PEACH BOTTOM ATOMIC POWER STATION

UNIT NOS. 2 AND 3

DOCKET NOS. 50-277 & 50-278

SEMI-ANNUAL EFFLUENT RELEASES REPORT

NO. 10

JULY 1, 1980 THROUGH DECEMBER 31, 1980

SUBMITTED TO

THE UNITED STATES NUCLEAR REGULATORY COMMISSION

PURSUANT TO

FACILITY OPERATING LICENSE NO. DPR-44 & 56

PHILADELPHIA ELECTRIC COMPANY

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Preparation Directed By:

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Peach Bottom Atomic Power Station

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I. INTRODUCTION

SEMI-ANNUAL EFFLUENT RELEASES REPORT

In accordance with the Unique Reporting Requirements of Technical Specification 6.9.3, this report summarizes the Effluent Release Data for Peach Bottom Atomic Power Station Units 2 and 3. This data covers the period July 1, 1980 through December 31, 1980. The notations E+ and E- are used to denote positive and negative exponents to the base 10.

TABLE A

PEACH BOTTOM UNITS 2 & 3 - LIQUID RADIOACTIVE RELEASE DATA 1980

	JULY	AUG	SEPT	OCT	NOV	DEC	TOTAL
Gross Activity ($\beta\gamma$) (4) Total Curies Except Tritium & Noble Gases	5.02E-02	5.04E-02	3.86E-03	3.91E-03	2.64E-02	8.32E-02	2.18E-01
Average μCi/ml Gross Activity (except Tritium at Point of Release	2.78E-09	3.30E-09	2.86E-10	3.68E-10	1.15E-09	3.13E-09	(2) 1.83E-09
Total Curies of Tritium	2.38E+00	1.94E+00	2.20E+00	2.44E+00	4.47E+00	5.24E+00	1.87E+01
Average μCi/ml Tritium at Point of Release (1)	1.32E-07	1.28E-07	1.63E-07	2.30E-07	1.95E-07	1.98E-07	(2) 1.74E-07
Total Curies, Alpha	$\leq$1.15E-06	$\leq$1.27E-06	$\leq$7.96E-07	$\leq$6.15E-07	$\leq$1.27E-06	$\leq$1.95E-06	$\leq$7.05E-06
Average μCi/ml Alpha at Point of Release (1)	$\leq$6.38E-14	$\leq$8.33E-14	$\leq$5.89E-14	$\leq$5.79E-14	5.54E-14	7.35E-14	$\leq$6.55E-14
Total Curies of Dissolved Noble Gases (5)	1.72E-02	4.94E-03	2.70E-02	5.03E-02	9.62E-02	3.20E-02	2.28E-01
Average μCi/ml of Noble Gases at Point of Release (5)	9.58E-10	3.25E-10	2.00E-09	4.79E-09	4.20E-09	1.21E-09	(2) 2.13E-09
Maximum μCi/ml Released except Tritium - at Point of Release	9.63E-08	6.58E-09	1.30E-09	1.22E-09	2.34E-08	2.49E-08	(3) 9.63E-08
Total Volume of Waste: Gallons:	5.85E+05	5.43E+05	3.19E+05	3.04E+05	5.61E+05	5.99E+05	2.91E+06
Liters:	2.22E+06	2.05E+06	1.21E+06	1.15E+06	2.12E+06	2.27E+06	1.10E+07
Total Volume of Dilution: Gallons:	4.77E+09	4.03E+09	3.57E+09	2.81E+09	6.06E+09	7.01E+09	2.83E+10
Liters:	1.80E+10	1.52E+10	1.35E+10	1.06E+10	2.29E+10	2.65E+10	1.07E+11
(1) % of Tech. Spec. Curie Limit	7.53E-01	7.60E-01	6.00E-02	6.00E-02	4.00E-01	1.25E+00	(2) 5.47E-01

(1) Based on Tech Spec. 3.8.B.2 on a per month basis
(2) Average for 6 month period
(3) Maximum for 6 month period
(4) Based on a strontium - 90 Counting efficiency
(5) Based on a monthly analysis

