PEACH BOTTOM ATOMIC POWER STATION
Unit Numbers 2 and 3
Docket Numbers 50-277 and 50-278

SEMI-ANNUAL EFFLUENT RELEASE REPORT

NO. 32

JULY 1, 1991 THROUGH DECEMBER 31, 1991

Submitted to
The United States Nuclear Regulatory Commission
Pursuant to
Facility Operating Licenses DPR-44 and DPR-56

Table of Contents

Technical Concurrences: (for accuracy of information)

Fred Crose for M.B. RYAN
Sr. Engineer - Radwaste

A.R. Odell
Sr. Chemist

I. INTRODUCTION

In accordance with the Unique Reporting Requirements of Technical Specification 6.9.2h (2) applicable during the reporting period, this report summarizes the Effluent Release Data for Peach Bottom Atomic Power Station Units 2 and 3 for the period July 1 through December 31, 1991. The notations E and E– are used to denote positive and negative exponents to the base 10, respectively.

The release of radioactive materials during the reporting period was within the Technical Specification limits. There were no changes made to the off–site dose calculation manual (ODCM) during the reporting period.

There were no known unplanned releases of liquid radioactive material.

Table 1A Page 1 of 1
Gaseous Effluents - Summation of All Releases

	Units	Quarter 3	Quarter 4	Est. Error Total %
A. Fission & activation gases				
1. Total release	Ci	1.02E4	1.10E3	18.8E0
2. Average release rate for period	μCi/sec	1.30E3	1.40E2	
3. Gamma Air Dose	Millirad	4.37E-2	2.43E-2	
Percent of Technical Specification	%	4.37E-1	2.43E-1	
4. Beta Air Dose	Millirad	6.97E-2	1.95E-2	
Percent of Technical Specification	%	3.49E-1	9.75E-2	
B. Iodines				
1. Total iodine-131	Ci	1.77E-2	4.01E-3	22.9E0
2. Average release rate for period	μCi/sec	2.25E-3	5.10E-4	
3. Critical Organ dose	Millirem	8.53E-2	1.77E-2	
Percent of Technical Specification	%	5.69E-1	1.18E-1	
C. Particulates				
1. Particulates with half-lives greater than 8 days (includes Alpha and Strontium 89-90)	Ci	2.02E-3	2.90E-4	22.9E0
2. Average release rate for period	μCi/sec	2.57E-4	3.69E-5	
3. Gross Alpha Radioactivity	Ci	7.96E-6	5.91E-6	
D. Tritium				
1. Total release	Ci	1.15E1	7.15E0	23.5E0
2. Average release rate for period	μCi/sec	1.47E0	9.09E-1	

