

TABLE 1A

SEMIANNUAL SUMMATION OF GASEOUS RELEASES
ALL AIRBORNE EFFLUENTS

QUARTERS 3 AND 4, 1993

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	1.42E+02	3.98E+02	20
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/SEC	1.78E+01	5.01E+01	
3. PERCENT OF TECH SPEC LIMIT	%	N/A	N/A	

B. RADIOIODINES

1. TOTAL IODINE-131	CURIES	2.10E-04	2.96E-04	23
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/SEC	2.64E-05	3.73E-05	
3. PERCENT OF TECH SPEC LIMIT	%	N/A	N/A	

C. PARTICULATES

1. PARTICULATE (HALF-LIVES > 8 DAYS)	CURIES	5.36E-07	6.66E-06	30
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/SEC	6.75E-08	8.38E-07	
3. PERCENT OF TECH SPEC LIMIT	%	N/A	N/A	
4. GROSS ALPHA RADIOACTIVITY	CURIES	2.93E-07	4.52E-07	

D. TRITIUM

1. TOTAL RELEASE	CURIES	1.72E+01	3.74E+01	14
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/SEC	2.16E+00	4.71E+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 3 AND 4, 1993

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

1. FISSION GASES

XE-133	CURIES	9.97E+01	3.54E+02	3.02E+01	3.32E+01
XE-135	CURIES	6.56E+00	6.22E-02	1.42E-01	1.91E-01
AR-41	CURIES	0.00E+00	0.00E+00	1.58E-01	2.94E-01
XE-131M	CURIES	0.00E+00	5.98E+00	5.91E-01	7.32E-01
XE-133M	CURIES	0.00E+00	4.02E+00	1.80E-01	2.29E-01
KR-85	CURIES	0.00E+00	0.00E+00	3.55E+00	0.00E+00
KR-85M	CURIES	3.11E-01	0.00E+00	1.80E-03	0.00E+00
KR-88	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
XE-135M	CURIES	3.89E-01	0.00E+00	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	1.07E+02	3.64E+02	3.48E+01	3.46E+01

2. IODINES

I-131	CURIES	2.10E-04	2.57E-04	1.40E-07	3.91E-05
I-133	CURIES	3.18E-04	1.06E-05	2.16E-07	0.00E+00
I-132	CURIES	2.04E-05	2.06E-04	2.02E-08	0.00E+00
I-135	CURIES	5.44E-05	0.00E+00	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	6.02E-04	4.74E-04	3.75E-07	3.91E-05

3. PARTICULATES

RB-88	CURIES	0.00E+00	0.00E+00	1.27E-07	0.00E+00
CS-138	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SR-89	CURIES	3.99E-07	2.54E-06	1.05E-08	5.57E-08
CO-58	CURIES	0.00E+00	3.15E-06	0.00E+00	0.00E+00
CO-60	CURIES	0.00E+00	1.59E-07	0.00E+00	0.00E+00
CR-51	CURIES	0.00E+00	6.23E-07	0.00E+00	0.00E+00
NB-95	CURIES	0.00E+00	1.36E-07	0.00E+00	0.00E+00
ALPHA	CURIES	2.91E-07	4.52E-07	1.49E-09	5.01E-11
TOTAL FOR PERIOD	CURIES	6.90E-07	7.06E-06	1.39E-07	5.58E-08

4. TRITIUM

H-3	CURIES	1.64E+01	3.63E+01	8.30E-01	1.09E+00
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TABLE 2A

SEMIANNUAL SUMMATION OF LIQUID RELEASES
ALL LIQUID EFFLUENTS

QUARTERS 3 AND 4, 1993

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	1.12E-02	9.72E-03	20
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	uCi/mL	1.81E-08	2.17E-08	
3. PERCENT OF APPLICABLE LIMIT	%	N/A	N/A	

B. TRITIUM

1. TOTAL RELEASE	CURIES	4.16E+02	1.12E+02	14
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	uCi/ML	6.73E-04	2.51E-04	
3. PERCENT OF APPLICABLE LIMIT	%	N/A	N/A	

C. DISSOLVED AND ENTRAINED GASES

1. TOTAL RELEASE	CURIES	7.88E-01	3.01E-02	27
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	uCi/ML	1.28E-06	6.73E-08	

D. GROSS ALPHA RADIOACTIVITY

1. TOTAL RELEASE	CURIES	0.00E+00	1.77E-03	29
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E. WASTE VOLUME RELEASED (PRE-DILUTION)	GAL	6.69E+06	5.12E+06	10
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F. VOLUME OF DILUTION WATER USED	GAL	1.56E+08	1.13E+08	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, 1993

