PEACH BOTTOM—THE POWER OF EXCELLENCE

PHILADELPHIA ELECTRIC COMPANY
PEACH BOTTOM ATOMIC POWER STATION
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D. B. Miller, Jr.
Vice President

February 27, 1991

Docket Nos. 50-277
50-278

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

SUBJECT: Semi-Annual Effluent Release Report No. 30
July 1, 1990 through December 31, 1990
Peach Bottom Atomic Power Station Unit Nos. 2 and 3

Gentlemen:

Enclosed are two copies of the Semi-Annual Effluent Release Report No. 29, July 1, 1990 through December 31, 1990 for Peach Bottom Atomic Power Station Unit Nos. 2 and 3.

This report is being submitted in compliance with 10 CFR 50.36a (a) (2) and the Technical Specifications of Operating Licenses DPR-44 and DPR-56, and to fulfill the requirements of Regulatory Guide 10.1.

During the report period, no revisions were made to the Offsite Dose Calculation Manual (ODCM).

Sincerely,

AAF out MJB
DBM/AAF/DPL/MJB:cmc

Enclosures

cc: R.A. Burricelli, Public Service Electric & Gas
T.M. Gerusky, Commonwealth of Pennsylvania
J.J. Lyash, USNRC Senior Resident Inspector
R. McLean, State of Maryland
T.T. Martin, Administrator, Region I, USNRC
H.C. Schwemm, Atlantic Electric
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PEACH BOTTOM ATOMIC POWER STATION
Unit Numbers 2 and 3
Docket Numbers 50-277 and 50-278

SEMI-ANNUAL EFFLUENT RELEASE REPORT

NO. 30

JULY 1, 1990 THROUGH DECEMBER 31, 1990

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

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Technical Concurrences: (for accuracy of information)

Martin B. Ryan
Sr. Engineer - Radwaste

A.D. Odell
Sr. Chemist

SEMI-ANNUAL EFFLUENT RELEASE REPORT
JULY 1, 1990 THROUGH DECEMBER 31, 1990

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, 1990 through December 31, 1990. The notations E and E- are used to denote positive and negative exponents to the base 10.

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 gasses				
1. Total release	Ci	5.27E3	2.05E3	54.0 E0
2. Average release rate for period	μCi/sec	6.70E2	2.61E2	
3. Gamma Air Dose	Millirad	3.06E-2	6.97E-2	
Percent of Technical Specification	%	3.06E-1	6.97E-1	
4. Beta Air Dose	Millirad	4.40E-2	8.18E-2	
Percent of Technical Specification	%	2.20E-1	4.09E-1	
B. Iodines				
1. Total iodine-131	Ci	6.37E-3	4.00E-3	61.0 E0
2. Average release rate for period	μCi/sec	8.10E-4	5.09E-4	
3. Critical Organ dose	Millirem	2.45E-2	4.58E-2	
Percent of Technical Specification	%	1.63E-1	3.05E-1	
C. Particulates				
1. Particulates with half-lives greater than 8 days (includes Alpha and Strontium 89-90)	Ci	1.86E-3	1.08E-3	61.0 E0
2. Average release rate for period	μCi/sec	2.37E-4	1.37E-4	
3. Gross Alpha Radioactivity	Ci	5.88E-5	2.31E-5	
D. Tritium				
1. Total release	Ci	1.11E1	8.29E0	94.0 E0
2. Average release rate for period	μCi/sec	1.41E0	1.06E0	

