0	.0	.0	.0	.0	2.0
W	.0	4.0	.0	.0	.0	.0	.0	4.0
WNW	.0	2.0	.0	.0	.0	.0	.0	2.0
NW	.0	5.0	.0	.0	.0	.0	.0	5.0
NNW	.0	8.0	.0	.0	.0	.0	.0	8.0
TOTAL	.0	134.0	25.0	.0	.0	.0	.0	159.0

DATA MEASUREMENT HEIGHT (M ABOVE GRADE) 10.00
 TEMPERATURE SENSOR SEPARATION (METERS) 50.90

MISSING OBS. DURING THIS PERIOD (ALL STABILITIES) 11
 VALID OBSER. DURING THIS PERIOD (ALL STABILITIES) 2173

NOTE: CALMS WERE DISTRIBUTED IN PROPORTION TO THE FREQUENCY OF WINDS IN THE LOWEST WIND SPEED GROUP WITH NON-ZERO ENTRIES IN EACH STABILITY.

INDIAN POINT (UNITS 2 & 3) - JOINT FREQUENCY DISTRIBUTIONS - APR/MAY/JUN 2000

BASIC METEOROLOGICAL OBSERVATIONS AT 10.0 (M)
 FOR PERIOD [Year/Month/Day/Hour]
 [2000/ 4/ 1/ 0] TO [2000/ 6/30/23]

PASQUILL STABILITY: G

WIND FROM	WIND SPEED (MPH)							TOTAL
	CALMS	.60 - 3.50	3.50 - 7.50	7.50 - 12.50	12.50 - 18.50	18.50 - 24.00	24.00 - 80.00	
N	.0	7.0	.0	.0	.0	.0	.0	7.0
NNE	.0	2.0	3.0	1.0	.0	.0	.0	6.0
NE	.0	4.0	3.0	.0	.0	.0	.0	7.0
ENE	.0	1.0	.0	.0	.0	.0	.0	1.0
E	.0	1.0	.0	.0	.0	.0	.0	1.0
ESE	.0	.0	.0	.0	.0	.0	.0	.0
SE	.0	1.0	.0	.0	.0	.0	.0	1.0
SSE	.0	4.0	.0	.0	.0	.0	.0	4.0
S	.0	.0	.0	.0	.0	.0	.0	.0
SSW	.0	1.0	.0	.0	.0	.0	.0	1.0
SW	.0	1.0	.0	.0	.0	.0	.0	1.0
WSW	.0	1.0	.0	.0	.0	.0	.0	1.0
W	.0	.0	.0	.0	.0	.0	.0	.0
WNW	.0	.0	.0	.0	.0	.0	.0	.0
NW	.0	1.0	.0	.0	.0	.0	.0	1.0
NNW	.0	2.0	.0	.0	.0	.0	.0	2.0
TOTAL	.0	26.0	6.0	1.0	.0	.0	.0	33.0

DATA MEASUREMENT HEIGHT (M ABOVE GRADE) 10.00
 TEMPERATURE SENSOR SEPARATION (METERS) 50.90

MISSING OBS. DURING THIS PERIOD (ALL STABILITIES) 11
 VALID OBSER. DURING THIS PERIOD (ALL STABILITIES) 2173

NOTE: CALMS WERE DISTRIBUTED IN PROPORTION TO THE FREQUENCY OF WINDS IN THE LOWEST WIND SPEED GROUP WITH NON-ZERO ENTRIES IN EACH STABILITY.

INDIAN POINT (UNITS 2 & 3) - JOINT FREQUENCY DISTRIBUTIONS - APR/MAY/JUN 2000

BASIC METEOROLOGICAL OBSERVATIONS AT 10.0 (M)
 FOR PERIOD [Year/Month/Day/Hour]
 [2000/ 4/ 1/ 0] TO [2000/ 6/30/23]

PASQUILL STABILITY: ALL

WIND FROM	WIND SPEED (MPH)							TOTAL
	CALMS	.60 - 3.50	3.50 - 7.50	7.50 - 12.50	12.50 - 18.50	18.50 - 24.00	24.00 - 80.00	
N	.0	47.0	123.0	63.0	2.0	.0	.0	235.0
NNE	.0	104.0	163.0	63.0	2.0	.0	.0	332.0
NE	.0	71.0	58.0	5.0	.0	.0	.0	134.0
ENE	.0	47.0	13.0	.0	.0	.0	.0	60.0
E	.0	53.0	1.0	.0	.0	.0	.0	54.0
ESE	.0	43.0	11.0	.0	.0	.0	.0	54.0
SE	.0	41.0	10.0	.0	.0	.0	.0	51.0
SSE	.0	91.0	143.0	31.0	4.0	.0	.0	269.0
S	.0	133.0	191.0	29.0	2.0	.0	.0	355.0
SSW	.0	57.0	67.0	17.0	1.0	.0	.0	142.0
SW	.0	47.0	30.0	1.0	.0	.0	.0	78.0
WSW	.0	20.0	34.0	2.0	.0	.0	.0	56.0
W	.0	24.0	28.0	5.0	.0	.0	.0	57.0
WNW	.0	10.0	52.0	24.0	.0	.0	.0	86.0
NW	.0	13.0	54.0	23.0	1.0	.0	.0	91.0
NNW	.0	28.0	70.0	21.0	.0	.0	.0	119.0
TOTAL	.0	829.0	1048.0	284.0	12.0	.0	.0	2173.0

DATA MEASUREMENT HEIGHT (M ABOVE GRADE) 10.00
 TEMPERATURE SENSOR SEPARATION (METERS) 50.90

MISSING OBS. DURING THIS PERIOD (ALL STABILITIES) 11
 VALID OBSER. DURING THIS PERIOD (ALL STABILITIES) 2173

NOTE: CALMS WERE DISTRIBUTED IN PROPORTION TO THE FREQUENCY OF WINDS IN THE LOWEST WIND SPEED GROUP WITH NON-ZERO ENTRIES IN EACH STABILITY.

INDIAN POINT (UNITS 2 & 3) - JOINT FREQUENCY DISTRIBUTIONS - JUL/AUG/SEP 2000

BASIC METEOROLOGICAL OBSERVATIONS AT 10.0 (M)
 FOR PERIOD [Year/Month/Day/Hour]
 [2000/ 7/ 1/ 0] TO [2000/ 9/30/23]

PASQUILL STABILITY: A

WIND FROM	WIND SPEED (MPH)							TOTAL
	CALMS	.60 - 3.50	3.50 - 7.50	7.50 - 12.50	12.50 - 18.50	18.50 - 24.00	24.00 - 80.00	
N	.0	.0	53.0	3.0	.0	.0	.0	56.0
NNE	.0	.0	1.0	3.0	.0	.0	.0	4.0
NE	.0	.0	.0	.0	.0	.0	.0	.0
ENE	.0	.0	.0	.0	.0	.0	.0	.0
E	.0	.0	1.0	.0	.0	.0	.0	1.0
ESE	.0	.0	1.0	.0	.0	.0	.0	1.0
SE	.0	.0	.0	.0	.0	.0	.0	.0
SSE	.0	1.0	20.0	.0	.0	.0	.0	21.0
S	.0	.0	44.0	.0	.0	.0	.0	44.0
SSW	.0	.0	7.0	2.0	.0	.0	.0	9.0
SW	.0	1.0	2.0	.0	.0	.0	.0	3.0
WSW	.0	.0	10.0	.0	.0	.0	.0	10.0
W	.0	.0	6.0	.0	.0	.0	.0	6.0
WNW	.0	1.0	4.0	.0	.0	.0	.0	5.0
NW	.0	.0	6.0	.0	.0	.0	.0	6.0
NNW	.0	.0	10.0	.0	.0	.0	.0	10.0
TOTAL	.0	3.0	165.0	8.0	.0	.0	.0	176.0

DATA MEASUREMENT HEIGHT (M ABOVE GRADE) 10.00
 TEMPERATURE SENSOR SEPARATION (METERS) 50.90

MISSING OBS. DURING THIS PERIOD (ALL STABILITIES) 2
 VALID OBSER. DURING THIS PERIOD (ALL STABILITIES) 2206

NOTE: CALMS WERE DISTRIBUTED IN PROPORTION TO THE FREQUENCY OF WINDS IN THE LOWEST WIND SPEED GROUP WITH NON-ZERO ENTRIES IN EACH STABILITY.

INDIAN POINT (UNITS 2 & 3) - JOINT FREQUENCY DISTRIBUTIONS - JUL/AUG/SEP 2000

BASIC METEOROLOGICAL OBSERVATIONS AT 10.0 (M)
 FOR PERIOD [Year/Month/Day/Hour]
 [2000/ 7/ 1/ 0] TO [2000/ 9/30/23]

PASQUILL STABILITY: B

WIND FROM	WIND SPEED (MPH)							TOTAL
	CALMS	.60 - 3.50	3.50 - 7.50	7.50 - 12.50	12.50 - 18.50	18.50 - 24.00	24.00 - 80.00	
N	.0	1.0	46.0	6.0	.0	.0	.0	53.0
NNE	.0	.0	11.0	1.0	.0	.0	.0	12.0
NE	.0	.0	3.0	.0	.0	.0	.0	3.0
ENE	.0	.0	2.0	.0	.0	.0	.0	2.0
E	.0	.0	1.0	.0	.0	.0	.0	1.0
ESE	.0	1.0	.0	.0	.0	.0	.0	1.0
SE	.0	1.0	.0	.0	.0	.0	.0	1.0
SSE	.0	2.0	1.0	.0	.0	.0	.0	3.0
S	.0	3.0	30.0	2.0	.0	.0	.0	35.0
SSW	.0	2.0	10.0	.0	.0	.0	.0	12.0
SW	.0	1.0	3.0	.0	.0	.0	.0	4.0
WSW	.0	2.0	6.0	.0	.0	.0	.0	8.0
W	.0	2.0	6.0	.0	.0	.0	.0	8.0
WNW	.0	1.0	1.0	.0	.0	.0	.0	2.0
NW	.0	1.0	.0	.0	.0	.0	.0	1.0
NNW	.0	2.0	3.0	.0	.0	.0	.0	5.0
TOTAL	.0	19.0	123.0	9.0	.0	.0	.0	151.0

DATA MEASUREMENT HEIGHT (M ABOVE GRADE) 10.00
 TEMPERATURE SENSOR SEPARATION (METERS) 50.90

MISSING OBS. DURING THIS PERIOD (ALL STABILITIES) 2
 VALID OBSER. DURING THIS PERIOD (ALL STABILITIES) 2206

NOTE: CALMS WERE DISTRIBUTED IN PROPORTION TO THE FREQUENCY
 OF WINDS IN THE LOWEST WIND SPEED GROUP WITH NON-ZERO
 ENTRIES IN EACH STABILITY.

INDIAN POINT (UNITS 2 & 3) - JOINT FREQUENCY DISTRIBUTIONS - JUL/AUG/SEP 2000

BASIC METEOROLOGICAL OBSERVATIONS AT 10.0 (M)
 FOR PERIOD [Year/Month/Day/Hour]
 [2000/ 7/ 1/ 0] TO [2000/ 9/30/23]

PASQUILL STABILITY: C

WIND FROM	WIND SPEED (MPH)							TOTAL
	CALMS	.60 - 3.50	3.50 - 7.50	7.50 - 12.50	12.50 - 18.50	18.50 - 24.00	24.00 - 80.00	
N	.0	9.0	16.0	5.0	.0	.0	.0	30.0
NNE	.0	.0	11.0	3.0	.0	.0	.0	14.0
NE	.0	3.0	1.0	.0	.0	.0	.0	4.0
ENE	.0	.0	.0	.0	.0	.0	.0	.0
E	.0	2.0	1.0	.0	.0	.0	.0	3.0
ESE	.0	.0	.0	.0	.0	.0	.0	.0
SE	.0	2.0	.0	.0	.0	.0	.0	2.0
SSE	.0	3.0	3.0	.0	.0	.0	.0	6.0
S	.0	13.0	22.0	2.0	.0	.0	.0	37.0
SSW	.0	3.0	13.0	.0	.0	.0	.0	16.0
SW	.0	5.0	2.0	.0	.0	.0	.0	7.0
WSW	.0	4.0	4.0	.0	.0	.0	.0	8.0
W	.0	2.0	4.0	.0	.0	.0	.0	6.0
WNW	.0	.0	1.0	.0	.0	.0	.0	1.0
NW	.0	2.0	2.0	.0	.0	.0	.0	4.0
NNW	.0	5.0	4.0	.0	.0	.0	.0	9.0
TOTAL	.0	53.0	84.0	10.0	.0	.0	.0	147.0

DATA MEASUREMENT HEIGHT (M ABOVE GRADE) 10.00
 TEMPERATURE SENSOR SEPARATION (METERS) 50.90

MISSING OBS. DURING THIS PERIOD (ALL STABILITIES) 2
 VALID OBSER. DURING THIS PERIOD (ALL STABILITIES) 2206

NOTE: CALMS WERE DISTRIBUTED IN PROPORTION TO THE FREQUENCY OF WINDS IN THE LOWEST WIND SPEED GROUP WITH NON-ZERO ENTRIES IN EACH STABILITY.

INDIAN POINT (UNITS 2 & 3) - JOINT FREQUENCY DISTRIBUTIONS - JUL/AUG/SEP 2000

BASIC METEOROLOGICAL OBSERVATIONS AT 10.0 (M)
 FOR PERIOD [Year/Month/Day/Hour]
 [2000/ 7/ 1/ 0] TO [2000/ 9/30/23]

PASQUILL STABILITY: D

WIND FROM	WIND SPEED (MPH)							TOTAL
	CALMS	.60 - 3.50	3.50 - 7.50	7.50 - 12.50	12.50 - 18.50	18.50 - 24.00	24.00 - 80.00	
N	.0	23.0	91.0	6.0	.0	.0	.0	120.0
NNE	.0	34.0	206.0	57.0	2.0	.0	.0	299.0
NE	.0	28.0	24.0	2.0	.0	.0	.0	54.0
ENE	.0	25.0	6.0	.0	.0	.0	.0	31.0
E	.0	18.0	2.0	.0	.0	.0	.0	20.0
ESE	.0	15.0	1.0	.0	.0	.0	.0	16.0
SE	.0	29.0	1.0	.0	.0	.0	.0	30.0
SSE	.0	22.0	12.0	.0	.0	.0	.0	34.0
S	.0	44.0	69.0	7.0	.0	.0	.0	120.0
SSW	.0	27.0	30.0	2.0	.0	.0	.0	59.0
SW	.0	7.0	8.0	.0	.0	.0	.0	15.0
WSW	.0	11.0	10.0	.0	.0	.0	.0	21.0
W	.0	1.0	7.0	.0	.0	.0	.0	8.0
WNW	.0	4.0	6.0	.0	.0	.0	.0	10.0
NW	.0	4.0	2.0	.0	.0	.0	.0	6.0
NNW	.0	10.0	8.0	.0	.0	.0	.0	18.0
TOTAL	.0	302.0	483.0	74.0	2.0	.0	.0	861.0

DATA MEASUREMENT HEIGHT (M ABOVE GRADE) 10.00
 TEMPERATURE SENSOR SEPARATION (METERS) 50.90

MISSING OBS. DURING THIS PERIOD (ALL STABILITIES) 2
 VALID OBSER. DURING THIS PERIOD (ALL STABILITIES) 2206

NOTE: CALMS WERE DISTRIBUTED IN PROPORTION TO THE FREQUENCY OF WINDS IN THE LOWEST WIND SPEED GROUP WITH NON-ZERO ENTRIES IN EACH STABILITY.

INDIAN POINT (UNITS 2 & 3) - JOINT FREQUENCY DISTRIBUTIONS - JUL/AUG/SEP 2000

BASIC METEOROLOGICAL OBSERVATIONS AT 10.0 (M)
 FOR PERIOD [Year/Month/Day/Hour]
 [2000/ 7/ 1/ 0] TO [2000/ 9/30/23]

PASQUILL STABILITY: E

WIND FROM	WIND SPEED (MPH)							TOTAL
	CALMS	.60 - 3.50	3.50 - 7.50	7.50 - 12.50	12.50 - 18.50	18.50 - 24.00	24.00 - 80.00	
N	.0	16.0	10.0	.0	.0	.0	.0	26.0
NNE	.0	57.0	121.0	.0	.0	.0	.0	178.0
NE	.0	49.0	38.0	.0	.0	.0	.0	87.0
ENE	.0	31.0	2.0	.0	.0	.0	.0	33.0
E	.0	19.0	2.0	.0	.0	.0	.0	21.0
ESE	.0	25.0	1.0	.0	.0	.0	.0	26.0
SE	.0	26.0	1.0	.0	.0	.0	.0	27.0
SSE	.0	32.0	4.0	.0	.0	.0	.0	36.0
S	.0	70.0	64.0	7.0	.0	.0	.0	141.0
SSW	.0	44.0	20.0	.0	.0	.0	.0	64.0
SW	.0	34.0	.0	.0	.0	.0	.0	34.0
WSW	.0	15.0	6.0	.0	.0	.0	.0	21.0
W	.0	7.0	2.0	.0	.0	.0	.0	9.0
WNW	.0	6.0	2.0	.0	.0	.0	.0	8.0
NW	.0	8.0	2.0	.0	.0	.0	.0	10.0
NNW	.0	4.0	5.0	.0	.0	.0	.0	9.0
TOTAL	.0	443.0	280.0	7.0	.0	.0	.0	730.0

DATA MEASUREMENT HEIGHT (M ABOVE GRADE) 10.00
 TEMPERATURE SENSOR SEPARATION (METERS) 50.90

MISSING OBS. DURING THIS PERIOD (ALL STABILITIES) 2
 VALID OBSER. DURING THIS PERIOD (ALL STABILITIES) 2206

NOTE: CALMS WERE DISTRIBUTED IN PROPORTION TO THE FREQUENCY OF WINDS IN THE LOWEST WIND SPEED GROUP WITH NON-ZERO ENTRIES IN EACH STABILITY.

