

March 24, 2008

U.S. Nuclear Regulatory Commission  
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ULNRC-05470




Ladies and Gentlemen:

**DOCKET NUMBER 50-483  
CALLAWAY PLANT UNIT 1  
UNION ELECTRIC CO.  
FACILITY OPERATING LICENSE NPF-30  
ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT ERRATA**

A calculation error has been identified and corrected in the Annual Radioactive Effluent Release Reports for calendar years 2000 through 2006. The error involved a unit conversion from pounds to grams for two continuously monitored release points that are included in the annual report. Attachment 8 provides the list of transmittal letters to the NRC for the Annual Radioactive Effluent Release Reports for calendar years 2000 through 2006.

These reports provide summaries of licensee radioactive effluent releases made in accordance with the Callaway Plant Offsite Dose Calculation Manual (FSAR Chapter 16.11) and Sections 5.6.3 and 5.5.1 of the Callaway Technical Specifications. The reports include summary tables presenting data for effluent releases. The reports demonstrate compliance with pertinent regulations including 10 CFR 50 Appendix I Section IV.B.2.

Attachments 1 through 7 provide corrections to the report summary tables for each calendar year 2000 through 2006. Note that the corrections for the errata are associated with airborne effluents only.

Sincerely,  
  
Luke H. Graessle  
Manager, Regulatory Affairs

JE48

DJW/nls

Attachment 1 - Errata for 2000 Callaway Plant Radioactive Effluent Release Report

Attachment 2 - Errata for 2001 Callaway Plant Radioactive Effluent Release Report

Attachment 3 - Errata for 2002 Callaway Plant Radioactive Effluent Release Report

Attachment 4 - Errata for 2003 Callaway Plant Radioactive Effluent Release Report

Attachment 5 - Errata for 2004 Callaway Plant Radioactive Effluent Release Report

Attachment 6 - Errata for 2005 Callaway Plant Radioactive Effluent Release Report

Attachment 7 - Errata for 2006 Callaway Plant Radioactive Effluent Release Report

Attachment 8 - List of Transmittal Letters for the Annual Radioactive Effluent  
Release Reports for Calendar Years 2000 through 2006

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Attachment 1  
Errata for 2000 Callaway Plant Radioactive Effluent Release Report

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TABLE 1A

SEMIANNUAL SUMMATION OF GASEOUS RELEASES  
ALL AIRBORNE EFFLUENTS

QUARTERS 1 AND 2, 2000

TYPE OF EFFLUENT	UNITS	FIRST QUARTER	SECOND QUARTER	EST TOTAL ERROR % (a)
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A. FISSION AND ACTIVATION GASES

1. TOTAL RELEASE	CURIES	5.69E+01	3.49E+01	20
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/SEC	7.23E+00	4.44E+00	
3. PERCENT OF TECH SPEC LIMIT	%	N/A	N/A	

B. RADIOIODINES

1. TOTAL IODINE-131	CURIES	4.11E-04	8.35E-07	23
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/SEC	5.23E-05	1.06E-07	
3. PERCENT OF TECH SPEC LIMIT	%	N/A	N/A	

C. PARTICULATES

1. PARTICULATE (HALF-LIVES > 8 DAYS)	CURIES	4.28E-04	4.95E-05	30
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/SEC	5.45E-05	6.29E-06	
3. PERCENT OF TECH SPEC LIMIT	%	N/A	N/A	
4. GROSS ALPHA RADIOACTIVITY	CURIES	8.66E-08	0.00E+00	

D. TRITIUM

1. TOTAL RELEASE	CURIES	1.46E+01	2.33E+01	14
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/SEC	1.86E+00	2.96E+00	
3. PERCENT OF TECH SPEC LIMIT	%	N/A	N/A	

(a) Safety Analysis Calculation 87-063-00, January 6, 1988

TABLE 1A

SEMIANNUAL SUMMATION OF GASEOUS RELEASES  
ALL AIRBORNE EFFLUENTS

QUARTERS 3 AND 4, 2000

TYPE OF EFFLUENT	UNITS	THIRD QUARTER	FOURTH QUARTER	EST TOTAL ERROR % (a)
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A. FISSION AND ACTIVATION GASES

1. TOTAL RELEASE	CURIES	3.26E+01	1.10E+01	20
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/SEC	4.10E+00	1.38E+00	
3. PERCENT OF TECH SPEC LIMIT	%	N/A	N/A	

B. RADIOIODINES

1. TOTAL IODINE-131	CURIES	0.00E+00	0.00E+00	23
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/SEC	0.00E+00	0.00E+00	
3. PERCENT OF TECH SPEC LIMIT	%	N/A	N/A	

C. PARTICULATES

1. PARTICULATE (HALF-LIVES > 8 DAYS)	CURIES	1.03E-04	7.19E-06	30
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/SEC	1.29E-05	9.04E-07	
3. PERCENT OF TECH SPEC LIMIT	%	N/A	N/A	
4. GROSS ALPHA RADIOACTIVITY	CURIES	1.15E-07	1.45E-08	

D. TRITIUM

1. TOTAL RELEASE	CURIES	2.00E+01	2.04E+01	14
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/SEC	2.52E+00	2.57E+00	
3. PERCENT OF TECH SPEC LIMIT	%	N/A	N/A	

(a) Safety Analysis Calculation 87-063-00, January 6, 1988

TABLE 1B

SEMIANNUAL AIRBORNE CONTINUOUS AND BATCH RELEASES  
GROUND LEVEL RELEASES  
FISSION GASES, IODINES, AND PARTICULATES

QUARTERS 1 AND 2, 2000

NUCLIDE	UNITS	CONTINUOUS RELEASES		BATCH RELEASES	
		FIRST QUARTER	SECOND QUARTER	FIRST QUARTER	SECOND QUARTER

1. FISSION GASES

XE-133	CURIES	4.66E+01	3.36E+01	6.71E+00	4.05E-01
XE-135	CURIES	2.97E+00	3.61E-01	2.59E-02	9.87E-03
AR-41	CURIES	0.00E+00	0.00E+00	7.36E-02	5.53E-02
XE-131M	CURIES	0.00E+00	0.00E+00	6.75E-02	0.00E+00
XE-133M	CURIES	1.79E-01	4.01E-01	3.80E-02	4.16E-03
KR-85	CURIES	0.00E+00	0.00E+00	1.45E-01	7.81E-03
KR-85M	CURIES	0.00E+00	0.00E+00	8.49E-04	1.76E-04
KR-88	CURIES	0.00E+00	0.00E+00	3.79E-04	1.66E-03
XE-138	CURIES	0.00E+00	0.00E+00	5.87E-05	0.00E+00
XE-135M	CURIES	0.00E+00	0.00E+00	9.26E-05	0.00E+00
XE-137	CURIES	0.00E+00	0.00E+00	0.00E+00	2.22E-03
TOTAL FOR PERIOD	CURIES	4.98E+01	3.44E+01	7.06E+00	4.86E-01

2. IODINES

I-131	CURIES	2.72E-06	7.06E-08	4.09E-04	7.65E-07
I-133	CURIES	0.00E+00	0.00E+00	2.73E-04	0.00E+00
I-132	CURIES	0.00E+00	0.00E+00	6.60E-05	0.00E+00
I-135	CURIES	0.00E+00	0.00E+00	9.18E-05	0.00E+00
TOTAL FOR PERIOD	CURIES	2.72E-06	7.06E-08	8.39E-04	7.65E-07

3. PARTICULATES

RB-88	CURIES	0.00E+00	0.00E+00	2.13E-04	0.00E+00
CS-137	CURIES	0.00E+00	5.46E-06	1.80E-04	3.21E-05
CO-60	CURIES	0.00E+00	0.00E+00	3.11E-05	9.83E-06
SB-125	CURIES	0.00E+00	0.00E+00	9.09E-07	0.00E+00
Y-91M	CURIES	0.00E+00	0.00E+00	3.60E-06	0.00E+00
CS-134	CURIES	0.00E+00	2.10E-06	0.00E+00	0.00E+00
ALPHA	CURIES	8.66E-08	0.00E+00	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	8.66E-08	7.56E-06	4.28E-04	4.19E-05

4. TRITIUM

H-3	CURIES	1.44E+01	2.26E+01	2.24E-01	7.47E-01
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TABLE 1B

SEMIANNUAL AIRBORNE CONTINUOUS AND BATCH RELEASES  
GROUND LEVEL RELEASES  
FISSION GASES, IODINES, AND PARTICULATES

QUARTERS 3 AND 4, 2000

NUCLIDE	UNITS	CONTINUOUS RELEASES		BATCH RELEASES	
		THIRD QUARTER	FOURTH QUARTER	THIRD QUARTER	FOURTH QUARTER

1. FISSION GASES

XE-133	CURIES	3.14E+01	9.73E+00	4.10E-01	3.62E-01
XE-135	CURIES	1.68E-01	4.09E-01	6.48E-03	3.56E-03
AR-41	CURIES	0.00E+00	0.00E+00	4.21E-02	4.24E-02
XE-131M	CURIES	0.00E+00	0.00E+00	0.00E+00	1.19E-03
XE-133M	CURIES	3.18E-01	0.00E+00	2.65E-03	1.66E-03
KR-85	CURIES	0.00E+00	0.00E+00	2.86E-01	0.00E+00
KR-85M	CURIES	0.00E+00	0.00E+00	1.18E-04	1.30E-04
KR-88	CURIES	0.00E+00	0.00E+00	9.43E-05	0.00E+00
XE-138	CURIES	0.00E+00	4.41E-01	0.00E+00	0.00E+00
XE-135M	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
XE-137	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	3.19E+01	1.06E+01	7.47E-01	4.11E-01

2. IODINES

I-131	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
I-133	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
I-132	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
I-135	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00

3. PARTICULATES

RB-88	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CS-137	CURIES	2.19E-05	3.59E-06	8.02E-06	2.04E-09
CO-60	CURIES	1.56E-06	2.06E-06	6.33E-05	0.00E+00
SB-125	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Y-91M	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CS-134	CURIES	7.77E-06	1.24E-06	0.00E+00	0.00E+00
MN-54	CURIES	0.00E+00	2.28E-07	0.00E+00	0.00E+00
CE-141	CURIES	0.00E+00	4.36E-08	0.00E+00	0.00E+00
CO-57	CURIES	0.00E+00	2.97E-08	0.00E+00	0.00E+00
ALPHA	CURIES	1.15E-07	1.45E-08	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	3.13E-05	7.20E-06	7.14E-05	2.04E-09

4. TRITIUM

H-3	CURIES	1.92E+01	2.01E+01	8.54E-01	3.55E-01
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TABLE 2A

SEMIANNUAL SUMMATION OF LIQUID RELEASES  
ALL LIQUID EFFLUENTS

QUARTERS 3 AND 4, 2000

TYPE OF EFFLUENT	UNITS	THIRD QUARTER	FOURTH QUARTER	EST TOTAL ERROR % (a)
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A. FISSION AND ACTIVATION PRODUCTS

1. TOTAL RELEASE [NOT INCLUDING TRITIUM, GASES, ALPHA]	CURIES	2.94E-02	3.94E-03	20
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	uCi/ML	8.33E-08	1.00E-08	
3. PERCENT OF APPLICABLE LIMIT	%	N/A	N/A	

B. TRITIUM

1. TOTAL RELEASE	CURIES	2.56E+02	5.71E+02	14
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	uCi/ML	7.26E-04	1.45E-03	
3. PERCENT OF APPLICABLE LIMIT	%	N/A	N/A	

C. DISSOLVED AND ENTRAINED GASES

1. TOTAL RELEASE	CURIES	8.49E-04	2.70E-02	27
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	uCi/ML	2.41E-09	6.87E-08	

D. GROSS ALPHA RADIOACTIVITY

1. TOTAL RELEASE	CURIES	0.00E+00	0.00E+00	29
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E. WASTE VOLUME RELEASED (PRE-DILUTION)	GAL	6.14E+06	5.78E+06	10
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F. VOLUME OF DILUTION WATER USED	GAL	8.70E+07	9.81E+07	10
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(a) Safety Analysis Calculation 87-063-00, January 6, 1988