Table 1B Page 1 of 2
Gaseous Effluents For Release Point - Main Stack

Nuclides Released	Units	Continuous Mode		Batch Mode	
		Quarter 3	Quarter 4	Quarter 3	Quarter 4
1. Fission gases					
Krypton - 85M	Ci	5.16E2	2.79E1	0.00 E0	0.00 E0
Krypton - 87	Ci	1.48E2	7.30E0	0.00 E0	0.00 E0
Krypton - 88	Ci	5.94E2	1.31E2	0.00 E0	0.00 E0
Xenon - 133	Ci	7.62E3	6.06E2	0.00 E0	0.00 E0
Xenon - 135	Ci	3.86E2	9.69E1	0.00 E0	0.00 E0
Xenon - 135M	Ci	3.32E1	3.94E0	0.00 E0	0.00 E0
Xenon - 138	Ci	2.87E2	1.64E1	0.00 E0	0.00 E0
Xenon - 133M	Ci	1.68E2	0.00E0	0.00 E0	0.00 E0
Xenon - 131M	Ci	1.78E2	0.00E0	0.00 E0	0.00 E0
Unidentified	Ci	0.00E0	0.00E0	0.00 E0	0.00 E0
Total for Period	Ci	9.93E3	8.90E2	0.00 E0	0.00 E0
2. Iodines					
Iodine - 131	Ci	6.53E-3	1.87E-3	0.00 E0	0.00 E0
Iodine - 133	Ci	2.38E-3	2.98E-4	0.00 E0	0.00 E0
Iodine - 135	Ci	2.68E-3	0.00E0	0.00 E0	0.00 E0
Total for Period	Ci	1.16E-2	2.17E-3	0.00 E0	0.00 E0
3. Particulates					
Strontium - 89	Ci	3.96E-4	7.89E-5	0.00 E0	0.00 E0
Strontium - 90	Ci	1.12E-6	3.60E-7	0.00 E0	0.00 E0
Strontium - 91	Ci	8.88E-4	6.24E-5	0.00 E0	0.00 E0
Cesium - 134	Ci	0.00E0	1.28E-6	0.00 E0	0.00 E0
Cesium - 137	Ci	1.11E-5	5.05E-6	0.00 E0	0.00 E0
Cesium - 138	Ci	5.33E-2	5.83E-3	0.00 E0	0.00 E0
Barium - 139	Ci	1.07E-2	8.26E-4	0.00 E0	0.00 E0
Barium - 140	Ci	5.96E-4	5.70E-5	0.00 E0	0.00 E0
Lanthanum - 140	Ci	3.48E-4	3.87E-5	0.00 E0	0.00 E0
Cobalt - 57	Ci	0.00E0	0.00E0	0.00 E0	0.00 E0
Cobalt - 58	Ci	0.00E0	2.82E-6	0.00 E0	0.00 E0

Table 1B Page 2 of 2
Gaseous Effluents For Release Point - Main Stack

Nuclides Released	Units	Continuous Mode		Batch Mode	
		Quarter 3	Quarter 4	Quarter 3	Quarter 4
Cobalt - 60	Ci	0.00 E0	7.34E-6	0.00 E0	0.00 E0
Zinc - 65	Ci	0.00 E0	9.72E-6	0.00 E0	0.00 E0
Yttrium - 91M	Ci	8.42E-3	4.46E-3	0.00 E0	0.00 E0
Iodine - 133	Ci	3.28E-4	0.00E0	0.00 E0	0.00 E0
Copper - 64	Ci	1.88E-3	0.00E0	0.00 E0	0.00 E0
Rubidium - 88	Ci	6.80E-3	0.00 E0	0.00 E0	0.00 E0
Manganese - 54	Ci	0.00E0	4.80E-7	0.00 E0	0.00 E0
Strontium - 92	Ci	0.00E0	0.00E0	0.00 E0	0.00 E0
Iodine - 132	Ci	3.44E-5	0.00E0	0.00 E0	0.00 E0
Iodine - 135	Ci	9.75E-5	0.00E0	0.00 E0	0.00 E0
Molybdenum - 99	Ci	2.30E-6	0.00E0	0.00 E0	0.00 E0
Technetium - 99m	Ci	2.00E-5	0.00E0	0.00 E0	0.00 E0
Tellurium - 132	Ci	2.96E-5	0.00E0	0.00 E0	0.00 E0
Chromium - 51	Ci	0.00E0	0.00E0	0.00E0	0.00E0
Cadmium - 109	Ci	0.00E0	0.00E0	0.00E0	0.00E0
Total for Period	Ci	8.38E-2	1.14E-2	0.00 E0	0.00 E0