INDIAN POINT (UNITS 2 & 3) - JOINT FREQUENCY DISTRIBUTIONS - JUL/AUG/SEP 2000

BASIC METEOROLOGICAL OBSERVATIONS AT 10.0 (M)
 FOR PERIOD [Year/Month/Day/Hour]
 [2000/ 7/ 1/ 0] TO [2000/ 9/30/23]

PASQUILL STABILITY: F

WIND FROM	WIND SPEED (MPH)							TOTAL
	CALMS	.60 - 3.50	3.50 - 7.50	7.50 - 12.50	12.50 - 18.50	18.50 - 24.00	24.00 - 80.00	
N	.0	24.0	.0	.0	.0	.0	.0	24.0
NNE	.0	30.0	18.0	.0	.0	.0	.0	48.0
NE	.0	10.0	4.0	.0	.0	.0	.0	14.0
ENE	.0	9.0	.0	.0	.0	.0	.0	9.0
E	.0	2.0	.0	.0	.0	.0	.0	2.0
ESE	.0	3.0	.0	.0	.0	.0	.0	3.0
SE	.0	4.0	.0	.0	.0	.0	.0	4.0
SSE	.0	4.0	.0	.0	.0	.0	.0	4.0
S	.0	16.0	.0	.0	.0	.0	.0	16.0
SSW	.0	3.0	.0	.0	.0	.0	.0	3.0
SW	.0	5.0	.0	.0	.0	.0	.0	5.0
WSW	.0	4.0	.0	.0	.0	.0	.0	4.0
W	.0	.0	.0	.0	.0	.0	.0	.0
WNW	.0	2.0	.0	.0	.0	.0	.0	2.0
NW	.0	1.0	.0	.0	.0	.0	.0	1.0
NNW	.0	1.0	.0	.0	.0	.0	.0	1.0
TOTAL	.0	118.0	22.0	.0	.0	.0	.0	140.0

DATA MEASUREMENT HEIGHT (M ABOVE GRADE) 10.00
 TEMPERATURE SENSOR SEPARATION (METERS) 50.90

MISSING OBS. DURING THIS PERIOD (ALL STABILITIES) 2
 VALID OBSER. DURING THIS PERIOD (ALL STABILITIES) 2206

NOTE: CALMS WERE DISTRIBUTED IN PROPORTION TO THE FREQUENCY OF WINDS IN THE LOWEST WIND SPEED GROUP WITH NON-ZERO ENTRIES IN EACH STABILITY.

INDIAN POINT (UNITS 2 & 3) - JOINT FREQUENCY DISTRIBUTIONS - JUL/AUG/SEP 2000

BASIC METEOROLOGICAL OBSERVATIONS AT 10.0 (M)
 FOR PERIOD [Year/Month/Day/Hour]
 [2000/ 7/ 1/ 0] TO [2000/ 9/30/23]

PASQUILL STABILITY: G

WIND FROM	WIND SPEED (MPH)							TOTAL
	CALMS	.60 - 3.50	3.50 - 7.50	7.50 - 12.50	12.50 - 18.50	18.50 - 24.00	24.00 - 80.00	
N	.0	.0	.0	.0	.0	.0	.0	.0
NNE	.0	.0	.0	.0	.0	.0	.0	.0
NE	.0	.0	.0	.0	.0	.0	.0	.0
ENE	.0	1.0	.0	.0	.0	.0	.0	1.0
E	.0	.0	.0	.0	.0	.0	.0	.0
ESE	.0	.0	.0	.0	.0	.0	.0	.0
SE	.0	.0	.0	.0	.0	.0	.0	.0
SSE	.0	.0	.0	.0	.0	.0	.0	.0
S	.0	.0	.0	.0	.0	.0	.0	.0
SSW	.0	.0	.0	.0	.0	.0	.0	.0
SW	.0	.0	.0	.0	.0	.0	.0	.0
WSW	.0	.0	.0	.0	.0	.0	.0	.0
W	.0	.0	.0	.0	.0	.0	.0	.0
WNW	.0	.0	.0	.0	.0	.0	.0	.0
NW	.0	.0	.0	.0	.0	.0	.0	.0
NNW	.0	.0	.0	.0	.0	.0	.0	.0
TOTAL	.0	1.0	.0	.0	.0	.0	.0	1.0

DATA MEASUREMENT HEIGHT (M ABOVE GRADE) 10.00
 TEMPERATURE SENSOR SEPARATION (METERS) 50.90

MISSING OBS. DURING THIS PERIOD (ALL STABILITIES) 2
 VALID OBSER. DURING THIS PERIOD (ALL STABILITIES) 2206

NOTE: CALMS WERE DISTRIBUTED IN PROPORTION TO THE FREQUENCY OF WINDS IN THE LOWEST WIND SPEED GROUP WITH NON-ZERO ENTRIES IN EACH STABILITY.

INDIAN POINT (UNITS 2 & 3) - JOINT FREQUENCY DISTRIBUTIONS - JUL/AUG/SEP 2000

BASIC METEOROLOGICAL OBSERVATIONS AT 10.0 (M)
 FOR PERIOD [Year/Month/Day/Hour]
 [2000/ 7/ 1/ 0] TO [2000/ 9/30/23]

PASQUILL STABILITY: ALL

WIND FROM	WIND SPEED (MPH)							TOTAL
	CALMS	.60 - 3.50	3.50 - 7.50	7.50 - 12.50	12.50 - 18.50	18.50 - 24.00	24.00 - 80.00	
N	.0	73.0	216.0	20.0	.0	.0	.0	309.0
NNE	.0	121.0	368.0	64.0	2.0	.0	.0	555.0
NE	.0	90.0	70.0	2.0	.0	.0	.0	162.0
ENE	.0	66.0	10.0	.0	.0	.0	.0	76.0
E	.0	41.0	7.0	.0	.0	.0	.0	48.0
ESE	.0	44.0	3.0	.0	.0	.0	.0	47.0
SE	.0	62.0	2.0	.0	.0	.0	.0	64.0
SSE	.0	64.0	40.0	.0	.0	.0	.0	104.0
S	.0	146.0	229.0	18.0	.0	.0	.0	393.0
SSW	.0	79.0	80.0	4.0	.0	.0	.0	163.0
SW	.0	53.0	15.0	.0	.0	.0	.0	68.0
WSW	.0	36.0	36.0	.0	.0	.0	.0	72.0
W	.0	12.0	25.0	.0	.0	.0	.0	37.0
WNW	.0	14.0	14.0	.0	.0	.0	.0	28.0
NW	.0	16.0	12.0	.0	.0	.0	.0	28.0
NNW	.0	22.0	30.0	.0	.0	.0	.0	52.0
TOTAL	.0	939.0	1157.0	108.0	2.0	.0	.0	2206.0

DATA MEASUREMENT HEIGHT (M ABOVE GRADE) 10.00
 TEMPERATURE SENSOR SEPARATION (METERS) 50.90

MISSING OBS. DURING THIS PERIOD (ALL STABILITIES) 2
 VALID OBSER. DURING THIS PERIOD (ALL STABILITIES) 2206

NOTE: CALMS WERE DISTRIBUTED IN PROPORTION TO THE FREQUENCY OF WINDS IN THE LOWEST WIND SPEED GROUP WITH NON-ZERO ENTRIES IN EACH STABILITY.

INDIAN POINT (UNITS 2 & 3) - JOINT FREQUENCY DISTRIBUTIONS - OCT/NOV/DEC 2000

BASIC METEOROLOGICAL OBSERVATIONS AT 10.0 (M)
 FOR PERIOD [Year/Month/Day/Hour]
 [2000/10/ 1/ 0] TO [2000/12/31/23]

PASQUILL STABILITY: A

WIND FROM	WIND SPEED (MPH)							TOTAL
	CALMS	.60 - 3.50	3.50 - 7.50	7.50 - 12.50	12.50 - 18.50	18.50 - 24.00	24.00 - 80.00	
N	.0	1.0	7.0	13.0	3.0	.0	.0	24.0
NNE	.0	.0	.0	.0	.0	.0	.0	.0
NE	.0	.0	1.0	.0	.0	.0	.0	1.0
ENE	.0	.0	.0	.0	.0	.0	.0	.0
E	.0	.0	.0	.0	.0	.0	.0	.0
ESE	.0	.0	.0	.0	.0	.0	.0	.0
SE	.0	.0	.0	.0	.0	.0	.0	.0
SSE	.0	.0	6.0	.0	.0	.0	.0	6.0
S	.0	.0	7.0	.0	.0	.0	.0	7.0
SSW	.0	.0	1.0	.0	.0	.0	.0	1.0
SW	.0	.0	.0	.0	.0	.0	.0	.0
WSW	.0	.0	1.0	.0	.0	.0	.0	1.0
W	.0	.0	5.0	1.0	.0	.0	.0	6.0
WNW	.0	.0	15.0	2.0	.0	.0	.0	17.0
NW	.0	1.0	7.0	4.0	.0	.0	.0	12.0
NNW	.0	.0	8.0	.0	.0	.0	.0	8.0
TOTAL	.0	2.0	58.0	20.0	3.0	.0	.0	83.0

DATA MEASUREMENT HEIGHT (M ABOVE GRADE) 10.00
 TEMPERATURE SENSOR SEPARATION (METERS) 50.90

MISSING OBS. DURING THIS PERIOD (ALL STABILITIES) 76
 VALID OBSER. DURING THIS PERIOD (ALL STABILITIES) 2132

NOTE: CALMS WERE DISTRIBUTED IN PROPORTION TO THE FREQUENCY OF WINDS IN THE LOWEST WIND SPEED GROUP WITH NON-ZERO ENTRIES IN EACH STABILITY.

INDIAN POINT (UNITS 2 & 3) - JOINT FREQUENCY DISTRIBUTIONS - OCT/NOV/DEC 2000

BASIC METEOROLOGICAL OBSERVATIONS AT 10.0 (M)
 FOR PERIOD [Year/Month/Day/Hour]
 [2000/10/ 1/ 0] TO [2000/12/31/23]

PASQUILL STABILITY: B

WIND FROM	WIND SPEED (MPH)							TOTAL
	CALMS	.60 - 3.50	3.50 - 7.50	7.50 - 12.50	12.50 - 18.50	18.50 - 24.00	24.00 - 80.00	
N	.0	.0	18.0	9.0	4.0	.0	.0	31.0
NNE	.0	.0	.0	.0	.0	.0	.0	.0
NE	.0	.0	.0	.0	.0	.0	.0	.0
ENE	.0	.0	.0	.0	.0	.0	.0	.0
E	.0	.0	.0	.0	.0	.0	.0	.0
ESE	.0	.0	.0	.0	.0	.0	.0	.0
SE	.0	.0	.0	.0	.0	.0	.0	.0
SSE	.0	2.0	2.0	.0	.0	.0	.0	4.0
S	.0	.0	8.0	.0	.0	.0	.0	8.0
SSW	.0	.0	3.0	.0	.0	.0	.0	3.0
SW	.0	.0	.0	.0	.0	.0	.0	.0
WSW	.0	.0	1.0	.0	.0	.0	.0	1.0
W	.0	.0	3.0	2.0	.0	.0	.0	5.0
WNW	.0	.0	16.0	2.0	.0	.0	.0	18.0
NW	.0	.0	9.0	5.0	.0	.0	.0	14.0
NNW	.0	.0	4.0	2.0	.0	.0	.0	6.0
TOTAL	.0	2.0	64.0	20.0	4.0	.0	.0	90.0

DATA MEASUREMENT HEIGHT (M ABOVE GRADE) 10.00
 TEMPERATURE SENSOR SEPARATION (METERS) 50.90

MISSING OBS. DURING THIS PERIOD (ALL STABILITIES) 76
 VALID OBSER. DURING THIS PERIOD (ALL STABILITIES) 2132

NOTE: CALMS WERE DISTRIBUTED IN PROPORTION TO THE FREQUENCY OF WINDS IN THE LOWEST WIND SPEED GROUP WITH NON-ZERO ENTRIES IN EACH STABILITY.

INDIAN POINT (UNITS 2 & 3) - JOINT FREQUENCY DISTRIBUTIONS - OCT/NOV/DEC 2000

BASIC METEOROLOGICAL OBSERVATIONS AT 10.0 (M)
 FOR PERIOD [Year/Month/Day/Hour]
 [2000/10/ 1/ 0] TO [2000/12/31/23]

PASQUILL STABILITY: C

WIND FROM	WIND SPEED (MPH)							TOTAL
	CALMS	.60 - 3.50	3.50 - 7.50	7.50 - 12.50	12.50 - 18.50	18.50 - 24.00	24.00 - 80.00	
N	.0	.0	11.0	8.0	2.0	.0	.0	21.0
NNE	.0	.0	5.0	1.0	.0	.0	.0	6.0
NE	.0	.0	.0	.0	.0	.0	.0	.0
ENE	.0	.0	.0	.0	.0	.0	.0	.0
E	.0	.0	.0	.0	.0	.0	.0	.0
ESE	.0	.0	.0	.0	.0	.0	.0	.0
SE	.0	1.0	.0	.0	.0	.0	.0	1.0
SSE	.0	1.0	1.0	.0	.0	.0	.0	2.0
S	.0	1.0	15.0	.0	.0	.0	.0	16.0
SSW	.0	.0	6.0	.0	.0	.0	.0	6.0
SW	.0	1.0	1.0	1.0	.0	.0	.0	3.0
WSW	.0	1.0	1.0	.0	.0	.0	.0	2.0
W	.0	.0	3.0	1.0	.0	.0	.0	4.0
WNW	.0	.0	9.0	5.0	.0	.0	.0	14.0
NW	.0	.0	9.0	7.0	.0	.0	.0	16.0
NNW	.0	.0	4.0	2.0	.0	.0	.0	6.0
TOTAL	.0	5.0	65.0	25.0	2.0	.0	.0	97.0

DATA MEASUREMENT HEIGHT (M ABOVE GRADE) 10.00
 TEMPERATURE SENSOR SEPARATION (METERS) 50.90

MISSING OBS. DURING THIS PERIOD (ALL STABILITIES) 76
 VALID OBSER. DURING THIS PERIOD (ALL STABILITIES) 2132

NOTE: CALMS WERE DISTRIBUTED IN PROPORTION TO THE FREQUENCY OF WINDS IN THE LOWEST WIND SPEED GROUP WITH NON-ZERO ENTRIES IN EACH STABILITY.

INDIAN POINT (UNITS 2 & 3) - JOINT FREQUENCY DISTRIBUTIONS - OCT/NOV/DEC 2000

BASIC METEOROLOGICAL OBSERVATIONS AT 10.0 (M)
 FOR PERIOD [Year/Month/Day/Hour]
 [2000/10/ 1/ 0] TO [2000/12/31/23]

PASQUILL STABILITY: D

WIND FROM	WIND SPEED (MPH)							TOTAL
	CALMS	.60 - 3.50	3.50 - 7.50	7.50 - 12.50	12.50 - 18.50	18.50 - 24.00	24.00 - 80.00	
N	.0	27.0	107.0	77.0	2.0	.0	.0	213.0
NNE	.0	33.0	98.0	44.0	2.0	.0	.0	177.0
NE	.0	28.0	28.0	.0	.0	.0	.0	56.0
ENE	.0	15.0	9.0	.0	.0	.0	.0	24.0
E	.0	14.0	1.0	.0	.0	.0	.0	15.0
ESE	.0	3.0	.0	.0	.0	.0	.0	3.0
SE	.0	8.0	1.0	.0	.0	.0	.0	9.0
SSE	.0	18.0	5.0	.0	.0	.0	.0	23.0
S	.0	21.0	31.0	8.0	.0	.0	.0	60.0
SSW	.0	19.0	19.0	.0	.0	.0	.0	38.0
SW	.0	18.0	13.0	2.0	.0	.0	.0	33.0
WSW	.0	11.0	16.0	2.0	.0	.0	.0	29.0
W	.0	3.0	74.0	5.0	2.0	.0	.0	84.0
WNW	.0	10.0	118.0	55.0	4.0	.0	.0	187.0
NW	.0	7.0	92.0	33.0	1.0	.0	.0	133.0
NNW	.0	11.0	104.0	12.0	.0	.0	.0	127.0
TOTAL	.0	246.0	716.0	238.0	11.0	.0	.0	1211.0

DATA MEASUREMENT HEIGHT (M ABOVE GRADE) 10.00
 TEMPERATURE SENSOR SEPARATION (METERS) 50.90
 MISSING OBS. DURING THIS PERIOD (ALL STABILITIES) 76
 VALID OBSER. DURING THIS PERIOD (ALL STABILITIES) 2132

NOTE: CALMS WERE DISTRIBUTED IN PROPORTION TO THE FREQUENCY OF WINDS IN THE LOWEST WIND SPEED GROUP WITH NON-ZERO ENTRIES IN EACH STABILITY.