TABLE 2B

SEMIANNUAL LIQUID CONTINUOUS AND BATCH RELEASES  
TOTALS FOR EACH NUCLIDE RELEASED

QUARTERS 3 AND 4, 2000

NUCLIDE	UNITS	CONTINUOUS RELEASES		BATCH RELEASES	
		THIRD QUARTER	FOURTH QUARTER	THIRD QUARTER	FOURTH QUARTER

I. ALL NUCLIDES

CO-58	CURIES	0.00E+00	0.00E+00	4.94E-04	4.05E-06
CO-60	CURIES	0.00E+00	0.00E+00	1.79E-03	1.76E-04
CS-137	CURIES	0.00E+00	0.00E+00	1.88E-02	2.77E-03
H-3	CURIES	0.00E+00	0.00E+00	2.56E+02	5.71E+02
I-131	CURIES	0.00E+00	0.00E+00	1.30E-05	5.84E-06
MN-54	CURIES	0.00E+00	0.00E+00	2.44E-04	6.17E-06
SB-125	CURIES	0.00E+00	0.00E+00	7.79E-04	4.03E-06
XE-133	CURIES	0.00E+00	0.00E+00	7.06E-04	2.60E-02
NB-95	CURIES	0.00E+00	0.00E+00	2.64E-05	0.00E+00
XE-133M	CURIES	0.00E+00	0.00E+00	0.00E+00	3.99E-05
XE-135	CURIES	0.00E+00	0.00E+00	3.07E-06	0.00E+00
CE-141	CURIES	0.00E+00	0.00E+00	2.59E-06	0.00E+00
KR-88	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
XE-131M	CURIES	0.00E+00	0.00E+00	1.40E-04	9.39E-04
CS-134	CURIES	0.00E+00	0.00E+00	7.15E-03	9.71E-04
CO-57	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ZR-95	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ZR-97	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TE-129	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BE-7	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SN-113	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TC-99M	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
I-133	CURIES	0.00E+00	0.00E+00	4.69E-06	0.00E+00
CR-51	CURIES	0.00E+00	0.00E+00	3.35E-05	0.00E+00
BA-139	CURIES	0.00E+00	0.00E+00	1.82E-05	0.00E+00
TOTALS FOR PERIOD	CURIES	0.00E+00	0.00E+00	2.56E+02	5.71E+02

TABLE 5

DOSE AT THE SITE BOUNDARY AND TO THE NEAREST RESIDENT  
FROM GASEOUS EFFLUENTS

ORGAN	UNITS	SITE BOUNDARY		NEAREST RESIDENT	
		LOCATION: 2.20 km NNW		LOCATION: 2.90 km NNW	
		AGE GROUP: CHILD		AGE GROUP: CHILD	
		DOSE	% LIMIT(a)	DOSE	% LIMIT(b)
1. GAMMA AIR DOSE *	MRAD	1.58E-03	0.02	1.04E-03	N/A
2. BETA AIR DOSE *	MRAD	3.98E-03	0.02	2.63E-03	N/A
3. WHOLE BODY ***	MREM	2.05E-03	N/A	1.34E-03	N/A
4. SKIN ***	MREM	3.77E-03	N/A	2.47E-03	N/A
5. BONE **	MREM	6.98E-04	N/A	4.09E-03	0.03
6. LIVER **	MREM	2.68E-03	N/A	1.55E-02	0.10
7. TOTAL BODY **	MREM	2.67E-03	N/A	1.26E-02	0.08
8. THYROID **	MREM	2.85E-03	N/A	4.91E-02	0.33
9. KIDNEY **	MREM	2.67E-03	N/A	1.33E-02	0.09
10. LUNG **	MREM	2.69E-03	N/A	1.24E-02	0.08
11. GI-LLI **	MREM	2.67E-03	N/A	1.20E-02	0.08

\* Dose from Noble Gases only

\*\* Dose from Tritium, Radioiodines, and Particulates only

\*\*\* Dose from Noble Gases plus Ground Plane dose

(a) Annual dose limits of Offsite Dose Calculation Manual (APA-ZZ-01003)  
of 10 mrad gamma air dose and 20 mrad beta air dose.

(b) Annual dose limits of Offsite Dose Calculation Manual (APA-ZZ-01003)  
of 15 mrem to any organ from I-131, I-133, H-3 and particulate  
radionuclides with halflives greater than 8 days.

TABLE 6

DOSE TO THE MEMBER OF THE PUBLIC FROM ACTIVITIES  
WITHIN THE SITE BOUNDARY

ORGAN	UNITS	EFFLUENT DOSE WITHIN THE SITE BOUNDARY	DIRECT RADIATION FROM THE UNIT	DIRECT RADIATION FROM OUTSIDE TANKS	TOTAL DOSE FOR THE YEAR
1. SKIN	MREM	9.60E-04	N/A	N/A	9.60E-04
2. BONE	MREM	2.07E-04	8.79E-03	1.30E-03	1.03E-02
3. LIVER	MREM	9.59E-04	8.79E-03	1.30E-03	1.10E-02
4. TOTAL BODY	MREM	1.38E-03	8.79E-03	1.30E-03	1.15E-02
5. THYROID	MREM	9.99E-04	8.79E-03	1.30E-03	1.11E-02
6. KIDNEY	MREM	9.58E-04	8.79E-03	1.30E-03	1.10E-02
7. LUNG	MREM	9.62E-04	8.79E-03	1.30E-03	1.11E-02
8. GI-LLI	MREM	9.57E-04	8.79E-03	1.30E-03	1.10E-02

TABLE 7

TOTAL DOSE DUE TO THE URANIUM FUEL CYCLE  
(MEMBER OF THE PUBLIC)

ORGAN	UNITS	DOSE AT THE RESIDENCE LOCATION	DOSE FROM ACTIVITIES WITHIN SITE BOUNDARY	TOTAL DOSE TO THE MEMBER OF THE PUBLIC	% LIMITS *
1. SKIN	MREM	8.05E-04	9.60E-04	1.77E-03	0.01
2. BONE	MREM	5.09E-04	1.03E-02	1.08E-02	0.04
3. LIVER	MREM	3.36E-03	1.10E-02	1.44E-02	0.06
4. TOTAL BODY	MREM	3.55E-03	1.15E-02	1.50E-02	0.06
5. THYROID	MREM	7.86E-03	1.11E-02	1.90E-02	0.03
6. KIDNEY	MREM	3.06E-03	1.10E-02	1.41E-02	0.06
7. LUNG	MREM	2.94E-03	1.11E-02	1.40E-02	0.06
8. GI-LLI	MREM	2.91E-03	1.10E-02	1.40E-02	0.06

\* Annual dose limits from 40CFR190.10(a) of 25 mrem whole body, 75 mrem to the thyroid, and 25 mrem to any other organ.

TABLE 8

DOSE DUE TO LIQUID EFFLUENTS  
(MEMBER OF THE PUBLIC)

2000

ORGAN	UNITS	DOSE	LIMIT *	% LIMIT
1. BONE	MREM	2.14E-01	10.00	2.14E+00
2. LIVER	MREM	3.45E-01	10.00	3.45E+00
3. TOTAL BODY	MREM	2.46E-01	3.00	8.20E+00
4. THYROID	MREM	3.68E-03	10.00	3.68E-02
5. KIDNEY	MREM	1.17E-01	10.00	1.17E+00
6. LUNG	MREM	4.14E-02	10.00	4.14E-01
7. GI-LLI	MREM	1.54E-02	10.00	1.54E-01

\* Annual dose limits of APA-ZZ-01003, Section 9.4.1.1.

Attachment 2  
Errata for 2001 Callaway Plant Radioactive Effluent Release Report

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TABLE 1A

SEMIANNUAL SUMMATION OF GASEOUS RELEASES  
ALL AIRBORNE EFFLUENTS

QUARTERS 1 AND 2, 2001

TYPE OF EFFLUENT	UNITS	FIRST QUARTER	SECOND QUARTER	EST TOTAL ERROR % (a)
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A. FISSION AND ACTIVATION GASES

1. TOTAL RELEASE	CURIES	2.07E+02	4.04E+01	20
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/SEC	2.66E+01	5.14E+00	
3. PERCENT OF TECH SPEC LIMIT	%	N/A	N/A	

B. RADIOIODINES

1. TOTAL IODINE-131	CURIES	1.12E-04	4.71E-05	23
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/SEC	1.44E-05	5.99E-06	
3. PERCENT OF TECH SPEC LIMIT	%	N/A	N/A	

C. PARTICULATES

1. PARTICULATE (HALF-LIVES > 8 DAYS)	CURIES	2.66E-05	1.06E-04	30
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/SEC	3.42E-06	1.35E-05	
3. PERCENT OF TECH SPEC LIMIT	%	N/A	N/A	
4. GROSS ALPHA RADIOACTIVITY	CURIES	7.69E-08	3.65E-08	

D. TRITIUM

1. TOTAL RELEASE	CURIES	1.96E+01	1.82E+01	14
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/SEC	2.52E+00	2.32E+00	
3. PERCENT OF TECH SPEC LIMIT	%	N/A	N/A	

(a) Safety Analysis Calculation 87-063-00, January 6, 1988

TABLE 1A

SEMIANNUAL SUMMATION OF GASEOUS RELEASES  
ALL AIRBORNE EFFLUENTS

QUARTERS 3 AND 4, 2001

TYPE OF EFFLUENT	UNITS	THIRD QUARTER	FOURTH QUARTER	EST TOTAL ERROR % (a)
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A. FISSION AND ACTIVATION GASES

1. TOTAL RELEASE	CURIES	2.63E+00	9.11E-01	20
2. AVERAGE RELEASE RATE FOR PERIOD	μCi/SEC	3.30E-01	1.15E-01	
3. PERCENT OF TECH SPEC LIMIT	%	N/A	N/A	

B. RADIOIODINES

1. TOTAL IODINE-131	CURIES	5.48E-08	2.73E-07	23
2. AVERAGE RELEASE RATE FOR PERIOD	μCi/SEC	6.89E-09	3.43E-08	
3. PERCENT OF TECH SPEC LIMIT	%	N/A	N/A	

C. PARTICULATES

1. PARTICULATE (HALF-LIVES > 8 DAYS)	CURIES	9.73E-05	2.87E-04	30
2. AVERAGE RELEASE RATE FOR PERIOD	μCi/SEC	1.22E-05	3.61E-05	
3. PERCENT OF TECH SPEC LIMIT	%	N/A	N/A	
4. GROSS ALPHA RADIOACTIVITY	CURIES	0.00E+00	4.74E-08	

D. TRITIUM

1. TOTAL RELEASE	CURIES	1.47E+01	1.07E+01	14
2. AVERAGE RELEASE RATE FOR PERIOD	μCi/SEC	1.85E+00	1.35E+00	
3. PERCENT OF TECH SPEC LIMIT	%	N/A	N/A	

(a) Safety Analysis Calculation 87-063-00, January 6, 1988

TABLE 1B

SEMIANNUAL AIRBORNE CONTINUOUS AND BATCH RELEASES  
GROUND LEVEL RELEASES  
FISSION GASES, IODINES, AND PARTICULATES

QUARTERS 1 AND 2, 2001

NUCLIDE	UNITS	CONTINUOUS RELEASES		BATCH RELEASES	
		FIRST QUARTER	SECOND QUARTER	FIRST QUARTER	SECOND QUARTER

1. FISSION GASES

XE-133	CURIES	1.89E+02	3.63E+01	2.63E-01	1.78E+00
AR-41	CURIES	2.29E-01	0.00E+00	3.91E-02	1.77E-01
XE-135	CURIES	8.92E+00	1.26E+00	4.60E-03	5.02E-02
KR-85	CURIES	0.00E+00	0.00E+00	4.88E-01	2.60E-01
XE-133M	CURIES	2.30E+00	6.18E-01	7.60E-04	1.41E-02
XE-131M	CURIES	8.05E-01	0.00E+00	1.89E-03	0.00E+00
KR-85M	CURIES	1.53E+00	0.00E+00	6.48E-05	4.44E-03
KR-87	CURIES	7.79E-01	0.00E+00	0.00E+00	0.00E+00
KR-88	CURIES	2.25E+00	0.00E+00	0.00E+00	0.00E+00
XE-135M	CURIES	3.35E-01	0.00E+00	2.75E-05	0.00E+00
XE-138	CURIES	4.04E-01	0.00E+00	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	2.06E+02	3.82E+01	7.98E-01	2.28E+00

2. IODINES

I-131	CURIES	1.28E-06	4.71E-05	1.11E-04	0.00E+00
I-132	CURIES	0.00E+00	3.20E-05	2.57E-05	0.00E+00
I-133	CURIES	0.00E+00	2.27E-06	9.04E-05	0.00E+00
I-135	CURIES	0.00E+00	0.00E+00	5.21E-05	0.00E+00
TOTAL FOR PERIOD	CURIES	1.28E-06	8.13E-05	2.79E-04	0.00E+00

3. PARTICULATES

CS-134	CURIES	0.00E+00	8.53E-08	1.03E-05	4.08E-06
CS-137	CURIES	0.00E+00	4.75E-07	1.63E-05	2.93E-05
CO-60	CURIES	0.00E+00	0.00E+00	0.00E+00	7.00E-05
CO-58	CURIES	0.00E+00	2.15E-06	0.00E+00	0.00E+00
SB-125	CURIES	0.00E+00	0.00E+00	0.00E+00	4.70E-08
ALPHA	CURIES	7.69E-08	3.65E-08	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	7.69E-08	2.75E-06	2.66E-05	1.03E-04