Table 1C Page 1 of 2

Gaseous Effluents For Release Point - Unit 2 & Unit 3 Roof Vents

Nuclides Released	Units	Continuous Mode		Batch Mode	
		Quarter 3	Quarter 4	Quarter 3	Quarter 4
1. Fission gases					
Krypton - 85M	Ci	2.85E-1	0.00E0	0.00 E0	0.00 E0
Krypton - 87	Ci	0.00E0	0.00E0	0.00 E0	0.00 E0
Krypton - 88	Ci	1.19E1	0.00E0	0.00 E0	0.00 E0
Xenon - 133	Ci	7.65E1	1.49E0	0.00 E0	0.00 E0
Xenon - 135	Ci	2.89E2	0.00E0	0.00 E0	0.00 E0
Xenon - 135M	Ci	0.00E0	0.00E0	0.00 E0	0.00 E0
Xenon - 138	Ci	0.00E0	0.00E0	0.00 E0	0.00 E0
Xenon - 133M	Ci	0.00E0	0.00E0	0.00 E0	0.00 E0
Unidentified	Ci	3.51E1	9.17E1	0.00 E0	0.00 E0
Total for Period	Ci	4.13E2	9.32E1	0.00 E0	0.00 E0
2. Iodines					
Iodine - 131	Ci	1.12E-2	2.14E-3	0.00 E0	0.00 E0
Iodine - 133	Ci	1.05E-2	9.91E-4	0.00 E0	0.00 E0
Iodine - 135	Ci	0.00E0	0.00E0	0.00 E0	0.00 E0
Total for Period	Ci	2.17E-2	3.13E-3	0.00 E0	0.00 E0
3. Particulates					
Strontium - 89	Ci	2.06E-4	4.04E-5	0.00 E0	0.00 E0
Strontium - 90	Ci	6.04E-6	3.51E-6	0.00 E0	0.00 E0
Strontium - 91	Ci	0.00E0	0.00 E0	0.00 E0	0.00 E0
Cesium - 134	Ci	0.00 E0	0.00 E0	0.00 E0	0.00 E0
Cesium - 137	Ci	9.07E-5	1.10E-4	0.00 E0	0.00 E0
Cesium - 138	Ci	1.95E-2	0.00 E0	0.00 E0	0.00 E0
Barium - 139	Ci	3.33E-3	0.00 E0	0.00 E0	0.00 E0
Barium - 140	Ci	0.00E0	0.00 E0	0.00 E0	0.00 E0
Lanthanum - 140	Ci	0.00E0	0.00 E0	0.00 E0	0.00 E0
Cobalt - 57	Ci	0.00E0	0.00 E0	0.00 E0	0.00 E0
Cobalt - 58	Ci	0.00 E0	0.00 E0	0.00 E0	0.00 E0
Cobalt - 60	Ci	0.00E0	0.00 E0	0.00 E0	0.00 E0

Table 1C Page 2 of 2

Gaseous Effluents For Release Point - Unit 2 & Unit 3 Roof Vents

Nuclides Released	Units	Continuous Mode		Batch Mode	
		Quarter 3	Quarter 4	Quarter 3	Quarter 4
Zinc - 65	Ci	0.00 E0	0.00E0	0.00 E0	0.00 E0
Yttrium - 91M	Ci	6.49E-4	0.00E0	0.00 E0	0.00 E0
Iodine - 133	Ci	3.12E-3	3.27E-5	0.00 E0	0.00 E0
Copper - 64	Ci	0.00E0	0.00E0	0.00 E0	0.00 E0
Rubidium - 88	Ci	0.00E0	0.00E0	0.00 E0	0.00 E0
Manganese - 54	Ci	0.00E0	0.00E0	0.00 E0	0.00 E0
Strontium - 92	Ci	0.00E0	0.00E0	0.00 E0	0.00 E0
Cadmium - 109	Ci	2.47E-4	1.81E-4	0.00 E0	0.00 E0
Iodine - 135	Ci	1.49E-4	0.00E0	0.00 E0	0.00 E0
Chromium - 51	Ci	2.89E-4	0.00E0	0.00 E0	0.00 E0
Technetium - 99M	Ci	2.40E-4	0.00E0	0.00 E0	0.00 E0
Molybdenum - 99	Ci	1.30E-4	0.00E0	0.00 E0	0.00 E0
Tellurium - 132	Ci	3.12E-5	0.00E0	0.00 E0	0.00 E0
Iodine - 132	Ci	4.80E-5	0.00E0	0.00 E0	0.00 E0
Total for Period	Ci	2.80E-2	3.68E-4	0.00 E0	0.00 E0