		CONTINUOUS RELEASES		BATCH RELEASES	
NUCLIDE	UNITS	THIRD QUARTER	FOURTH QUARTER	THIRD QUARTER	FOURTH QUARTER
1. ALL NUCLIDES					
ALPHA	CURIES	0.00E+00	0.00E+00	0.00E+00	1.77E-03
CO-60	CURIES	0.00E+00	0.00E+00	9.13E-04	9.25E-04
H-3	CURIES	0.00E+00	0.00E+00	4.16E+02	1.12E+02
XE-133	CURIES	0.00E+00	0.00E+00	7.69E-01	2.94E-02
CO-58	CURIES	0.00E+00	0.00E+00	1.09E-05	9.18E-04
CS-134	CURIES	0.00E+00	0.00E+00	1.75E-04	1.59E-04
CS-137	CURIES	0.00E+00	0.00E+00	2.43E-04	1.26E-04
XE-133M	CURIES	0.00E+00	0.00E+00	9.59E-03	1.41E-04
MN-54	CURIES	0.00E+00	0.00E+00	5.93E-05	9.06E-05
CE-141	CURIES	0.00E+00	0.00E+00	0.00E+00	3.34E-06
SB-125	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	5.03E-05
XE-135	CURIES	0.00E+00	0.00E+00	3.73E-03	0.00E+00
FE-55	CURIES	0.00E+00	0.00E+00	5.16E-03	2.17E-03
XE-131M	CURIES	0.00E+00	0.00E+00	4.92E-03	5.28E-04
I-131	CURIES	0.00E+00	0.00E+00	2.38E-05	3.49E-05
SB-124	CURIES	0.00E+00	0.00E+00	0.00E+00	3.61E-08
TC-99M	CURIES	0.00E+00	0.00E+00	2.13E-06	0.00E+00
SR-89	CURIES	0.00E+00	0.00E+00	4.32E-03	4.56E-03
SR-90	CURIES	0.00E+00	0.00E+00	2.80E-04	2.73E-04
CO-57	CURIES	0.00E+00	0.00E+00	0.00E+00	2.78E-06
XE-127	CURIES	0.00E+00	0.00E+00	0.00E+00	4.54E-06
FE-59	CURIES	0.00E+00	0.00E+00	0.00E+00	1.44E-05
NB-95	CURIES	0.00E+00	0.00E+00	0.00E+00	1.98E-04
ZR-95	CURIES	0.00E+00	0.00E+00	0.00E+00	1.35E-04
ZN-65	CURIES	0.00E+00	0.00E+00	0.00E+00	4.61E-05
CD-109	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BA-133M	CURIES	0.00E+00	0.00E+00	0.00E+00	9.12E-08
CR-51	CURIES	0.00E+00	0.00E+00	0.00E+00	1.59E-05
TOTALS FOR PERIOD	CURIES	0.00E+00	0.00E+00	4.16E+02	1.12E+02

TABLE 3
SOLID WASTE & IRRADIATED FUEL SHIPMENTS
QUARTERS 3 & 4, 1993

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

TYPE OF WASTE	6-MONTH PERIOD	EST. TOTAL ERROR (%)
a. Spent resins, filter sludges evaporator bottoms, etc.	21.93 m ³ 4.29E+02 Ci	±25%
	<u>Percent Abundance</u>	<u>Curies</u>
Fe-55	25.483%	1.09E+02
Co-60	25.083%	1.07E+02
Ni-63	11.617%	4.99E+01
Cs-137	11.317%	4.86E+01
Co-58	10.095%	4.34E+01
Cs-134	8.218%	3.53E+01
Mn-54	2.743%	1.18E+01
Sb-125	1.127%	4.84E+00
b. Dry compressible waste, contaminated equipment, etc.	17.96 m ³ 1.70E-01 Ci	±25%
Co-60	54.100%	9.37E-02
Ni-63	26.000%	4.50E-02
Mn-54	12.200%	2.11E-02
Fe-55	2.220%	3.84E-03
Sb-125	2.040%	2.53E-03
Co-58	1.450%	2.51E-03
c. Irradiated components, control rods, etc.	8.27 m ³ 1.42E+02 Ci	
Co-60	24.694%	3.51E+01
Fe-55	20.524%	2.91E+01
Co-58	17.940%	2.55E+01
Ni-63	13.460%	1.91E+01
Cs-137	8.417%	1.20E+01
Cs-134	7.213%	1.02E+01
Mn-54	2.309%	3.28E+00
Nb-95	1.340%	1.90E+00
d. Other: Solidified oil and oil sludges	0 m ³ 0 Ci	