4. TRITIUM

H-3	CURIES	1.95E+01	1.78E+01	1.15E-01	4.65E-01
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TABLE 1B

SEMIANNUAL AIRBORNE CONTINUOUS AND BATCH RELEASES  
GROUND LEVEL RELEASES  
FISSION GASES, IODINES, AND PARTICULATES

QUARTERS 3 AND 4, 2001

NUCLIDE	UNITS	CONTINUOUS RELEASES		BATCH RELEASES	
		THIRD QUARTER	FOURTH QUARTER	THIRD QUARTER	FOURTH QUARTER

1. FISSION GASES

XE-133	CURIES	0.00E+00	7.76E-02	8.54E-02	1.85E-01
AR-41	CURIES	0.00E+00	0.00E+00	3.59E-02	5.23E-02
XE-135	CURIES	0.00E+00	0.00E+00	1.01E-03	1.27E-03
KR-85	CURIES	0.00E+00	0.00E+00	1.73E+00	0.00E+00
XE-133M	CURIES	0.00E+00	0.00E+00	0.00E+00	1.73E-04
XE-131M	CURIES	0.00E+00	6.70E-02	3.33E-04	0.00E+00
KR-85M	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
KR-87	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
KR-88	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
XE-135M	CURIES	0.00E+00	0.00E+00	0.00E+00	1.72E-04
XE-138	CURIES	7.79E-01	5.28E-01	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	7.79E-01	6.72E-01	1.85E+00	2.39E-01

2. IODINES

I-131	CURIES	5.48E-08	2.73E-07	0.00E+00	0.00E+00
I-132	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
I-133	CURIES	0.00E+00	2.52E-07	0.00E+00	0.00E+00
I-135	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	5.48E-08	5.25E-07	0.00E+00	0.00E+00

3. PARTICULATES

CS-134	CURIES	0.00E+00	4.53E-07	0.00E+00	4.66E-05
CS-137	CURIES	2.28E-07	5.07E-06	0.00E+00	1.02E-04
CO-60	CURIES	0.00E+00	0.00E+00	1.62E-06	1.29E-05
CO-58	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SB-125	CURIES	9.21E-05	1.17E-04	3.07E-07	0.00E+00
CR-51	CURIES	2.68E-06	2.05E-06	0.00E+00	0.00E+00
SB-124	CURIES	3.54E-07	3.65E-07	0.00E+00	0.00E+00
ALPHA	CURIES	0.00E+00	4.74E-08	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	9.53E-05	1.25E-04	1.93E-06	1.62E-04

4. TRITIUM

H-3	CURIES	1.38E+01	1.00E+01	9.31E-01	7.27E-01
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TABLE 6

DOSE TO THE MEMBER OF THE PUBLIC FROM ACTIVITIES  
WITHIN THE SITE BOUNDARY

ORGAN	UNITS	EFFLUENT DOSE WITHIN THE SITE BOUNDARY	DIRECT RADIATION FROM THE UNIT	DIRECT RADIATION FROM OUTSIDE TANKS	TOTAL DOSE FOR THE YEAR
1. SKIN	MREM	2.47E-03	N/A	N/A	2.47E-03
2. BONE	MREM	1.89E-04	8.79E-03	1.09E-02	1.99E-02
3. LIVER	MREM	7.96E-04	8.79E-03	1.09E-02	2.05E-02
4. TOTAL BODY	MREM	2.00E-03	8.79E-03	1.09E-02	2.17E-02
5. THYROID	MREM	8.11E-04	8.79E-03	1.09E-02	2.05E-02
6. KIDNEY	MREM	7.95E-04	8.79E-03	1.09E-02	2.05E-02
7. LUNG	MREM	8.02E-04	8.79E-03	1.09E-02	2.05E-02
8. GI-LLI	MREM	7.95E-04	8.79E-03	1.09E-02	2.05E-02

TABLE 7

TOTAL DOSE DUE TO THE URANIUM FUEL CYCLE  
(MEMBER OF THE PUBLIC)

ORGAN	UNITS	DOSE AT THE RESIDENCE LOCATION	DOSE FROM ACTIVITIES WITHIN SITE BOUNDARY	TOTAL DOSE TO THE MEMBER OF THE PUBLIC	% LIMITS *
1. SKIN	MREM	1.71E-03	2.47E-03	4.17E-03	0.02
2. BONE	MREM	3.96E-04	1.99E-02	2.03E-02	0.08
3. LIVER	MREM	2.35E-03	2.05E-02	2.28E-02	0.09
4. TOTAL BODY	MREM	3.07E-03	2.17E-02	2.48E-02	0.10
5. THYROID	MREM	3.79E-03	2.05E-02	2.43E-02	0.03
6. KIDNEY	MREM	2.09E-03	2.05E-02	2.26E-02	0.09
7. LUNG	MREM	2.00E-03	2.05E-02	2.25E-02	0.09
8. GI-LLI	MREM	1.99E-03	2.05E-02	2.25E-02	0.09

\* Annual dose limits from 40CFR190.10(a) of 25 mrem whole body, 75 mrem to the thyroid, and 25 mrem to any other organ.

Attachment 3  
Errata for 2002 Callaway Plant Radioactive Effluent Release Report

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TABLE 1A

SEMIANNUAL SUMMATION OF GASEOUS RELEASES  
ALL AIRBORNE EFFLUENTS

QUARTERS 1 AND 2, 2002

TYPE OF EFFLUENT	UNITS	FIRST QUARTER	SECOND QUARTER	EST TOTAL ERROR % (a)
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A. FISSION AND ACTIVATION GASES

1. TOTAL RELEASE	CURIES	1.22E+00	1.08E+00	20
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/SEC	1.57E-01	1.37E-01	
3. PERCENT OF TECH SPEC LIMIT	%	N/A	N/A	

B. RADIOIODINES

1. TOTAL IODINE-131	CURIES	0.00E+00	0.00E+00	23
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/SEC	0.00E+00	0.00E+00	
3. PERCENT OF TECH SPEC LIMIT	%	N/A	N/A	

C. PARTICULATES

1. PARTICULATE (HALF-LIVES > 8 DAYS)	CURIES	1.76E-04	1.45E-06	30
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/SEC	2.27E-05	1.84E-07	
3. PERCENT OF TECH SPEC LIMIT	%	N/A	N/A	
4. GROSS ALPHA RADIOACTIVITY	CURIES	8.51E-08	0.00E+00	

D. TRITIUM

1. TOTAL RELEASE	CURIES	1.69E+01	1.07E+01	14
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/SEC	2.18E+00	1.36E+00	
3. PERCENT OF TECH SPEC LIMIT	%	N/A	N/A	

(a) Safety Analysis Calculation 87-063-00, January 6, 1988

TABLE 1A

SEMIANNUAL SUMMATION OF GASEOUS RELEASES  
ALL AIRBORNE EFFLUENTS

QUARTERS 3 AND 4, 2002

TYPE OF EFFLUENT	UNITS	THIRD QUARTER	FOURTH QUARTER	EST TOTAL ERROR % (a)
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A. FISSION AND ACTIVATION GASES

1. TOTAL RELEASE	CURIES	1.40E+00	2.09E+00	20
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/SEC	1.76E-01	2.63E-01	
3. PERCENT OF TECH SPEC LIMIT	%	N/A	N/A	

B. RADIOIODINES

1. TOTAL IODINE-131	CURIES	0.00E+00	3.64E-06	23
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/SEC	0.00E+00	4.57E-07	
3. PERCENT OF TECH SPEC LIMIT	%	N/A	N/A	

C. PARTICULATES

1. PARTICULATE (HALF-LIVES > 8 DAYS)	CURIES	7.84E-05	1.28E-04	30
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/SEC	9.86E-06	1.62E-05	
3. PERCENT OF TECH SPEC LIMIT	%	N/A	N/A	
4. GROSS ALPHA RADIOACTIVITY	CURIES	1.17E-07	2.94E-07	

D. TRITIUM

1. TOTAL RELEASE	CURIES	1.29E+01	2.30E+01	14
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/SEC	1.62E+00	2.90E+00	
3. PERCENT OF TECH SPEC LIMIT	%	N/A	N/A	

(a) Safety Analysis Calculation 87-063-00, January 6, 1988

TABLE 1B

SEMIANNUAL AIRBORNE CONTINUOUS AND BATCH RELEASES  
GROUND LEVEL RELEASES  
FISSION GASES, IODINES, AND PARTICULATES

QUARTERS 1 AND 2, 2002

NUCLIDE	UNITS	CONTINUOUS RELEASES		BATCH RELEASES	
		FIRST QUARTER	SECOND QUARTER	FIRST QUARTER	SECOND QUARTER

1. FISSION GASES

XE-138	CURIES	1.20E-01	0.00E+00	1.48E-04	0.00E+00
AR-41	CURIES	0.00E+00	0.00E+00	4.44E-02	5.24E-02
XE-133	CURIES	2.63E-01	5.82E-01	1.95E-01	2.30E-01
XE-135	CURIES	5.82E-02	5.09E-02	1.61E-03	1.38E-03
XE-131M	CURIES	0.00E+00	1.62E-01	4.04E-06	0.00E+00
XE-133M	CURIES	0.00E+00	0.00E+00	1.89E-03	7.90E-04
KR-85	CURIES	0.00E+00	0.00E+00	5.37E-01	0.00E+00
TOTAL FOR PERIOD	CURIES	4.41E-01	7.95E-01	7.80E-01	2.84E-01

2. IODINES

I-132	CURIES	0.00E+00	0.00E+00	4.05E-07	0.00E+00
TOTAL FOR PERIOD	CURIES	0.00E+00	0.00E+00	4.05E-07	0.00E+00

3. PARTICULATES

CS-134	CURIES	0.00E+00	0.00E+00	2.64E-05	3.24E-07
CS-137	CURIES	1.50E-06	2.34E-07	3.22E-05	2.54E-07
CE-144	CURIES	0.00E+00	0.00E+00	5.67E-06	0.00E+00
CO-60	CURIES	0.00E+00	0.00E+00	6.82E-05	4.38E-08
SB-125	CURIES	0.00E+00	0.00E+00	4.20E-05	0.00E+00
CO-57	CURIES	0.00E+00	0.00E+00	1.44E-07	0.00E+00
CR-51	CURIES	0.00E+00	0.00E+00	0.00E+00	7.26E-09
BA-139	CURIES	0.00E+00	0.00E+00	0.00E+00	5.86E-07
ALPHA	CURIES	8.51E-08	0.00E+00	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	1.58E-06	2.34E-07	1.75E-04	1.22E-06

4. TRITIUM

H-3	CURIES	1.66E+01	1.03E+01	2.77E-01	4.12E-01
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TABLE 1B

SEMIANNUAL AIRBORNE CONTINUOUS AND BATCH RELEASES  
GROUND LEVEL RELEASES  
FISSION GASES, IODINES, AND PARTICULATES

QUARTERS 3 AND 4, 2002

NUCLIDE	UNITS	CONTINUOUS RELEASES		BATCH RELEASES	
		THIRD QUARTER	FOURTH QUARTER	THIRD QUARTER	FOURTH QUARTER

1. FISSION GASES

XE-138	CURIES	0.00E+00	0.00E+00	9.60E-05	0.00E+00
AR-41	CURIES	0.00E+00	0.00E+00	5.86E-02	2.16E-01
XE-133	CURIES	7.99E-01	9.81E-01	1.79E-01	5.70E-01
XE-135	CURIES	2.96E-01	1.77E-01	1.07E-03	8.18E-03
XE-131M	CURIES	0.00E+00	0.00E+00	0.00E+00	1.25E-04
XE-133M	CURIES	0.00E+00	2.24E-02	1.08E-04	1.67E-05
KR-85	CURIES	0.00E+00	0.00E+00	0.00E+00	1.05E-01
KR-85M	CURIES	1.22E-02	1.54E-03	0.00E+00	0.00E+00
KR-87	CURIES	1.82E-02	2.31E-03	0.00E+00	8.52E-05
KR-88	CURIES	3.39E-02	4.30E-03	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	1.16E+00	1.19E+00	2.39E-01	8.99E-01

2. IODINES

I-132	CURIES	0.00E+00	8.71E-05	0.00E+00	6.02E-05
I-133	CURIES	0.00E+00	0.00E+00	2.09E-07	0.00E+00
I-131	CURIES	0.00E+00	2.43E-06	0.00E+00	1.20E-06
TOTAL FOR PERIOD	CURIES	0.00E+00	8.96E-05	2.09E-07	6.14E-05