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 gasses					
Krypton - 85M	Ci	2.46E2	4.44E1	0.00 E0	0.00 E0
Krypton - 87	Ci	1.36E2	8.16E1	0.00 E0	0.00 E0
Krypton - 88	Ci	1.64E2	9.09E1	0.00 E0	0.00 E0
Xenon - 133	Ci	4.18E3	1.11E3	0.00 E0	0.00 E0
Xenon - 135	Ci	1.04E2	3.03E2	0.00 E0	0.00 E0
Xenon - 135M	Ci	5.13E1	7.92E1	0.00 E0	0.00 E0
Xenon - 138	Ci	7.55E0	3.88E1	0.00 E0	0.00 E0
Xenon - 133M	Ci	5.08E1	0.00E0	0.00 E0	0.00 E0
Xenon - 131M	Ci	4.92E1	3.30E1	0.00 E0	0.00 E0
Unidentified	Ci	0.00E0	0.00E0	0.00 E0	0.00 E0
Total for Period	Ci	4.99E3	1.78E3	0.00 E0	0.00 E0
2. Iodines					
Iodine - 131	Ci	4.12E-3	8.43E-4	0.00 E0	0.00 E0
Iodine - 133	Ci	1.88E-3	5.88E-4	0.00 E0	0.00 E0
Iodine - 135	Ci	3.14E-3	0.00E0	0.00 E0	0.00 E0
Total for Period	Ci	9.14E-3	1.43E-3	0.00 E0	0.00 E0
3. Particulates					
Strontium - 89	Ci	8.04E-4	4.45E-4	0.00 E0	0.00 E0
Strontium - 90	Ci	2.11E-6	1.00E-6	0.00 E0	0.00 E0
Strontium - 91	Ci	8.00E-4	4.48E-4	0.00 E0	0.00 E0
Cesium - 134	Ci	0.00E0	0.00E0	0.00 E0	0.00 E0
Cesium - 137	Ci	6.20E-5	1.35E-5	0.00 E0	0.00 E0
Cesium - 138	Ci	3.25E-2	3.53E-2	0.00 E0	0.00 E0
Barium - 139	Ci	8.53E-3	4.92E-3	0.00 E0	0.00 E0
Barium - 140	Ci	8.66E-4	1.07E-3	0.00 E0	0.00 E0
Lanthanum - 140	Ci	5.12E-4	2.91E-4	0.00 E0	0.00 E0
Cobalt - 57	Ci	0.00E0	0.00E0	0.00 E0	0.00 E0
Cobalt - 58	Ci	0.00E0	7.00E-7	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	0.00E0	0.00 E0	0.00 E0
Zinc - 65	Ci	0.00 E0	0.00E0	0.00 E0	0.00 E0
Yttrium - 91M	Ci	3.63E-3	2.76E-3	0.00 E0	0.00 E0
Iodine - 133	Ci	0.00E0	0.00E0	0.00 E0	0.00 E0
Copper - 64	Ci	0.00E0	0.00E0	0.00 E0	0.00 E0
Rubidium - 88	Ci	4.02E-3	0.00 E0	0.00 E0	0.00 E0
Rubidium - 89	Ci	3.87E-4	0.00 E0	0.00 E0	0.00 E0
Total for Period	Ci	5.21E-2	4.52E-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 1	Quarter 2	Quarter 1	Quarter 2
1. Fission gasses					
Krypton - 85M	Ci	0.00 E0	4.50E0	0.00 E0	0.00 E0
Krypton - 87	Ci	0.00 E0	0.00E0	0.00 E0	0.00 E0
Krypton - 88	Ci	0.00 E0	0.00E0	0.00 E0	0.00 E0
Xenon - 133	Ci	9.97E1	4.36E1	0.00 E0	0.00 E0
Xenon - 135	Ci	8.24E1	9.43E1	0.00 E0	0.00 E0
Xenon - 135M	Ci	1.96E1	0.00E0	0.00 E0	0.00 E0
Xenon - 138	Ci	0.00E0	0.00E0	0.00 E0	0.00 E0
Unidentified	Ci	8.12E1	1.23E2	0.00 E0	0.00 E0
Total for Period	Ci	2.83E2	2.65E2	0.00 E0	0.00 E0
2. Iodines					
Iodine - 131	Ci	2.25E-3	3.16E-3	0.00 E0	0.00 E0
Iodine - 133	Ci	7.94E-3	1.40E-3	0.00 E0	0.00 E0
Iodine - 135	Ci	0.00E0	0.00 E0	0.00 E0	0.00 E0
Total for Period	Ci	1.02E-2	4.56E-3	0.00 E0	0.00 E0
3. Particulates					
Strontium - 89	Ci	1.03E-4	1.28E-4	0.00 E0	0.00 E0
Strontium - 90	Ci	1.98E-5	2.20E-5	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	0.00 E0	0.00 E0	0.00 E0	0.00 E0
Cesium - 138	Ci	1.89E-2	1.27E-2	0.00 E0	0.00 E0
Barium - 139	Ci	1.77E-3	1.26E-3	0.00 E0	0.00 E0
Barium - 140	Ci	0.00 E0	0.00E0	0.00 E0	0.00 E0
Lanthanum - 140	Ci	0.00 E0	0.00E0	0.00 E0	0.00 E0
Cobalt - 57	Ci	0.00 E0	0.00E0	0.00 E0	0.00 E0
Cobalt - 58	Ci	0.00 E0	0.00E0	0.00 E0	0.00 E0
Cobalt - 60	Ci	0.00 E0	0.00E0	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 1	Quarter 2	Quarter 1	Quarter 2
Zinc - 65	Ci	0.00 E0	0.00 E0	0.00 E0	0.00 E0
Yttrium - 91M	Ci	4.87E-4	1.46E-4	0.00 E0	0.00 E0
Iodine - 133	Ci	7.99E-5	8.76E-5	0.00 E0	0.00 E0
Copper - 64	Ci	0.00E0	0.00E0	0.00 E0	0.00 E0
Rubidium - 88	Ci	4.77E-3	2.64E-3	0.00 E0	0.00 E0
Rubidium - 89	Ci	7.85E-4	0.00E0	0.00 E0	0.00 E0
Technetium - 99M	Ci	3.53E-5	2.89E-5	0.00 E0	0.00 E0
Molybdenum - 99	Ci	2.25E-5	2.40E-5	0.00 E0	0.00 E0
Tellurium - 132	Ci	6.70E-6	0.00E0	0.00 E0	0.00 E0
Total for Period	Ci	2.70e-2	1.70E-2	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 gasses				
1. Total release (not including tritium, gasses, alpha)	Ci	2.27E-3	7.81E-4	32.0 E0
2. Average diluted concentration during period	μCi/ml	4.07E-11	1.18E-10	
3. Body Dose	Millirem	4.82E-4	1.91E-4	
Percent of Technical Specification	%	1.61E-2	6.37E-3	
4. Maximally Exposed Organ Dose	Millirem	8.66E-4	4.76E-4	
Percent of Technical Specification	%	8.66E-3	4.76E-3	
B. Tritium				
1. Total release	Ci	8.37E0	1.75E0	39.0 E0
2. Average diluted concentration during period	μCi/ml	1.50E-7	2.62E-7	
C. Dissolved and entrained gasses				
1. Total release	Ci	2.98E-2	2.26E-3	42.0 E0
2. Average diluted concentration during period	μCi/ml	5.34E-10	3.38E-10	
D. Gross alpha radioactivity				
1. Total release	Ci	9.61E-5	8.76E-6	39.0 E0
2. Average diluted concentration during period	μCi/ml	1.72E-12	1.31E-12	
E. Volume of waste released (prior to dilution)	liters	3.38E6	5.03E5	32.0 E0
F. Volume of dilution water used during period	liters	5.58E10	6.68E9	30.0 E0