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination	Class of Solid Waste Shipped	Type of Container
2	Cask	Barnwell, SC	A	LSA
3	Cask	Barnwell, SC	B	LSA
3	Cask	Barnwell, SC	C	LSA
1	Truck	Oak Ridge, TN (QUADREX)	A	LSA
9	Truck	Oak Ridge, TN (SEG)	A	LSA

TABLE 3 (cont'd.)
SOLID WASTE & IRRADIATED FUEL SHIPMENTS
QUARTERS 3 & 4, 1993

Solidification Agent

Cement (applicable to waste type "a" only)

B. IRRADIATED FUEL SHIPMENTS (DISPOSITION)

<u>Number of Shipments</u>	<u>Mode of Transportation</u>	<u>Destination</u>
0	N/A	N/A

TABLE 5

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

		SITE BOUNDARY		NEAREST RESIDENT	
		LOCATION: 1.80 km SE		LOCATION: 2.87 km NNW	
		AGE GROUP: CHILD		AGE GROUP: CHILD	
ORGAN	UNITS	DOSE	% LIMIT(a)	DOSE	% LIMIT(b)
1. GAMMA AIR DOSE *	MRAD	1.47E-02	0.15	9.47E-03	N/A
2. BETA AIR DOSE *	MRAD	3.51E-02	0.18	2.25E-02	N/A
3. WHOLE BODY ***	MREM	1.28E-02	N/A	8.23E-03	N/A
4. SKIN ***	MREM	2.91E-02	N/A	1.87E-02	N/A
5. BONE **	MREM	3.92E-06	N/A	1.66E-04	0.00
6. LIVER **	MREM	3.34E-03	N/A	1.89E-02	0.13
7. TOTAL BODY **	MREM	3.34E-03	N/A	1.88E-02	0.13
8. THYROID **	MREM	3.72E-03	N/A	6.88E-02	0.46
9. KIDNEY **	MREM	3.34E-03	N/A	1.90E-02	0.13
10. LUNG **	MREM	3.34E-03	N/A	1.88E-02	0.13
11. GI-LLI **	MREM	3.34E-03	N/A	1.88E-02	0.13

* 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
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1. SKIN	MREM	2.91E-03	N/A	N/A	2.91E-03
2. BONE	MREM	2.63E-04	8.79E-03	1.06E-03	1.01E-02
3. LIVER	MREM	6.39E-04	8.79E-03	1.06E-03	1.05E-02
4. TOTAL BODY	MREM	1.92E-03	8.79E-03	1.06E-03	1.18E-02
5. THYROID	MREM	6.66E-04	8.79E-03	1.06E-03	1.05E-02
6. KIDNEY	MREM	6.39E-04	8.79E-03	1.06E-03	1.05E-02
7. LUNG	MREM	6.39E-04	8.79E-03	1.06E-03	1.05E-02
8. GI-LLI	MREM	6.39E-04	8.79E-03	1.06E-03	1.05E-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	9.57E-03	2.91E-03	1.25E-02	0.05
2. BONE	MREM	2.51E-05	1.01E-02	1.01E-02	0.04
3. LIVER	MREM	5.72E-03	1.05E-02	1.62E-02	0.06
4. TOTAL BODY	MREM	9.93E-03	1.18E-02	2.17E-02	0.09
5. THYROID	MREM	1.60E-02	1.05E-02	2.65E-02	0.04
6. KIDNEY	MREM	5.74E-03	1.05E-02	1.62E-02	0.06
7. LUNG	MREM	5.69E-03	1.05E-02	1.62E-02	0.06
8. GI-LLI	MREM	5.70E-03	1.05E-02	1.62E-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)

1993

ORGAN	UNITS	DOSE	LIMIT *	% LIMIT
1. BONE	MREM	9.11E-03	10.00	9.11E-02
2. LIVER	MREM	1.05E-02	10.00	1.05E-01
3. TOTAL BODY	MREM	9.24E-03	3.00	3.08E-01
4. THYROID	MREM	3.03E-03	10.00	3.03E-02
5. KIDNEY	MREM	5.48E-03	10.00	5.48E-02
6. LUNG	MREM	3.84E-03	10.00	3.84E-02
7. GI-LLI	MREM	6.57E-03	10.00	6.57E-02

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