3. PARTICULATES

CS-134	CURIES	1.54E-06	2.02E-07	0.00E+00	1.81E-06
CS-137	CURIES	1.16E-05	7.64E-06	0.00E+00	2.10E-05
CE-144	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CO-60	CURIES	1.00E-05	6.83E-06	2.30E-09	2.33E-05
SB-125	CURIES	5.45E-05	4.06E-05	0.00E+00	0.00E+00
CO-57	CURIES	0.00E+00	0.00E+00	0.00E+00	1.87E-08
CR-51	CURIES	0.00E+00	0.00E+00	0.00E+00	3.08E-06
BA-139	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TC-101	CURIES	0.00E+00	0.00E+00	5.44E-07	0.00E+00
MN-54	CURIES	1.86E-07	0.00E+00	0.00E+00	1.15E-07
CE-141	CURIES	0.00E+00	0.00E+00	0.00E+00	2.23E-07
Y-91M	CURIES	0.00E+00	0.00E+00	0.00E+00	9.17E-07
CO-58	CURIES	0.00E+00	4.83E-07	0.00E+00	1.62E-05
NB-95	CURIES	0.00E+00	0.00E+00	0.00E+00	8.31E-07
ZR-95	CURIES	0.00E+00	0.00E+00	0.00E+00	2.55E-07
RU-103	CURIES	0.00E+00	0.00E+00	0.00E+00	4.26E-06
MO-99	CURIES	0.00E+00	0.00E+00	0.00E+00	3.43E-07

TABLE 1B (continued)

SEMIANNUAL AIRBORNE CONTINUOUS AND BATCH RELEASES  
GROUND LEVEL RELEASES  
FISSION GASES, IODINES, AND PARTICULATES

QUARTERS 3 AND 4, 2002

NUCLIDE	UNITS	CONTINUOUS RELEASES		BATCH RELEASES	
		THIRD QUARTER	FOURTH QUARTER	THIRD QUARTER	FOURTH QUARTER

3. PARTICULATES

TC-99M	CURIES	0.00E+00	0.00E+00	0.00E+00	3.43E-07
ALPHA	CURIES	1.17E-07	2.94E-07	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	7.80E-05	5.60E-05	5.46E-07	7.27E-05

4. TRITIUM

H-3	CURIES	1.23E+01	2.15E+01	5.67E-01	1.55E+00
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TABLE 5

DOSE AT THE SITE BOUNDARY AND TO THE NEAREST RESIDENT  
FROM GASEOUS EFFLUENTS

ORGAN	UNITS	SITE BOUNDARY		NEAREST RESIDENT	
		LOCATION: 1.40 km SSW		LOCATION: 2.90 km NNW	
		AGE GROUP: CHILD		AGE GROUP: CHILD	
		DOSE	% LIMIT(a)	DOSE	% LIMIT(b)
1. GAMMA AIR DOSE *	MRAD	2.82E-04	0.00	1.68E-04	N/A
2. BETA AIR DOSE *	MRAD	3.27E-04	0.00	1.95E-04	N/A
3. WHOLE BODY ***	MREM	7.34E-04	N/A	5.01E-04	N/A
4. SKIN ***	MREM	9.64E-04	N/A	6.38E-04	N/A
5. BONE **	MREM	4.76E-04	N/A	1.69E-03	0.01
6. LIVER **	MREM	2.75E-03	N/A	1.34E-02	0.09
7. TOTAL BODY **	MREM	2.75E-03	N/A	1.22E-02	0.08
8. THYROID **	MREM	2.75E-03	N/A	1.22E-02	0.08
9. KIDNEY **	MREM	2.75E-03	N/A	1.24E-02	0.08
10. LUNG **	MREM	2.79E-03	N/A	1.21E-02	0.08
11. GI-LLI **	MREM	2.75E-03	N/A	1.20E-02	0.08

\* Dose from Noble Gases only

\*\* Dose from Tritium, Radioiodines, and Particulates only

\*\*\* Dose from Noble Gases plus Ground Plane dose

(a) Annual dose limits of Offsite Dose Calculation Manual (APA-ZZ-01003)  
of 10 mrad gamma air dose and 20 mrad beta air dose.

(b) Annual dose limits of Offsite Dose Calculation Manual (APA-ZZ-01003)  
of 15 mrem to any organ from I-131, I-133, H-3 and particulate  
radionuclides with halfives greater than 8 days.

TABLE 6

DOSE TO THE MEMBER OF THE PUBLIC FROM ACTIVITIES  
WITHIN THE SITE BOUNDARY

ORGAN	UNITS	EFFLUENT DOSE WITHIN THE SITE BOUNDARY	DIRECT RADIATION FROM THE UNIT	DIRECT RADIATION FROM OUTSIDE TANKS	TOTAL DOSE FOR THE YEAR
1. SKIN	MREM	1.12E-04	N/A	N/A	1.12E-04
2. BONE	MREM	1.57E-04	8.79E-03	9.88E-03	1.88E-02
3. LIVER	MREM	7.66E-04	8.79E-03	9.88E-03	1.94E-02
4. TOTAL BODY	MREM	8.26E-04	8.79E-03	9.88E-03	1.95E-02
5. THYROID	MREM	7.66E-04	8.79E-03	9.88E-03	1.94E-02
6. KIDNEY	MREM	7.66E-04	8.79E-03	9.88E-03	1.94E-02
7. LUNG	MREM	7.73E-04	8.79E-03	9.88E-03	1.94E-02
8. GI-LLI	MREM	7.66E-04	8.79E-03	9.88E-03	1.94E-02

TABLE 7

TOTAL DOSE DUE TO THE URANIUM FUEL CYCLE  
(MEMBER OF THE PUBLIC)

ORGAN	UNITS	DOSE AT THE RESIDENCE LOCATION	DOSE FROM ACTIVITIES WITHIN SITE BOUNDARY	TOTAL DOSE TO THE MEMBER OF THE PUBLIC	% LIMITS *
1. SKIN	MREM	2.93E-04	1.12E-04	4.06E-04	0.00
2. BONE	MREM	6.74E-04	1.88E-02	1.95E-02	0.08
3. LIVER	MREM	7.90E-03	1.94E-02	2.73E-02	0.11
4. TOTAL BODY	MREM	7.91E-03	1.95E-02	2.74E-02	0.11
5. THYROID	MREM	7.49E-03	1.94E-02	2.69E-02	0.04
6. KIDNEY	MREM	7.55E-03	1.94E-02	2.70E-02	0.11
7. LUNG	MREM	7.45E-03	1.94E-02	2.69E-02	0.11
8. GI-LLI	MREM	7.47E-03	1.94E-02	2.69E-02	0.11

\* Annual dose limits from 40CFR190.10(a) of 25 mrem whole body, 75 mrem to the thyroid, and 25 mrem to any other organ.



Attachment 4  
Errata for 2003 Callaway Plant Radioactive Effluent Release Report

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TABLE 1A

SEMIANNUAL SUMMATION OF GASEOUS RELEASES  
ALL AIRBORNE EFFLUENTS

QUARTERS 1 AND 2, 2003

TYPE OF EFFLUENT	UNITS	FIRST QUARTER	SECOND QUARTER	EST TOTAL ERROR % (a)
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A. FISSION AND ACTIVATION GASES

1. TOTAL RELEASE	CURIES	2.61E+01	1.13E+00	20
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/SEC	3.35E+00	1.44E-01	
3. PERCENT OF TECH SPEC LIMIT	%	N/A	N/A	

B. RADIOIODINES

1. TOTAL IODINE-131	CURIES	1.38E-04	0.00E+00	23
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/SEC	1.78E-05	0.00E+00	
3. PERCENT OF TECH SPEC LIMIT	%	N/A	N/A	

C. PARTICULATES

1. PARTICULATE (HALF-LIVES > 8 DAYS)	CURIES	1.78E-04	2.24E-05	30
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/SEC	2.30E-05	2.85E-06	
3. PERCENT OF TECH SPEC LIMIT	%	N/A	N/A	
4. GROSS ALPHA RADIOACTIVITY	CURIES	1.83E-07	2.28E-07	

D. TRITIUM

1. TOTAL RELEASE	CURIES	1.25E+01	1.48E+01	14
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/SEC	1.60E+00	1.89E+00	
3. PERCENT OF TECH SPEC LIMIT	%	N/A	N/A	

(a) Safety Analysis Calculation 87-063-00, January 6, 1988

TABLE 1A

SEMIANNUAL SUMMATION OF GASEOUS RELEASES  
ALL AIRBORNE EFFLUENTS

QUARTERS 3 AND 4, 2003

TYPE OF EFFLUENT	UNITS	THIRD QUARTER	FOURTH QUARTER	EST TOTAL ERROR % (a)
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A. FISSION AND ACTIVATION GASES

1. TOTAL RELEASE	CURIES	5.08E+00	1.68E+01	20
2. AVERAGE RELEASE RATE FOR PERIOD	µCi/SEC	6.39E-01	2.12E+00	
3. PERCENT OF TECH SPEC LIMIT	%	N/A	N/A	

B. RADIOIODINES

1. TOTAL IODINE-131	CURIES	0.00E+00	1.75E-05	23
2. AVERAGE RELEASE RATE FOR PERIOD	µCi/SEC	0.00E+00	2.20E-06	
3. PERCENT OF TECH SPEC LIMIT	%	N/A	N/A	

C. PARTICULATES

1. PARTICULATE (HALF-LIVES > 8 DAYS)	CURIES	5.13E-07	1.73E-05	30
2. AVERAGE RELEASE RATE FOR PERIOD	µCi/SEC	6.45E-08	2.18E-06	
3. PERCENT OF TECH SPEC LIMIT	%	N/A	N/A	
4. GROSS ALPHA RADIOACTIVITY	CURIES	7.89E-08	1.69E-07	

D. TRITIUM

1. TOTAL RELEASE	CURIES	1.24E+01	1.09E+01	14
2. AVERAGE RELEASE RATE FOR PERIOD	µCi/SEC	1.56E+00	1.36E+00	
3. PERCENT OF TECH SPEC LIMIT	%	N/A	N/A	

(a) Safety Analysis Calculation 87-063-00, January 6, 1988

TABLE 1B

SEMIANNUAL AIRBORNE CONTINUOUS AND BATCH RELEASES  
GROUND LEVEL RELEASES  
FISSION GASES, IODINES, AND PARTICULATES

QUARTERS 1 AND 2, 2003

NUCLIDE	UNITS	CONTINUOUS RELEASES		BATCH RELEASES	
		FIRST QUARTER	SECOND QUARTER	FIRST QUARTER	SECOND QUARTER

1. FISSION GASES

AR-41	CURIES	0.00E+00	0.00E+00	2.11E-01	5.58E-02
XE-133	CURIES	1.04E+01	1.06E+00	1.41E+01	1.47E-02
XE-135	CURIES	3.03E-01	0.00E+00	2.55E-02	0.00E+00
XE-131M	CURIES	0.00E+00	0.00E+00	2.07E-01	0.00E+00
XE-133M	CURIES	4.01E-01	0.00E+00	1.15E-01	1.97E-07
XE-138	CURIES	1.59E-01	0.00E+00	1.44E-04	0.00E+00
XE-135M	CURIES	0.00E+00	0.00E+00	2.20E-04	0.00E+00
KR-85M	CURIES	0.00E+00	0.00E+00	9.53E-05	0.00E+00
KR-85	CURIES	0.00E+00	0.00E+00	1.15E-01	0.00E+00
TOTAL FOR PERIOD	CURIES	1.13E+01	1.06E+00	1.48E+01	7.05E-02

2. IODINES

I-131	CURIES	6.26E-08	0.00E+00	1.38E-04	0.00E+00
TOTAL FOR PERIOD	CURIES	6.26E-08	0.00E+00	1.38E-04	0.00E+00

3. PARTICULATES

SB-125	CURIES	3.90E-06	4.01E-06	0.00E+00	0.00E+00
CO-60	CURIES	3.30E-07	5.79E-07	8.08E-05	1.67E-05
CS-137	CURIES	7.95E-07	7.54E-07	3.70E-07	1.52E-07
CO-57	CURIES	5.12E-08	0.00E+00	0.00E+00	0.00E+00
CE-144	CURIES	0.00E+00	0.00E+00	1.44E-06	0.00E+00
NB-95	CURIES	0.00E+00	0.00E+00	5.34E-05	0.00E+00
ZR-95	CURIES	0.00E+00	0.00E+00	3.73E-05	0.00E+00
CO-58	CURIES	0.00E+00	0.00E+00	0.00E+00	2.02E-07
ALPHA	CURIES	1.83E-07	2.28E-07	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	5.26E-06	5.57E-06	1.73E-04	1.71E-05

4. TRITIUM

H-3	CURIES	1.09E+01	1.44E+01	1.54E+00	4.85E-01
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TABLE 1B

