Entergy

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April 30, 2009
JAFP-09-0055

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

Subject: **Entergy Nuclear Operations, Inc.**
James A. FitzPatrick Nuclear Power Plant
Docket No. 50-333
License No. DPR-59

2008 Annual Radioactive Effluent Release Report

Dear Sir or Madam:

Enclosed is the Annual Radioactive Effluent Release Report for the period of January 1, 2008 through December 31, 2008. This report is submitted in accordance with the requirements of the James A. FitzPatrick Nuclear Power Plant Offsite Dose Calculation Manual, Part 1, Radiological Controls, Section 6.2.

This report includes, as an Addendum, an Assessment of the Radiation Doses to the public due to the radioactive liquid and gaseous effluents released during the 2008 calendar year. The format used for the effluent data is outlined in Appendix B of Regulatory Guide 1.21, Revision 1. Distribution is in accordance with Regulatory Guide 10.1, Revision 4.

There are no commitments contained in this letter.

If you have any questions concerning the enclosed report, please contact Crystal A. Boucher, Chemistry Superintendent, at the James A. FitzPatrick Nuclear Power Plant at (315)349-6748.

Very truly yours,

JOSEPH PECHACEK
LICENSING MANAGER - JAF

JP/CAB/jbh

Enclosure: Annual Radioactive Effluent Release Report January 1, 2008 – December 31, 2008

Xc: NRC Resident Inspector
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ENTERGY NUCLEAR OPERATIONS, INC.

JAMES A. FITZPATRICK NUCLEAR POWER PLANT

ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT

JANUARY 1, 2008 - DECEMBER 31, 2008

DOCKET NO.: 50-333

LICENSE NO.: DPR-59

ENTERGY NUCLEAR OPERATIONS, INC.
JAMES A. FITZPATRICK NUCLEAR POWER PLANT
ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY 2008-DECEMBER 2008

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SUPPLEMENTAL INFORMATION

FACILITY: JAFNPP LICENSEE: ENTERGY NUCLEAR OPERATIONS, INC.

1. **Offsite Dose Calculation Manual Part 1 Radiological Controls**

a. Fission and Activation Gases:

(1) The dose rate at or beyond the site boundary due to radioactive materials released from the plant in gaseous effluent shall be limited as follows:

(a) Less than or equal to 500 mrem/year to the whole body and less than or equal to 3000 mrem/year to the skin from noble gases.

(2) The air dose to areas at or beyond the site boundary from noble gases released from the plant in gaseous effluent shall be limited:

(a) During any calendar quarter, to less than or equal to 5 mrad from gamma radiation, and less than or equal to 10 mrad from beta radiation; and,

(b) During any calendar year, to less than or equal to 10 mrad from gamma radiation and less than or equal to 20 mrad from beta radiation.

b. Tritium, Iodines and Particulates, Half Lives > 8 days:

(1) The dose to a member of the public at or beyond the site boundary from Iodine-131, Iodine-133, Tritium, and radionuclides in particulate form with half-lives greater than 8 days released from the plant in gaseous effluent shall be limited:

(a) During any calendar quarter to less than or equal to 7.5 mrem to any organ; and,

(b) During any calendar year to less than or equal to 15 mrem to any organ.

(c) Less than 0.1% of the limits of Specification 3.4.1.c.1.a and 3.4.1.c.1.b as a result of burning contaminated oil.

(2) The dose rate at or beyond the site boundary due to radioactive materials released from the plant in gaseous effluents shall be limited as follows:

(a) Less than or equal to 1500 mrem/year to any organ from Iodine-131, Iodine-133, Tritium and for radioactive materials in particulate form with half-lives greater than 8 days (inhalation pathway only).

SUPPLEMENTAL INFORMATION (continued)

c. Liquid Effluents:

(1) The concentration of radioactive materials released to the unrestricted areas shall not exceed ten times the values specified in 10 CFR 20.1001-20.2402, Appendix B, Table 2, Column 2. For dissolved or entrained noble gases the concentration shall be limited to 2.00E-04 µCi/ml.

(2) The dose to a member of the public from radioactive materials released from the plant in liquid effluents to unrestricted areas shall be limited as follows:

(a) During any calendar quarter, limited to less than or equal to 1.5 mrem to the whole body and to less than or equal to 5 mrem to any organ; and,

(b) During any calendar year, limited to less than or equal to 3 mrem to the whole body and to less than or equal to 10 mrem to any organ.

2. <u>10X Effluent Concentrations</u>

a. Fission and activation gases: (None specified)

b. Iodines: (None specified)

c. Particulates, half-lives >8 days: (None specified)

d. Liquid effluents:

	Quarter 1	Quarter 2	Quarter 3	Quarter 4
(1) Fission and activation products (mixture EC) (µCi/ml)	None	None	---------	---------
(2) Tritium (µCi/ml)	1.00E-02	1.00E-02	1.00E-02	1.00E-02
(3) Dissolved and entrained gases (µCi/ml)	2.00E-04	2.00E-04	2.00E-04	2.00E-04

SUPPLEMENTAL INFORMATION (continued)

3. Average Energy

(None specified)

4. Measurements and Approximations of Total Radioactivity

a. Fission and Activation Gases: Continuous monitor on each release path calibrated to a marinelli grab sample analyzed by gamma spectroscopy; bubbler grab sample analyzed for Tritium.

b. Iodines: Gamma spectral analysis of charcoal cartridge and particulate filter on each release path.

c. Particulates: Gamma spectral analysis of each particulate filter and charcoal cartridge for each release path. A four week per quarter composite of particulate filters for each release path for Strontium-89 and Strontium-90. One week per month particulate filter for each release path for gross alpha.

d. Liquid Effluents: Gamma spectral analysis of each batch discharged, except composite analysis for Strontium-89, Strontium-90, Iron-55, Tritium, and Alpha.

e. Solid Waste: Gamma spectral analysis of a representative sample of each waste shipment. Scaling factors established from off-site composite sample analyses to estimate concentration of non-gamma emitters. Low activity trash shipments, curie content estimated by dose rate measurement and application of appropriate scaling factors.

f. Error Estimation Method: Overall error for sampling and analysis estimated by combining individual errors using error propagation methods. This process is composed of determinate and undeterminate errors.