INDIAN POINT (UNITS 2 & 3) - JOINT FREQUENCY DISTRIBUTIONS - OCT/NOV/DEC 2000

BASIC METEOROLOGICAL OBSERVATIONS AT 10.0 (M)
 FOR PERIOD [Year/Month/Day/Hour]
 [2000/10/ 1/ 0] TO [2000/12/31/23]

PASQUILL STABILITY: E

WIND FROM	WIND SPEED (MPH)							TOTAL
	CALMS	.60 - 3.50	3.50 - 7.50	7.50 - 12.50	12.50 - 18.50	18.50 - 24.00	24.00 - 80.00	
N	.0	12.0	24.0	5.0	.0	.0	.0	41.0
NNE	.0	42.0	39.0	2.0	.0	.0	.0	83.0
NE	.0	33.0	27.0	.0	.0	.0	.0	60.0
ENE	.0	25.0	4.0	.0	.0	.0	.0	29.0
E	.0	15.0	1.0	.0	.0	.0	.0	16.0
ESE	.0	11.0	.0	.0	.0	.0	.0	11.0
SE	.0	19.0	.0	.0	.0	.0	.0	19.0
SSE	.0	25.0	3.0	3.0	2.0	.0	.0	33.0
S	.0	33.0	16.0	8.0	1.0	.0	.0	58.0
SSW	.0	20.0	8.0	1.0	1.0	.0	.0	30.0
SW	.0	12.0	1.0	.0	1.0	.0	.0	14.0
WSW	.0	4.0	2.0	.0	.0	.0	.0	6.0
W	.0	6.0	6.0	.0	1.0	.0	.0	13.0
WNW	.0	3.0	9.0	.0	.0	.0	.0	12.0
NW	.0	6.0	5.0	.0	.0	.0	.0	11.0
NNW	.0	8.0	1.0	1.0	.0	.0	.0	10.0
TOTAL	.0	274.0	146.0	20.0	6.0	.0	.0	446.0

DATA MEASUREMENT HEIGHT (M ABOVE GRADE) 10.00
 TEMPERATURE SENSOR SEPARATION (METERS) 50.90

MISSING OBS. DURING THIS PERIOD (ALL STABILITIES) 76
 VALID OBSER. DURING THIS PERIOD (ALL STABILITIES) 2132

NOTE: CALMS WERE DISTRIBUTED IN PROPORTION TO THE FREQUENCY OF WINDS IN THE LOWEST WIND SPEED GROUP WITH NON-ZERO ENTRIES IN EACH STABILITY.

INDIAN POINT (UNITS 2 & 3) - JOINT FREQUENCY DISTRIBUTIONS - OCT/NOV/DEC 2000

BASIC METEOROLOGICAL OBSERVATIONS AT 10.0 (M)
 FOR PERIOD [Year/Month/Day/Hour]
 [2000/10/ 1/ 0] TO [2000/12/31/23]

PASQUILL STABILITY: F

WIND FROM	WIND SPEED (MPH)							TOTAL
	CALMS	.60 - 3.50	3.50 - 7.50	7.50 - 12.50	12.50 - 18.50	18.50 - 24.00	24.00 - 80.00	
N	.0	11.0	.0	.0	.0	.0	.0	11.0
NNE	.0	58.0	24.0	.0	.0	.0	.0	82.0
NE	.0	15.0	21.0	.0	.0	.0	.0	36.0
ENE	.0	7.0	.0	.0	.0	.0	.0	7.0
E	.0	3.0	.0	.0	.0	.0	.0	3.0
ESE	.0	1.0	.0	.0	.0	.0	.0	1.0
SE	.0	3.0	.0	.0	.0	.0	.0	3.0
SSE	.0	6.0	.0	.0	.0	.0	.0	6.0
S	.0	5.0	1.0	.0	.0	.0	.0	6.0
SSW	.0	4.0	.0	.0	.0	.0	.0	4.0
SW	.0	3.0	.0	.0	.0	.0	.0	3.0
WSW	.0	1.0	.0	.0	.0	.0	.0	1.0
W	.0	1.0	.0	.0	.0	.0	.0	1.0
WNW	.0	.0	.0	.0	.0	.0	.0	.0
NW	.0	3.0	.0	.0	.0	.0	.0	3.0
NNW	.0	1.0	.0	.0	.0	.0	.0	1.0
TOTAL	.0	122.0	46.0	.0	.0	.0	.0	168.0

DATA MEASUREMENT HEIGHT (M ABOVE GRADE) 10.00
 TEMPERATURE SENSOR SEPARATION (METERS) 50.90

MISSING OBS. DURING THIS PERIOD (ALL STABILITIES) 76
 VALID OBSER. DURING THIS PERIOD (ALL STABILITIES) 2132

NOTE: CALMS WERE DISTRIBUTED IN PROPORTION TO THE FREQUENCY OF WINDS IN THE LOWEST WIND SPEED GROUP WITH NON-ZERO ENTRIES IN EACH STABILITY.

INDIAN POINT (UNITS 2 & 3) - JOINT FREQUENCY DISTRIBUTIONS - OCT/NOV/DEC 2000

BASIC METEOROLOGICAL OBSERVATIONS AT 10.0 (M)
 FOR PERIOD [Year/Month/Day/Hour]
 [2000/10/ 1/ 0] TO [2000/12/31/23]

PASQUILL STABILITY: G

WIND FROM	WIND SPEED (MPH)							TOTAL
	CALMS	.60 - 3.50	3.50 - 7.50	7.50 - 12.50	12.50 - 18.50	18.50 - 24.00	24.00 - 80.00	
N	.0	6.0	.0	.0	.0	.0	.0	6.0
NNE	.0	12.0	3.0	.0	.0	.0	.0	15.0
NE	.0	3.0	1.0	.0	.0	.0	.0	4.0
ENE	.0	.0	.0	.0	.0	.0	.0	.0
E	.0	1.0	.0	.0	.0	.0	.0	1.0
ESE	.0	1.0	.0	.0	.0	.0	.0	1.0
SE	.0	1.0	.0	.0	.0	.0	.0	1.0
SSE	.0	.0	.0	.0	.0	.0	.0	.0
S	.0	1.0	.0	.0	.0	.0	.0	1.0
SSW	.0	.0	.0	.0	.0	.0	.0	.0
SW	.0	2.0	.0	.0	.0	.0	.0	2.0
WSW	.0	.0	.0	.0	.0	.0	.0	.0
W	.0	.0	.0	.0	.0	.0	.0	.0
WNW	.0	2.0	.0	.0	.0	.0	.0	2.0
NW	.0	.0	.0	.0	.0	.0	.0	.0
NNW	.0	4.0	.0	.0	.0	.0	.0	4.0
TOTAL	.0	33.0	4.0	.0	.0	.0	.0	37.0

DATA MEASUREMENT HEIGHT (M ABOVE GRADE) 10.00
 TEMPERATURE SENSOR SEPARATION (METERS) 50.90

MISSING OBS. DURING THIS PERIOD (ALL STABILITIES) 76
 VALID OBSER. DURING THIS PERIOD (ALL STABILITIES) 2132

NOTE: CALMS WERE DISTRIBUTED IN PROPORTION TO THE FREQUENCY OF WINDS IN THE LOWEST WIND SPEED GROUP WITH NON-ZERO ENTRIES IN EACH STABILITY.

INDIAN POINT (UNITS 2 & 3) - JOINT FREQUENCY DISTRIBUTIONS - OCT/NOV/DEC 2000

BASIC METEOROLOGICAL OBSERVATIONS AT 10.0 (M)
 FOR PERIOD [Year/Month/Day/Hour]
 [2000/10/ 1/ 0] TO [2000/12/31/23]

PASQUILL STABILITY: ALL

WIND FROM	WIND SPEED (MPH)							TOTAL
	CALMS	.60 - 3.50	3.50 - 7.50	7.50 - 12.50	12.50 - 18.50	18.50 - 24.00	24.00 - 80.00	
N	.0	57.0	167.0	112.0	11.0	.0	.0	347.0
NNE	.0	145.0	169.0	47.0	2.0	.0	.0	363.0
NE	.0	79.0	78.0	.0	.0	.0	.0	157.0
ENE	.0	47.0	13.0	.0	.0	.0	.0	60.0
E	.0	33.0	2.0	.0	.0	.0	.0	35.0
ESE	.0	16.0	.0	.0	.0	.0	.0	16.0
SE	.0	32.0	1.0	.0	.0	.0	.0	33.0
SSE	.0	52.0	17.0	3.0	2.0	.0	.0	74.0
S	.0	61.0	78.0	16.0	1.0	.0	.0	156.0
SSW	.0	43.0	37.0	1.0	1.0	.0	.0	82.0
SW	.0	36.0	15.0	3.0	1.0	.0	.0	55.0
WSW	.0	17.0	21.0	2.0	.0	.0	.0	40.0
W	.0	10.0	91.0	9.0	3.0	.0	.0	113.0
WNW	.0	15.0	167.0	64.0	4.0	.0	.0	250.0
NW	.0	17.0	122.0	49.0	1.0	.0	.0	189.0
NNW	.0	24.0	121.0	17.0	.0	.0	.0	162.0
TOTAL	.0	684.0	1099.0	323.0	26.0	.0	.0	2132.0

DATA MEASUREMENT HEIGHT (M ABOVE GRADE) 10.00
 TEMPERATURE SENSOR SEPARATION (METERS) 50.90
 MISSING OBS. DURING THIS PERIOD (ALL STABILITIES) 76
 VALID OBSER. DURING THIS PERIOD (ALL STABILITIES) 2132

NOTE: CALMS WERE DISTRIBUTED IN PROPORTION TO THE FREQUENCY OF WINDS IN THE LOWEST WIND SPEED GROUP WITH NON-ZERO ENTRIES IN EACH STABILITY.

Indian Point 3

RADIOACTIVE EFFLUENT REPORT

G. OFFSITE DOSE CALCULATION MANUAL,
PROCESS CONTROL PROGRAM, OR LAND USE CENSUS LOCATION CHANGES

2000

The ODCM was upgraded twice in this reporting period.
Rev 13, in March: Implementation of Generic Letter 89-01
Rev 14, in Nov: Implementation of Improved Tech Specs
See the attached justification packages.

The PCP was upgraded twice in this period.
Rev 6, in March: Implementation of Generic Letter 89-01
Rev 7, in Aug: in preparation for implementing Improved Tech Specs
The justification packages are attached.

There were no changes in the REMP during this period.

There were no new locations for dose calculations and/or environmental monitoring identified by the land use census during this period.

ODCM Revision 13
Effective Date: March 8, 2000

This revision was performed per the guidance in Generic Letter 89-01
and the SER for Technical Specification Amendment 199.

ODCM Revision 14

Justification Package

Brief summary of changes:

- 1) *Typographical errors corrected or re-worded, as indicated*
- 2) *Improved Technical Specification references and additions, in gray*
- 3) *The grass-cow-milk ingestion pathway was suppressed per the land use census and NUREG-0133*
- 4) *Specific release pathways discussed per lessons learned from the IP2 Primary to Secondary Leak*

Each change is discussed in detail on the following pages.

item 1

OBJECTIVE:

Add the guidance from incorporating Improved Technical Specifications (ITS), in GRAY SHADING, into this ODCM upgrade.

DESCRIPTION OF CHANGES:

Added all ITS information, in GRAY SHADING, with the stipulation that all shaded areas are effective ONLY in concert with final acceptance of ITS.

IMPACT:

NONE

JUSTIFICATION:

Information brought into the ODCM was previously located in Technical Specifications or another location. It is added to the ODCM to ensure an adequate review and approval sequence per the Improved Technical Specifications (ITS). The gray shading indicates that the changes are INFORMATION ONLY until the ITS project is officially incorporated.

item 2

OBJECTIVE:

Update the REFERENCES to the ODCM.

DESCRIPTION OF CHANGES:

Added:

- #22 NRC Generic Letter 89-01 (Technical Specification Amendment 199), and
- #23 Improved Technical Specifications

IMPACT:

NONE

JUSTIFICATION:

These documents describe bases and specifics for additions and modifications to the ODCM.

item 3

OBJECTIVE: Update references from CTS to ITS location (ACTS 00-49471).

DESCRIPTION OF CHANGES: *(items below are gray-shaded and discussed in the ITS package)*

RECS:

Sec 1.11	TS, App A 6.8.4 & 4.3.2 moved to ITS 5.5.1,5.5.4,5.6.2,5.6.3
Sec 1.13	Inserted PCP reference to RECS 5.5
Sec 2/3.1	TS, App A 6.8.4.a.1 moved to ITS 5.5.4
Sec 2/3.1	Reporting Requirement 5.1 moved to 5.2
Sec 2/3.2	TS, App A 6.8.4.a.1 moved to ITS 5.5.4
Sec 2/3.2	Reporting Requirement 5.1 moved to 5.2
Table 2.2-1, 3a	Added note 12 for ITS (PAM)
Sec 2.3.1	TS, App A 6.8.4.a.2&3 moved to ITS 5.5.4
Sec 2.3.2	TS, App A 6.8.4.a.4&5 moved to ITS 5.5.4
Sec 2.3.2	TS, App A 6.9.2 moved to RECS 5.7
Sec 2.3.3	TS, App A 6.8.4.a.6 moved to ITS 5.5.4
Sec 2.3.3	TS, App A 6.9.2 moved to RECS 5.7
Sec 2.4.1	TS, App A 6.8.4.a.3&7 moved to ITS 5.5.4
Table 3.4.1-1	Note b Rep Req 5.1 moved to RECS 5.2
Sec 2.4.2	TS, App A 6.8.4.a.5&8 moved to ITS 5.5.4
Sec 2.4.2	TS, App A 6.9.2 moved to RECS 5.7
Sec 2.4.3	TS, App A 6.8.4.a.5&9 moved to ITS 5.5.4
Sec 2.4.3	TS, App A 6.9.2 moved to RECS 5.7
Sec 2.4.4	TS, App A 6.8.4.a.6 moved to ITS 5.5.4
Sec 2.4.4	TS, App A 6.9.2 moved to RECS 5.7
Sec 2.5	TS, App A 6.8.4.a.10 moved to ITS 5.5.4
Sec 2.5	TS, App A 6.9.2 moved to RECS 5.7
Sec 2.7	TS, App A 6.8.4.b inserted here, referencing ITS 5.5.1.b, which identifies ODCM as source
Sec 2.7.A	RECS Reporting Req moved from 5.2 to 5.3
Sec 2.7.B	TS, App A 6.9.2 moved to RECS 5.7
Sec 2.7.C	RECS Reporting Req moved from 5.1 to 5.2

item 3 (continued)

Table 2.7-1	RECS Reporting Req 5.2/5.1 moved to 5.3/5.2
Table 3.7-1	Notes a & c, RECS Rep Req 5.2 moved to 5.3
Sec 2.8	TS,App A 6.8.4.b.2 moved to ITS 5.5.1.b and RECS 2.7
Sec 2/3.8	Rep Req moved from 5.1 & 5.2 moved to 5.2 & 5.3
Sec 2.9	TS,App A 6.8.4.b.3 moved to ITS 5.5.1.b and RECS 2.7
Sec 2/3.9	Rep Req moved from 5.2 to 5.3
Sec 2/3.10	and 2/3.11 moved here from CTS App B 1/2.2 & 1/2.3
Sec 4	BASES for 2.10/2.11 moved here from CTS App B Sec 3
Sec 5	Renamed "Reporting" to "Administrative" Requirements
Sec 5.1	Added a RECORDS RETENTION section (TRM 5.5 & CTS 6.10.2)
Sec 5.2	Relocated from Sec 5.1:
	Replaced TS App B, 1.2.1 & 1.3.2 with ITS RECS 2.10 & 2.11
	Replaced TS App B, 4.3.3 with RECS 5.4
	Replaced TS App B, 4.5.2 & 4.6.2 with ITS RECS 5.5 & 5.6
Sec 5.3:	Relocated from Sec 5.2:
Sec 5.4	Added (new section), from CTS App B, 4.3.3
Sec 5.5	Added (new section), from CTS App B, 4.5
Sec 5.6	Added (new section), from CTS App B, 4.6
Sec 5.7	Renumbered from RECS 5.3 to 5.7 (inserted Sec 5.4-5.6)

ODCM Part II Inserted Sec 1.3, from CTS App B 4.7 describing map.

Sec 2.1.9 App A, Table 4.1-2 moving to ITS 3.7.17

IMPACT: None

JUSTIFICATION: Per ITS, change in reference location or direction only

item 4

OBJECTIVE:

Remove one of the redundant Figures describing SITE BOUNDARY.

DESCRIPTION OF CHANGES:

Figure 4.7-1 in CTS, App B deleted, per ITS. It was already added to the ODCM Part II in the previous ODCM revision.

RECS Section 1, (Definitions) was modified:

Section 1.16 SITE BOUNDARY
and
Section 1.19 UNRESTRICTED AREA

Now include a reference to ODCM Part II for this Figure.

ODCM Part II, Section 1.3 was added (from CTS App B, 4.7) defining the purpose of the map. Figure 1-1 is the following page.

IMPACT:

NONE

JUSTIFICATION:

Eliminates redundancy and confusion.

item 5

OBJECTIVE:

Correct the typographical errors in RECS Sec 2.6 A.

DESCRIPTION OF CHANGES:

RECS 2.6.A, references to earlier sections of the RECS were corrected as follows:

<u>ODCM Rev 13</u>	<u>ODCM Rev 14</u>
2.3.2.A	2.3.2.1
2.4.2.A	2.4.2.1
2.4.3.A	2.4.3.1

IMPACT:

None

JUSTIFICATION:

Typographical corrections as a result of updating the outline format of RECS Section 2, and leaving these references in an older format in error.

item 6

OBJECTIVE:

Update the suggested options for the methods of reporting meteorological data to the commission in the annual radioactive effluent report.

DESCRIPTION OF CHANGES:

In new Section 5.1, 4th paragraph, replaced the phrase "magnetic tape" with "electronic media".

IMPACT:

None

JUSTIFICATION:

Updating the intent of this phrase to modern electronic methods stipulated by the NRC. These data are still normally supplied as part of the (written paper) Annual Effluent Release Report.

item 7

OBJECTIVE:

Correct the typographical errors in ODCM, Part II, Section 2.

DESCRIPTION OF CHANGES:

Section 2.1.9 corrected from referencing "3.3-1B" to Table 3.3.1-1 of the RECS.

Section 2.1.11 corrected from referencing "2.2.1 B" to Section 2.10 of the RECS.

IMPACT:

None

JUSTIFICATION:

Typographical corrections as a result of updating the outline format of RECS, and omitting the updates of these references in error.

item 8

OBJECTIVE:

Modify the diagram of liquid effluent pathways (ODCM Part II, Figure 2-1) to properly show waste Monitor Tank recirculation pathway and monitoring.