SEMIANNUAL AIRBORNE CONTINUOUS AND BATCH RELEASES  
GROUND LEVEL RELEASES  
FISSION GASES, IODINES, AND PARTICULATES

QUARTERS 3 AND 4, 2003

NUCLIDE	UNITS	CONTINUOUS RELEASES		BATCH RELEASES	
		THIRD QUARTER	FOURTH QUARTER	THIRD QUARTER	FOURTH QUARTER

1. FISSION GASES

AR-41	CURIES	0.00E+00	0.00E+00	3.94E-02	4.82E-01
XE-133	CURIES	1.78E-01	1.09E+01	1.19E-02	2.19E-01
XE-135	CURIES	0.00E+00	1.07E-01	0.00E+00	4.60E-03
XE-131M	CURIES	4.63E+00	4.97E+00	0.00E+00	1.76E-04
XE-133M	CURIES	0.00E+00	1.07E-02	0.00E+00	0.00E+00
XE-138	CURIES	0.00E+00	0.00E+00	2.82E-04	0.00E+00
XE-135M	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
KR-85M	CURIES	0.00E+00	1.29E-03	0.00E+00	0.00E+00
KR-85	CURIES	0.00E+00	0.00E+00	2.28E-01	7.95E-02
KR-88	CURIES	0.00E+00	2.47E-02	0.00E+00	0.00E+00
KR-87	CURIES	0.00E+00	0.00E+00	0.00E+00	3.72E-05
TOTAL FOR PERIOD	CURIES	4.80E+00	1.60E+01	2.80E-01	7.85E-01

2. IODINES

I-131	CURIES	0.00E+00	2.75E-07	0.00E+00	1.72E-05
I-133	CURIES	0.00E+00	0.00E+00	0.00E+00	6.59E-06
I-132	CURIES	0.00E+00	0.00E+00	0.00E+00	1.65E-06
TOTAL FOR PERIOD	CURIES	0.00E+00	2.75E-07	0.00E+00	2.55E-05

3. PARTICULATES

SB-125	CURIES	4.90E-07	1.02E-06	0.00E+00	0.00E+00
CO-60	CURIES	0.00E+00	2.18E-07	2.23E-08	1.12E-05
CS-137	CURIES	0.00E+00	2.91E-07	0.00E+00	2.68E-06
CO-57	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CE-144	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NB-95	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ZR-95	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CO-58	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CS-134	CURIES	0.00E+00	0.00E+00	0.00E+00	1.39E-06
CS-136	CURIES	0.00E+00	0.00E+00	0.00E+00	4.47E-07
ALPHA	CURIES	7.89E-08	1.69E-07	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	5.69E-07	1.70E-06	2.23E-08	1.58E-05

4. TRITIUM

H-3	CURIES	1.23E+01	1.06E+01	7.50E-02	2.55E-01
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TABLE 5

DOSE AT THE SITE BOUNDARY AND TO THE NEAREST RESIDENT  
FROM GASEOUS EFFLUENTS

		SITE BOUNDARY		NEAREST RESIDENT	
		LOCATION: 1.40 km SSW		LOCATION: 2.90 km NNW	
		AGE GROUP: CHILD		AGE GROUP: CHILD	
ORGAN	UNITS	DOSE	% LIMIT(a)	DOSE	% LIMIT(b)
1. GAMMA AIR DOSE *	MRAD	8.87E-04	0.01	4.77E-04	N/A
2. BETA AIR DOSE *	MRAD	2.00E-03	0.01	1.07E-03	N/A
3. WHOLE BODY ***	MREM	1.14E-03	N/A	6.15E-04	N/A
4. SKIN ***	MREM	2.09E-03	N/A	1.13E-03	N/A
5. BONE **	MREM	3.78E-04	N/A	3.18E-04	0.00
6. LIVER **	MREM	2.17E-03	N/A	8.58E-03	0.06
7. TOTAL BODY **	MREM	2.17E-03	N/A	8.50E-03	0.06
8. THYROID **	MREM	2.25E-03	N/A	2.13E-02	0.14
9. KIDNEY **	MREM	2.17E-03	N/A	8.54E-03	0.06
10. LUNG **	MREM	2.20E-03	N/A	8.48E-03	0.06
11. GI-LLI **	MREM	2.17E-03	N/A	8.51E-03	0.06

\* Dose from Noble Gases only

\*\* Dose from Tritium, Radioiodines, and Particulates only

\*\*\* Dose from Noble Gases plus Ground Plane dose

(a) Annual dose limits of Offsite Dose Calculation Manual (APA-ZZ-01003)  
of 10 mrad gamma air dose and 20 mrad beta air dose.

(b) Annual dose limits of Offsite Dose Calculation Manual (APA-ZZ-01003)  
of 15 mrem to any organ from I-131, I-133, H-3 and particulate  
radionuclides with half-lives greater than 8 days.

TABLE 6

DOSE TO THE MEMBER OF THE PUBLIC FROM ACTIVITIES  
WITHIN THE SITE BOUNDARY

ORGAN	UNITS	EFFLUENT DOSE WITHIN THE SITE BOUNDARY	DIRECT RADIATION FROM THE UNIT	DIRECT RADIATION FROM OUTSIDE TANKS	TOTAL DOSE FOR THE YEAR
1. SKIN	MREM	3.95E-04	N/A	N/A	3.95E-04
2. BONE	MREM	1.02E-04	8.79E-03	9.21E-04	9.81E-03
3. LIVER	MREM	5.87E-04	8.79E-03	9.21E-04	1.03E-02
4. TOTAL BODY	MREM	7.64E-04	8.79E-03	9.21E-04	1.05E-02
5. THYROID	MREM	6.01E-04	8.79E-03	9.21E-04	1.03E-02
6. KIDNEY	MREM	5.87E-04	8.79E-03	9.21E-04	1.03E-02
7. LUNG	MREM	5.93E-04	8.79E-03	9.21E-04	1.03E-02
8. GI-LLI	MREM	5.87E-04	8.79E-03	9.21E-04	1.03E-02

TABLE 7

TOTAL DOSE DUE TO THE URANIUM FUEL CYCLE  
(MEMBER OF THE PUBLIC)

ORGAN	UNITS	DOSE AT THE RESIDENCE LOCATION	DOSE FROM ACTIVITIES WITHIN SITE BOUNDARY	TOTAL DOSE TO THE MEMBER OF THE PUBLIC	% LIMITS *
1. SKIN	MREM	9.24E-04	3.95E-04	1.32E-03	0.01
2. BONE	MREM	2.31E-04	9.81E-03	1.00E-02	0.04
3. LIVER	MREM	5.27E-03	1.03E-02	1.56E-02	0.06
4. TOTAL BODY	MREM	5.67E-03	1.05E-02	1.61E-02	0.06
5. THYROID	MREM	9.68E-03	1.03E-02	2.00E-02	0.03
6. KIDNEY	MREM	5.26E-03	1.03E-02	1.56E-02	0.06
7. LUNG	MREM	5.24E-03	1.03E-02	1.55E-02	0.06
8. GI-LLI	MREM	5.34E-03	1.03E-02	1.56E-02	0.06

\* Annual dose limits from 40CFR190.10(a) of 25 mrem whole body, 75 mrem to the thyroid, and 25 mrem to any other organ.



Attachment 5  
Errata for 2004 Callaway Plant Radioactive Effluent Release Report

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TABLE 1A

SEMIANNUAL SUMMATION OF GASEOUS RELEASES  
ALL AIRBORNE EFFLUENTS

QUARTERS 1 AND 2, 2004

TYPE OF EFFLUENT	UNITS	FIRST QUARTER	SECOND QUARTER	EST TOTAL ERROR % (a)
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A. FISSION AND ACTIVATION GASES

1. TOTAL RELEASE	CURIES	3.01E+02	4.72E+02	20
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/SEC	3.83E+01	6.01E+01	
3. PERCENT OF TECH SPEC LIMIT	%	N/A	N/A	

B. RADIOIODINES

1. TOTAL IODINE-131	CURIES	4.45E-03	4.60E-03	23
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/SEC	5.66E-04	5.86E-04	
3. PERCENT OF TECH SPEC LIMIT	%	N/A	N/A	

C. PARTICULATES

1. PARTICULATE (HALF-LIVES > 8 DAYS)	CURIES	4.76E-03	1.06E-03	30
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/SEC	6.05E-04	1.35E-04	
3. PERCENT OF TECH SPEC LIMIT	%	N/A	N/A	
4. GROSS ALPHA RADIOACTIVITY	CURIES	4.71E-07	4.11E-07	

D. TRITIUM

1. TOTAL RELEASE	CURIES	6.61E+00	1.31E+01	14
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/SEC	8.41E-01	1.67E+00	
3. PERCENT OF TECH SPEC LIMIT	%	N/A	N/A	

(a) Safety Analysis Calculation 87-063-00, January 6, 1988

TABLE IA

SEMIANNUAL SUMMATION OF GASEOUS RELEASES  
ALL AIRBORNE EFFLUENTS

QUARTERS 3 AND 4, 2004

TYPE OF EFFLUENT	UNITS	THIRD QUARTER	FOURTH QUARTER	EST TOTAL ERROR % (a)
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A. FISSION AND ACTIVATION GASES

1. TOTAL RELEASE	CURIES	3.09E+00	1.65E+00	20
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/SEC	3.89E-01	2.08E-01	
3. PERCENT OF TECH SPEC LIMIT	%	N/A	N/A	

B. RADIOIODINES

1. TOTAL IODINE-131	CURIES	0.00E+00	0.00E+00	23
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/SEC	0.00E+00	0.00E+00	
3. PERCENT OF TECH SPEC LIMIT	%	N/A	N/A	

C. PARTICULATES

1. PARTICULATE (HALF-LIVES > 8 DAYS)	CURIES	4.78E-05	9.87E-06	30
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/SEC	6.01E-06	1.24E-06	
3. PERCENT OF TECH SPEC LIMIT	%	N/A	N/A	
4. GROSS ALPHA RADIOACTIVITY	CURIES	4.21E-07	2.24E-07	

D. TRITIUM

1. TOTAL RELEASE	CURIES	1.06E+01	8.15E+00	14
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/SEC	1.34E+00	1.03E+00	
3. PERCENT OF TECH SPEC LIMIT	%	N/A	N/A	

(a) Safety Analysis Calculation 87-063-00, January 6, 1988

TABLE 1B

SEMIANNUAL AIRBORNE CONTINUOUS AND BATCH RELEASES  
GROUND LEVEL RELEASES  
FISSION GASES, IODINES, AND PARTICULATES

QUARTERS 1 AND 2, 2004

NUCLIDE	UNITS	CONTINUOUS RELEASES		BATCH RELEASES	
		FIRST QUARTER	SECOND QUARTER	FIRST QUARTER	SECOND QUARTER
<b>1. FISSION GASES</b>					
AR-41	CURIES	0.00E+00	0.00E+00	6.62E-02	1.17E-01
XE-133	CURIES	2.77E+02	4.42E+02	2.11E-01	1.53E+01
XE-135	CURIES	1.08E+01	5.25E+00	1.59E-03	4.53E-02
KR-85M	CURIES	2.89E+00	4.71E-01	0.00E+00	2.76E-03
XE-135M	CURIES	0.00E+00	3.76E-01	2.64E-04	0.00E+00
KR-87	CURIES	9.03E-01	1.04E-01	0.00E+00	0.00E+00
XE-131M	CURIES	1.60E+00	1.71E+00	1.54E-03	1.15E-01
XE-133M	CURIES	2.54E+00	5.25E+00	9.20E-04	4.54E-02
KR-88	CURIES	3.42E+00	4.54E-01	0.00E+00	1.43E-02
KR-85	CURIES	0.00E+00	0.00E+00	2.10E+00	3.26E-01
XE-138	CURIES	0.00E+00	2.06E-01	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	2.99E+02	4.56E+02	2.38E+00	1.59E+01

**2. IODINES**

I-133	CURIES	0.00E+00	1.86E-05	2.17E-03	8.25E-04
I-131	CURIES	5.30E-06	1.15E-03	4.45E-03	3.45E-03
I-132	CURIES	0.00E+00	1.04E-05	5.71E-04	1.21E-04
I-135	CURIES	0.00E+00	0.00E+00	4.66E-04	0.00E+00
TOTAL FOR PERIOD	CURIES	5.30E-06	1.18E-03	7.65E-03	4.40E-03