Table 2A Page 1 of 1

Liquid Effluents - Summation of All Releases

	Units	Quarter 3	Quarter 4	Est. Error Total %
A. Fission & activation gases				
1. Total release (not including tritium, gases, alpha)	Ci	1.28E-3	7.96E-3	22.9E0
2. Average diluted concentration during period	μCi/ml	5.66E-11	4.63E-10	
3. Body Dose	Millirem	3.28E-4	5.06E-3	
Percent of Technical Specification	%	1.09E-2	1.69E-1	
4. Maximally Exposed Organ Dose	Millirem	5.24E-4	7.41E-3	
Percent of Technical Specification	%	5.24E-3	7.41E-2	
B. Tritium				
1. Total release	Ci	2.99E0	4.03E0	15.0E0
2. Average diluted concentration during period	μCi/ml	1.32E-7	2.34E-7	
C. Dissolved and entrained gases				
1. Total release	Ci	1.04E-2	4.70E-3	22.9E0
2. Average diluted concentration during period	μCi/ml	4.59E-10	2.74E-10	
D. Gross alpha radioactivity				
1. Total release	Ci	3.32E-5	8.32E-5	22.9E0
2. Average diluted concentration during period	μCi/ml	1.47E-12	4.84E-12	
E. Volume of waste released (prior to dilution)	liters	1.45E6	2.15E6	12.7E0
F. Volume of dilution water used during period	liters	2.26E10	1.72E10	10.9E0

Table 2B Page 1 of 2
Liquid Effluents

Nuclides Released	Units	Continuous Mode		Batch Mode	
		Quarter 3	Quarter 4	Quarter 3	Quarter 4
Strontium - 89	Ci	0.00 E0	0.00 E0	2.36E-5	2.98E-5
Strontium - 90	Ci	0.00 E0	0.00 E0	1.63E-5	7.98E-6
Alpha	Ci	0.00 E0	0.00 E0	3.32E-5	8.32E-5
Tritium	Ci	0.00 E0	0.00 E0	2.99E0	4.03E0
Phosphorus - 32	Ci	0.00 E0	0.00 E0	1.62E-4	5.54E-4
Iron - 55	Ci	0.00 E0	0.00 E0	7.23E-4	1.42E-3
Xenon - 131M	Ci	0.00 E0	0.00 E0	0.00E0	0.00E0
Xenon - 133	Ci	0.00 E0	0.00 E0	4.21E-3	3.43E-3
Xenon - 133M	Ci	0.00 E0	0.00 E0	0.00E0	0.00E0
Xenon - 135	Ci	0.00 E0	0.00 E0	5.92E-3	1.27E-3
Krypton - 85M	Ci	0.00 E0	0.00 E0	0.00E0	0.00E0
Krypton - 87	Ci	0.00 E0	0.00 E0	0.00E0	0.00E0
Krypton - 88	Ci	0.00 E0	0.00 E0	0.00E0	0.00E0
Xenon - 135M	Ci	0.00 E0	0.00 E0	2.57E-4	0.00E0
Manganese - 54	Ci	0.00 E0	0.00 E0	0.00E0	2.27E-4
Cesium - 134	Ci	0.00 E0	0.00 E0	5.26E-5	3.31E-4
Cesium - 137	Ci	0.00 E0	0.00 E0	9.08E-5	5.73E-4
Cesium - 138	Ci	0.00 E0	0.00 E0	0.00E0	0.00E0
Zinc - 65	Ci	0.00 E0	0.00 E0	0.00E0	7.68E-4
Sodium - 24	Ci	0.00 E0	0.00 E0	0.00E0	3.12E-4
Cobalt - 58	Ci	0.00 E0	0.00 E0	0.00E0	3.10E-4
Cobalt - 60	Ci	0.00 E0	0.00 E0	4.70E-5	1.63E-3
Iodine - 131	Ci	0.00 E0	0.00 E0	1.33E-4	1.04E-4
Iodine - 133	Ci	0.00 E0	0.00 E0	1.74E-5	0.00E0
Molybdenum - 99	Ci	0.00 E0	0.00 E0	0.00E0	0.00E0
Iodine - 135	Ci	0.00 E0	0.00 E0	0.00E0	0.00E0
Barium - 140	Ci	0.00 E0	0.00 E0	0.00E0	0.00E0
Neptunium - 239	Ci	0.00 E0	0.00 E0	0.00E0	0.00E0
Chromium - 51	Ci	0.00 E0	0.00 E0	0.00E0	6.64E-4