DESCRIPTION OF CHANGES:

Corrected Figure 2-1's Monitor Tank recirculation line drawing, showing R-18 in the recirculation path, accurately depicting configuration in the field.

IMPACT:

None

JUSTIFICATION:

This upgrade accurately depicts current system configuration.

item 9

OBJECTIVE:

Eliminate the 5-mile cow and associated Grass-Cow-Milk pathway.

DESCRIPTION OF CHANGES:

Altered Section 4 of ODCM Part I, and Section 3 of the ODCM Part II, to eliminate the overly conservative (and incorrect) inclusion of doses calculated from the 5-mile cow location, due to the historical absence of said cow.

Sections affected:

ODCM Part I

Page 4-4 (Bases), 3rd paragraph, identifying the pathway as one of the pathways evaluated per NUREG 0133, but adding (parenthetically) that this pathway is NOT applicable at Indian Point

ODCM Part II

- 3.3.4.2 Reworded to eliminate the pathway.
- 3.3.4.3 Changed "controlling location" to "nearest resident" in the descriptions of W and w in the equations.
- 3.3.4.4 Removed DS and Ri(C). Simplified and condensed equations by adding limits to definition of DN.
- 3.3.4.5c Grass-Cow-Milk Pathway eliminated. The Vegetation Pathway was changed from sub-section d to c, with sub-section d eliminated.
- 3.5.4 Last sentence added to state that no real pathway exists at Indian Point.
- 3.5.6d/e Both sub-sections d and e were eliminated (15th percentile dispersion factor correction factors).

Tables 3-12a-d Eliminated, with 3-13 renamed to 3-12.

Appendix 3-A 5 mile location parameters on page 1 deleted, and combined pages 7-9 of previous revision into one page (7) in new revision, omitting references to the secondary receptor.

item 9 (continued)

IMPACT:

Calculated doses at the site boundary and nearest resident are unaffected, however, all dose calculations at the 5-mile cow location will be discontinued. The infant thyroid dose will no longer become critical (at the secondary receptor) whenever there is a minimal release of airborne iodine.

JUSTIFICATION:

The land use census and the REMP ensure there is no change to the bases for selection of applicable pathways. Offsite dose will still be calculated as directed in governing documents: NUREG 0133 and Reg Guide 1.109. Section 5.3 of the NUREG covers 10CFR50 compliance and states "The pathway values used for calculating dose contributions shall be consistent with the results of the land use census". Since 1985, the land use census has identified that no animal producing milk for human consumption exists within the prescribed 5-mile area and that this pathway does not exist for Indian Point.

The recent trend to discontinue grossly conservative reporting of dose (in favor of accurate, defensible quantification) will be better demonstrated as a result of this change. It is also significant that false effluent dose reporting from IP3 be discontinued in favor of using the NUREG and Reg Guide models as they were intended. This upgrade will provide better long-term trending for later comparison to our historical performance, as well as that of other plants. Independent industry experts have suggested this upgrade in order to approach a more universal industry standard.

item 10

OBJECTIVE:

Update the airborne effluent waste stream diagram to accurately depict the relationship between liquid releases and the monitor tank vent pathway.

DESCRIPTION OF CHANGES:

Updated Figure 3-1 of ODCM Part II similarly to Figure 2-1 (ODCM Part II), showing the liquid recirculation pathway and the position of R-18, as well as the airborne vent points.

IMPACT:

None

JUSTIFICATION:

This update accurately depicts field configuration.

item 11

OBJECTIVE:

Add identification of specific release pathways after a Primary to Secondary Leak event to the ODCM, Part II (ACTS 00-49215).

DESCRIPTION OF CHANGES:

Added a source document (Reference 4 of the ODCM) for the development of Iodine partition factors to Section 3.1.14. Added specific release points of interest to 3.1.19, identified as a result of the Indian Point II leak in February 2000. Removed the suggested partition factor of 0.05 in Section 3.1.18 in favor of specifying all partition factors in a lower tier document (RE-CS-039, Airborne Radioactive Effluents).

IMPACT:

The specific release points and mitigation criteria were added to the ODCM to help ensure lower tier documents and staff training effectively controls releases specific to primary to secondary leaks. Chemistry Department lower tier documents were updated as follows:

RE-CS-039 (Airborne Radioactive Effluents) was updated to specifically identify release points and sampling methods for quantification.

RE-CCI-039 (Reactor Plant Startup, Shutdown, and Casualties) was updated to direct watchstanders to sample affected systems during the event, for later quantification with appropriate procedures.

JUSTIFICATION:

These changes ensure all releases are quantified and evaluated in a timely manner in the event of a Primary to Secondary Leak. They do not alter existing controls on effluents, but merely ensure they are applied to release points specific to this condition.

Process Control Program, Revision 6
Effective Date: March 8, 2000

This report summarizes the changes incorporated into Revision 6 of the Solid Radioactive Waste Process Control program (PCP). Each change is listed with a justification for the change and its impact on the process control program. When the impact is described as "None" it is to be interpreted as having no impact on the process control program or compliance with regulatory requirements.

Process Control Program Revision 6 Justification Package

1. a. Description
Deleted the definition for "density correction" from section 5, Definitions.
- b. Justification
This term is not used in this document.
- c. Impact
None.

2. a. Description
Updated the reference to the applicable QA procedure in section 9.4, Quality Control for sampling and Classification.
- b. Justification
The requirements of Quality Assurance Procedure 18.1 have been incorporated into QA-AD-03.
- c. Impact
None.

3. a. Description
Revised Section 5 and Section 9 to refer to the applicable section of 10 CFR 20.
- b. Justification
Steps 5.1.21 and 9.4.2 incorrectly referred to Appendix F of 10 CFR 20. The Correct reference is Appendix G of 10 CFR 20.
- c. Impact
None.

Process Control Program, Revision 7
Effective Date: September 18, 2000

This report summarizes the changes incorporated into Revision 7 of the Solid Radioactive Waste Process Control program (PCP). Each change is listed with a justification for the change and its impact on the process control program. When the impact is described as "None" it is to be interpreted as having no impact on the process control program or compliance with regulatory requirements.

Process Control Program Revision 7 Justification Package

1.
 - a. Description
Added Appendix B of Technical Specifications to the list of Commitment documents.
 - b. Justification
This Change does not add or delete any requirements.
 - c. Impact
None.

2.
 - a. Description
Included updated references to the ITS throughout the PCP.
 - b. Justification
This addition will ensure the accuracy of references during the plant's transition to use of ITS.
 - c. Impact
None.

ATTACHMENT II TO IPN-01-033

OFFSITE DOSE CALCULATION MANUAL, REVISION 13

**Entergy Nuclear Operations, Inc.
Indian Point 3 Nuclear Power Plant
Docket No. 50-286**

CONTROLLED

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TITLE: OFFSITE DOSE CALCULATION MANUAL REV. 13

INFORMATION ONLY

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INDIAN POINT 3
OFFSITE DOSE CALCULATION MANUAL

Revision 13

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1.0 DEFINITIONS1.1 ACTION

That part of a Control that prescribes remedial measures required under designated conditions.

1.2 CHANNEL CALIBRATION

Adjustment of channel output such that it responds, with acceptable range and accuracy, to known values of the parameter which the channel measures. Calibration shall encompass the entire channel, including alarm or trip, and shall be deemed to include the channel functional test.

1.3 CHANNEL CHECK

A qualitative determination of acceptable operability by observation of channel behavior during operation. This determination shall include, where possible, comparison of the channel with other independent channels measuring the same variable.

1.4 CHANNEL FUNCTIONAL TEST

Injection of a simulated signal into the channel to verify that it is operable, including alarm and/or trip initiating action.

1.5 EFFLUENT CONCENTRATION

The EFFLUENT CONCENTRATION is that maximum concentration limit of each radionuclide specified in 10 CFR 20, Table 2 of Appendix B.

1.6 GASEOUS RADWASTE TREATMENT SYSTEM

A GASEOUS RADWASTE TREATMENT SYSTEM is any system designed and installed to reduce radioactive gaseous effluents by collecting primary coolant system offgases from the primary system and providing for delay or holdup for the purpose of reducing the total radioactivity prior to release to the environment.

1.7 LIQUID RADWASTE TREATMENT SYSTEM

A LIQUID RADWASTE TREATMENT SYSTEM is any system designed and installed to reduce radioactive liquid effluents by collecting liquid radwaste and providing for processing capability and/or holdup for the purpose of reducing and monitoring the total radioactivity prior to release to the environment.

1.8 MAXIMUM PERMISSIBLE CONCENTRATION WATER (MPCW)

MPCW is that concentration of a radionuclide equal to 10 times the concentration of a radionuclide specified in 10 CFR 20, Appendix B, Table 2, Column 2.

1.9 MEMBER(S) OF THE PUBLIC

MEMBER(S) OF THE PUBLIC means any individual except when that individual is receiving an occupational dose.

1.10 OCCUPATIONAL DOSE

Occupational dose means the dose received by an individual in the course of employment in which the individual's assigned duties involve exposure to radiation or to radioactive material from licensed and unlicensed sources of radiation, whether in the possession of the licensee or other person. Occupational dose does not include dose received from background radiation, from any medical administration the individual has received, from exposure administered to individuals administered radioactive material and released in accordance with 35.75, from voluntary participation in medical research programs, or as a member of the public.

1.11 OFFSITE DOSE CALCULATION MANUAL (ODCM)

The OFFSITE DOSE CALCULATION MANUAL shall contain the current methodology and parameters used in the calculation of offsite doses resulting from radioactive gaseous and liquid effluents, in the calculation of gaseous and liquid effluent monitoring Alarm/Trip Setpoints, and in the conduct of the Radiological Environmental Monitoring Program. The ODCM shall also contain (1) the Radioactive Effluent Controls and Radiological Environmental Monitoring Programs required by Appendix A Technical Specification 6.8.4 and (2) descriptions of the information that should be included in the Annual Radiological Environmental Operating and Radioactive Effluent Release Reports required by Appendix A Technical Specifications 4.3.2.1 and 4.3.2.2.

1.12 OPERABLE - OPERABILITY

Properly installed in the system and capable of performing the intended functions in the intended manner as verified by testing and tested at the frequency required by the Radiological Effluent Controls. Implicit in this definition shall be the assumption that all necessary attendant controls, electrical power source, cooling or seal water, lubrication or other auxiliary equipment that are required for the system, subsystem, train, component or device to perform its function(s) are also capable of performing their related support function(s).

1.13 PROCESS CONTROL PROGRAM (PCP)

The PROCESS CONTROL PROGRAM shall contain the current formulas, sampling, analyses, tests, and determinations to be made to ensure that the processing and packaging of solid radioactive wastes based on demonstrated processing of actual or simulated wet solid wastes will be accomplished in such a way as to assure compliance with 10 CFR Parts 20, 61 and 71 and Federal and State regulations and other requirements governing the disposal of solid radioactive waste.

- 1.14 PURGE - PURGING
PURGE or PURGING is the controlled process of discharging air or gas from a confinement in such a manner that replacement air or gas is required to purify the confinement.
- 1.15 RATED THERMAL POWER (RTP)
RTP shall be a total reactor core heat transfer rate to the reactor coolant of 3025 Mwt. ("Rated Power" and "Rated Thermal Power" are used interchangeably throughout the Technical Specifications).
- 1.16 SITE BOUNDARY
The SITE BOUNDARY (see Figure 1-1) means that line beyond which the land or property is not owned, leased, or otherwise controlled by either site licensee.
- 1.17 SOURCE CHECK
A SOURCE CHECK shall be the qualitative assessment of channel response when the channel sensor is exposed to a source of increased radioactivity.
- 1.18 THERMAL POWER
THERMAL POWER shall be the total reactor core heat transfer rate to the reactor coolant.
- 1.19 UNRESTRICTED AREA
An UNRESTRICTED AREA (see Figure 1-1) means an area, access to which is neither limited nor controlled by the licensee.
- 1.20 VENTILATION EXHAUST TREATMENT SYSTEM
A VENTILATION EXHAUST TREATMENT SYSTEM is any system designed and installed to reduce gaseous radioiodine or radioactive material in particulate form in effluents by passing ventilation or vent exhaust gases through charcoal absorbers and/or HEPA filters for the purpose of removing iodines or particulates from the gaseous exhaust stream prior to the release to the environment. Such a system is not considered to have any effect on noble gas effluents. Engineered Safety Feature (ESF) atmospheric cleanup systems are not considered to be VENTILATION EXHAUST TREATMENT SYSTEM components.

2/3.0 RADIOLOGICAL EFFLUENT CONTROLS AND SURVEILLANCE REQUIREMENTS2.1 Radioactive Liquid Effluent Monitoring InstrumentationCONTROL:

In accordance with Appendix A Technical Specification 6.8.4.a.1, the radioactive liquid effluent monitoring instrumentation channels shown in Table 2.1-1 shall be OPERABLE with their alarm/trip setpoints set to ensure that the limits of Control 2.3.1 are not exceeded. The alarm/trip setpoints of these channels shall be determined and adjusted in accordance with the methodology and parameters in the OFFSITE DOSE CALCULATION MANUAL (ODCM).

APPLICABILITY: As shown in Table 2.1-1.

ACTION:

- A. With a radioactive liquid effluent monitoring instrumentation channel alarm/trip setpoint less conservative than required by the above Control, immediately suspend the release of radioactive liquid effluents monitored by the affected channel, or declare the channel inoperable, or change the setpoint so it is acceptably conservative.
- B. With less than the minimum number of radioactive liquid effluent monitoring instrumentation channels OPERABLE, take the ACTION shown in Table 2.1-1. Exert best efforts to return the instruments to OPERABLE status within 30 days and if unsuccessful, explain in the next Annual Radioactive Effluent Release Report, pursuant to Reporting Requirement 5.1, why the inoperability was not corrected within this time frame.
- C. Report all deviations in the Annual Radioactive Effluent Release Report.

3.1 SURVEILLANCE REQUIREMENTS:

Each radioactive liquid effluent monitoring instrumentation channel shall be demonstrated OPERABLE by performance of the CHANNEL CHECK, SOURCE CHECK, CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST operations at the frequencies shown in Table 3.1-1.

TABLE 2.1-1

RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION		
INSTRUMENT	MINIMUM CHANNELS OPERABLE*	ACTION
1. GROSS RADIOACTIVITY MONITORS PROVIDING ALARM AND AUTOMATIC TERMINATION OF RELEASE		
a. Liquid Radwaste Effluent Line** (R-18 and R-61)	(1)	1
b. Steam Generator Blowdown Effluent Line (R-19)	(1)	2
2. GROSS BETA OR GAMMA RADIOACTIVITY MONITORS PROVIDING ALARM BUT NOT PROVIDING AUTOMATIC TERMINATION OF RELEASE		
a. Service Water System Effluent Line (R-16A, R-16B, R-23)	(1)	3
3. FLOW RATE MEASUREMENT DEVICES		
a. Liquid Radwaste Effluent Line	(1)	4
b. Steam Generator Blowdown Effluent Line	(1)	4
4. RADIOACTIVITY RECORDERS***		
a. Liquid Radwaste Effluent Line	(1)	1
b. Steam Generator Blowdown Effluent Line	(1)	2
5. TANK LEVEL INDICATING DEVICES****		
a. Refueling Water Storage Tank	(1)	5
b. Primary Water Storage Tank	(1)	5
c. Monitor Tank #31	(1)	5
d. Monitor Tank #32	(1)	5

TABLE 2.1-1 (Continued)

TABLE NOTATION

- * During release by the pathway, channels shall be OPERABLE and in service during such release on a continuous, uninterrupted basis. Except that outages are permitted, within the time frame and limitations of the specified action, for the purpose of maintenance of required tests, checks and calibration.
- ** The condensate polisher regenerative waste release path does not need to be monitored unless a primary to secondary side leak is present.
- *** Required only if alarm/trip set point is based on recorder-controller.
- **** Tanks included in this Control are those outdoor tanks that are not surrounded by liners, dikes, or walls capable of holding the tank contents and do not have tank overflows and surrounding area drains connected to the liquid radwaste treatment system.

TABLE 2.1-1 (Continued)

TABLE NOTATION

- ACTION 1 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases may continue provided that prior to initiating a release:
- a. At least two independent samples are analyzed in accordance with Radiological Effluent Control Surveillance Requirement 3.3.1.A,
 - and
 - b. At least two technically qualified members of the Facility Staff independently verify the release rate calculations and discharge line valving:
- Otherwise, suspend release of radioactive effluents via this pathway.
- ACTION 2 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue provided grab samples are analyzed either for principal gamma emitters or for gross radioactivity (beta or gamma) at a lower limit of detection of at least 5×10^{-7} microcurie/ml (as Cs-137):
- a. At least once per 12 hours when the specific activity of the secondary coolant is greater than 0.01 microcurie/gram DOSE EQUIVALENT I-131.
 - b. At least once per 24 hours when the specific activity of the secondary coolant is less than or equal to 0.01 microcurie/gram DOSE EQUIVALENT I-131.
- ACTION 3 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue provided that, at least once per 12 hours, grab samples are collected and analyzed for gross radioactivity (beta or gamma) at a lower limit of detection of at least 5×10^{-7} microcurie/ml (as Cs-137).
- ACTION 4 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue provided the flow rate is estimated at least once per 4 hours during actual releases. Pump performance curves may be used to estimate flow.
- ACTION 5 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, liquid additions to this tank may continue provided the tank liquid level is estimated during all liquid additions to the tank.