Determinate - Pump flowrates, volume measurements and analysis collection yields
Undeterminate - Random counting error estimated using accepted statistical calculations

SUPPLEMENTAL INFORMATION (continued)

5. Batch Releases

a. Liquid: Canal	Quarter 1	Quarter 2	Quarter 3	Quarter 4
(1) Number of batch releases:	1.40E+01	1.50E+01	1.00E+01	1.60E+01
(2) Total time period for batch release: (min)	3.55E+02	2.93E+02	3.97E+02	9.00E+02
(3) Maximum time period for batch release: (min)	1.30E+02	1.50E+02	1.14E+02	1.02E+02
(4) Average time period for batch release: (min)	2.55E+01	1.95E+01	3.97E+01	5.63E+01
(5) Minimum time period for batch release: (min)	2.00E+00	1.00E+00	1.00E+00	1.00E+00
(6) Total Activity Released (Ci)	1.14E-04	1.28E-04	9.04E-01	2.90E+00
(7) Total Volume Released (liters)	7.00E+04	1.83E+04	1.20E+05	4.09E+05
b. Liquid: Non-Canal				
(1) Number of batch releases:	1.00E+01	7.00E+00	1.30E+01	3.00E+00
(2) Total time period for batch release: (min)	1.20E+01	7.30E+01	1.14E+03	2.10E+01
(3) Maximum time period for batch release: (min)	2.00E+00	5.20E+01	3.46E+02	1.70E+01
(4) Average time period for batch release: (min)	1.20E+00	1.04E+01	8.79E+01	7.00E+00
(5) Minimum time period for batch release: (min)	1.00E+00	1.00E+00	2.00E+00	2.00E+00
(6) Total Activity Released (Ci)	2.18E-05	6.29E-05	6.20E-04	8.45E-06
(7) Total Volume Released (liters)	5.22E+03	2.71E+04	4.35E+05	7.95E+03

c. Gaseous:

There were no gaseous batch releases for this report period.

SUPPLEMENTAL INFORMATION (continued)

6. Abnormal Releases

a. Liquid:	Quarter 1	Quarter 2	Quarter 3	Quarter 4
(1) Number of releases:	NONE	NONE	NONE	NONE
(2) Total activity released:	NONE	NONE	NONE	NONE
b. Gaseous				
(1) Number of releases:	NONE	NONE	NONE	NONE
(2) Total activity released:	NONE	NONE	NONE	NONE

TABLE 1A
GASEOUS EFFLUENTS--SUMMATION OF ALL RELEASES

	UNIT	QTR 1	QTR 2	QTR 3	QTR 4	EST TOTAL ERROR %
A. FISSION AND ACTIVATION GASES						
1. Total Release	Ci	2.90E+01	9.36E+01	5.33E+01	1.30E+01	≤2.50E+01
2. Average release rate for period	µCi/sec	3.68E+00	1.19E+01	6.70E+00	1.64E+00	
3. Applicable ODCM Limit	%	*	*	*	*	
B. IODINE-131						
1. Total Iodine-131	Ci	2.11E-04	2.05E-04	3.85E-04	1.55E-04	≤2.50E+01
2. Average release rate for period	µCi/sec	2.68E-05	2.60E-05	4.85E-05	1.95E-05	
3. Applicable ODCM Limit	%	*	*	*	*	
C. PARTICULATES						
1. Particulates with half-lives >8 days	Ci	3.69E-05	2.16E-05	1.10E-03	3.99E-05	≤3.60E+01
2. Average release rate for period	µCi/sec	4.96E-06	2.75E-06	1.38E-04	5.02E-06	
3. Applicable ODCM Limit	%	*	*	*	*	
4. Gross alpha radioactivity	Ci	9.31E-07	5.42E-07	5.56E-07	3.16E-07	≤2.50E+01
D. TRITIUM						
1. Total Release	Ci	2.93E+00	2.67E+00	4.13E+00	5.25E+00	≤2.50E+01
2. Average release rate for period	µCi/sec	3.73E-01	3.39E-01	5.19E-01	6.60E-01	
3. Applicable ODCM Limit	%	*	*	*	*	
***E. PERCENT OF APPLICABLE** *ODCM LIMITS*						
FISSION AND ACTIVATION GASES						
1. Quarterly gamma air dose limit	%	8.55E-03	3.83E-02	8.71E-03	6.44E-03	
2. Quarterly beta air dose limit	%	5.15E-04	3.03E-03	1.02E-03	4.59E-04	
3. Yearly gamma air dose limit	%	4.28E-03	1.92E-02	4.36E-03	3.22E-03	
4. Yearly beta air dose limit	%	2.57E-04	1.52E-03	5.09E-04	2.29E-04	
5. Whole body dose rate limit	%	2.22E-03	8.24E-02	4.19E-03	8.35E-03	
6. Skin dose rate limit	%	4.48E-04	1.77E-02	9.82E-04	1.80E-03	
HALOGENS, TRITIUM AND PARTICULATES WITH HALF-LIVES >8 DAYS						
7. Quarterly dose limit (organ)	%	4.00E-02	3.55E-02	7.30E-02	2.37E-02	
8. Yearly dose limit (organ)	%	2.00E-02	1.78E-02	3.65E-02	1.19E-02	
9. Organ dose rate limit	%	1.97E-05	2.25E-05	5.89E-05	1.95E-05	

TABLE 1B
GASEOUS EFFLUENTS--ELEVATED RELEASE

CONTINUOUS MODE

NUCLIDES RELEASED	UNIT	QUARTER 1	QUARTER 2	QUARTER 3	QUARTER 4
1. Fission Gases					
Argon-41	Ci	2.45E+00	1.81E+00	1.36E+00	2.42E+00
Krypton-85m	Ci	9.59E+00	7.67E+00	7.76E+00	1.29E+00
Krypton-87	Ci	----------	8.09E+00	9.19E-02	1.22E+00
Krypton-88	Ci	5.04E+00	9.20E+00	4.73E+00	1.09E+00
Xenon-133	Ci	1.17E+01	2.12E+01	3.10E+01	8.88E-01
Xenon-133m	Ci	----------	1.69E-01	2.06E-01	----------
Xenon-135	Ci	3.15E-02	9.27E+00	5.91E+00	1.46E+00
Xenon-135m	Ci	----------	7.93E+00	5.69E-01	1.08E+00
Xenon-138	Ci	1.73E-01	2.75E+01	1.51E-02	3.59E+00
TOTAL	Ci	2.90E+01	9.28E+01	5.16E+01	1.30E+01
2. Iodines					
Iodine-131	Ci	1.19E-05	5.80E-05	4.34E-05	9.92E-05
Iodine-133	Ci	5.19E-05	9.20E-05	9.27E-05	2.09E-04
Iodine-135	Ci	----------	1.82E-05	1.82E-05	5.16E-05
TOTAL	Ci	6.38E-05	1.68E-04	1.54E-04	3.60E-04
3. Particulates					
Manganese-54	Ci	----------	1.53E-07	3.06E-07	----------
Strontium-89	Ci	1.12E-05	4.87E-06	5.93E-06	2.78E-06
Strontium-90	Ci	1.00E-07	----------	----------	2.85E-08
Barium-140	Ci	----------	1.50E-06	----------	1.09E-06
TOTAL	Ci	1.13E-05	6.52E-06	6.24E-06	3.90E-06
4. Tritium					
Hydrogen-3	Ci	2.11E-01	3.65E-01	8.96E-01	1.09E+00

Note: There were no batch releases for this report period.