**3. PARTICULATES**

CS-137	CURIES	1.05E-06	2.99E-07	1.61E-03	3.80E-04
SB-125	CURIES	2.61E-06	5.54E-07	0.00E+00	0.00E+00
BA-140	CURIES	0.00E+00	0.00E+00	5.13E-05	3.57E-05
CS-134	CURIES	0.00E+00	0.00E+00	2.44E-03	5.44E-04
CS-136	CURIES	0.00E+00	0.00E+00	2.61E-04	5.64E-05
NA-24	CURIES	0.00E+00	0.00E+00	4.30E-06	0.00E+00
SB-122	CURIES	0.00E+00	0.00E+00	2.82E-04	0.00E+00
CO-58	CURIES	0.00E+00	5.58E-06	2.55E-05	3.79E-06
CO-60	CURIES	4.67E-07	0.00E+00	8.07E-05	3.36E-05
NB-95	CURIES	0.00E+00	0.00E+00	0.00E+00	4.25E-07
CR-51	CURIES	0.00E+00	0.00E+00	0.00E+00	1.51E-06
ALPHA	CURIES	4.71E-07	4.11E-07	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	4.60E-06	6.84E-06	4.75E-03	1.05E-03

TABLE 1B (continued)

SEMIANNUAL AIRBORNE CONTINUOUS AND BATCH RELEASES  
GROUND LEVEL RELEASES  
FISSION GASES, IODINES, AND PARTICULATES

QUARTERS 1 AND 2, 2004

NUCLIDE	UNITS	CONTINUOUS RELEASES		BATCH RELEASES	
		FIRST QUARTER	SECOND QUARTER	FIRST QUARTER	SECOND QUARTER

4. TRITIUM

H-3	CURIES	6.00E+00	1.20E+01	6.08E-01	1.06E+00
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TABLE 1B

SEMIANNUAL AIRBORNE CONTINUOUS AND BATCH RELEASES  
GROUND LEVEL RELEASES  
FISSION GASES, IODINES, AND PARTICULATES

QUARTERS 3 AND 4, 2004

NUCLIDE	UNITS	CONTINUOUS RELEASES		BATCH RELEASES	
		THIRD QUARTER	FOURTH QUARTER	THIRD QUARTER	FOURTH QUARTER

1. FISSION GASES

AR-41	CURIES	0.00E+00	0.00E+00	4.15E-02	6.43E-02
XE-133	CURIES	3.02E+00	1.46E-01	8.79E-04	1.86E-03
XE-135	CURIES	2.87E-02	3.96E-02	1.24E-05	2.29E-05
KR-85M	CURIES	0.00E+00	1.09E-02	0.00E+00	0.00E+00
XE-135M	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
KR-87	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
XE-131M	CURIES	0.00E+00	0.00E+00	8.20E-04	0.00E+00
XE-133M	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
KR-88	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
KR-85	CURIES	0.00E+00	0.00E+00	0.00E+00	1.34E+00
XE-138	CURIES	1.42E-03	5.51E-02	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	3.05E+00	2.52E-01	4.32E-02	1.40E+00

2. IODINES

I-133	CURIES	9.62E-07	0.00E+00	0.00E+00	0.00E+00
I-131	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
I-132	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
I-135	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	9.62E-07	0.00E+00	0.00E+00	0.00E+00

3. PARTICULATES

CS-137	CURIES	7.12E-06	1.10E-06	0.00E+00	0.00E+00
SB-125	CURIES	3.21E-05	7.62E-06	0.00E+00	0.00E+00
BA-140	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CS-134	CURIES	5.24E-07	0.00E+00	0.00E+00	0.00E+00
CS-136	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NA-24	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SB-122	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CO-58	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CO-60	CURIES	6.30E-06	7.65E-07	1.22E-06	0.00E+00
NB-95	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CR-51	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MO-99	CURIES	0.00E+00	0.00E+00	3.43E-08	0.00E+00
TC-99M	CURIES	0.00E+00	0.00E+00	3.43E-08	0.00E+00
CE-144	CURIES	0.00E+00	0.00E+00	4.71E-07	0.00E+00
CO-57	CURIES	0.00E+00	1.04E-07	0.00E+00	0.00E+00

TABLE 1B (continued)

SEMIANNUAL AIRBORNE CONTINUOUS AND BATCH RELEASES  
GROUND LEVEL RELEASES  
FISSION GASES, IODINES, AND PARTICULATES

QUARTERS 3 AND 4, 2004

NUCLIDE	UNITS	CONTINUOUS RELEASES		BATCH RELEASES	
		THIRD QUARTER	FOURTH QUARTER	THIRD QUARTER	FOURTH QUARTER

3. PARTICULATES

CE-141	CURIES	0.00E+00	1.07E-07	0.00E+00	0.00E+00
CS-138	CURIES	0.00E+00	0.00E+00	0.00E+00	1.74E-07
ALPHA	CURIES	4.21E-07	2.24E-07	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	4.64E-05	9.92E-06	1.76E-06	1.74E-07

4. TRITIUM

H-3	CURIES	1.04E+01	7.23E+00	2.40E-01	9.17E-01
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TABLE 5

DOSE AT THE SITE BOUNDARY AND TO THE NEAREST RESIDENT  
FROM GASEOUS EFFLUENTS

		SITE BOUNDARY		NEAREST RESIDENT	
		LOCATION: 2.20 km NNW		LOCATION: 2.90 km NNW	
		AGE GROUP: CHILD		AGE GROUP: CHILD	
ORGAN	UNITS	DOSE	% LIMIT(a)	DOSE	% LIMIT(b)
1. GAMMA AIR DOSE *	MRAD	1.29E-02	0.13	8.50E-03	N/A
2. BETA AIR DOSE *	MRAD	3.03E-02	0.15	1.99E-02	N/A
3. WHOLE BODY ***	MREM	1.74E-02	N/A	1.13E-02	N/A
4. SKIN ***	MREM	3.08E-02	N/A	2.01E-02	N/A
5. BONE **	MREM	6.34E-03	N/A	6.34E-02	0.42
6. LIVER **	MREM	7.66E-03	N/A	8.85E-02	0.59
7. TOTAL BODY **	MREM	7.54E-03	N/A	2.70E-02	0.18
8. THYROID **	MREM	1.22E-02	N/A	8.39E-01	5.59
9. KIDNEY **	MREM	7.57E-03	N/A	3.91E-02	0.26
10. LUNG **	MREM	7.55E-03	N/A	1.99E-02	0.13
11. GI-LLI **	MREM	7.50E-03	N/A	1.22E-02	0.08

\* Dose from Noble Gases only

\*\* Dose from Tritium, Radioiodines, and Particulates only

\*\*\* Dose from Noble Gases plus Ground Plane dose

(a) Annual dose limits of Offsite Dose Calculation Manual (APA-ZZ-01003)  
of 10 mrad gamma air dose and 20 mrad beta air dose.

(b) Annual dose limits of Offsite Dose Calculation Manual (APA-ZZ-01003)  
of 15 mrem to any organ from I-131, I-133, H-3 and particulate  
radionuclides with half-lives greater than 8 days.



TABLE 6

DOSE TO THE MEMBER OR THE PUBLIC FROM ACTIVITIES  
WITHIN THE SITE BOUNDARY  
2004  
(MEMBER OF THE PUBLIC)

ORGAN	UNITS	EFFLUENT DOSE WITHIN THE SITE BOUNDARY	DIRECT RADIATION FROM THE UNIT	DIRECT RADIATION FROM OUTSIDE TANKS	DIRECT RADIATION FROM RAM STORAGE	EFFLUENT DOSE FROM THE CLG TWR	TOTAL DOSE FOR THE YEAR
SKIN	mrem	5.80E-03	N/A	N/A	N/A	N/A	5.80E-03
BONE	mrem	1.83E-03	8.79E-03	1.36E-03	1.82E-03	N/A	1.38E-02
LIVER	mrem	2.22E-03	8.79E-03	1.36E-03	1.82E-03	2.08E-05	1.42E-02
TOTAL BODY	mrem	4.86E-03	8.79E-03	1.36E-03	1.82E-03	2.08E-05	1.67E-02
THYROID	mrem	3.06E-03	8.79E-03	1.36E-03	1.82E-03	2.08E-05	1.51E-02
KIDNEY	mrem	2.20E-03	8.79E-03	1.36E-03	1.82E-03	2.08E-05	1.42E-02
LUNG	mrem	2.20E-03	8.79E-03	1.36E-03	1.82E-03	2.08E-05	1.42E-02
GI-LLI	mrem	2.19E-03	8.79E-03	1.36E-03	1.82E-03	2.08E-05	1.42E-02

TABLE 7

TOTAL DOSE DUE TO THE URANIUM FUEL CYCLE  
(MEMBER OF THE PUBLIC)  
2004

ORGAN	UNITS	EFFLUENT DOSE AT RESIDENCE LOCATION	DOSE FROM ACTIVITIES IN SITE BOUNDARY	DOSE FROM CLG TWR H-3 AT NEAREST RESIDENCE	TOTAL DOSE TO THE MEMBER OF THE PUBLIC	% OF LIMITS
SKIN	mrem	1.62E-02	5.80E-03	N/A	2.20E-02	0.09
BONE	mrem	1.88E-02	1.38E-02	N/A	3.26E-02	0.13
LIVER	mrem	3.65E-02	1.42E-02	1.42E-05	5.07E-02	0.20
TOTAL BODY	mrem	3.71E-02	1.67E-02	1.42E-05	5.38E-02	0.21
THYROID	mrem	2.96E-01	1.51E-02	1.42E-05	3.11E-01	0.41
KIDNEY	mrem	1.90E-02	1.42E-02	1.42E-05	3.32E-02	0.13
LUNG	mrem	1.15E-02	1.42E-02	1.42E-05	2.57E-02	0.10
GI-LLI	mrem	9.33E-03	1.42E-02	1.42E-05	2.35E-02	0.09

Annual dose limits from 40 CFR 190.10(a) of 25 mrem whole body, 75 mrem to the thyroid and 25 mrem to any other organ.

Attachment 6  
Errata for 2005 Callaway Plant Radioactive Effluent Release Report

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TABLE 1A

SEMIANNUAL SUMMATION OF GASEOUS RELEASES  
ALL AIRBORNE EFFLUENTS

QUARTERS 1 AND 2, 2005

TYPE OF EFFLUENT	UNITS	FIRST QUARTER	SECOND QUARTER	EST TOTAL ERROR % (a)
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A. FISSION AND ACTIVATION GASES

1. TOTAL RELEASE	CURIES	9.13E+00	2.59E+00	20
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/SEC	1.17E+00	3.29E-01	
3. PERCENT OF TECH SPEC LIMIT	%	N/A	N/A	

B. RADIOIODINES

1. TOTAL IODINE-131	CURIES	0.00E+00	4.55E-08	23
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/SEC	0.00E+00	5.79E-09	
3. PERCENT OF TECH SPEC LIMIT	%	N/A	N/A	

C. PARTICULATES

1. PARTICULATE (HALF-LIVES > 8 DAYS)	CURIES	1.58E-03	4.95E-04	30
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/SEC	2.03E-04	6.29E-05	
3. PERCENT OF TECH SPEC LIMIT	%	N/A	N/A	
4. GROSS ALPHA RADIOACTIVITY	CURIES	1.25E-07	2.07E-07	

D. TRITIUM

1. TOTAL RELEASE	CURIES	1.34E+01	9.26E+00	14
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/SEC	1.72E+00	1.18E+00	
3. PERCENT OF TECH SPEC LIMIT	%	N/A	N/A	

(a) Safety Analysis Calculation 87-063-00, January 6, 1988

TABLE 1A

SEMIANNUAL SUMMATION OF GASEOUS RELEASES  
ALL AIRBORNE EFFLUENTS

QUARTERS 3 AND 4, 2005

TYPE OF EFFLUENT	UNITS	THIRD QUARTER	FOURTH QUARTER	EST TOTAL ERROR % (a)
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A. FISSION AND ACTIVATION GASES

1. TOTAL RELEASE	CURIES	1.95E+01	3.33E+00	20
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/SEC	2.45E+00	4.19E-01	
3. PERCENT OF TECH SPEC LIMIT	%	N/A	N/A	

B. RADIOIODINES

1. TOTAL IODINE-131	CURIES	3.94E-08	5.81E-08	23
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/SEC	4.96E-09	7.31E-09	
3. PERCENT OF TECH SPEC LIMIT	%	N/A	N/A	

C. PARTICULATES

1. PARTICULATE (HALF-LIVES > 8 DAYS)	CURIES	1.17E-05	5.45E-05	30
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/SEC	1.47E-06	6.86E-06	
3. PERCENT OF TECH SPEC LIMIT	%	N/A	N/A	
4. GROSS ALPHA RADIOACTIVITY	CURIES	1.98E-07	5.48E-07	

D. TRITIUM

1. TOTAL RELEASE	CURIES	9.18E+00	8.95E+00	14
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/SEC	1.15E+00	1.13E+00	
3. PERCENT OF TECH SPEC LIMIT	%	N/A	N/A	