TABLE 3.1-1

RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS				
INSTRUMENT	CHANNEL CHECK	SOURCE CHECK	CHANNEL CALIBRA- TION	CHANNEL FUNC- TIONAL TEST
1. GROSS RADIOACTIVITY MONITORS PROVIDING ALARM AND AUTOMATIC TERMINATION OF RELEASE				
a. Liquid Radwaste Effluent Line (R-18 and R-61****)	D*	D*	24M(3)	Q(1)*
b. Steam Generator Blowdown Effluent Line (R-19)	D*	M*	24M(3)	Q(1)*
2. GROSS BETA OR GAMMA RADIOACTIVITY MONITORS PROVIDING ALARM BUT NOT PROVIDING AUTOMATIC TERMINATION OF RELEASE				
a. Service Water System Effluent Line (R-16A and R-16B)	D*	M*	24M(3)	Q(2)*
b. Service Water System Effluent Line (R-23)	D*	M*	18M(3)	Q(2)*
3. FLOW RATE MEASUREMENT DEVICES				
a. Liquid Radwaste Effluent Line	D(4)	N.A.	18M	Q
b. Steam Generator Blowdown Effluent Line	D(4)	N.A.	24M	N.A.
4. RADIOACTIVITY RECORDERS				
a. Liquid Radwaste Effluent Line	D*	N.A.	24M	Q****
b. Steam Generator Blowdown Effluent Line	D*	N.A.	24M	Q****
5. TANK LEVEL INDICATING DEVICES***				
a. Refueling Water Storage Tank	D**	N.A.	18M	18M
b. Primary Water Storage Tank	D**	N.A.	24M	24M
c. Monitor Tank #31	D**	N.A.	18M	18M
d. Monitor Tank #32	D**	N.A.	18M	18M

TABLE 3.1-1(Continued)TABLE NOTATION

- * When this pathway is utilized for releases, with frequency no more than indicated.
 - ** During liquid additions to the tank.
 - *** Tanks included in this Control are those outdoor tanks that are not surrounded by liners, dikes, or walls capable of holding the tank contents and do not have tank overflows and surrounding area drains connected to the liquid radwaste treatment system.
 - **** Required only if alarm/trip setpoint is based on recorder-controller.
 - ***** The condensate polisher regenerative waste release path does not need to be monitored unless a primary to secondary leak is present.
- (1) The CHANNEL FUNCTIONAL TEST shall also demonstrate that automatic isolation of this pathway and control room alarm annunciation occur if the following condition exists:
 1. Instrument indicates measured levels above the alarm/trip setpoint.
 - (2) The CHANNEL FUNCTIONAL TEST shall also demonstrate that control room alarm annunciation occurs if any of the following conditions exists:
 1. Instrument indicates measured levels above the alarm setpoint.
 2. Instrument controls not set in operate mode.
 - (3) Radioactive calibration standards used for CHANNEL CALIBRATIONS shall be traceable to the National Institute of Standards and Technology (NIST) or an aliquot of calibration solution shall be analyzed with instrumentation which is calibrated with NIST traceable standards. (Standards from suppliers who participate in measurement assurance activities with NIST are acceptable).
 - (4) CHANNEL CHECK shall consist of verifying indication of flow during periods of release. CHANNEL CHECK shall be made at least once per 24 hours on days on which continuous, periodic, or batch releases are made.
- | | | | |
|------|------------------------------|---|-----------|
| D | Daily | M | Monthly |
| N.A. | Not Applicable | Q | Quarterly |
| 18M | At least once per 18 months. | | |
| 24M | At least once per 24 months. | | |

2.2 RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

CONTROL:

In accordance with Appendix A Technical Specification 6.8.4.a.1, the radioactive gaseous effluent monitoring instrumentation channels shown in Table 2.2-1 shall be OPERABLE with their alarm/trip setpoints set to ensure that the limits of Control 2.4.1 are not exceeded. The alarm/trip setpoints of these channels shall be determined and adjusted in accordance with the methodology and parameters in the ODCM.

APPLICABILITY: As shown in Table 2.2-1.

ACTION:

- A. With a radioactive gaseous effluent monitoring instrumentation channel alarm/trip setpoint less conservative than required by the above Control, immediately suspend the release of radioactive gaseous effluents monitored by the affected channel or declare the channel inoperable, or change the setpoint so it is acceptably conservative.
- B. With less than the minimum number of radioactive gaseous effluent monitoring instrumentation channels OPERABLE, take the ACTION shown in Table 2.2-1. Exert best efforts to return the instruments to OPERABLE status within 30 days and, if unsuccessful, explain in the next Annual Radioactive Effluent Release Report, pursuant to Reporting Requirement 5.1, why the inoperability was not corrected within this time frame.
- C. Report all deviations in the Annual Radioactive Effluent Release Report.

3.2 SURVEILLANCE REQUIREMENTS:

Radioactive gaseous effluent monitoring instrumentation channels shall be demonstrated OPERABLE by performance of the CHANNEL CHECK, SOURCE CHECK, CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST operations at the frequencies shown in Table 3.2-1.

TABLE 2.2-1

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION			
INSTRUMENT	MINIMUM CHANNELS OPERABLE	APPLICABILITY	ACTION
1. WASTE GAS HOLDUP SYSTEM			
a. Noble Gas Activity Monitor-Providing Alarm (R-20)	(1)	**	6
2. CONDENSER AIR EJECTOR			
a. Noble Gas Activity Monitor (R-15)	(1)	*	8
3. ENVIRONMENTAL RELEASE POINTS (PLANT VENT***, ADMIN. BUILDING, CONTROLLED AREA, RAD MACHINE SHOP)			
a. Noble Gas Activity Monitor (R-14, R-27, R-46 and R-59)	(1)	*	8, 11
b. Iodine Sampler	(1)	*	10
c. Particulate Sampler	(1)	*	10
d. Flow Rate Monitor	(1)	*	7
e. Sampler Flow Rate Monitor	(1)	*	7
4. CONTAINMENT PURGE SYSTEM			
a. Containment Noble Gas Activity - Monitor (R-12) Providing Alarm and Automatic Termination of Release	(1)	*	9

TABLE NOTATION

- * Channels shall be OPERABLE and in service on a continuous basis during release via this pathway, except that outages are permitted, within the time frame of the specified action for the purpose of maintenance and performance of required tests, checks and calibrations.
- ** During waste gas holdup system operation (treatment for primary system offgases).

TABLE 2.2-1 (Continued)

- *** This will also monitor releases from the Vent Header, Auxiliary Building Vents, Fuel Storage Building Vents, and the Rad Waste Area Vent.
- ACTION 6 - With the number of channels OPERABLE less than that required by the Minimum Channels OPERABLE requirement, the radioactive content of the receiving gas decay tank shall be determined daily to ensure compliance with Appendix B, Technical Specification 1.3.2.
- ACTION 7 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue provided the flow rate is estimated at least once per 4 hours.
- ACTION 8 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue provided grab samples are taken at least once per 12 hours and these samples are analyzed for gross activity within 24 hours.
- ACTION 9 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, immediately suspend PURGING of radioactive effluents via this pathway. During containment building ventilation in the cold shutdown condition, continuous monitoring and automatic termination of release is not required. One continuous monitor at the final release point (plant vent) is sufficient.
- ACTION 10 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via the effected pathway may continue provided samples are continuously collected with auxiliary sampling equipment as required in Table 3.4-1.
- ACTION 11 - With the number of channels OPERABLE less than that required by the Minimum Channels OPERABLE requirement for the plant vent, the contents of the radwaste gas decay tanks may be released to the environment provided that prior to initiating the release:
- a. At least two independent samples of the tank contents are analyzed
 - and,
 - b. At least two technically qualified members of the facilities staff independently verify the release rate calculations and discharge valve lineup.

TABLE 3.2-1

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS					
INSTRUMENT	CHANNEL CHECK	SOURCE CHECK	CHANNEL CALIBRATION	FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
1. WASTE GAS HOLDUP SYSTEM					
a. Noble Gas Activity Monitor - Providing Alarm (R-20)	D	M	24M(2)	Q(1)**	*
2. CONDENSER AIR EJECTOR					
a. Noble Gas Activity Monitor (R-15)	D	M	24M(2)	Q(1)**	*
3. ENVIRONMENTAL RELEASE POINTS (PLANT VENT, ADMIN. BUILDING CONTROLLED AREA. VENT, RAD.MACHINE SHOP VENT)					
a. Noble Gas Activity Monitor (R-14, R-27, R-46, and R-59)	D	M	24M(2)	Q(1)**	*
b. Iodine Sampler	W	N.A.	N.A.	N.A.	*
c. Particulate Sampler	W	N.A.	N.A.	N.A.	*
d. Flow Rate Monitor	D	N.A.	18M	Q	*
e. Sampler Flow Rate Monitor	D	N.A.	18M	N.A.	*
4. CONTAINMENT PURGE SYSTEM					
a. Containment Noble Gas Activity Monitor (R-12) - Providing Alarm and Automatic Termination of Release	D	M	24M(2)	Q(1)**	*

TABLE NOTATION

* Surveillance is required at all times except when monitor has been removed from service in accordance with Table 2.2-1.

** Will not include operation of automatic control functions.

TABLE 3.2-1(Continued)

- (1) The CHANNEL FUNCTIONAL TEST shall also demonstrate that control room alarm annunciation occurs if any of the following conditions exists:
1. Instrument indicates measured levels above the alarm setpoint.
 2. Instrument controls not set in operate mode.
- (2) Radioactive Calibration Standards used for CHANNEL CALIBRATIONS shall be traceable to the National Institute of Standards and Technology (NIST) or an aliquot of calibration gas shall be analyzed with instrumentation which is calibrated with NIST traceable standards (standards from suppliers which participate in measurement assurance activities with NIST are acceptable).
- D Daily
M Monthly
N.A. Not Applicable
Q Quarterly
18M At least once per 18 months.
24M At least once per 24 months.

- 2.3 RADIOACTIVE LIQUID EFFLUENTS
- 2.3.1 LIQUID EFFLUENT CONCENTRATION

CONTROL:

In accordance with Appendix A Technical Specifications 6.8.4.a.2 and 6.8.4.a.3, the concentration of radioactive material released in liquid effluents to UNRESTRICTED AREAS shall be limited to 10 times the EFFLUENT CONCENTRATION values specified in Appendix B, Table 2, Column 2 to 10CFR20 for radionuclides other than dissolved or entrained noble gases. For dissolved or entrained noble gases, the concentration shall be limited to 2×10^{-4} microcuries/ml.

APPLICABILITY: At all times.

ACTION:

With the concentration of radioactive material released in liquid effluents to UNRESTRICTED AREAS exceeding the above limits, immediately restore the concentration to within these limits.

- 3.3.1 SURVEILLANCE REQUIREMENTS:

- A. Radioactive liquid wastes shall be sampled and analyzed according to the sampling and analysis program of Table 3.3.1-1.
- B. The results of the radioactivity analyses shall be used in accordance with the methodology and parameters in the ODCM to assure that the concentrations at the point of release are maintained within the limits of Control 2.3.1.

TABLE 3.3.1-1

RADIOACTIVE LIQUID WASTE SAMPLING AND ANALYSIS PROGRAM				
Liquid Release Type	Sampling Frequency	Minimum Analysis Frequency	Type of Activity Analysis	Lower Limit of Detection (LLD) ^a (uCi/ml)
A. Batch Waste Release Tanks ^b	B Each Batch	B Each Batch	Principal Gamma Emitters ^c	5×10^{-7}
			Mo-99, Ce-144	5×10^{-6}
			I-131	1×10^{-6}
	B One Batch/M	M	Dissolved & Entrained Gases (Gamma Emitters)	1×10^{-5}
	B Each Batch	M Composite ^d	H-3	1×10^{-5}
			Gross Alpha	1×10^{-7}
	B Each Batch	Q Composite ^d	Sr-89, Sr-90	5×10^{-8}
			Fe-55	1×10^{-6}
	B. Continuous Releases ^{e,f}	3/W Composite ^d	W Composite ^d	Principal Gamma Emitters
Mo-99, Ce-144				5×10^{-6}
I-131				1×10^{-6}
M Grab Sample		M	Dissolved & Entrained Gases (Gamma Emitters)	1×10^{-5}
W Composite ^d		M Composite ^d	H-3	1×10^{-5}
			Gross Alpha	1×10^{-7}
W Composite ^d		Q Composite ^d	Sr-89, Sr-90	5×10^{-8}
			Fe-55	1×10^{-6}

TABLE 3.3.1-1 (Continued)TABLE NOTATION

Frequency Notation

B = Batch
W = Weekly
M = Monthly
Q = Quarterly

^aThe LLD is defined, for purposes of these Controls, as the smallest concentration of radioactive material in a sample that will yield a net count, above system background, that will be detected with 95% probability with only 5% probability of falsely concluding that a blank observation represents a "real" signal. Equations used in the calculation of the LLD for a particular measurement system are presented in the ODCM.

It should be recognized that the LLD is defined as an a priori (before the fact) limit representing the capability of a measurement system and not as an a posteriori (after the fact) limit for a particular measurement.

^bA batch release is the discharge of liquid wastes of a discrete volume. Prior to samplings for analyses, each batch shall be isolated, and then thoroughly mixed to assure representative sampling. (Steam Generators may be considered a batch release for reporting purpose during shutdown condition but should be analyzed in accordance with the continuous release section of table.)

^cThe principal gamma emitters for which the LLD Control applies exclusively are the following radionuclides: Mn-54, Fe-59, Co-58, Co-60, Zn-65, Cs-134, Cs-137; and Ce-141. This list does not mean that only these nuclides are to be monitored. Other gamma peaks that are identifiable, together with those of the above nuclides, shall also be analyzed and reported in the Annual Radioactive Effluent Release Report pursuant to Reporting Requirement 5.1.

^dA composite sample is one in which the quantity of liquid sampled is proportional to the quantity of liquid waste discharged and in which the method of sampling employed results in a specimen that is representative of the liquids released.

^eA continuous release is the discharge of liquid wastes of a nondiscrete volume, e.g., from a volume of a system that has an input flow during the continuous release.

^fSteam generator feedwater shall be monitored for principal gamma emitters when steam generator blowdown exceeds 3×10^{-5} uci/ml and releases to the environment. This activity concentration is evaluated in accordance with the methodology presented in the ODCM.

2.3.2 DOSE FROM LIQUID EFFLUENTSCONTROLS:

In accordance with Appendix A Technical Specifications 6.8.4.a.4 and 6.8.4.a.5, the dose or dose commitment to a MEMBER OF THE PUBLIC from radioactive materials in liquid effluents released, from each reactor unit, to UNRESTRICTED AREAS shall be limited:

1. During any calendar quarter to less than or equal to 1.5 mrems to the total body and to less than or equal to 5 mrems to any organ,

and

2. During any calendar year to less than or equal to 3 mrems to the total body and to less than or equal to 10 mrems to any organ.

APPLICABILITY: At all times.

ACTION:

With the calculated dose from the release of radioactive materials in liquid effluents exceeding any of the above limits, in lieu of a Licensee Event Report, prepare and submit to the Commission within 30 days, pursuant to Appendix A Technical Specification 6.9.2, a Special Report that identifies the cause(s) for exceeding the limit(s) and defines the corrective action(s) that have been taken to reduce the release(s) and the proposed corrective actions to be taken to assure that subsequent releases will be in compliance with the above limits. This Special Report shall also include (1) the results of radiological analyses of the drinking water source and (2) the radiological impact on finished drinking water supplies with regard to the requirements of 40 CFR Part 141.*

3.3.2 SURVEILLANCE REQUIREMENTS:

Cumulative dose contributions from liquid effluents for the current calendar quarter and the current calendar year shall be determined in accordance with the methodology and parameters in the ODCM at least once per month.

* Applicable only if drinking water supply is taken from the receiving water body within 3 miles of the plant discharge. In the case of river sited plants this is 3 miles downstream only.

2.3.3 LIQUID RADWASTE TREATMENT SYSTEMCONTROL:

In accordance with Appendix A Technical Specification 6.8.4.a.6, the liquid radwaste treatment system shall be used when the projected doses due to the liquid effluent, from each reactor unit, to UNRESTRICTED AREAS would exceed 0.06 mrem to the total body or 0.2 mrem to any organ in a 31 day period.

APPLICABILITY: At all times.

ACTION:

With radioactive liquid waste being discharged without treatment and in excess of the above limits, in lieu of a Licensee Event Report, prepare and submit to the Commission within 30 days, pursuant to Appendix A Technical Specification 6.9.2, a Special Report that includes the following information:

1. Explanation of why liquid radwaste was being discharged without treatment, identification of any inoperable equipment or subsystems, and the reason for the inoperability,
2. Action(s) taken to restore the inoperable equipment to OPERABLE status, and
3. Summary description of action(s) taken to prevent a recurrence.

3.3.3 SURVEILLANCE REQUIREMENTS:

Doses due to liquid releases from each reactor unit to UNRESTRICTED AREAS shall be projected at least once per month in accordance with the methodology and parameters in the ODCM when the liquid radwaste treatment systems are not being fully utilized.

2.4 RADIOACTIVE GASEOUS EFFLUENTS2.4.1 GASEOUS EFFLUENT DOSE RATESCONTROL:

In accordance with Appendix A Technical Specifications 6.8.4.a.3 and 6.8.4.a.7, the dose rate due to radioactive materials released in gaseous effluents from the site to areas at and beyond the SITE BOUNDARY shall be limited to the following:

1. For noble gases: Less than or equal to a dose rate of 500 mrems/yr to the total body and less than or equal to a dose rate of 3000 mrems/yr to the skin,

and

2. For iodine-131, for tritium, and for all radionuclides in particulate form with half lives greater than 8 days: Less than or equal to a dose rate of 1500 mrems/yr to any organ.

APPLICABILITY: At all times.

ACTION:

With the dose rate(s) exceeding the above limits, immediately restore the release rate to within the above limit(s).