TABLE 1C
GASEOUS EFFLUENTS--GROUND LEVEL RELEASES

CONTINUOUS MODE

NUCLIDES RELEASED	UNIT	QUARTER 1	QUARTER 2	QUARTER 3	QUARTER 4
1. Fission Gases					
Xenon-133	Ci	----------	----------	1.36E+00	----------
Xenon-135	Ci	----------	----------	3.03E-01	----------
Xenon-135M	Ci	----------	8.03E-01	----------	----------
TOTAL	Ci	----------	8.03E-01	1.66E+00	----------
2. Iodines					
Iodine-131	Ci	1.99E-04	1.47E-04	3.42E-04	5.60E-05
Iodine-133	Ci	6.31E-04	6.08E-04	1.32E-03	2.39E-04
Iodine-135	Ci	----------	----------	1.60E-04	----------
TOTAL	Ci	8.30E-04	7.55E-04	1.82E-03	2.95E-04
3. Particulates					
Manganese-54	Ci	----------	----------	6.92E-05	1.51E-06
Cobalt-58	Ci	----------	----------	3.68E-06	----------
Cobalt-60	Ci	2.12E-06	----------	2.41E-05	1.01E-06
Zinc-65	Ci	----------	----------	2.86E-04	2.00E-05
Strontium-89	Ci	2.08E-05	1.07E-05	1.93E-05	1.02E-05
Strontium-90	Ci	1.13E-06	1.46E-07	1.48E-06	3.27E-06
Cadmium-115M	Ci	----------	----------	5.82E-04	----------
Barium-140	Ci	1.58E-06	4.27E-06	1.07E-04	----------
Cerium-141	Ci	----------	----------	1.46E-06	----------
TOTAL	Ci	2.56E-05	1.51E-05	1.09E-03	3.60E-05
4. Tritium					
Hydrogen-3	Ci	2.72E+00	2.30E+00	3.23E+00	4.16E+00

Note: There were no batch releases for this report period.

TABLE 2A
LIQUID EFFLUENTS--SUMMATION OF ALL RELEASES

	UNIT	QTR 1	QTR 2	QTR 3	QTR 4	EST TOTAL ERROR %
A. FISSION AND ACTIVATION PRODUCTS						
1. Total Release (not including tritium, gases and alpha)	Ci	NONE	NONE	----------	----------	≤2.50E+01
2. Average diluted concentration during period	µCi/ml	NONE	NONE	----------	----------	
3. Applicable ODCM Limit	%	----------	----------	----------	----------	
B. TRITIUM						
1. Total Release	Ci	1.36E-04	1.91E-04	9.05E-01	2.90E+00	≤2.50E+01
2. Average diluted concentration during period (Note 1)	µCi/ml	2.90E-07	1.39E-06	1.43E-06	2.18E-06	
3. Applicable ODCM Limit	%	* *	*	*		
C. DISSOLVED AND ENTRAINED GASES						
1. Total Release	Ci	NONE	NONE	----------	9.91E-05	≤2.50E+01
2. Average diluted concentration during period	µCi/ml	NONE	NONE	----------	7.37E-11	
3. Applicable ODCM Limit	%	* *	*	*		
D. GROSS ALPHA RADIOACTIVITY						
1. Total Release	Ci	NONE	NONE	----------	----------	≤4.20E+01
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	liters	7.52E+04	4.54E+04	5.55E+05	4.17E+05	
F. VOLUME OF DILUTION WATER USED DURING PERIOD	liters	4.76E+08	4.22E+08	6.20E+08	1.32E+09	
***G. PERCENT OF APPLICABLE** *ODCM LIMITS*						
1. Quarterly Whole Body Dose	%	4.11E-04	2.03E-04	2.33E-04	2.39E-04	
2. Quarterly Organ Dose	%	1.23E-04	6.08E-05	6.99E-05	7.17E-05	
3. Annual Whole Body Dose	%	2.05E-04	1.01E-04	1.16E-04	1.19E-04	
4. Annual Organ Dose	%	6.16E-05	3.04E-05	3.49E-05	3.58E-05	

(Note 1) Concentration includes summation from diluted and undiluted values from Canal and Non-Canal releases (Table 2B).

TABLE 2B
LIQUID EFFLUENTS CANAL

BATCH MODE

NUCLIDES RELEASED	UNIT	QUARTER 1	QUARTER 2	QUARTER 3	QUARTER 4
1. Fission and Activation Products					
NONE	Ci	----------	----------	----------	----------
2. Tritium					
Hydrogen-3	Ci	1.14E-04	1.28E-04	9.04E-01	2.90E+00
3. Dissolved and Entrained Gases					
Xenon--135	Ci	----------	----------	----------	9.91E-05
TOTAL		----------	----------	----------	9.91E-05

Note: There were no continuous mode discharges during this report period.

TABLE 2B (SUPPLEMENT)
LIQUID EFFLUENTS NON-CANAL

BATCH MODE

NUCLIDES RELEASED	UNIT	QUARTER 1	QUARTER 2	QUARTER 3	QUARTER 4
1. Fission and Activation Products					
NONE	Ci	----------	----------	----------	----------
2. Tritium					
Hydrogen-3	Ci	2.18E-05	6.29E-05	6.20E-04	8.45E-06
3. Dissolved and Entrained Gases					
NONE	Ci	----------	----------	----------	----------

Note: There were no continuous mode discharges during this report period.

TABLE 3A
SOLID WASTE AND IRRADIATED FUEL SHIPMENTS

A. SOLID WASTE SHIPPED OFFSITE FOR BURIAL OR DISPOSAL (NOT IRRADIATED FUEL)

1. Type of Waste	Unit	Class A	Class B	Class C	Est. Total Error %
a. Spent resins, filter sludges	m^3	0.00E+00	0.00E+00	0.00E+00	0.00E+00
evaporator bottoms, etc.	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
b. Dry compressible waste,	m^3	0.00E+00	0.00E+00	0.00E+00	0.00E+00
contaminated equipment, etc.	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
c. Irradiated components,	m^3	0.00E+00	0.00E+00	3.25E+00	1.00E+01
control rods, etc.	Ci	0.00E+00	0.00E+00	2.18E+04	1.00E+01
d. Other: Dry compressible	m^3	7.58E+02	1.60E+01	3.41E+00	1.00E+01
waste, contaminated equipment,	Ci	7.88E-01	1.16E+03	2.56E+03	1.00E+01
spent resins for volume reduction.					

2. Estimate of Major Nuclide Composition (by type of waste)

a. Spent resins, filter sludges, evaporator bottoms, etc.

NONE

b. Dry compressible waste, contaminated equipment, etc.

NONE

c. Irradiated components, control rods, etc.

Isotope	Percent	Curies		Isotope	Percent	Curies	
Cobalt-58	1.32E-02	2.88E+00	E	Cobalt-60	5.00E+01	1.09E+04	E
Iron-55	4.29E+01	9.35E+03	E	Manganese-54	7.24E-01	1.58E+02	E
Nickel-63	6.24E+00	1.36E+03	E	Nickel-59	3.29E-02	7.17E+00	E
Tantalum-182	6.59E-02	1.44E+01	E				

d. Other: Dry compressible waste, contaminated equipment, spent resins for volume reduction.