(a) Safety Analysis Calculation 87-063-00, January 6, 1988

TABLE 1B

SEMIANNUAL AIRBORNE CONTINUOUS AND BATCH RELEASES  
GROUND LEVEL RELEASES  
FISSION GASES, IODINES, AND PARTICULATES

QUARTERS 1 AND 2, 2005

NUCLIDE	UNITS	CONTINUOUS RELEASES		BATCH RELEASES	
		FIRST QUARTER	SECOND QUARTER	FIRST QUARTER	SECOND QUARTER

1. FISSION GASES

AR-41	CURIES	2.94E-02	1.09E-01	9.45E-02	4.35E-02
XE-133	CURIES	2.85E-01	9.99E-01	2.17E-03	1.94E-03
XE-135	CURIES	1.25E-01	4.00E-01	2.96E-05	2.92E-05
KR-85	CURIES	0.00E+00	0.00E+00	4.11E+00	0.00E+00
KR-85M	CURIES	1.33E-02	4.95E-02	0.00E+00	0.00E+00
KR-87	CURIES	3.07E-02	1.15E-01	0.00E+00	0.00E+00
KR-88	CURIES	3.82E-02	1.42E-01	0.00E+00	0.00E+00
XE-135M	CURIES	5.31E-02	1.08E-01	0.00E+00	0.00E+00
XE-138	CURIES	1.75E+00	1.33E-01	0.00E+00	0.00E+00
XE-131M	CURIES	2.61E+00	4.89E-01	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	4.93E+00	2.55E+00	4.20E+00	4.55E-02

2. IODINES

I-133	CURIES	5.62E-08	0.00E+00	2.89E-06	3.37E-07
I-132	CURIES	1.77E-05	0.00E+00	1.33E-06	0.00E+00
I-131	CURIES	0.00E+00	4.55E-08	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	1.78E-05	4.55E-08	4.23E-06	3.37E-07

3. PARTICULATES

MO-99	CURIES	0.00E+00	0.00E+00	7.05E-05	2.45E-05
TC-99M	CURIES	0.00E+00	0.00E+00	7.05E-05	2.45E-05
CS-134	CURIES	0.00E+00	0.00E+00	4.96E-04	1.42E-04
CS-137	CURIES	5.17E-08	0.00E+00	4.94E-04	1.22E-04
CO-60	CURIES	0.00E+00	0.00E+00	7.29E-06	1.72E-05
CE-141	CURIES	0.00E+00	0.00E+00	1.29E-04	4.50E-05
CO-58	CURIES	0.00E+00	0.00E+00	3.12E-04	1.09E-04
SB-125	CURIES	0.00E+00	2.80E-07	0.00E+00	0.00E+00
CD-109	CURIES	0.00E+00	9.63E-06	0.00E+00	0.00E+00
CE-144	CURIES	0.00E+00	0.00E+00	0.00E+00	5.86E-07
PR-144	CURIES	0.00E+00	0.00E+00	0.00E+00	5.86E-07
TE-132	CURIES	0.00E+00	0.00E+00	0.00E+00	1.06E-07
ALPHA	CURIES	1.25E-07	2.07E-07	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	1.76E-07	1.01E-05	1.58E-03	4.85E-04

TABLE 1B (continued)

SEMIANNUAL AIRBORNE CONTINUOUS AND BATCH RELEASES  
GROUND LEVEL RELEASES  
FISSION GASES, IODINES, AND PARTICULATES

QUARTERS 1 AND 2, 2005

NUCLIDE	UNITS	CONTINUOUS RELEASES		BATCH RELEASES	
		FIRST QUARTER	SECOND QUARTER	FIRST QUARTER	SECOND QUARTER

4. TRITIUM

H-3	CURIES	5.66E+00	6.99E+00	7.69E+00	2.27E+00
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TABLE 1B

SEMIANNUAL AIRBORNE CONTINUOUS AND BATCH RELEASES  
GROUND LEVEL RELEASES  
FISSION GASES, IODINES, AND PARTICULATES

QUARTERS 3 AND 4, 2005

NUCLIDE	UNITS	CONTINUOUS RELEASES		BATCH RELEASES	
		THIRD QUARTER	FOURTH QUARTER	THIRD QUARTER	FOURTH QUARTER

1. FISSION GASES

AR-41	CURIES	2.87E-02	0.00E+00	1.18E-01	2.05E-02
XE-133	CURIES	2.06E+00	0.00E+00	2.65E-03	4.16E-04
XE-135	CURIES	6.01E-01	0.00E+00	7.60E-05	0.00E+00
KR-85	CURIES	3.86E+00	0.00E+00	1.24E+01	2.51E+00
KR-85M	CURIES	3.22E-02	0.00E+00	0.00E+00	0.00E+00
KR-87	CURIES	5.65E-02	0.00E+00	7.55E-05	0.00E+00
KR-88	CURIES	7.58E-02	0.00E+00	0.00E+00	0.00E+00
XE-135M	CURIES	1.31E-01	0.00E+00	0.00E+00	0.00E+00
XE-138	CURIES	7.62E-02	0.00E+00	0.00E+00	0.00E+00
XE-131M	CURIES	0.00E+00	7.72E-01	1.12E-03	2.55E-02
XE-133M	CURIES	9.37E-03	0.00E+00	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	6.92E+00	7.72E-01	1.25E+01	2.55E+00

2. IODINES

I-133	CURIES	0.00E+00	0.00E+00	2.22E-05	4.44E-08
I-132	CURIES	0.00E+00	0.00E+00	1.17E-07	2.73E-06
I-131	CURIES	0.00E+00	0.00E+00	3.94E-08	5.81E-08
TOTAL FOR PERIOD	CURIES	0.00E+00	0.00E+00	2.24E-05	2.84E-06

3. PARTICULATES

MO-99	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TC-99M	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CS-134	CURIES	0.00E+00	0.00E+00	4.10E-08	0.00E+00
CS-137	CURIES	0.00E+00	0.00E+00	0.00E+00	3.89E-08
CO-60	CURIES	0.00E+00	0.00E+00	8.55E-07	3.49E-05
CE-141	CURIES	0.00E+00	0.00E+00	4.60E-08	0.00E+00
CO-58	CURIES	0.00E+00	0.00E+00	3.93E-06	1.54E-05
SB-125	CURIES	5.14E-07	4.29E-07	0.00E+00	0.00E+00
CD-109	CURIES	0.00E+00	1.66E-06	1.04E-06	0.00E+00
CE-144	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PR-144	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TE-132	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SB-124	CURIES	0.00E+00	0.00E+00	2.92E-07	0.00E+00
CR-51	CURIES	0.00E+00	0.00E+00	1.88E-06	1.65E-06
MN-54	CURIES	0.00E+00	0.00E+00	1.34E-07	2.40E-07
NB-95	CURIES	0.00E+00	0.00E+00	1.74E-06	1.87E-07



TABLE 1B (continued)

SEMIANNUAL AIRBORNE CONTINUOUS AND BATCH RELEASES  
GROUND LEVEL RELEASES  
FISSION GASES, IODINES, AND PARTICULATES

QUARTERS 3 AND 4, 2005

NUCLIDE	UNITS	CONTINUOUS RELEASES		BATCH RELEASES	
		THIRD QUARTER	FOURTH QUARTER	THIRD QUARTER	FOURTH QUARTER

3. PARTICULATES

ZR-95	CURIES	0.00E+00	0.00E+00	1.21E-06	0.00E+00
CO-57	CURIES	0.00E+00	0.00E+00	0.00E+00	1.15E-08
ALPHA	CURIES	1.98E-07	5.48E-07	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	7.12E-07	2.64E-06	1.12E-05	5.24E-05

4. TRITIUM

H-3	CURIES	8.47E+00	8.65E+00	7.11E-01	3.02E-01
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TABLE 5

DOSE AT THE SITE BOUNDARY AND TO THE NEAREST RESIDENT  
FROM GASEOUS EFFLUENTS

ORGAN	UNITS	SITE BOUNDARY		NEAREST RESIDENT	
		DOSE	% LIMIT(a)	DOSE	% LIMIT(b)
				LOCATION: 2.20 km NNW	LOCATION: 2.90 km NNW
				AGE GROUP: CHILD	AGE GROUP: CHILD
1. GAMMA AIR DOSE *	MRAD	1.21E-03	0.01	7.98E-04	N/A
2. BETA AIR DOSE *	MRAD	2.57E-03	0.01	1.69E-03	N/A
3. WHOLE BODY ***	MREM	2.99E-03	N/A	1.92E-03	N/A
4. SKIN ***	MREM	4.95E-03	N/A	3.21E-03	N/A
5. BONE **	MREM	1.87E-03	N/A	1.69E-02	0.11
6. LIVER **	MREM	3.32E-03	N/A	2.92E-02	0.19
7. TOTAL BODY **	MREM	3.29E-03	N/A	1.32E-02	0.09
8. THYROID **	MREM	3.29E-03	N/A	9.60E-03	0.06
9. KIDNEY **	MREM	3.30E-03	N/A	1.58E-02	0.11
10. LUNG **	MREM	3.32E-03	N/A	1.18E-02	0.08
11. GI-LLI **	MREM	3.28E-03	N/A	9.72E-03	0.06

\* Dose from Noble Gases only

\*\* Dose from Tritium, Radioiodines, and Particulates only

\*\*\* Dose from Noble Gases plus Ground Plane dose

(a) Annual dose limits of Offsite Dose Calculation Manual (APA-ZZ-01003)  
of 10 mrad gamma air dose and 20 mrad beta air dose.

(b) Annual dose limits of Offsite Dose Calculation Manual (APA-ZZ-01003)  
of 15 mrem to any organ from I-131, I-133, H-3 and particulate  
radionuclides with half-lives greater than 8 days.

TABLE 6

DOSE TO THE MEMBER OR THE PUBLIC FROM ACTIVITIES  
WITHIN THE SITE BOUNDARY  
2005  
(MEMBER OF THE PUBLIC)

ORGAN	UNITS	EFFLUENT DOSE WITHIN THE SITE BOUNDARY	DIRECT RADIATION FROM THE UNIT	DIRECT RADIATION FROM OUTSIDE TANKS	DIRECT RADIATION FROM RAM STORAGE	EFFLUENT DOSE FROM THE CLG TWR	TOTAL DOSE FOR THE YEAR
SKIN	mrem	6.91E-04	N/A	N/A	N/A	N/A	6.91E-04
BONE	mrem	5.06E-04	8.79E-03	8.30E-03	5.99E-03	N/A	2.36E-02
LIVER	mrem	9.00E-04	8.79E-03	8.30E-03	5.99E-03	1.95E-03	2.60E-02
TOTAL BODY	mrem	1.15E-03	8.79E-03	8.30E-03	5.99E-03	1.95E-03	2.51E-02
THYROID	mrem	8.93E-04	8.79E-03	8.30E-03	5.99E-03	1.95E-03	2.61E-02
KIDNEY	mrem	8.95E-04	8.79E-03	8.30E-03	5.99E-03	1.95E-03	2.60E-02
LUNG	mrem	9.00E-04	8.79E-03	8.30E-03	5.99E-03	1.95E-03	2.60E-02
GI-LLI	mrem	8.93E-04	8.79E-03	8.30E-03	5.99E-03	1.95E-03	2.59E-02

TABLE 7

TOTAL DOSE DUE TO THE URANIUM FUEL CYCLE  
(MEMBER OF THE PUBLIC)  
2005

ORGAN	UNITS	EFFLUENT DOSE AT RESIDENCE LOCATION	DOSE FROM ACTIVITIES IN SITE BOUNDARY	DOSE FROM CLG TWR H-3 AT NEAREST RESIDENCE	TOTAL DOSE TO THE MEMBER OF THE PUBLIC	% OF LIMITS
SKIN	mrem	2.04E-03	6.91E-04	N/A	2.73E-03	0.01
BONE	mrem	5.07E-03	2.36E-02	N/A	2.87E-02	0.11
LIVER	mrem	1.34E-02	2.60E-02	1.33E-03	4.07E-02	0.16
TOTAL BODY	mrem	1.23E-02	2.51E-02	1.33E-03	3.87E-02	0.15
THYROID	mrem	6.29E-03	2.61E-02	1.33E-03	3.37E-02	0.04
KIDNEY	mrem	8.61E-03	2.60E-02	1.33E-03	3.59E-02	0.14
LUNG	mrem	7.07E-03	2.60E-02	1.33E-03	3.44E-02	0.14
GI-LLI	mrem	6.50E-03	2.59E-02	1.33E-03	3.37E-02	0.13

Annual dose limits from 40 CFR 190.10(a) of 25 mrem whole body, 75 mrem to the thyroid and 25 mrem to any other organ.