3.4.1 SURVEILLANCE REQUIREMENTS:

- A. The dose rate due to noble gases in gaseous effluents shall be determined to be within the above limits in accordance with the methodology and parameters in the ODCM.
- B. The dose rate due to iodine-131, tritium, and all radionuclides in particulate form with half lives greater than 8 days in gaseous effluents shall be determined to be within the above limits in accordance with the methodology and parameters in the ODCM by obtaining representative samples and performing analyses in accordance with the sampling and analysis program specified in Table 3.4.1-1.

TABLE 3.4.1-1

RADIOACTIVE GASEOUS WASTE SAMPLING AND ANALYSIS PROGRAM				
Gaseous Release Type	Sampling Frequency	Minimum Analysis Frequency	Type of Activity Analysis	Lower Limit of Detection (LLD ^a) (uCi/cc)
A. Waste Gas Storage	B Each Tank Grab Sample	B Each Tank	Principal Noble Gas Gamma Emitters ^b	1x10 ⁻⁴
B. Containment Purge	B Each PURGE Grab Sample	B Each PURGE	Principal Noble Gas Gamma Emitters ^b	1x10 ⁻⁴
C. Condenser Air Ejector	Grab Sample	M	Principal Noble Gas Gamma Emitters ^b	1x10 ⁻⁴
D. Environmental Release Points (Plant Vent, Admin. Bldg. Controlled Area Vent, Radioactive Machine Shop Vent)	M ^c Grab Sample	M ^c	Principal Noble Gas Gamma Emitters ^b	1x10 ⁻⁴
	M ^{d,e} Grab	M ^{d,e}	H-3	1x10 ⁻⁶
	Continuous ^f	W ^g Charcoal Sample	I-131	1x10 ⁻¹²
	Continuous ^f	W ^g Particulate Sample	Principal Gamma Emitters ^b (I-131, Others)	1x10 ⁻¹¹
	Continuous ^f	M Composite Particulate Sample	Gross Alpha	1x10 ⁻¹¹
	Continuous ^f	Q Composite Particulate Sample	Sr-89, Sr-90	1x10 ⁻¹¹
	Continuous ^f	Noble Gas Monitor	Noble Gases Gross Beta or Gamma	1x10 ⁻⁶

TABLE 3.4.1-1 (Continued)TABLE NOTATION

Frequency Notation

B = Batch
W = Weekly
M = Monthly
Q = Quarterly

^aThe LLD is defined, for purposes of these Controls, as the smallest concentration of radioactive material in a sample that will yield a net count, above system background, that will be detected with 95% probability with only 5% probability of falsely concluding that a blank observation represents a "real" signal. Equations used in the calculation of the LLD for a particular measurement system are presented in the ODCM.

It should be recognized that the LLD is defined as an a priori (before the fact) limit representing the capability of a measurement system and not as an a posteriori (after the fact) limit for a particular measurement.

^bThe principal gamma emitters for which the LLD Control applies exclusively are the following radionuclides: Kr-87, Kr-88, Xe-133, Xe-133m, Xe-135, and Xe-138 for gaseous emissions and Mn-54, Fe-59, Co-58, Co-60, Zn-65, Mo-99, Cs-134, Cs-137, Ce-141 and Ce-144 for particulate emissions. This list does not mean that only these nuclides are to be monitored. Other gamma peaks that are identifiable, together with those of the above nuclides, shall also be analyzed and reported in the Annual Radioactive Effluent Release Report pursuant to Reporting Requirement 5.1.

^cThe main plant vent shall be sampled and analyzed following shutdown, startup, or a THERMAL POWER change (within one hour) exceeding 15 percent of RATED THERMAL POWER unless either (1) analysis shows that the DOSE EQUIVALENT I-131 concentration in the primary coolant has not increased more than a factor of 3: or (2) the noble gas activity monitor shows that effluent activity has not increased by more than a factor of 3. Under no circumstances would iodine samples be required more than once per day. Plant vent Tritium grab samples shall be taken at least once per 24 hours when the refueling canal is flooded unless continuous sampling equipment is in use.

^dPlant vent tritium grab samples shall be taken at least once per 24 hours when the refueling canal is flooded unless continuous sampling equipment is in use.

^ePlant vent tritium grab samples shall be taken at least once per 7 days from the ventilation exhaust from the spent fuel pool area, whenever spent fuel is in the spent fuel pool unless continuous sampling equipment is in use.

TABLE 3.4.1-1 (Continued)TABLE NOTATION

^fThe ratio of the sample flow rate to the sampled steam flow rate shall be known for the time period covered by each dose or dose rate calculation made in accordance with Controls 2.4.1, 2.4.2 and 2.4.3.

⁹Samples shall be changed at least once per 7 days and analyses shall be completed within 48 hours after changing, or after removal from sampler. Sampling shall also be performed at least once per 24 hours for at least 7 days following each shutdown, startup or THERMAL POWER change exceeding 15 percent of RATED THERMAL POWER in one hour and analyses shall be completed within 48 hours of changing. When samples collected for 24 hours are analyzed, the corresponding LLDs may be increased by a factor of 10. This requirement does not apply if either (1) analysis shows that the DOSE EQUIVALENT I-131 concentration in the primary coolant has not increased more than a factor of 3; or (2) the noble gas monitor shows that effluent activity has not increased more than a factor of 3.

2.4.2 DOSE FROM NOBLE GASESCONTROLS:

In accordance with Appendix A Technical Specifications 6.8.4.a.5 and 6.8.4.a.8, the air dose due to noble gases released in gaseous effluents, from each reactor unit, to areas at and beyond the SITE BOUNDARY shall be limited to the following:

1. During any calendar quarter: Less than or equal to 5 mrad for gamma radiation and less than or equal to 10 mrad for beta radiation.

and,

2. During any calendar year: Less than or equal to 10 mrad for gamma radiation and less than or equal to 20 mrad for beta radiation.

APPLICABILITY: At all times.

ACTION:

With the calculated air dose from radioactive noble gases in gaseous effluents exceeding any of the above limits, in lieu of a Licensee Event Report, prepare and submit to the Commission within 30 days, pursuant to Appendix A Technical Specification 6.9.2, a Special Report that identifies the cause(s) for exceeding the limit(s) and defines the corrective actions that have been taken to reduce the releases and the proposed corrective actions to be taken to assure that subsequent releases will be in compliance with the above limits.

3.4.2 SURVEILLANCE REQUIREMENTS:

Cumulative dose contributions for the current calendar quarter and current calendar year for noble gases shall be determined in accordance with the ODCM at least once per month.

2.4.3 DOSE FROM IODINE-131, TRITIUM, AND RADIONUCLIDES IN PARTICULATE FORM

CONTROLS:

In accordance with Appendix A Technical Specifications 6.8.4.a.5 and 6.8.4.a.9, the dose to a MEMBER OF THE PUBLIC from iodine-131, tritium and all radionuclides in particulate form with half-lives greater than 8 days in gaseous effluents released, from each reactor unit, to areas at and beyond the SITE BOUNDARY shall be limited to the following:

1. During any calendar quarter: Less than or equal to 7.5 mrems to any organ

and,

2. During any calendar year: Less than or equal to 15 mrems to any organ.

APPLICABILITY: At all times.

ACTION:

With the calculated dose from the release of iodine-131, tritium, and radionuclides in particulate form with half lives greater than 8 days, in gaseous effluents exceeding any of the above limits, in lieu of a Licensee Event Report, prepare and submit to the Commission within 30 days, pursuant to Appendix A Technical Specification 6.9.2, a Special Report that identifies the cause(s) for exceeding the limit and defines the corrective actions that have been taken to reduce the releases and the proposed corrective actions to be taken to assure that subsequent releases will be in compliance with the above limits.

3.4.3 SURVEILLANCE REQUIREMENTS:

Cumulative dose contributions for the current calendar quarter and current calendar year for iodine-131, tritium, and radionuclides in particulate form with half lives greater than 8 days shall be determined in accordance with the methodology and parameters in the ODCM at least once per month.

2.4.4 GASEOUS RADWASTE TREATMENT SYSTEMCONTROL:

In accordance with Appendix A Technical Specification 6.8.4.a.6, the appropriate GASEOUS RADWASTE TREATMENT SYSTEM and the appropriate VENTILATION EXHAUST TREATMENT SYSTEM shall be used to reduce radioactive materials in gaseous waste prior to their discharge when the projected gaseous effluent air doses due to gaseous effluent releases, from each reactor unit, to areas at and beyond the SITE BOUNDARY would exceed 0.2 mrad for gamma radiation and 0.4 mrad for beta radiation in a 31 day period. The VENTILATION EXHAUST TREATMENT SYSTEM shall be used to reduce radioactive materials in gaseous waste prior to their discharge when the projected doses due to gaseous effluent releases, from each reactor unit, to areas at and beyond the SITE BOUNDARY would exceed 0.3 mrem to any organ of a MEMBER OF THE PUBLIC in a 31 day period.

APPLICABILITY: At all times.

ACTION:

With gaseous waste being discharged without treatment and in excess of the above limits, in lieu of a Licensee Event Report, prepare and submit to the Commission within 30 days, pursuant to Appendix A Technical Specification 6.9.2, a Special Report that includes the following information:

1. Explanation of why gaseous radwaste was being discharged without treatment, identification of any inoperable equipment or subsystems, and the reason for the inoperability,
2. Action(s) taken to restore the inoperable equipment to OPERABLE status,

and
3. Summary description of action(s) taken to prevent a recurrence.

3.4.4 SURVEILLANCE REQUIREMENTS:

Doses due to gaseous releases from each reactor unit to areas at and beyond the SITE BOUNDARY shall be projected at least once per month in accordance with the methodology and parameters in the ODCM when the GASEOUS RADWASTE TREATMENT SYSTEMS are not being fully utilized.

2.5/3.5 SOLID RADIOACTIVE WASTE
CONTROLS AND SURVEILLANCE REQUIREMENTS:

These sections are contained in the PCP.

2.6 TOTAL DOSE

CONTROL:

In accordance with Appendix A Technical Specification 6.8.4.a.10, limit the annual (calendar year) dose or dose commitment to any MEMBER OF THE PUBLIC due to releases of radioactivity and to direct radiation from uranium fuel cycle sources to less than or equal to 25 mrems to the total body or any organ, except the thyroid, which shall be limited to less than or equal to 75 mrems.

APPLICABILITY: At all times.

ACTION:

- A. With calculated doses from the release of radioactive materials in liquid or gaseous effluents exceeding twice the limits of Control 2.3.2.A, 2.4.2.A or 2.4.3.A, calculations should be made, including direct radiation contributions from the reactor units and from outside storage tanks, to determine whether the above limits have been exceeded.
- B. If such is the case, in lieu of a Licensee Event Report, prepare and submit to the Commission within 30 days, pursuant to Appendix A Technical Specification 6.9.2, a Special Report that defines the corrective action to be taken to reduce subsequent releases to prevent recurrence of exceeding the above limits and includes the schedule for achieving conformance with the above limits. This Special Report, as defined in 10 CFR Part 20.2203(a)(4), shall include an analysis that estimates the radiation exposure (dose) to a MEMBER OF THE PUBLIC from uranium fuel cycle sources, including all effluent pathways and direct radiation, for the calendar year that includes the release(s) covered by this report. It shall also describe levels of radiation and concentrations of radioactive material involved, and the cause of the exposure levels or concentrations. If the estimated dose(s) exceeds the above limits and if the release condition resulting in violation of 40 CFR Part 190 has not already been corrected, the Special Report shall include a request for a variance in accordance with the provisions of 40 CFR Part 190. Submittal of the report within 30 days is considered a timely request, and a variance is granted until staff action on the request is complete.

3.6 SURVEILLANCE REQUIREMENTS:

- A. Cumulative dose contributions from liquid and gaseous effluents shall be determined in accordance with Surveillance Requirements 3.3.2, 3.4.2, 3.4.3 and in accordance with the methodology and parameters in the ODCM.
- B. Cumulative dose contributions from direct radiation from the reactor units and from radwaste storage tanks shall be determined in accordance with the methodology and parameters in the ODCM. This requirement is applicable only under conditions set forth in Control 2.6.

2.7

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAMCONTROL:

In accordance with Appendix A Technical Specification 6.8.4.b.1, the Radiological Environmental Monitoring Program shall be conducted as specified in Table 2.7-1.

APPLICABILITY: At all times.

ACTION:

- A. With the Radiological Environmental Monitoring Program not being conducted as specified in Table 2.7-1, in lieu of a Licensee Event Report, prepare and submit to the Commission, in the Annual Radiological Environmental Operating Report required by Reporting Requirement 5.2, a description of the reasons for not conducting the program as required and the plans for preventing a recurrence.
- B. With the level of radioactivity as the result of plant effluents in an environmental sampling medium at a specified location exceeding the reporting levels of Table 2.7-2 when averaged over any calendar quarter, in lieu of a Licensee Event Report, prepare and submit to the Commission within 30 days, pursuant to Appendix A Technical Specification 6.9.2, a Special Report that identifies the cause(s) for exceeding the limit(s) and defines the corrective actions to be taken to reduce radioactive effluents so that the potential annual dose to A MEMBER OF THE PUBLIC is less than the calendar year limits of Controls 2.3.2, 2.4.2, and 2.4.3. When more than one of the radionuclides in Table 2.7-2 are detected in the sampling medium, this report shall be submitted if:

$$\frac{\text{concentration (1)}}{\text{reporting level (1)}} + \frac{\text{concentration (2)}}{\text{reporting level (2)}} + \dots \geq 1.0$$

When radionuclides other than those in Table 2.7-2 are detected and are the result of plant effluents, this report shall be submitted if the potential annual dose to A MEMBER OF THE PUBLIC is equal to or greater than the calendar year limits of Controls 2.3.2, 2.4.2, and 2.4.3. This report is not required if the measured level of radioactivity was not the result of plant effluents; however, in such an event, the condition shall be reported and described in the Annual Radiological Environmental Operating Report.

- C. With milk or fresh leafy vegetable samples unavailable from one or more of the sample locations required by Table 2.7-1, identify locations for obtaining replacement samples and add them to the Radiological Environmental Monitoring Program within 30 days. The specific locations from which samples were unavailable may then be deleted from the monitoring program. In lieu of a Licensee Event Report and pursuant to Reporting Requirement 5.1, identify the cause of the unavailability of samples and identify the new location(s) for obtaining replacement samples in the next Annual Radioactive Effluent Release Report and also include in the report a revised figure(s) and table for the ODCM reflecting the new location(s).

3.7 SURVEILLANCE REQUIREMENTS:

The radiological environmental monitoring samples shall be collected pursuant to Table 2.7-1 from the specific locations given in the table and figure(s) in the ODCM and the detection capabilities required by Table 3.7-1.

TABLE 2.7-1

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM			
Exposure Pathway and/or Sample	Number of Representative Samples and Sample Locations ^a	Sampling and Collection Frequency	Type and Frequency of Analysis
1. Direct Radiation ^b	<p>40 routine monitoring stations (DR1-DR40) with two or more dosimeters for measuring and recording integrated dose continuously placed as follows:</p> <p>an inner ring of stations, one in each meteorological sector in the general area of the site boundary (DR1-DR16)</p> <p>an outer ring of stations, one in each meteorological sector in the 6 to 8 km range from the site (DR17-DR32)</p> <p>the balance of the stations (DR33-DR40) to be placed in special interest areas and in one area to serve as a control station.</p>	Quarterly	Gamma dose quarterly

TABLE 2.7-1 (Continued)

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM			
Exposure Pathway and/or Sample	Number of Representative Samples and Sample Locations ^a	Sampling and Collection Frequency	Type and Frequency of Analysis
2. Airborne Radioiodine and Particulates	<p>Samples from 5 locations (A1-A5):</p> <p>3 samples (A1-A3) from close to the 3 site boundary locations in different sectors, of the highest calculated annual average ground level D/Q.</p> <p>1 sample (A4) from the vicinity of a community having the highest calculated annual average ground level D/Q.</p> <p>1 sample (A5) from a control location as for example 15-30 km distant and in the least prevalent wind direction.</p>	<p>Continuous sampler operation with collection weekly, or more frequently if required by dust loading</p>	<p><u>Radioiodine Canister:</u></p> <p>I-131 analysis weekly.</p> <p><u>Particulate Sampler:</u></p> <p>Gross beta radioactivity analysis following filter change;^d</p> <p>Gamma isotopic analysis^e of composite (by location) quarterly</p>
3. Waterborne			
a. Surface	<p>1 sample upstream^f (Wa1)</p> <p>1 sample downstream (Wa2)</p>	<p>Composite sample over 1 month period^g</p>	<p>Gamma isotopic analysis^e monthly. Composite for tritium analysis quarterly.</p>

TABLE 2.7-1 (Continued)

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM			
Exposure Pathway and/or Sample	Number of Representative Samples and Sample Locations ^a	Sampling and Collection Frequency	Type and Frequency of Analysis
3. Waterborne			
b. Drinking	1 sample (Wb1) of the nearest surface drinking supply	Grab monthly	Gross beta and gamma isotopic analysis monthly. Composite for tritium analysis quarterly.
c. Sediment from Shoreline	2 samples (Wc1-Wc2) 1 sample (Wc1) from downstream area with existing or potential recreational value. 1 control sample (Wc2) from an upstream area.	2 annually at least 90 days apart	Gamma isotopic analysis ^a
4. Ingestion			
a. Milk	Samples from milking animals in 3 locations (Ia1-Ia3) within 5 km distance having the highest dose potential. If there are none, then 1 sample from milking animals in each of 3 areas (Ia1-Ia3) between 5 to 8 km distant if available where doses are calculated to be greater than 1 mrem per yr ^h . 1 sample from milking animals at a control location (Ia4), 15-30 km distant and in the least prevalent wind direction.	Semimonthly when animals are on pasture; monthly at other times. Con- currently with indicator locations.	Gamma isotopic ^a and I-131 analysis semimonthly when animals are on pasture; monthly at other times.