Isotope	Percent	Curies		Isotope	Percent	Curies	
Cerium-144	1.14E-02	4.25E-01	E	Cobalt-58	2.92E-01	1.09E+01	E
Cobalt-60	9.06E+00	3.38E+02	E	Cesium-134	1.32E-01	4.91E+00	E
Cesium-137	3.25E-01	1.21E+01	E	Iron-55	7.43E+01	2.77E+03	E
Iron-59	2.59E-01	9.66E+00	E	Manganese-54	7.77E+00	2.90E+02	E
Nickel-63	5.50E-01	2.05E+01	E	Strontium-90	1.27E-01	4.75E+00	E
Zinc-65	6.95E+00	2.59E+02	E	Chromium-51	1.69E-01	6.31E+00	E
Niobium-95	1.47E-02	5.48E-01	E	Antimony-124	5.60E-02	2.09E+00	E
Antimony-125	1.90E-02	7.08E-01	E				

(E- Estimated M- Measured)

Percentage of nuclides and total activities are based on a combination of direct measurements and scaling for non-gamma emitting nuclides.

TABLE 3A (continued)
SOLID WASTE AND IRRADIATED FUEL SHIPMENTS

3. Solid Waste Disposition

No. of Shipments	Mode of Transportation	Destination
12	Truck	* Energy Solutions Oak Ridge, TN
2	Truck	Energy Solutions Barnwell, SC
2	Truck	*Energy Solutions Kingston, TN
5	Truck	* Studsvik Erwin, TN

*- Volume Reduction Facility

B. IRRADIATED FUEL SHIPMENTS (Disposition)

No. of Shipments	Mode of Transportation	Destination
NONE	----------	----------

TABLE 3B
SOLID WASTE AND IRRADIATED FUEL SHIPMENTS

A. NRC CLASS A

SOURCE OF WASTE	PROCESSING EMPLOYED	CONTAINER VOLUME	TYPE OF CONTAINER	NUMBER OF CONTAINERS
Dry compressible Waste (DAW), Contaminated Equipment, etc.	Non-compacted	1280 ft^3	STC	16
Dry compressible Waste (DAW), Contaminated Equipment, etc.	Non-compacted	49 ft^3	STC	1
Dry compressible Waste(DAW), Contaminated Equipment, etc.	Non-compacted	96 ft^3	STC	64
Dry compressible Waste(DAW), Contaminated Equipment, etc.	Non-compacted	108 ft^3	STC	1

B. NRC CLASS B

Spent Resins, Filter Sludges, evaporator Bottoms, etc.	Air Drying Non-compacted	205.8 ft^3	HIC	1
Spent Resins, Filter Sludges, evaporator Bottoms, etc.	Air Drying Non-compacted	120.3 ft^3	HIC	4

C. NRC CLASS C

Irradiated Hardware	Non-compacted	57.4 ft^3	HIC	2

HIC- High Integrity Container
STC- Strong Tight Container

ATTACHMENT 1

CHANGES TO THE OFFSITE DOSE CALCULATION MANUAL (ODCM)

In accordance with the James A. FitzPatrick Nuclear Power Plant Offsite Dose Calculation Manual (ODCM), Part 1 Radiological Controls (REC) Section 6.2.3, changes made to the Offsite Dose Calculation Manual (ODCM) during the reporting period shall be included in the Annual Radioactive Effluent Release Report.

Revision 19 of the ODCM was approved by the Onsite Safety Review Committee on August 30, 2007 at Meeting Number JAF-2007-011 and became effective on April 3, 2008. This revision does not reduce the accuracy or reliability of any dose calculations or setpoint determinations. Listed below is a brief summary of changes incorporated in this revision. Attached to this report is a revised copy of the ODCM.

The following changes were made as the result of a GAP Analysis performed between NUREG-1302 and the ODCM, Part I.

Rev 10

1. Through Part I, the format for terms listed in Section 1.3, Definitions was standardized to capitalize the first letter of each word when used in text in Part I. This change does not affect the accuracy of the ODCM.

2. Various minor editorial changes which do not change the intent of the content or requirements of the ODCM.

3. Part I, Page 2, Sec. 1.2 — Updated the Revision History of the ODCM. This change does not affect the accuracy of the ODCM.

4. Part I, Page 6, Sec. 1.3.S — The Reference to 10CRF20.3(a)(17) was deleted as this is a reference to the previous revision of 10CFR20. The correct reference to the current 10CFR 20 is retained in this section. This change improves the accuracy of the ODCM.

5. Part I, Page 17, Sec. 2.3.3 — The word "specification" was used in place of the wording "Limiting Conditions for Operation". This change was made to be consistent with working used in NUREG-1302.

6. Part I, Page 25 & 26, Sec. 3.1.3 — Table 3.1-3 lists the specific operability requirements for gaseous effluent pathway (stack and building vents) flow instrumentation and associated monitor flow rate instrumentation. Previous to this revision, operability requirements for flow instrumentation were contained in applicable plant procedures. Because the ODCM serves as a program document, the requirements were added to the ODCM to ensure that flow instrumentation operability requirements were identified. This change improves the accuracy of the ODCM.

ATTACHMENT 1 (CONTINUED)

7.	Part I Page 28 Sec. 3.2.3	The number 500 mrem was corrected to 1500 mrem. This was a typographical error. This change makes the ODCM consistent with NUREG-1302.
8.	Part I Page 34 Sec. 3.3.3	The word "specification" was used in place of the wording "Limiting Conditions for Operation". This change was made to be consistent with wording used in NUREG-1302.
9.	Part I Page 35 Sec. 3.4.1.a	Added the words "with half-lives greater than 8 days" to further define the type of particulate material in gaseous effluents. This change increases the accuracy of the ODCM and is consistent with the wording in NUREG-1302.
10.	Part I Page 36 Sec. 3.4.2.a.	Added the words "with half-lives greater than 8 days" to further define the type of particulate material in gaseous effluents. This change increases the accuracy of the ODCM and is consistent with the wording in NUREG-1302.
11.	Part I Page 36 Sec. 3.4.2.b.	Added the words "with half-lives greater than 8 days" to further define the type of particulate material in gaseous effluents. This change increases the accuracy of the ODCM and is consistent with the wording in NUREG-1302.
12.	Part I Page 36 Sec. 3.4.3	The wording "Limiting Condition of Operation" was replaced with the word "specification". This change was made to be consistent with wording used in NUREG-1302.
13.	Part I Page 39 Sec.3.6.1.a	Last line removed the word "not". The word "not" was a typographical error and was deleted. This change increases the accuracy of the ODCM and is consistent with the wording in NUREG-1302.
14.	Part I Page 39 Sec.3.6.1.c.2	Reference appropriate TS section in ODCM section 3.6.1.c.2 and remove redundant shutdown statement from ODCM. Add clarifying information to the ODCM Bases.
15.	Part I Page 40 Sec.3.6.3	ER JF-03-01442 has installed a logic changed to the contact logic for the isolation of the Offgas system. The change involves only the isolation one and INOP alarms but does not impact the High-High Radiation isolation requirements.