Nuclides Released	Units	Continuous Mode		Batch Mode	
		Quarter 3	Quarter 4	Quarter 3	Quarter 4
Yttrium - 91M	Ci	0.00 E0	0.00 E0	0.00E0	0.00E0
Strontium - 91	Ci	0.00 E0	0.00 E0	0.00E0	0.00E0
Antimony - 122	Ci	0.00 E0	0.00 E0	0.00E0	0.00E0
Tellurium - 132	Ci	0.00 E0	0.00 E0	0.00E0	0.00E0
Nobium - 95	Ci	0.00 E0	0.00 E0	0.00E0	1.83E-4
Strontium - 92	Ci	0.00 E0	0.00 E0	0.00E0	9.55E-5
Cadmium - 109	Ci	0.00 E0	0.00 E0	0.00E0	0.00E0
Cesium - 136	Ci	0.00 E0	0.00 E0	0.00E0	0.00E0
Antimony - 124	Ci	0.00 E0	0.00 E0	0.00E0	0.00E0
Iron - 59	Ci	0.00 E0	0.00 E0	0.00E0	0.00E0
Tellurium - 129M	Ci	0.00 E0	0.00 E0	0.00E0	0.00E0
Tellurium - 131M	Ci	0.00 E0	0.00 E0	0.00E0	0.00E0
Zirconium - 95	Ci	0.00 E0	0.00 E0	0.00E0	0.00E0
Silver - 110M	Ci	0.00 E0	0.00 E0	1.83E-5	7.51E-4
Total for Period (above)	Ci	0.00 E0	0.00 E0	3.00170	4.04274

PEACH BOTTOM UNITS 2 & 3
JULY 1, 1991 TO DECEMBER 31, 1991
CLASSES OF SOLID RADIOACTIVE WASTE SHIPMENTS

Total # of Shipments	Waste Description (source of waste)	Container/Type	Individual Volume (cubic ft.)		Total Volume (cubic ft.)	Total Curie	Principal Radionuclides
Class A							
32	Dewatered Resin	HIC/Type A Cask	202.1		6467.2	2.01E+02	Zn-65, Cs-137, Co-60, I-131, Cs-134
101	DAW	Metal Drum/STC	variable	(*)	8391.4	9.64E+00	Co-60, Fe-55 Cs-137, H-3, Cr-51
45	DAW	Metal Drum/STC	variable	(**)	1060.9	6.46E-01	Co-60, Fe-55, Cs-137, Cs-134, Ni-63
3	Dewatered Filters	HIC/Type A Cask	205.8		617.4	1.36E+01	Co-60, Zn-65, Mn-54 Fe-55, Co-58
1	Dewatered Filters Media/DAW	Metal Drum/STC	7.5		480.0	4.20E-01	Co-60, Fe-55, Zn-65 Cs-137, Ni-63
Class B							
1	Dewatered Resin	HIC/Type B Cask	132.4		132.4	5.31E+02	Zn-65, Cs-137, Cs-134, Cr-51, Co-60
Class C							
3	Irradiated Metal	Steel Liner/ Type B Cask	57.4		172.2	5.94E+04	Fe-55, Co-60, Mn-54, Ni-63, C-14
1	Dewatered Filters/ Irrad. Metal/DAW	HIC/Type B Cask	135.8		135.8	4.22E+01	Co-60, Fe-55, Ni-63, Cs-137, Zn-65
Totals							
187					17457.3	6.02E+04	