TABLE 2.7-1 (Continued)

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM			
Exposure Pathway and/or Sample	Number of Representative Samples and Sample Locations ^a	Sampling and Collection Frequency	Type and Frequency of Analysis
4. Ingestion			
b. Fish and Invertebrates	<p>2 samples (Ib1, Ib2)</p> <p>1 sample (Ib1) of each of 2 species commercially and/or recreationally important species of fish or invertebrate in the vicinity of the discharge when available.</p> <p>1 sample (Ib2) of each of 2 commercially and/or recreationally important species (the same species as in Ib1 if available) from an area not influenced by plant discharge.</p>	Sample in season, or semi-annually if they are not seasonal	Gamma isotopic analysis ^e
c. Food Products	<p>Samples of 3 different kinds of broad leaf vegetation (edible or inedible) grown nearest each of two different offsite locations of highest predicted annual average ground level D/Q if milk sampling is not performed (Ic1-Ic2).</p> <p>1 sample of each of the similar broad leaf vegetation grown 15-30 km distant in the least prevalent wind direction if milk sampling is not performed (Ic3).</p>	<p>Monthly when available</p> <p>Monthly when available</p>	<p>Gamma isotopic^e and I-131 analysis</p> <p>Gamma isotopic^e and I-131 analysis</p>

TABLE 2.7-1 (Continued)TABLE NOTATION

^aThe code letters in parenthesis (e.g., DR1, A1, etc.) refer to sample locations as specified in the ODCM. Specific parameters of distance and direction sector from the centerline of one reactor, and additional description where pertinent, shall be provided for each and every sample location in Table 2.7-1 in a table and figure(s) in the ODCM. Refer to NUREG-0133, "Preparation of Radiological Effluent Technical Specifications for Nuclear Power Plant," October 1978, and to Radiological Assessment Branch Technical Position, Revision 1, November 1979. Deviations are permitted from the required sampling schedule if specimens are unobtainable due to hazardous conditions, seasonal unavailability, malfunction of automatic sampling equipment and other legitimate reasons. If specimens are unobtainable due to sampling equipment malfunction, every effort shall be made to complete corrective action prior to the end of the next sampling period. All deviations from the sampling schedule shall be documented in the Annual Radiological Environmental Operating Report pursuant to Reporting Requirement 5.2. It is recognized that, at times, it may not be possible or practicable to continue to obtain samples of the media of choice at the most desired location or time. In these instances suitable alternative media and locations may be chosen for the particular pathway in question and appropriate substitutions made within 30 days in the Radiological Environmental Monitoring Program. In lieu of a Licensee Event Report and pursuant to Reporting Requirement 5.1, identify the cause of the unavailability of samples for that pathway and identify the new location(s) for obtaining replacement samples in the next Annual Radioactive Effluent Release Report and also include in the report a revised figure(s) and table for the ODCM reflecting the new location(s).

^bOne or more instruments, such as a pressurized ion chamber, for measuring and recording dose rate continuously may be used in place of, or in addition to, integrating dosimeters. For the purposes of this table, a thermoluminescent dosimeter (TLD) is considered to be one phosphor; two or more phosphors in a packet are considered as two or more dosimeters. Film badges shall not be used as dosimeters for measuring direct radiation.

^cThe purpose of this sample is to obtain background information. If it is not practical to establish control locations in accordance with the distance and wind direction criteria, other sites that provide valid background data may be substituted.

^dAirborne particulate sample filters shall be analyzed for gross beta radioactivity 24 hours or more after sampling to allow for radon and thoron daughter decay. If gross beta activity in air particulate samples is greater than ten times the yearly mean, of the previous calendar year, of control samples, gamma isotopic analysis shall be performed on the individual samples.

TABLE 2.7-1 (Continued)TABLE NOTATION

^eGamma isotopic analysis means the identification and quantification of gamma emitting radionuclides that may be attributable to the effluents from the facility.

^f"Upstream" sample shall be taken near the intake structures as described in the ODCM. The "downstream sample" shall be taken from the mixing zone at the diffuser to the discharge canal.

^gA composite sample is one in which the quantity (aliquot) of liquid sampled shall be collected at time intervals that are very short (e.g., hourly) relative to the compositing period (e.g., monthly) in order to assure obtaining a representative sample.

^hThe dose shall be calculated for the maximum organ and age group using the methodology and parameters in the ODCM.

TABLE 2.7-2

REPORTING LEVELS FOR RADIOACTIVITY CONCENTRATIONS IN ENVIRONMENTAL SAMPLES					
Reporting Levels					
Analysis	Water (pCi/l)	Airborne Particulate or Gases (pCi/m ³)	Fish (pCi/kg, wet)	Milk (pCi/l)	Food Products (pCi/kg, wet)
H-3	20,000*				
Mn-54	1,000		30,000		
Fe-59	400		10,000		
Co-58	1,000		30,000		
Co-60	300		10,000		
Zn-65	300		20,000		
Zr-Nb-95	400				
I-131	2**	0.9		3	100
Cs-134	30	10	1,000	60	1,000
Cs-137	50	20	2,000	70	2,000
Ba-La-140	200			300	

* For drinking water samples. This is 40 CFR Part 141 value. If no drinking water pathway exists, a value of 30,000 pCi/l may be used.

** If no drinking water pathway exists, a value of 20 pCi/l may be used.

TABLE 3.7-1

DETECTION CAPABILITIES FOR ENVIRONMENTAL SAMPLE ANALYSIS ^a						
LOWER LIMIT OF DETECTION (LLD) ^{b,c}						
Analysis	Water (pCi/ℓ)	Airborne Particu- late or Gases (pCi/m ³)	Fish (pCi/kg, wet)	Milk (pCi/ℓ)	Food Products (pCi/kg, wet)	Sediment (pCi/kg, dry)
gross beta	4	0.01				
H-3	2,000*					
Mn-54	15		130			
Fe-59	30		260			
Co-58, 60	15		130			
Zn-65	30		260			
Zr-Nb-95	15					
I-131	1**	0.07		1	60	
Cs-134	15	0.05	130	15	60	150
Cs-137	18	0.06	150	18	80	180
Ba-La-140	15			15		

TABLE NOTATION

- * If no drinking water pathway exists, a value of 3,000 pCi/ℓ may be used.
- ** If no drinking water pathway exists, a value of 15 pCi/ℓ may be used.

TABLE 3.7-1 (Continued)

^aThis list does not mean that only these nuclides are to be considered. Other peaks that are identifiable, together with those of the above nuclides, shall also be analyzed and reported in the Annual Radiological Environmental Operating Report pursuant to Reporting Requirement 5.2.

^bRequired detection capabilities for thermoluminescent dosimeters used for environmental measurements are given in Regulatory Guide 4.13.

^cThe LLD is defined, for purposes of these Controls as the smallest concentration of radioactive material in a sample that will yield a net count, above system background, that will be detected with 95% probability with only 5% probability of falsely concluding that a blank observation represents a "real" signal. Equations used in the calculation of the LLD for a particular measurement system are presented in the ODCM.

It should be recognized that the LLD is defined as an a priori (before the fact) limit representing the capability of a measurement system and not as an a posteriori (after the fact) limit for a particular measurement. Analyses shall be performed in such a manner that the stated LLDs will be achieved under routine conditions. Occasionally background fluctuations, unavoidable small sample sizes, the presence of interfering nuclides, or other uncontrollable circumstances may render these LLDs unachievable. In such cases, the contributing factors shall be identified and described in the Annual Radiological Environmental Operating Report pursuant to Reporting Requirement 5.2.

2.8 LAND USE CENSUSCONTROL:

In accordance with Appendix A Technical Specification 6.8.4.b.2, conduct a land use census which identifies within a distance of 8 km (5 miles) the location in each of the 16 meteorological sectors of the nearest milk animal, the nearest residence and the nearest garden of greater than 50m² (500 ft²) producing broad leaf vegetation. Broad leaf vegetation sampling of at least three different kinds of vegetation may be performed at the SITE BOUNDARY in each of two different direction sectors with the highest predicted D/Qs in lieu of the garden census. The Controls for broad leaf vegetation sampling in Table 2.7-1.4c shall be followed, including analysis of control samples.

APPLICABILITY: At all times.

ACTION:

- A. With a land use census identifying a location(s) that yields a calculated dose or dose commitment greater than the values currently being calculated in Control 3.4.3, in lieu of a Licensee Event Report, identify the new location(s) in the next Annual Radioactive Effluent Release Report, pursuant to Reporting Requirement 5.1.
- B. With a land use census identifying a location(s) that yields a calculated dose or dose commitment (via the same exposure pathway) two times greater than at a location from which samples are currently being obtained in accordance with Control 2.7, add the new location(s) to the Radiological Environmental Monitoring Program within 30 days. The sampling location(s), excluding the control station location, having the lowest calculated dose or dose commitment(s), via the same exposure pathway, may be deleted from this monitoring program after (October 31) of the year in which this land use census was conducted. In lieu of a Licensee Event Report and pursuant to Reporting Requirement 5.1, identify the new location(s) in the next Annual Radioactive Effluent Release Report and also include in the report a revised figure(s) and table for the ODCM reflecting the new location(s).

3.8 SURVEILLANCE REQUIREMENTS:

The land use census shall be conducted during the growing season at least once per calendar year using that information that will provide the best results, such as by a door-to-door survey, aerial survey or by consulting local agriculture authorities. The results of the land use census shall be included in the Annual Radiological Environmental Operating Report pursuant to Reporting Requirement 5.2.

2.9 INTERLABORATORY COMPARISON PROGRAM

CONTROL:

In accordance with Appendix A Technical Specification 6.8.4.b.3, perform analyses on radioactive materials supplied as part of an Interlaboratory Comparison Program that has been approved by the Commission.

APPLICABILITY: At all times.

ACTION:

With analyses not being performed as required above, report the corrective actions taken to prevent a recurrence to the Commission in the Annual Radiological Environmental Operating Report pursuant to Reporting Requirement 5.2.

3.9 SURVEILLANCE REQUIREMENTS:

A summary of the results obtained as part of the required Interlaboratory Comparison Program shall be included in the Annual Radiological Environmental Operation Report pursuant to Reporting Requirement 5.2.

4.0 BASESRADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION (2/3.1)

The radioactive liquid effluent instrumentation is provided to monitor and control, as applicable, the releases of radioactive materials in liquid effluents during actual or potential releases of liquid effluents. The alarm/trip setpoints for these instruments shall be calculated and adjusted in accordance with the methodology and parameters in the ODCM to ensure that the alarm/trip will occur prior to exceeding 10 times the EFFLUENT CONCENTRATION values specified in Appendix B, Table 2, Column 2 to 10 CFR 20. The OPERABILITY and use of this instrumentation is consistent with the requirements of General Design Criteria 60, 63 and 64 of Appendix A to 10 CFR Part 50. The purpose of tank level indicating devices is to assure the detection and control of leaks that if not controlled could potentially result in the transport of radioactive materials to UNRESTRICTED AREAS.

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION (2/3.2)

The radioactive gaseous effluent instrumentation is provided to monitor and control, as applicable, the releases of radioactive materials in gaseous effluents during actual or potential releases of gaseous effluents. The alarm/trip setpoints for these instruments shall be calculated and adjusted in accordance with the methodology and parameters in the ODCM to ensure that the alarm/trip will occur prior to exceeding the limits of 10 CFR Part 20. The OPERABILITY and use of this instrumentation is consistent with the requirements of General Design Criteria 60, 63 and 64 of Appendix A to 10 CFR Part 50.

LIQUID EFFLUENTS CONCENTRATION (2/3.3.1)

This Control is provided to ensure that the concentration of radioactive materials released in liquid waste effluents to UNRESTRICTED AREAS will be less than 10 times the EFFLUENT CONCENTRATION values specified in Appendix B, Table 2, Column 2 to 10 CFR 20. The Control provides operational flexibility for releasing liquid effluents in concentrations to follow the Section II.A and II.C design objectives of Appendix I to 10 CFR Part 50. This limitation provides reasonable assurance that the levels of radioactive materials in bodies of water in UNRESTRICTED AREAS will result in exposures within (1) the Section II.A design objectives of Appendix I, 10 CFR Part 50, to a MEMBER OF THE PUBLIC and (2) the restrictions authorized by 10 CFR Part 20.1301(e). The concentration limit for the dissolved or entrained noble gases is based upon the assumption that Xe-135 is the controlling radionuclide and its EFFLUENT CONCENTRATION in air (submersion) was converted to an equivalent concentration in water. This control does not affect the requirement to comply with the annual limitations of 10 CFR Part 20.1301(a).

This Control applies to the release of radioactive materials in liquid effluents from all units at the site.

The required detection capabilities for radioactive materials in liquid waste samples are tabulated in terms of the lower limits of detection (LLDs). Detailed discussion of the LLD and other detection limits can be found in Currie, L.A., "Lower Limit of Detection: Definition and Elaboration of a Proposed Position for Radiological Effluent and Environmental Measurements," NUREG/CR-4007 (September 1984), and in the HASL Procedures Manual, HASL-300 (revised annually).

DOSE FROM LIQUID EFFLUENTS (2/3.3.2)

This Control is provided to implement the requirements of Sections II.A, III.A and IV.A of Appendix I, 10 CFR Part 50. The Control statement implements the guides set forth in Section II.A of Appendix I. The Action statements provide the required operating flexibility and at the same time implement the guides set forth in Section IV.A of Appendix I to assure that the releases of radioactive material in liquid effluents will be kept "as low as is reasonably achievable." Also, for fresh water sites with drinking water supplies that can be potentially affected by plant operations, there is reasonable assurance that the operation of the facility will not result in radionuclide concentrations in the finished drinking water that are in excess of the requirements of 40 CFR Part 141. The dose calculation methodology and parameters in the ODCM implement the requirements in Section III.A of Appendix I that conformance with the guides of Appendix I be shown by calculational procedures based on models and data, such that the actual exposure of a MEMBER OF THE PUBLIC through appropriate pathways is unlikely to be substantially underestimated. The equations specified in the ODCM for calculating the doses due to the actual release rates of radioactive materials in liquid effluents are consistent with the methodology provided in Regulatory Guide 1.109, "Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the purpose of Evaluating Compliance with 10 CFR Part 50, Appendix I," Revision 1, October 1977 and Regulatory Guide 1.113, "Estimating Aquatic Dispersion of Effluents from Accidental and Routine Reactor Releases for the Purpose of Implementing Appendix I," April 1977.

This Control applies to the release of liquid effluents from each reactor at the site. For units with shared radwaste treatment systems, the liquid effluents from the shared system are proportioned among the units sharing that system.

LIQUID RADWASTE TREATMENT SYSTEM (2/3.3.3)

The requirement that the appropriate portions of this system be used, when specified, provides assurance that the releases of radioactive materials in liquid effluents will be kept "as low as is reasonably achievable". This Control implements the requirements of 10 CFR Part 50.36a, General Design Criterion 60 of Appendix A to 10 CFR Part 50 and the design objective given in Section II.D of Appendix I to 10 CFR part 50. The specified limits governing the use of appropriate portions of the liquid radwaste treatment system were specified as a suitable fraction of the dose design objectives set forth in Section II.A of Appendix I, 10 CFR Part 50, for liquid effluents.

This Control applies to the release of liquid effluents from each reactor at the site. For units with shared radwaste treatment systems, the liquid effluents from the shared system are proportioned among the units sharing that system.

GASEOUS EFFLUENTS DOSE RATE (2/3.4.1)

This Control provides reasonable assurance that radioactive material discharged in gaseous effluents will not result in the exposure of a MEMBER OF THE PUBLIC in an UNRESTRICTED AREA, either at or beyond the Site Boundary in excess of the design objectives of Appendix I to 10 CFR Part 50. This Control is provided to ensure that gaseous effluents from all units on the site will be appropriately controlled. It provides operational flexibility for releasing gaseous effluents to satisfy the Section II.A and II.C design objectives of Appendix I to 10 CFR Part 50. For MEMBERS OF THE PUBLIC who may at times be within the Site Boundary, the occupancy of that MEMBER OF THE PUBLIC will usually be sufficiently low to compensate for the reduced atmospheric dispersion of gaseous effluents relative to that for the Site Boundary. Examples of calculations for such MEMBERS OF THE PUBLIC, with the appropriate occupancy factors, shall be given in the ODCM. The specified release rate limits restrict, at all times, the corresponding dose rates above background to a MEMBER OF THE PUBLIC at or beyond the Site Boundary to less than or equal to 500 mrem/year to the total body or to less than or equal to 3000 mrem/year to the skin. These release rate limits also restrict, at all times, the corresponding thyroid dose rate above background to a child via the inhalation pathway to less than or equal to 1500 mrem/year. This Control does not affect the requirement to comply with the annual limitations of 10 CFR 20.1301(a).

This Control applies to the release of gaseous effluents from all units at the site.

DOSE FROM NOBLE GASES (2/3.4.2)

This Control is provided to implement the requirements of Sections II.B, III.A and IV.A of Appendix I, 10 CFR Part 50. The Control statements implement the guides set forth in Section II.B of Appendix I. The Action statements provide the required operating flexibility and at the same time implement the guides set forth in Section IV.A of Appendix I to assure that the releases of radioactive material in gaseous effluents will be kept "as low as is reasonably achievable." The Surveillance Requirements implement the requirements in Section III.A of Appendix I that conformance with the guides of Appendix I be shown by calculational procedures based on models and data such that the actual exposure of a MEMBER OF THE PUBLIC through appropriate pathways is unlikely to be substantially underestimated.

The dose calculation methodology and parameters established in the ODCM for calculating the doses due to the actual release rates of radioactive noble gases in gaseous effluents are consistent with the methodology provided in Regulatory Guide 1.109, "Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10 CFR Part 50, Appendix I," Revision 1, October 1977 and Regulatory Guide 1.111, "Methods for Estimating Atmospheric Transport and Dispersion of Gaseous Effluents in Routine Releases from Light-Water Cooled Reactors," Revision 1, July 1977. The ODCM equations provided for determining the air doses at and beyond the SITE BOUNDARY are based upon the historical average atmospheric conditions.