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	6.40E-5	2.10E-5
Strontium - 90	Ci	0.00 E0	0.00 E0	2.87E-5	7.40E-6
Alpha	Ci	0.00 E0	0.00 E0	9.61E-5	8.76E-5
Tritium	Ci	0.00 E0	0.00 E0	8.37E0	1.75E0
Phosphorus - 32	Ci	0.00 E0	0.00 E0	2.31E-4	1.30E-4
Iron - 55	Ci	0.00 E0	0.00 E0	6.27E-4	6.28E-5
Xenon - 131M	Ci	0.00 E0	0.00 E0	0.00E0	0.00E0
Xenon - 133	Ci	0.00 E0	0.00 E0	1.82E-2	1.18E-3
Xenon - 133M	Ci	0.00 E0	0.00 E0	6.84E-4	0.00E0
Xenon - 135	Ci	0.00 E0	0.00 E0	1.09E-2	1.07E-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	2.76E-5	0.00E0
Manganese - 54	Ci	0.00 E0	0.00 E0	0.00E0	2.77E-5
Cesium - 134	Ci	0.00 E0	0.00 E0	1.09E-5	1.53E-6
Cesium - 137	Ci	0.00 E0	0.00 E0	2.02E-4	4.26E-5
Cesium - 138	Ci	0.00 E0	0.00 E0	0.00E0	0.00E0
Zinc - 65	Ci	0.00 E0	0.00 E0	0.00E0	7.21E-5
Sodium - 24	Ci	0.00 E0	0.00 E0	0.00E0	0.00E0
Cobalt - 58	Ci	0.00 E0	0.00 E0	9.61E-6	2.14E-5
Cobalt - 60	Ci	0.00 E0	0.00 E0	8.02E-5	7.83E-5
Iodine - 131	Ci	0.00 E0	0.00 E0	0.00E0	1.77E-4
Iodine - 133	Ci	0.00 E0	0.00 E0	0.00E0	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	8.27E-4	9.51E-5