NOTES:

* - Indicates actual total PECo radwaste shipped from Quadrex, after volume reduction, to the burial site.

** - Indicates actual total PECo radwaste shipped from SEG, after volume reduction, to the burial site.

ATTACHMENT A
SUPPLEMENT INFORMATION

Facility: Peach Bottom Units 2 & 3

Licenses: DPR-44
DPR-56

1. Regulatory Limits (Technical Specification Limits)

A. Noble Gases:

1.	≤ 500	mRem/Yr	– total body	–	"instantaneous" limits
	≤ 3000	mRem/Yr	– skin		Tech. Spec. 3.8.C.1.a
2.	≤ 10	mRad	– air gamma	–	quarterly air dose limits
	≤ 20	mRad	– air beta		Tech. Spec. 3.8.C.2.a
3.	≤ 20	mRad	– air gamma	–	yearly air dose limits
	≤ 40	mRad	– air beta		Tech. Spec. 3.8.C.2.b

B. Iodines, Tritium, Particulates with Half Life > 8 days:

1.	≤ 1500	mRem/Yr (inhalation path)	– any organ	–	"instantaneous" limits Tech. Spec. 3.8.C.1.b
2.	≤ 15	mRem	– any organ	–	quarterly dose limits Tech. Spec. 3.8.C.3.a
3.	≤ 30	mRem	– any organ	–	yearly dose limits Tech. Spec. 3.8.C.3.b

C. Liquid Effluents

1.	Concentration ≤ 10 CFR 20, Appendix B, Table II, Col. 2			–	"instantaneous" limit Tech. Spec. 3.8.B.1
2.	≤ 3.0	mRem	– total body	–	quarterly dose limits
	≤ 10	mRem	– any organ		Tech. Spec. 3.8.B.2.a
3.	≤ 6.0	mRem	– total body	–	yearly dose limits
	≤ 20	mRem	– any organ		Tech. Spec. 3.8.B.2.b

2. Maximum Permissible Concentrations:

MPCs are not used to calculate permissible release rates and concentrations for gaseous releases.

The MPCs specified in 10 CFR 20, Appendix B, Table II, Column 2, for identified nuclides are used to calculate permissible release rates and concentrations for liquid release per Peach Bottom Technical Specification 3.8.B.1.

3. Average Energy:

Not Applicable

4. Measurements and Approximations of Total Radioactivity:

A. Fission and Activation Gases:

The method used is the Nuclear Data 6700 Counting System
– Gas Marinelli –

B. Iodine:

The method used is the Nuclear Data 6700 Counting System
– Charcoal Cartridge –

C. Particulates:

The method used is the Nuclear Data 6700 Counting System
– Air Particulate Sample, (47mm filter) –

D. Liquid Effluents:

The method used is the Nuclear Data 6700 Counting System and the Radwaste Liquid Discharge Pre–Release Method with a liter marinelli.

5. Batch Releases:

A. Liquid:

	QTR 3	QTR 4
Number of batch releases:	23	38
Total time for batch releases (minutes):	4625	7710
Maximum time period for batch release (minutes):	265	315
Average time period for batch release (minutes):	201	203
Minimum time period for batch release (minutes):	60	30
Dilution flow (liters):	2.25E10	1.72E10

B. Gaseous:

Not applicable.

6. Abnormal Releases:

A. Liquid:

None

B. Gaseous:

None