This Control applies to the release of gaseous effluents from each reactor at the site. For units with shared radwaste treatment systems, the gaseous effluents from the shared system are proportioned among the units sharing that system.

DOSE FROM IODINE-131, TRITIUM, AND RADIONUCLIDES IN PARTICULATE FORM
(2/3.4.3)

This Control is provided to implement the requirements of Sections II.C, III.A and IV.A of Appendix I, 10 CFR Part 50. The Controls are the guides set forth in Section II.C of Appendix I. The Action statements provide the required operating flexibility and at the same time implement the guides set forth in Section IV.A of Appendix I to assure that the releases of radioactive materials in gaseous effluents will be kept "as low as is reasonably achievable." The ODCM calculational methods specified in the Surveillance Requirements implement the requirements in Section III.A of Appendix I that conformance with the guides of Appendix I be shown by calculational procedures based on models and data, such that the actual exposure of a MEMBER OF THE PUBLIC through appropriate pathways is unlikely to be substantially underestimated.

The ODCM calculational methodology and parameters for calculating the doses due to the actual release rates of the subject materials are consistent with the methodology provided in Regulatory Guide 1.109, "Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10 CFR Part 50, Appendix I," Revision 1, October 1977 and Regulatory Guide 1.111, "Methods for Estimating Atmospheric Transport and Dispersion of Gaseous Effluents in Routine Releases from Light-Water-Cooled Reactors," Revision 1, July 1977. These equations also provide for determining the actual doses based upon the historical average atmospheric conditions. The release rate Controls for iodine-131, tritium, and radionuclides in particulate form with half lives greater than 8 days are dependent upon the existing radionuclide pathways to man, in the areas at and beyond the SITE BOUNDARY. The pathways that were examined in the development of these calculations were: 1) individual inhalation of airborne radionuclides, 2) deposition of radionuclides onto green leafy vegetation with subsequent consumption by man, 3) deposition onto grassy areas where milk animals and meat producing animals graze with consumption of the milk and meat by man, and 4) deposition on the ground with subsequent exposure of man.

This Control applies to the release of gaseous effluents from each reactor at the site. For units with shared radwaste treatment systems, the gaseous effluents from the shared systems are proportioned among the units sharing that system.

GASEOUS RADWASTE TREATMENT SYSTEM (2/3.4.4)

The requirement that the appropriate portions of these systems be used, when specified, provides reasonable assurance that the release of radioactive materials in gaseous effluents will be kept "as low as is reasonably achievable." This Control implements the requirements of 10 CFR Part 50.36a, General Design Criterion 60 of Appendix A to 10 CFR Part 50, and the design objectives given in Section II.D of Appendix I to 10 CFR Part 50.

The specified limits governing the use of appropriate portions of the systems were specified as a suitable fraction of the dose design objectives set forth in Sections II.B and II.C of Appendix I, 10 CFR Part 50, for gaseous effluents.

This Control applies to the release of gaseous effluents from each reactor at the site. For units with shared radwaste treatment systems, the gaseous effluents from the shared systems are proportioned among the units sharing that system.

TOTAL DOSE (2/3.6)

This Control is provided to meet the dose limitations of 40 CFR Part 190 that have been incorporated into 10 CFR Part 20.1301(d). The Control requires the preparation and submittal of a Special Report whenever the calculated doses due to releases of radioactivity and to radiation from uranium fuel cycle sources exceed 25 mrems to the total body or any organ, except the thyroid, which shall be limited to less than or equal to 75 mrems.

For sites containing up to 4 reactors, it is highly unlikely that the resultant dose to a MEMBER OF THE PUBLIC will exceed the dose limits of 40 CFR Part 190 if the individual reactors remain within twice the dose design objectives of Appendix I, and if direct radiation doses from the reactor units and outside storage tanks are kept small. The Special Report will describe a course of action that should result in the limitation of the annual dose to a MEMBER OF THE PUBLIC to within the 40 CFR Part 190 limits. For the purposes of the Special Report, it may be assumed that the dose commitment to the MEMBER OF THE PUBLIC from other uranium fuel cycle sources is negligible, with the exception that dose contributions from other nuclear fuel cycle facilities at the same site or within a radius of 8 km must be considered. If the dose to any MEMBER OF THE PUBLIC is estimated to exceed the requirements of 40 CFR Part 190, submittal of the Special Report within 30 days with a request for a variance (provided the release conditions resulting in violation of 40 CFR Part 190 have not already been corrected), in accordance with the provisions of 40 CFR Part 190.11 and 10 CFR Part 20.2203(a)(4), is considered to be a timely request and fulfills the requirements of 40 CFR Part 190 until NRC staff action is completed. The variance only relates to the limits of 40 CFR Part 190, and does not apply in any way to the other requirements for dose limitation of 10 CFR Parts 20, as addressed in Controls 2.3.1 and 2.4.1. An individual is not considered a MEMBER OF THE PUBLIC during any period in which he/she is engaged in carrying out any operation that is part of the nuclear fuel cycle.

Demonstration of compliance with the limits of 40 CFR Part 190 or with the design objectives of Appendix I to 10 CFR Part 50 will be considered to demonstrate compliance with the 0.1 rem limit of 10 CFR Part 20.1301.

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM (2/3.7)

The Radiological Environmental Monitoring Program required by this Control provides representative measurements of radiation and of radioactive materials in those exposure pathways and for those radionuclides that lead to the highest potential radiation exposures of MEMBERS OF THE PUBLIC resulting from the station operation.

This monitoring program implements Section IV.B.2 of Appendix I to 10 CFR Part 50 and thereby supplements the Radiological Effluent Monitoring Program by verifying that the measurable concentrations of radioactive materials and levels of radiation are not higher than expected on the basis of the effluent measurements and the modeling of the environmental exposure pathways. Program changes may be initiated based on operational experience.

The required detection capabilities for environmental sample analyses are tabulated in terms of the lower limits of detection (LLDs). The LLDs required by Table 3.7-1 are considered optimum for routine environmental measurements in industrial laboratories. It should be recognized that the LLD is defined as an a priori (before the fact) limit representing the capability of a measurement system and not as an a posteriori (after the fact) limit for a particular measurement.

LAND USE CENSUS (2/3.8)

This Control is provided to ensure that changes in the use of areas at and beyond the SITE BOUNDARY are identified and that modifications to the Radiological Environmental Monitoring Program are made if required by the results of this census. The best information from the door-to-door survey, from aerial survey or from consulting with local agricultural authorities shall be used. This census satisfies the requirements of Section IV.B.3 of Appendix I to 10 CFR Part 50. Restricting the census to gardens of greater than 50 m² provides assurance that significant exposure pathways via leafy vegetables will be identified and monitored since a garden of this size is the minimum required to produce the quantity (26 kg/year) of leafy vegetables assumed in Regulatory Guide 1.109 for consumption by a child. To determine this minimum garden size, the following assumptions were made: 1) 20% of the garden was used for growing broad leaf vegetation (i.e., similar to lettuce and cabbage), and 2) a vegetation yield of 2 kg/m².

INTERLABORATORY COMPARISON PROGRAM (2/3.9)

The requirement for participation in an approved Interlaboratory Comparison Program is provided to ensure that independent checks on the precision and accuracy of the measurements of radioactive material in environmental sample matrices are performed as part of the quality assurance program for environmental monitoring in order to demonstrate that the results are reasonably valid for the purposes of Section IV.B.2 of Appendix I to 10 CFR Part 50.

5.0 REPORTING REQUIREMENTS5.1 ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT

A Radioactive Effluent Release Report covering the operation of the unit during the previous year shall be submitted prior to May 1 of each year. A single submittal may be made for a multiple unit station. The submittal should combine those sections that are common to all units at the station; however, for units with separate radwaste systems, the submittal shall specify the releases of radioactive material from each unit.

The Annual Radioactive Effluent Release Report shall include the following information:

- A summary of the quantities of radioactive liquid and gaseous effluents and solid waste released from the unit as outlined in Regulatory Guide 1.21, "Measuring, Evaluating, and Reporting Radioactivity in Solid Wastes and Releases of Radioactive Materials in Liquid and Gaseous Effluents from Light-Water-Cooled Nuclear Power Plants," Revision 1, June 1974, with data summarized on a quarterly basis following the format of Appendix B thereof or as modified in the REC.
- For solid wastes, the following information for each class of solid waste (as defined by 10 CFR Part 61) shipped offsite during the report period will be presented in tabular form similar to that of Table 3 of Regulatory Guide 1.21.
 - a. Container volume,
 - b. Total curie quantity (specify whether determined by measurement or estimate),
 - c. Principal radionuclides (specify whether determined by measurement or estimate,
 - d. Source of waste and processing employed (e.g., dewatered spent resin, compacted dry waste, evaporator bottoms),
 - e. Type of container (e.g., LSA, Type A, Type B, Large Quantity), and
 - f. Solidification agent or absorbent (e.g., cement, urea formaldehyde).
- An annual summary of hourly meteorological data collected over the previous year. This annual summary may be either in the form of an hour-by-hour listing on magnetic tape of wind speed, wind direction, atmospheric stability, and precipitation (if measured), or in the form of joint frequency distributions of wind speed, wind direction, and atmospheric stability. In lieu of submission with the Radioactive Effluent Release Report, the licensee has the option of retaining this summary of required meteorological data on site in a file that shall be provided to the NRC upon request.
- An assessment of the radiation doses due to the radioactive liquid and gaseous effluents released from the unit or station during the previous calendar year.

- An assessment of the radiation doses from radioactive liquid and gaseous effluents to MEMBERS OF THE PUBLIC due to their activities inside the SITE BOUNDARY during the report period. All assumptions used in making these assessments, i.e., specific activity, exposure time and location, shall be included in the report.

Approximate and conservative approximate methods for determining the meteorological conditions shall be used for determining gaseous pathway doses. The assessment of radiation doses shall be performed in accordance with the methodology and parameters in the OFFSITE DOSE CALCULATION MANUAL (ODCM).

- An assessment of radiation doses to the likely most exposed MEMBER OF THE PUBLIC from reactor releases and other nearby uranium fuel cycle sources, when required by Sections 2.6 and 3.6, including doses from primary effluent pathways and direct radiation, for the previous calendar year to show conformance with 40 CFR Part 190, "Environmental Radiation Protection Standards for Nuclear Power Operation."

Acceptable methods for calculating the dose contribution from liquid and gaseous effluents are given in Regulatory Guide 1.109 Rev. 1, October, 1977.

- A list and description of unplanned releases from the site to UNRESTRICTED AREAS of radioactive materials in gaseous and liquid effluents made during the reporting period.
- Pursuant to Controls 2.1 and 2.2, an explanation as to why the inoperability of liquid or gaseous effluent monitoring instrumentation was not corrected within the time specified.
- Pursuant to Controls 2.1 and 2.2, a discussion of all deviations from the provisions of these Controls.
- Pursuant to Control 2.7 and Table 2.7-1, Notation (a), identify the causes of the unavailability of samples for pathway analysis and identify the new locations for obtaining replacement samples. Include revised figure(s) and table for the ODCM reflecting the new locations.
- Pursuant to Table 3.3.1-1, Notation (c) and Table 3.4.1-1, Notation (b), a discussion of identifiable gamma peaks, including those of nuclides specified in Tables 3.3.1-1 and 3.4.1-1.
- Pursuant to Control 2.8, a listing of new location(s) for dose calculations and/or environmental monitoring identified by the land use census. Include revised figure(s) and table for the ODCM reflecting the new location(s).
- Pursuant to Appendix B Technical Specifications 1.2.1 and 1.3.2, a description of the events leading to liquid holdup tanks or gas storage tanks exceeding the Control limits.
- Pursuant to Appendix B Technical Specification 4.3.3, a discussion of the major changes to radioactive liquid, gaseous, and solid waste treatment systems.
- Pursuant to Appendix B Technical Specifications 4.5.2 and 4.6.2, any changes made during the reporting period to the PROCESS CONTROL PROGRAM (PCP) and to the OFFSITE DOSE CALCULATION MANUAL (ODCM), respectively.

5.2 ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT

An annual Radiological Environmental Operating Report covering the operation of the unit during the previous calendar year shall be submitted prior to May 1 of each year. A single submittal may be made for a multiple unit station.

The Annual Radiological Environmental Operating Report shall include:

- Summaries, interpretations, and an analysis of trends of the results of the Radiological Environmental Monitoring Program for the report period, including a comparison, as appropriate, with preoperational studies, with operational controls, and with previous environmental surveillance reports, and an assessment of the observed impacts of the plant operation on the environment.
- The results of analysis of all radiological environmental samples and of all environmental radiation measurements taken during the period pursuant to the locations specified in the tables and figures in the ODCM, as well as summarized and tabulated results of these analyses and measurements in the format of the table in the Radiological Assessment Branch Technical Position, Revision 1, November 1979. In the event that some individual results are not available for inclusion with the report, the report shall be submitted noting and explaining the reasons for the missing results. The missing data shall be submitted as soon as possible in a supplementary report.
- A summary description of the Radiological Environmental Monitoring Program.
- At least two legible maps covering all sampling locations keyed to a table giving distances and directions from the centerline of one reactor. One map shall cover stations near the site boundary and the second shall include the more distant stations.
- A discussion of the reasons for not conducting the Radiological Environmental Monitoring Program as specified by Control 2.7 and the plans for preventing recurrence.
- Pursuant to Control 2.7, a discussion of environmental sample measurements that exceed the reporting levels of Table 2.7-2 but are not the result of plant effluents.
- Pursuant to Table 2.7-1, Notation (a), a discussion of all deviations from the sampling schedule of Table 2.7-1.
- Pursuant to Table 3.7-1, Notation (c), a discussion of the contributing factors for cases in which the LLD required by Table 3.7-1 was not achievable.
- Pursuant to Table 3.7-1, Notation (a), a discussion of identifiable nuclide peaks, including those of nuclides specified in Table 3.7-1.
- Pursuant to Control 3.8, the results of the land use census.
- Pursuant to Control 2.9, the corrective actions taken to prevent a recurrence if the Interlaboratory Comparison Program is not being performed as required.
- Pursuant to Control 3.9, the results of licensee participation in the Interlaboratory Comparison Program.

5.3 SPECIAL REPORTS

In lieu of a Licensee Event Report (LER), the following special reports must be generated within 30 days:

- Pursuant to Control 2.3.2, identify the cause(s) for exceeding the specified limits for dose or dose commitment to a MEMBER OF THE PUBLIC from the release of radioactive materials in liquid effluents to UNRESTRICTED AREAS. Define the corrective action(s) taken to reduce the releases and the proposed corrective action(s) to be taken to assure subsequent releases will be in compliance with limits. Include the results of radiological analyses of the drinking water source and the radiological impact on finished drinking water supplies with regard to the requirements of 40 CFR Part 141.
- Pursuant to Control 2.3.3, explain why liquid radwaste was discharged without treatment and identify any inoperable liquid radwaste treatment system equipment or subsystems and the reason for the inoperability. Include the action(s) taken to restore the inoperable equipment to OPERABLE status and a summary description of the action(s) taken to prevent a recurrence.
- Pursuant to Control 2.4.2, identify the cause(s) for exceeding the specified limit(s) for the air dose due to radioactive noble gases released in gaseous effluents. Define the corrective actions taken to reduce the releases and define the proposed corrective actions to be taken to assure subsequent releases will be in compliance with limits specified in the Control.
- Pursuant to Control 2.4.3, identify the cause(s) for exceeding the specified limits for the dose to a MEMBER OF THE PUBLIC from the release of iodine-131, tritium, and radionuclides in particulate form with half lives greater than 8 days in gaseous effluents. Define the corrective actions taken to reduce the releases and define the proposed corrective actions to be taken to assure subsequent releases will be in compliance with limits specified in the Control.
- Pursuant to Control 2.4.4, explain why gaseous radwaste was discharged without treatment and identify inoperable gaseous radwaste treatment system equipment or subsystems and the reason for the inoperability. Include the action(s) taken to restore the inoperable equipment to OPERABLE status and a summary description of the action(s) taken to prevent a recurrence.
- Pursuant to Control 2.6 and 10 CFR Part 20.2203(a)(4), define the corrective action to be taken to reduce subsequent releases to prevent recurrence of exceeding the specified total dose limits. Include a schedule for achieving conformance with the limits and describe the course of action that should result in the limitation of the annual dose to a MEMBER OF THE PUBLIC to within the 40 CFR Part 190 limits. Include an analysis that estimates the radiation exposure (dose) to a MEMBER OF THE PUBLIC from uranium fuel cycle sources, including all effluent pathways and direct radiation, for the calendar year that includes the releases covered by this report. Also describe the levels of radiation and the concentrations of radioactive material involved as well as the cause of the exposure levels or concentrations. Include a request, if required by the provisions of the Control, for a variance in accordance with the provisions of 40 CFR Part 190.

- Pursuant to Control 2.7, identify the cause(s) for exceeding the reporting levels of Table 2.7-2 and define the corrective actions to be taken to reduce radioactive effluents so that the potential annual dose to a MEMBER OF THE PUBLIC is less than the calendar year limits of Controls 2.3.2, 2.4.2, and 2.4.3. Report when more than one radionuclide in Table 2.7-2 is detected and

$$\frac{\text{Concentration (1)}}{\text{Reporting Level (1)}} + \frac{\text{Concentration (2)}}{\text{Reporting Level (2)}} + \dots \geq 1.0$$

Report when radionuclides other than those in Table 2.7-2 are detected and are the result of plant effluents and the potential annual dose to a MEMBER OF THE PUBLIC is equal to or greater than the calendar year limits of Controls 2.3.2, 2.4.2, and 2.4.3.