ATTACHMENT 1 (CONTINUED)

16.	Part I Page 44 Sec.4.1.3	This specification used a distance of 8 km. The value was converted to 5 miles to be consistent with other distances used in the ODCM, all of which are in miles. This change does not reduce the accuracy of the ODCM.
17.	Part I Page 45 Sec.4.1.1	Figure was updated to reflect the sale of the 9 Mile Point Units 1 & 2 to Constellation Energy. This figure is now consistent with the Technical Specification figure. This change increases the accuracy of the ODCM.
18.	Part I Page 47 Sec.5.1.1.c.2	The term limit level in the equation was replaced with reporting level to be consistent with NUREG-1302.
19.	Part I Page 54 Table 5.1-1 Note (b)	The words "particulate samples" were added to the second sentence for improved clarity and to make the note consistent with NUREG-1302. This change improves the accuracy of the ODCM.
20.	Part I Page 55 Sec.5.1-2 Note (a)	Added to the table to provide a basis for using 30,000 uCi/l for tritium and 20 pCi/l for I-131. The note states that there is no drinking water pathway near the site.
21.	Part I Page 56 Table 5.1-3 Footnote (c)	Added a footnote reference to provide a basis for using the tritium in water LLD of 3000 pCi/l. This change increases the accuracy of the ODCM.
22.	Part I Page 57 Table 5.1.3 Note (c)	Revised to include the words "James A. FitzPatrick" /Nine Mile Point sites for clarification. The words "I-131 and 3000 pCi/liter is used for Tritium" were also added to clarify that the values of 15 pCi/l and 3000 pCi/l were used as the required lower limits of detection because there is no drinking water pathway in the vicinity of the site. These changes increase the accuracy of the ODCM.
23.	Part I Page 65 Table 8.1.c.2	Revise Offsite Dose Calculation Manual (ODCM) 8.1.c.2 by deleting the current shutdown requirement and replacing it with a statement to enter the applicable Technical Specifications (TS) Conditions and Required Actions. In addition, add corresponding information to the ODCM Bases.
24.	Part II Page 2 Sec. 1.3	Updated the Revision History of the ODCM. This change does not affect the accuracy of the ODCM.

ATTACHMENT 1 (CONTINUED)

25.	Part II Page 82 Sec. 6.3	Update Reference 6.3, AP-02.08 was superseded. Added EN-AD-103, Document Control and Records Management. Activities, Revision 03, April 29, 2005.
26.	Part II Page 83 Sec. 6.18	Updated Reference 6.18, AP-03.04 to the current Revision, Revision 12.
	Part II Page 83 Sec. 6.19	Updated Reference 6.19, changed wording of Hi Storm 100 Cask System (ISFSI) to include Amendments 1 and 2.
27.	Part II Appendix E Table E-4 Page E-10	Historical Noble gas releases from 1999 to 2003 for the main stack were added to the table to update the release database with recent release totals and isotopic distribution. The historical data is used to develop effective dose transfer factors for dose calculations and stack and vent setpoint values. This change increases the accuracy of the ODCM.
28.	Part II Appendix E Table E-6 Page E-12	Fraction values for total elevated release (stack) were added to the table for the years 1999 through 2003 to update the table with recent effluent data. The historical data is used in calculating setpoint values for the gaseous effluent pathways (stack and vents) for the plant. This change increases the accuracy of the ODCM.
29.	Part II Appendix H Table H-1 Page H-5	Rounded number to the nearest tenth.
30.	Part II Appendix H Table H-1 Page H-9	Corrected typo on Garden Location No. 343, Direction was corrected from ESE to E. This change increases the accuracy of the ODCM.

ATTACHMENT 2

SUMMARY OF CHANGES TO THE PROCESS CONTROL PROGRAM

In accordance with the James A. FitzPatrick Nuclear Power Plant Offsite Dose Calculation Manual (ODCM), Part 1 Radiological Controls (REC) Section 6.2.3, changes made to the Process Control Program (PCP) during the reporting period shall be included in the Annual Radioactive Effluent Release Report.

Revision 1 to the Process Control Program, EN-RW-105 was approved by the Onsite Safety Review Committee on May 30, 2008 at Meeting JAF-2008-008 and became effective on July 30, 2008. This revision does not reduce the overall conformance of the solidified waste product to existing criteria for solid waste. Listed below is a brief summary of changes incorporated in this revision.

1) Waste management practices section replaced dry and liquid waste management.
2) Waste stream sampling methods and frequency section added.
3) Waste classification Section added.
4) Quality Control section added.
5) Dewatering section added.
6) Waste packaging section added.
7) Miscellaneous section added for special tools/equipment & training requirements.

ATTACHMENT 3

SUMMARY OF CHANGES TO THE ENVIRONMENTAL MONITORING AND DOSE CALCULATION LOCATIONS

In accordance with the James A. FitzPatrick Nuclear Power Plant Off Site Dose Calculation Manual (ODCM), Part 1, Sections 6.2.3 a listing of new locations for dose calculation and/or environmental monitoring identified by the land use census shall be included in the Annual Radioactive Effluent Release Report.

CHANGES IN ENVIRONMENTAL MONITORING LOCATIONS

CHANGES TO THE REMP PROGRAM

The following changes were implemented during the 2008 sampling program:

A. Sediment Sampling Program

During the report period, one sample location for sediment from a shoreline area with existing or potential recreational value was changed. The ODCM required location was moved due to shoreline erosion. The new location is in the same geographical location and meteorological sector.

NEW LOCATIONS FOR DOSE CALCULATIONS

During the reporting period, no changes in Dose Calculation Receptor Locations were required based on the results of the land use census.

ATTACHMENT 4

DEVIATIONS FROM THE REQUIRED ENVIRONMENTAL SAMPLING SCHEDULE

In accordance with the James A. FitzPatrick Nuclear Power Plant Off Site Dose Calculation Manual (ODCM), Part 1, Section 6.2.7 the cause for the unavailability of any environmental samples required during the report period shall be included in the Annual Radioactive Effluent Release Report.

The following reports samples that were a deviation from the requirements of ODCM Part 1, Table 5.1-1. ODCM Part I, Section 5.1.1.c.1 allows for deviations from the program due to hazardous conditions, seasonal unavailability, theft, uncooperative residents, or to malfunction of automatic sampling equipment.

A. ODCM Program Deviations

The following are deviations from the program specified by the ODCM:

1. The air sampling pump at the R-5 Offsite Environmental Sampling Station was inoperable for approximately 3 hours during the sampling period of 8/19/08 to 8/26/08. The air sample pump was running at the time of sample collection. The sample pump out of service time was determined based on the sample pump run time integrator. The inoperability of the pump was due to loss of power to the sampler. No corrective actions were required to restore unit to service.