Table 2B Page 2 of 2
Liquid Effluents

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	0.00 E0
Strontium - 91	Ci	0.00 E0	0.00 E0	0.00E0	0.00 E0
Antimony - 122	Ci	0.00 E0	0.00 E0	0.00E0	0.00 E0
Tellurium - 132	Ci	0.00 E0	0.00 E0	0.00E0	0.00 E0
Niobium - 95	Ci	0.00 E0	0.00 E0	1.78E-5	1.97E-5
Lanthanum - 140	Ci	0.00 E0	0.00 E0	4.18E-5	0.00E0
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
Zinconium - 95	Ci	0.00 E0	0.00 E0	0.00E0	0.00E0
Cerium - 141	Ci	0.00 E0	0.00 E0	0.00E0	0.00E0
Silver - 110M	Ci	0.00 E0	0.00 E0	1.31E-4	2.98E-5
Total for Period (above)	Ci	0.00 E0	0.00 E0	8.40218E0	1.75304E0

ATTACHMENT A
SUPPLEMENTAL 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 ≤ 3000 mRem/Yr - skin	- "instantaneous" limits Tech. Spec. 3.8.C.1.a
2. ≤ 10 mRad - air gamma ≤ 20 mRad - air beta	- quarterly air dose limits Tech. Spec. 3.8.C.2.a
3. ≤ 20 mRad - air gamma ≤ 40 mRad - air beta	- yearly air dose limits Tech. Spec. 3.8.C.2.b

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

1. ≤ 1500 mRem/Yr - any organ (inhalation path)	- "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" limits Tech. Spec. 3.8.B.1
2. ≤ 3.0 mRem - total body ≤ 10 mRem - any organ	- quarterly dose limits Tech. Spec. 3.8.B.2.a
3. ≤ 6.0 mRem - total body ≤ 20 mRem - any organ	- yearly dose limits Tech. Spec. 3.8.B.2.b

ATTACHMENT A
SUPPLEMENTAL INFORMATION

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, (47 mm 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.

ATTACHMENT A
SUPPLEMENTAL INFORMATION

5. **Batch Releases:**

A. Liquid:

	QTR 3	QTR 4
Number of batch releases:	50	12
Total time for batch releases (minutes):	12103	1886
Maximum time period for batch release (minutes):	380	355
Average time period for batch release (minutes):	242	157
Minimum time period for batch release (minutes):	15	30
Dilution flow (liters):	5.58E10	6.68e9

B. Gaseous:

Not Applicable

6. **Abnormal Releases:**

A. Liquid.

None

B. Gaseous:

None

PEACH BOTTOM UNITS 2 & 3
JULY 1, 1990 TO DECEMBER 31, 1990
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						
56	Dewatered Resin	HIC/Type A Cask	202.1	11317.6	1.70E+05	Cs-137, I-131, Co-60, Zn-65, La-140
1	DAW	Metal Drum/ Type A Cask	7.5	600.0	3.09E-01	Co-60, Cs-137 Ru-106, Co-57, Sb-125
52	DAW	Metal Drum/STC	variable	(*) 2229.7	8.59E+00	Co-60, Fe-55, Zn-65, Cs-137, Cs-134
10	DAW	Metal Drum/STC	variable	(**) 211.6	9.83E-02	Co-60, Cs-137, Fe-55, Zn-65, Cs-134
1	Filters	HIC/Type A Cask	170.8	170.8	2.83E+00	Co-60, Zn-65, Fe-55 Cs-134, Cs-137
Class B						
2	Dewatered Resin	HIC/Type A Cask	202.1	404.2	2.24E+01	Cs-137, Co-60 Cs-134, Zn-65, Ni-63
2	Dewatered Resin	HIC/Type B Cask	132.4	264.8	7.46E+02	Cr-51, Co-60, Zn-65, Co-58, Fe-55
Class C						
1	Irradiated Metal	Steel Liner/ Type B Cask	57.4	57.4	2.39E+03	Co-60, Fe-55, Ni-63, C-14, TC-99
Totals						
125				15256.1	1.73E+05	

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.