Attachment 7  
Errata for 2006 Callaway Plant Radioactive Effluent Release Report

Index of Changes (7 pages)

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Page 15 Table 1B	Replacement Table 1B Semiannual Airborne Continuous and Batch Releases, Ground Level Releases Fission Gases, Iodines, and Particulates Quarters 1 and 2, 2006
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Page 38 Table 5	Replacement Table 5 Dose At The Site Boundary And To The Nearest Resident From Gaseous Effluents
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Page 40 Table 7	Replacement Table 7 Total Dose Due To The Uranium Fuel Cycle (Member Of The Public)

TABLE 1A

SEMIANNUAL SUMMATION OF GASEOUS RELEASES  
ALL AIRBORNE EFFLUENTS

QUARTERS 1 AND 2, 2006

TYPE OF EFFLUENT	UNITS	FIRST QUARTER	SECOND QUARTER	EST TOTAL ERROR % (a)
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A. FISSION AND ACTIVATION GASES

1. TOTAL RELEASE	CURIES	2.22E+00	1.37E-01	20
2. AVERAGE RELEASE RATE FOR PERIOD	µCi/SEC	2.86E-01	1.74E-02	
3. PERCENT OF TECH SPEC LIMIT	%	N/A	N/A	

B. RADIOIODINES

1. TOTAL IODINE-131	CURIES	0.00E+00	0.00E+00	23
2. AVERAGE RELEASE RATE FOR PERIOD	µCi/SEC	0.00E+00	0.00E+00	
3. PERCENT OF TECH SPEC LIMIT	%	N/A	N/A	

C. PARTICULATES

1. PARTICULATE (HALF-LIVES > 8 DAYS)	CURIES	0.00E+00	7.34E-08	30
2. AVERAGE RELEASE RATE FOR PERIOD	µCi/SEC	0.00E+00	9.33E-09	
3. PERCENT OF TECH SPEC LIMIT	%	N/A	N/A	
4. GROSS ALPHA RADIOACTIVITY	CURIES	2.18E-07	3.42E-07	

D. TRITIUM

1. TOTAL RELEASE	CURIES	5.01E+00	1.25E+01	14
2. AVERAGE RELEASE RATE FOR PERIOD	µCi/SEC	6.44E-01	1.59E+00	
3. PERCENT OF TECH SPEC LIMIT	%	N/A	N/A	

(a) Safety Analysis Calculation 87-063-00, January 6, 1988

TABLE 1A

SEMIANNUAL SUMMATION OF GASEOUS RELEASES  
ALL AIRBORNE EFFLUENTS

QUARTERS 3 AND 4, 2006

TYPE OF EFFLUENT	UNITS	THIRD QUARTER	FOURTH QUARTER	EST TOTAL ERROR % (a)
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A. FISSION AND ACTIVATION GASES

1. TOTAL RELEASE	CURIES	9.41E-01	1.85E-01	20
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/SEC	1.18E-01	2.32E-02	
3. PERCENT OF TECH SPEC LIMIT	%	N/A	N/A	

B. RADIOIODINES

1. TOTAL IODINE-131	CURIES	0.00E+00	0.00E+00	23
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/SEC	0.00E+00	0.00E+00	
3. PERCENT OF TECH SPEC LIMIT	%	N/A	N/A	

C. PARTICULATES

1. PARTICULATE (HALF-LIVES > 8 DAYS)	CURIES	0.00E+00	2.49E-05	30
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/SEC	0.00E+00	3.13E-06	
3. PERCENT OF TECH SPEC LIMIT	%	N/A	N/A	
4. GROSS ALPHA RADIOACTIVITY	CURIES	5.18E-07	5.53E-07	

D. TRITIUM

1. TOTAL RELEASE	CURIES	1.13E+01	7.85E+00	14
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/SEC	1.43E+00	9.87E-01	
3. PERCENT OF TECH SPEC LIMIT	%	N/A	N/A	

(a) Safety Analysis Calculation 87-063-00, January 6, 1988

TABLE 1B

SEMIANNUAL AIRBORNE CONTINUOUS AND BATCH RELEASES  
GROUND LEVEL RELEASES  
FISSION GASES, IODINES, AND PARTICULATES

QUARTERS 1 AND 2, 2006

NUCLIDE	UNITS	CONTINUOUS RELEASES		BATCH RELEASES	
		FIRST QUARTER	SECOND QUARTER	FIRST QUARTER	SECOND QUARTER

1. FISSION GASES

AR-41	CURIES	0.00E+00	0.00E+00	4.63E-02	3.88E-02
XE-133	CURIES	6.89E-02	9.70E-02	1.44E-03	9.69E-04
XE-135	CURIES	4.35E-02	0.00E+00	0.00E+00	0.00E+00
KR-85	CURIES	0.00E+00	0.00E+00	2.06E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	1.12E-01	9.70E-02	2.11E+00	3.97E-02

2. IODINES

TOTAL FOR PERIOD	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
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3. PARTICULATES

CD-109	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CO-60	CURIES	0.00E+00	0.00E+00	0.00E+00	7.34E-08
ALPHA	CURIES	2.18E-07	3.42E-07	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	2.18E-07	3.42E-07	0.00E+00	7.34E-08

4. TRITIUM

H-3	CURIES	4.67E+00	4.74E+00	3.38E-01	7.72E+00
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TABLE 1B

SEMIANNUAL AIRBORNE CONTINUOUS AND BATCH RELEASES  
GROUND LEVEL RELEASES  
FISSION GASES, IODINES, AND PARTICULATES

QUARTERS 3 AND 4, 2006

NUCLIDE	UNITS	CONTINUOUS RELEASES		BATCH RELEASES	
		THIRD QUARTER	FOURTH QUARTER	THIRD QUARTER	FOURTH QUARTER

1. FISSION GASES

AR-41	CURIES	0.00E+00	0.00E+00	5.54E-02	8.64E-02
XE-133	CURIES	0.00E+00	0.00E+00	2.47E-03	2.98E-03
XE-135	CURIES	0.00E+00	1.58E-02	0.00E+00	0.00E+00
KR-85	CURIES	0.00E+00	0.00E+00	8.82E-01	0.00E+00
XE-131M	CURIES	0.00E+00	0.00E+00	1.02E-03	0.00E+00
XE-133M	CURIES	0.00E+00	7.94E-02	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	0.00E+00	9.52E-02	9.41E-01	8.93E-02

2. IODINES

TOTAL FOR PERIOD	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
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3. PARTICULATES

CD-109	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CO-60	CURIES	0.00E+00	0.00E+00	0.00E+00	2.46E-05
SB-125	CURIES	0.00E+00	2.53E-07	0.00E+00	0.00E+00
ALPHA	CURIES	5.18E-07	5.53E-07	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	5.18E-07	8.06E-07	0.00E+00	2.46E-05

4. TRITIUM

H-3	CURIES	1.05E+01	7.17E+00	8.09E-01	6.74E-01
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TABLE 5

DOSE AT THE SITE BOUNDARY AND TO THE NEAREST RESIDENT  
FROM GASEOUS EFFLUENTS

		SITE BOUNDARY		NEAREST RESIDENT	
		LOCATION: 2.20 km NNW		LOCATION: 2.90 km NNW	
		AGE GROUP: CHILD		AGE GROUP: CHILD	
ORGAN	UNITS	DOSE	% LIMIT(a)	DOSE	% LIMIT(b)
1. GAMMA AIR DOSE *	MRAD	7.56E-05	0.00	4.98E-05	N/A
2. BETA AIR DOSE *	MRAD	2.22E-04	0.00	1.46E-04	N/A
3. WHOLE BODY ***	MREM	1.46E-04	N/A	9.42E-05	N/A
4. SKIN ***	MREM	3.11E-04	N/A	2.03E-04	N/A
5. BONE **	MREM	7.42E-05	N/A	4.72E-05	0.00
6. LIVER **	MREM	1.20E-03	N/A	6.57E-03	0.04
7. TOTAL BODY **	MREM	1.20E-03	N/A	6.58E-03	0.04
8. THYROID **	MREM	1.20E-03	N/A	6.57E-03	0.04
9. KIDNEY **	MREM	1.20E-03	N/A	6.57E-03	0.04
10. LUNG **	MREM	1.20E-03	N/A	6.58E-03	0.04
11. GI-LLI **	MREM	1.20E-03	N/A	6.58E-03	0.04

\* Dose from Noble Gases only

\*\* Dose from Tritium, Radioiodines, and Particulates only

\*\*\* Dose from Noble Gases plus Ground Plane dose

(a) Annual dose limits of Offsite Dose Calculation Manual (APA-ZZ-01003)  
of 10 mrad gamma air dose and 20 mrad beta air dose.

(b) Annual dose limits of Offsite Dose Calculation Manual (APA-ZZ-01003)  
of 15 mrem to any organ from I-131, I-133, H-3 and particulate  
radionuclides with halflives greater than 8 days.

TABLE 6

DOSE TO THE MEMBER OR THE PUBLIC FROM ACTIVITIES  
WITHIN THE SITE BOUNDARY  
2006  
(MEMBER OF THE PUBLIC)

ORGAN	UNITS	EFFLUENT DOSE WITHIN THE SITE BOUNDARY	DIRECT RADIATION FROM THE UNIT	DIRECT RADIATION FROM OUTSIDE TANKS	DIRECT RADIATION FROM RAM STORAGE	EFFLUENT DOSE FROM THE CLG TWR	TOTAL DOSE FOR THE YEAR
SKIN	mrem	6.10E-05	N/A	N/A	N/A	N/A	6.10E-05
BONE	mrem	2.19E-05	8.79E-03	5.13E-04	5.99E-03	2.20E-04	1.55E-02
LIVER	mrem	3.73E-04	8.79E-03	5.13E-04	5.99E-03	2.20E-04	1.58E-02
TOTAL BODY	mrem	3.92E-04	8.79E-03	5.13E-04	5.99E-03	2.20E-04	1.59E-02
THYROID	mrem	3.73E-04	8.79E-03	5.13E-04	5.99E-03	2.20E-04	1.58E-02
KIDNEY	mrem	3.73E-04	8.79E-03	5.13E-04	5.99E-03	2.20E-04	1.58E-02
LUNG	mrem	3.74E-04	8.79E-03	5.13E-04	5.99E-03	2.20E-04	1.58E-02
GI-LLI	mrem	3.73E-04	8.79E-03	5.13E-04	5.99E-03	2.20E-04	1.58E-02

TABLE 7  
TOTAL DOSE DUE TO THE URANIUM FUEL CYCLE  
(MEMBER OF THE PUBLIC)  
2006

ORGAN	UNITS	EFFLUENT DOSE AT RESIDENCE LOCATION	DOSE FROM ACTIVITIES IN SITE BOUNDARY	DOSE FROM CLG TWR H-3 AT NEAREST RESIDENCE	TOTAL DOSE TO THE MEMBER OF THE PUBLIC	% OF LIMITS
SKIN	mrem	1.56E-04	6.10E-05	N/A	2.17E-04	0.001
BONE	mrem	4.72E-05	1.55E-02	N/A	1.55E-02	0.06
LIVER	mrem	4.02E-03	1.58E-02	1.50E-04	1.99E-02	0.08
TOTAL BODY	mrem	4.07E-03	1.59E-02	1.50E-04	2.00E-02	0.08
THYROID	mrem	4.02E-03	1.58E-02	1.50E-04	1.99E-02	0.03
KIDNEY	mrem	4.02E-03	1.58E-02	1.50E-04	1.99E-02	0.08
LUNG	mrem	4.02E-03	1.58E-02	1.50E-04	1.99E-02	0.08
GI-LLI	mrem	4.03E-03	1.58E-02	1.50E-04	1.99E-02	0.08

Annual dose limits from 40 CFR 190.10(a) of 25 mrem whole body, 75 mrem to the thyroid and 25 mrem to any other organ.

Attachment 8

List of Transmittal Letters for the Annual Radioactive Effluent Release Report for  
Calendar Years 2000-2006

**Year 2000:**

ULNRC-04465, 2000 Annual Radioactive Effluent Release Report, dated  
04/26/2001

ULNRC-05005, Revision for 2000 Annual Radioactive Effluent Release Report,  
dated 05/21/2004

**Year 2001:**

ULNRC-04647, 2001 Annual Radioactive Effluent Release Report, dated  
04/25/2002

**Year 2002:**

ULNRC-04840, 2002 Annual Radioactive Effluent Release Report, dated  
04/29/2003

**Year 2003:**

ULNRC-04991, 2003 Annual Radioactive Effluent Release Report, dated  
04/27/2004

**Year 2004:**

ULNRC-05140, 2004 Annual Radioactive Effluent Release Report, dated  
04/29/2005

ULNRC-05164, Revision for 2004 Annual Radioactive Effluent Release Report,  
dated 06/23/2005

**Year 2005:**

ULNRC-05277, 2005 Annual Radioactive Effluent Release Report, dated  
04/27/2006

ULNRC-05403, Revision for 2005 Annual Radioactive Effluent Release Report,  
dated 04/23/2007

**Year 2006:**

ULNRC-05401, 2006 Annual Radioactive Effluent Release Report, dated  
04/23/2007