2. The air sampling pump at the R-5 Offsite Environmental Sampling Station was inoperable for 46.7 hours during the sampling period of 8/26/08 to 9/03/08. The sample pump out of service time was determined based on the sample pump run time integrator. The inoperability of the pump was due to equipment failure. Air sample pump was replaced.

3. The air sampling pump at the R-5 Offsite Environmental Sampling Station was inoperable for 14.5 hours during the sampling period of 9/03/08 to 9/05/08. The air sample pump was running at the time of sample collection. The sample pump out of service time was determined based on the sample pump run time integrator. The air sample vacuum pump and blower fan were replaced.

ATTACHMENT 4 (CONTINUED)

4. The air sampling pumps at the R-3 offsite and R-4 offsite Environmental Sampling Stations were inoperable for 30.6 hours and 31.3 hours, respectively during the sampling period of 9/09/08 to 9/16/08. The sample pump out of service time was determined based on the sample pump run time integrator. The inoperability of the pump was due to loss of power to the sampler. The power outage was due to Hurricane Ike. No corrective actions were required to restore unit to service.

5. The air sampling pump at the R-5 Offsite Environmental Sampling Station was inoperable for 4 hours during the sampling period of 10/28/08 to 11/04/08. The air sample pump was running at the time of sample collection. The sample pump out of service time was determined based on the sample pump run time integrator. The inoperability of the pump was due to loss of power to the sampler due to high winds. No corrective actions were required to restore unit to service.

6. The air sampling pumps at the R-3 Offsite and R-4 Offsite Environmental Sampling Stations were each inoperable for 2.4 hours during the sampling period of 11/25/08 to 12/02/08. The air sample pumps were running at the time of sample collection. The sample pump out of service time was determined based on the sample pump run time integrator. The inoperability of the pump was due to loss of power to the sampler. No corrective actions were required to restore unit to service.

B. Air Sampling Station Operability Assessment

The ODCM required air sampling program consists of 5 individual sampling locations. The collective operable time period for the air monitoring stations was 43,785 hours out of a possible 43,920 hours. The air sampling availability factor for the report period was 99.69%.

ATTACHMENT 5

ANNUAL SUMMARY OF HOURLY METEOROLOGICAL DATA

The James A. FitzPatrick Nuclear Power Plant Offsite Dose Calculation Manual (ODCM), Part 1, Radiological Controls (REC) Section 6.2 and 6.2.2 states in part: The Annual Radioactive Effluent Release Report submitted prior to May 1 of each year may include an annual summary of meteorological data collected over the previous year. If the meteorological data is not included, the licensee shall retain it on file and provide it to the U.S. Nuclear Regulatory Commission upon request. In accordance with the aforementioned ODCM requirement, meteorological data is not included in this report. It is retained on file and is available upon request.

ATTACHMENT 6

MAJOR MODIFICATIONS TO RADIOACTIVE LIQUID, GASEOUS AND SOLID WASTE TREATMENT SYSTEMS

In accordance with the James A. FitzPatrick Nuclear Power Plant Offsite Dose Calculation Manual (ODCM), Part 1 Radiological Controls (REC) Section 7.0, Major Modifications to Radioactive Waste Treatment Systems (liquid, gaseous and solid) shall be reported in the Annual Radioactive Effluent Release Report for the period in which the modification is completed and made operational.

There were no major modifications to any liquid, gaseous, or solid radioactive waste treatment systems.

ATTACHMENT 7

ONSITE GROUND WATER MONITORING

A) Gamma Isotopic Monitoring

Monitoring Wells (5-9) were sampled and analyzed quarterly to below the required lower limits of detection in accordance with the Offsite Dose Calculation Manual (ODCM) Part 1, Table 2.2-1. These values are as follows:

Radionuclide	LLD Value (µCi/ml)	Radionuclide	LLD Value (µCi/ml)
Manganese-54	5.0E-7	Iodine-131	1.0E-6
Cobalt-58	5.0E-7	Cesium-134	5.0E-7
Iron-59	5.0E-7	Cesium-137	5.0E-7
Cobalt-60	5.0E-7	Cerium-141	5.0E-5
Zinc-65	5.0E-7	Cerium-144	5.0E-5
Molybdenum-99	5.0E-5		

There were no plant related nuclides detected in the samples.

B) Tritium Monitoring

Monitoring Wells (5-9) were sampled and analyzed quarterly for tritium to below the required lower limit of detection in accordance with the Offsite Dose Calculation Manual (ODCM) of 3000 pCi/L.

The results are as follows:

Well	Lower Limit of Detection pCi/L	Sample Result pCi/L
5	1000	<1000
6	1000	<1000
7	1000	<1000
8	1000	<1000
9	1000	<1000

ATTACHMENT 8

INOPERATIVE EFFLUENT SAMPLING EQUIPMENT

In accordance with the James A. FitzPatrick Nuclear Power Plant Offsite Dose Calculation Manual (ODCM), Part 1 Radiological Controls (REC) Section 3.1.1.c.3.b, Inoperative Effluent Sampling Equipment that is not within 30 days requires an explanation of why the inoperability was not corrected within 30 days on the next Radioactive Release Report.

The refuel floor iodine and particulate sample pump, 17P-28, was found inoperable on 9/15/08. The cause was faulty motor overloads which caused the pump to trip when being supplied by alternate power during a plant shutdown for refueling outage. Temporary samples (Iodine & Particulate) were setup on refuel floor ventilation system in accordance with the ODCM.

The sample pump and motor were replaced with more robust overload protection. A faulty transformer was obsolete and an equivalent transformer was engineered as a replacement part.

On 1/26/09, the 600-120V and 120-24V transformers were replaced and 17P-28 and the installed iodine and particulate sample system was returned to service.

ADDENDUM 1

ASSESSMENT OF RADIATION DOSES TO THE PUBLIC JANUARY - DECEMBER 2008

1. INTRODUCTION

The James A. FitzPatrick Nuclear Power Plant Offsite Dose Calculation Manual (ODCM), Part 1 Radiological Controls, requires an assessment of the radiation doses to the public due to radioactive liquid and gaseous effluents. This assessment of doses to the public is based on accepted methodologies found in the Offsite Dose Calculation Manual (ODCM).

2. DOSE LIMITS

A. DOSE FROM LIQUID EFFLUENTS (ODCM, Part 1, REC 2.3)

Applicability

Applies to doses from radioactive material in liquid effluents.

Objective

To ensure that the dose limitations of 10 CFR 50, Appendix I, are met.

Specifications

The dose to a member of the public from radioactive materials released from the plant in liquid effluents to unrestricted areas shall be limited as follows:

1. During any calendar quarter, limited to less than or equal to 1.5 mrem to the whole body and to less than or equal to 5 mrem to any organ.

2. During any calendar year, limited to less than or equal to 3 mrem to the whole body and to less than or equal to 10 mrem to any organ.

B. GASEOUS DOSE RATES (ODCM, Part 1, REC 3.2)

Applicability

Applies to the radiation dose from radioactive material in gaseous effluents.

ADDENDUM 1 (continued)

Objective

To ensure that the dose rates at or beyond the site boundary from gaseous effluents do not exceed the annual dose limits of 10 CFR 20, for unrestricted areas.

Specifications

The dose rate at or beyond the site boundary due to radioactive materials released from the plant in gaseous effluents shall be limited as follows:

1. Less than or equal to 500 mrem/year to the whole body and less than or equal to 3000 mrem/year to the skin from noble gases; and,

2. Less than or equal to 1500 mrem/year to any organ from Iodine-131, Iodine-133, Tritium and for radioactive materials in particulate form with half-lives greater than 8 days (inhalation pathway only).

C. AIR DOSE, NOBLE GASES (ODCM, Part 1, REC 3.3)

Applicability

Applies to the air dose due to noble gases in gaseous effluents.

Objective

To ensure that the noble gas dose limitations of 10 CFR 50, Appendix I, are met.

Specifications

The air dose to areas at or beyond the site boundary from noble gases released from the plant in gaseous effluents shall be limited:

1. During any calendar quarter, to less than or equal to 5 mrad from gamma radiation, and less than or equal to 10 mrad from beta radiation; and,

2. During any calendar year, to less than or equal to 10 mrad from gamma radiation and less than or equal to 20 mrad from beta radiation.

ADDENDUM 1 (continued)

D. DOSE DUE TO IODINE-131, IODINE-133, TRITIUM AND RADIONUCLIDES IN PARTICULATE FORM (ODCM, Part 1, REC 3.4)

Applicability

Applies to the cumulative dose from Iodine-131, Iodine-133, Tritium, and radionuclides in particulate form with half-lives greater than 8 days in gaseous effluents.

Objective

To ensure that the dose limitations of 10 CFR 50, Appendix I, are met.

Specifications

The dose to a member of the public at or beyond the site boundary from Iodine-131, Iodine-133, Tritium, and radionuclides in particulate form with half-lives greater than 8 days released from the plant in gaseous effluents shall be limited:

1. During any calendar quarter to less than or equal to 7.5 mrem to any organ; and,

2. During any calendar year to less than or equal to 15 mrem to any organ.

E. TOTAL DOSE FROM URANIUM FUEL CYCLE (ODCM, Part 1, REC 4.0)

Applicability

Applies to radiation dose from releases of radioactivity and radiation from uranium fuel cycle sources.

Objective

To ensure that the requirements of 40 CFR 190 are met.

ADDENDUM 1 (continued)

Specifications

The dose or dose commitment to any member of the public, due to releases of radioactivity and radiation, from uranium fuel cycle sources shall be limited as follows:

1. Less than or equal to 25 mrem/year to the whole body; and,

2. Less than or equal to 25 mrem/year to any organ except the thyroid which shall be limited to less than or equal to 75 mrem/year.

3. DOSE ASSESSMENT

A. METHODOLOGY

The assessment of radiation doses to the public due to radioactive liquid and gaseous effluents is performed in accordance with the ODCM. The ODCM is based on methodologies and models suggested by the "Guidance Manual For Preparation of Radiological Effluent Technical Specifications for Nuclear Power Plants" (NUREG-0133) and "Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the purpose of Evaluating Compliance with 10CFR50, Appendix I" (Regulatory Guide 1.109).

B. ASSUMPTIONS

Dose calculations are performed using formulas and constants defined in the ODCM. Specific radioactive release activities used in the dose calculations are listed in the Annual Radioactive Effluent Release Report (1.21 Report) for the period of January 1, 2008 to December 31, 2008. Historical meteorological data was used to generate tables of average dispersion factors. Locations of interest were identified from the 2008 land use census. Dispersion factors and locations of interest used in performing the dose calculations are listed in Table 2.

C. ASSESSMENT RESULTS SUMMARY

The calculated doses to the public due to radioactive effluents are listed in Table 1. The calculated doses are small fractions of their respective dose limits.

ADDENDUM 1 (continued)

4. 40 CFR 190 DOSE ASSESSMENT

A. METHODOLOGY

Evaluation to demonstrate compliance with the 40 CFR 190 dose limits must be performed when the doses calculated for 10 CFR 50 compliance exceed twice their respective limits. When additional dose assessment is required to demonstrate compliance with 40 CFR 190 it is performed in accordance with the ODCM.

B. RESULTS SUMMARY

The cumulative dose contribution from liquid and gaseous effluents for this report period were calculated and are listed in Table 1. The cumulative dose contribution from direct radiation from the reactor unit and from radwaste storage tanks is measured by environmental thermoluminescent dosimeters for the report period. This data is contained in the Annual Environmental Operating Report. The calculated doses from liquid and gaseous effluents are less than twice their respective 10 CFR 50 limits, therefore, additional calculations are not necessary to demonstrate compliance with 40 CFR 190 dose limits (ODCM, Part 1, REC 4.1.1.c)

ADDENDUM 1 (continued)

TABLE 1
ANNUAL DOSE ASSESSMENT 2008

A. LIQUIDS

QUARTER	1	2	3	4	ANNUAL
	(a)	(a)	(a)	(a)	(a)
Organ (mrem)	6.16E-06	3.04E-06	3.49E-06	3.58E-06	1.63E-05
% of Limit	1.23E-04	6.08E-05	6.99E-05	7.17E-05	1.63E-04
	(b)	(b)	(b)	(b)	(b)
Whole Body (mrem)	6.16E-06	3.04E-06	3.49E-06	3.58E-06	1.63E-05
% of Limit	4.11E-04	2.03E-04	2.33E-04	2.39E-04	5.43E-04

(a) Dose to the Child Liver primarily by the potable water pathway.
(b) Dose to the Child Whole Body primarily by the potable water pathway.

B. NOBLE GASES

QUARTER	1	2	3	4	ANNUAL
Total Body (mrem/yr)	1.11E-02	4.12E-01	2.10E-02	4.18E-02	4.12E-01
% of Limit	2.22E-03	8.24E-02	4.19E-03	8.35E-03	8.24E-02
Skin (mrem/yr)	1.34E-02	5.31E-01	2.94E-02	5.39E-02	5.31E-01
% of Limit	4.48E-04	1.77E-02	9.82E-04	1.80E-03	1.77E-02
Gamma (mrad)	4.28E-04	1.92E-03	4.36E-04	3.22E-04	3.11E-03
% of Limit	8.55E-03	3.83E-02	8.71E-03	6.44E-03	3.11E-02
Beta (mrad)	5.15E-05	3.03E-04	1.02E-04	4.59E-05	5.02E-04
% of Limit	5.15E-04	3.03E-03	1.02E-03	4.59E-04	2.51E-03

ADDENDUM 1 (continued)

TABLE 1
ANNUAL DOSE ASSESSMENT 2008

C. IODINES AND PARTICULATES

QUARTER	1	2	3	4	ANNUAL
	(a)	(c)	(c)	(b)	(c)
Organ (mrem)	3.00E-03	2.66E-03	5.47E-03	1.78E-03	1.29E-02
% of Limit	4.00E-02	3.55E-02	7.30E-02	2.37E-02	8.60E-02
	(a)	(a)	(a)	(a)	(a)
Organ Dose Rate (mrem/yr)	2.96E-04	3.38E-04	8.84E-04	2.93E-04	8.84E-04
% of Limit	1.97E-05	2.25E-05	5.89E-05	1.95E-05	5.89E-05

(a) Dose to the Child Thyroid primarily by the vegetation pathway.
(b) Dose to the Infant Thyroid primarily by the goats milk pathway.
(c) Dose to the Infant Thyroid primarily by the cows milk pathway.

ADDENDUM 1 (continued)

TABLE 2
METEOROLOGICAL DATA AND LOCATIONS OF INTEREST

RECEPTOR	GEOGRAPHIC LOCATION		ATMOSPHERIC** DISPERSION FACTOR	
A. IODINE & PARTICULATES	DISTANCE/ DIRECTION	RELEASE POINT	X/Q (sec/m^3)	D/Q (l/m^2)
1. Garden	0.90 mi @ 83°E	ST	2.83E-08*	1.75E-09
Grazing Season	0.90 mi @ 83°E	RX	2.02E-07*	5.01E-09
Cary	0.90 mi @ 83°E	TB	1.83E-07*	4.80E-09
Location No. 78	0.90 mi @ 83°E	RF	2.02E-07*	5.01E-09
	0.90 mi @ 83°E	RW	3.21E-07*	5.76E-09
2. Meat	1.18 mi @ 127°SE	ST	1.72E-08*	6.80E-10
Grazing Season	1.18 mi @ 127°SE	RX	5.36E-08*	1.30E-09
Parkhurst	1.18 mi @ 127°SE	TB	5.14E-08*	1.27E-09
Location No. 26	1.18 mi @ 127°SE	RF	5.36E-08*	1.30E-09
	1.18 mi @ 127°SE	RW	9.12E-08*	1.46E-09
3. Cow	2.50 mi @ 139°SE	ST	1.67E-08*	2.65E-10
Grazing Season	2.50 mi @ 139°SE	RX	2.76E-08*	4.14E-10
France	2.50 mi @ 139°SE	TB	2.71E-08*	4.07E-10
Location No. 10	2.50 mi @ 139°SE	RF	2.76E-08*	4.14E-10
	2.50 mi @ 139°SE	RW	4.15E-08*	4.36E-10
4. Goat (D/Q)	3.62 mi @ 113°ESE	ST	----------	2.28E-10
Grazing Season	3.62 mi @ 113°ESE	RX	----------	3.40E-10
Showers	3.62 mi @ 113°ESE	TB	----------	3.33E-10
Location No. 71	3.62 mi @ 113°ESE	RF	----------	3.40E-10
	3.62 mi @ 113°ESE	RW	----------	3.49E-10
5. Goat (X/Q)	2.64 mi @ 152°SSE	ST	1.94E-08*	----------
Grazing Season	2.64 mi @ 152°SSE	RX	2.58E-08*	----------
Nickolas	2.64 mi @ 152°SSE	TB	2.57E-08*	----------
Location No. 61	2.64 mi @ 152°SSE	RF	2.58E-08*	----------
	2.64 mi @ 152°SSE	RW	3.59E-08*	----------

ADDENDUM 1 (continued)

TABLE 2
METEOROLOGICAL DATA AND LOCATIONS OF INTEREST

RECEPTOR	GEOGRAPHIC LOCATION		ATMOSPHERIC** DISPERSION FACTOR	
A. IODINE & PARTICULATES	DISTANCE/ DIRECTION	RELEASE POINT	X/Q (sec/m3)	D/Q (l/m2)
6. Resident Annual Average				
a. Inhalation[2]	1.55 mi @ 90°E[1]	ST	2.99E-08	----------
Cary	0.90 mi @ 83°E	RX	2.07E-07	----------
Location No. 78	0.90 mi @ 83°E	TB	1.88E-07	----------
	0.90 mi @ 83°E	RF	2.07E-07	----------
	0.90 mi @ 83°E	RW	3.06E-07	----------
b. Deposition[3]	0.71 mi @ 118°ESE	ST	----------	1.60E-09
Whaley	0.71 mi @ 118°ESE	RX	----------	5.52E-09
Location No. 199	0.71 mi @ 118°ESE	TB	----------	5.30E-09
	0.71 mi @ 118°ESE	RF	----------	5.52E-09
	0.71 mi @ 118°ESE	RW	----------	6.28E-09
B. NOBLE GASES				
1. Air Dose	1.55 mi @ 90°E[1]	ST	2.99E-08	----------
Annual Average	0.60 mi @ 90°E	ST(fc)	1.16E-07	----------
Site Boundary	0.60 mi @ 90°E	RX	3.58E-07	----------
	0.60 mi @ 90°E	TB	3.19E-07	----------
	0.60 mi @ 90°E	RF	3.58E-07	----------
	0.60 mi @ 90°E	RW	5.39E-07	----------
2. Total Body	0.60 mi @ 90°E	ST(fc)	1.16E-07	----------
Annual Average	0.60 mi @ 90°E	RX	3.58E-07	----------
Site Boundary	0.60 mi @ 90°E	TB	3.19E-07	----------
	0.60 mi @ 90°E	RF	3.58E-07	----------
	0.60 mi @ 90°E	RW	5.39E-07	----------

ADDENDUM 1 (continued)

TABLE 2
METEOROLOGICAL DATA AND LOCATIONS OF INTEREST

RECEPTOR	GEOGRAPHIC LOCATION		ATMOSPHERIC** DISPERSION FACTOR	
B. NOBLE GASES (continued)	DISTANCE/ DIRECTION	RELEASE POINT	X/Q (sec/m3)	D/Q (l/m2)
3. Skin	1.55 mi @ 90°E	ST	2.99E-08	----------
Annual Average	0.60 mi @ 90°E	ST(fc)	1.16E-07	----------
Site Boundary	0.60 mi @ 90°E	RX	3.58E-07	----------
	0.60 mi @ 90°E	TB	3.19E-07	----------
	0.60 mi @ 90°E	RF	3.58E-07	----------
	0.60 mi @ 90°E	RW	5.39E-07	----------

* Tritium Dose Calculation
** Based on ODCM X/Q, D/Q Values Rev. 08
(1) Highest Sector Average X/Q in a populated area, not an identified residence.
(2) Inhalation uses Annual Average X/Q values. All other receptors use grazing season meteorology.
(3) Deposition uses Annual Average D/Q values. All other receptors use grazing season meteorology.

ST = Main Stack
RX = Reactor Building Vent
TB = Turbine Building Vent
RF = Refuel Floor Vent
RW = Radwaste Building Vent
fc = Finite Cloud