TABLE B

PEACH BOTTOM UNITS 2 & 3 - ISOTOPIC ANALYSIS OF LIQUID RADIOACTIVE (IN CURIES) (1)
1980

ISOTOPE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	CI TOTAL
Strontium - 89	2.79E-05	1.02E-04	*	3.51E-05	1.89E-04	4.83E-04	8.37E-04
Strontium - 90	*	*	*	*	*	8.23E-05	8.23E-05
Cesium - 134	1.64E-02	2.07E-02	1.64E-04	*	2.78E-03	1.60E-02	5.61E-02
Cesium - 137	2.41E-02	3.15E-02	2.09E-04	*	4.64E-03	2.55E-02	8.59E-02
Iodine - 131	4.46E-06	2.52E-05	*	4.28E-05	2.25E-04	7.04E-04	1.00E-03
Cobalt - 58	7.99E-04	1.66E-04	*	*	1.64E-04	2.23E-03	3.36E-03
Cobalt - 60	1.08E-02	3.73E-03	3.06E-04	4.70E-04	6.75E-03	1.70E-02	3.90E-02
Zinc - 65	1.21E-02	9.52E-03	*	1.92E-04	5.34E-03	2.90E-02	5.62E-02
Managanese - 54	3.05E-04	*	*	*	1.66E-04	7.72E-04	1.24E-03
Chromium - 51	*	*	2.56E-04	*	1.19E-03	9.31E-03	1.08E-02
Zirconium - 95	*	*	*	*	*	4.16E-04	4.16E-04
Manganese - 56	*	*	*	*	8.39E-05	*	8.39E-05
Lanthanum - 140	3.17E-04	*	7.24E-04	1.16E-03	*	5.62E-04	2.76E-03
Niobium - 95	*	*	*	*	*	4.63E-04	4.63E-04
Sodium - 24	1.69E-02	1.22E-02	4.39E-04	*	1.72E-02	3.46E-02	8.13E-02
Yttrium - 91m	*	*	7.36E-05	2.53E-04	4.64E-04	*	7.91E-04
Xenon - 135m	5.74E-03	2.95E-04	3.16E-03	2.25E-03	1.78E-03	2.45E-03	1.57E-02
Iodine - 133	9.90E-04	9.35E-05	2.04E-04	7.64E-04	9.87E-04	1.84E-03	4.88E-03
Iodine - 135	*	*	*	*	8.50E-04	*	8.50E-04
Strontium - 92	*	*	*	*	2.91E-05	*	2.91E-05
Technetium - 99m	3.09E-05	*	*	*	1.21E-03	3.71E-04	1.58E-03
Xenon - 133m	*	*	*	*	3.37E-04	*	3.37E-04
Xenon - 133	2.07E-02	4.61E-03	1.12E-02	7.84E-03	3.11E-02	3.31E-02	1.09E-01
Xenon - 135	1.71E-02	1.02E-02	3.42E-02	3.15E-02	3.96E-02	3.59E-02	1.69E-01
Phosphorus - 32	1.03E-04	5.35E-04	4.26E-05	7.62E-05	*	1.12E-03	1.88E-03
Iron - 55	9.50E-05	*	*	3.15E-05	1.32E-04	*	2.59E-04
Nickel - 63	1.02E-04	3.70E-05	*	2.84E-04	2.29E-04	9.41E-04	1.59E-03
TOTAL (Curies)	1.27E-01	9.37E-02	5.10E-02	4.49E-02	1.16E-01	2.13E-01	6.45E-01

* Less than detectable activity

(1) Based on analysis done on each batch

TABLE E

PEACH BOTTOM UNITS 2 & 3 - SOLID RADIOACTIVE WASTE SHIPMENT 1980

	JULY	AUG	SEPT	OCT	NOV	DEC	TOTAL
Number of shipments	36.	29.	27.	29.	24.	24.	169.
Volume of waste (ft^3)	9.50E+03	1.06E+04	4.90E+03	5.99E+03	4.51E+03	4.57E+03	4.01E+04
Activity, Curies	1.40E+03	3.21E+02	8.19E+02	4.16E+02	2.08E+02	4.49E+02	3.61E+03
shipping dates(# of shipments)	1 (2) A 2 (2) A 3 (2) A 7 (1) A 8 (3) A 9 (1) A 10(2) B 10(1) A 11(2) A 14(1) A 15(2) A 16(1) A 17(1) A 18(2) A 21(2) A 22(1) A 23(1) A 24(2) A 25(2) A 28(1) A 29(2) A 30(1) A 31(1) A	1 (2) A 4 (1) A 5 (2) A 6 (1) A 7 (1) A 8 (2) A 11(1) A 12(2) A 13(1) A 15(2) A 18(1) A 19(2) A 20(2) B 21(1) B 22(1) B 22(2) A 25(1) A 26(2) A 27(1) A 28(1) A	2 (2) A 3 (1) A 4 (1) A 5 (2) A 8 (1) A 9 (2) A 10(2) A 11(1) A 12(2) A 15(1) A 16(2) A 17(1) A 18(1) A 19(2) A 22(1) A 23(1) A 24(1) A 25(1) A 26(1) A 30(1) A	3 (1) A 4 (1) A 6 (1) A 7 (2) A 8 (1) A 9 (1) A 10(1) A 14(2) A 15(1) A 16(1) A 17(1) A 17(1) B 20(1) B 20(2) A 21(1) B 21(2) A 22(1) A 23(1) A 24(1) A 27(1) A 28(2) A 29(2) A 30(1) A	3 (1) A 4 (2) A 5 (1) A 6 (1) A 7 (2) A 10(1) A 11(1) A 12(1) A 13(1) A 14(2) A 17(1) A 18(2) A 19(1) A 20(1) A 21(2) A 24(1) A 25(1) A 26(1) A 29(1) A	1 (1) A 2 (2) A 3 (1) A 4 (1) A 5 (1) A 8 (1) A 9 (1) A 10(2) A 11(1) A 12(1) A 15(1) A 16(1) A 17(2) A 18(2) A 19(1) A 22(1) A 24(1) A 29(1) A 30(2) A	

A. Disposition - All waste shipped by Hittman Nuclear and Development Corporation in trucks to the Chem. Nuclear Corporation, Barnwell, South Carolina

B. Disposition - Waste shipped by Chem - Nuclear Systems Inc. to the Nuclear Engineering Co., Inc. Beatty, Nevada

TABLE D

PEACH BOTTOM UNITS 2 & 3 - ISOTOPIC ANALYSIS OF GASEOUS RADIOACTIVE EFFLUENTS (in Curies)

1980

ISOTOPE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	CI TOTAL
Krypton - 87 (2)	5.00E-01	*	*	*	*	*	5.00E-01
Xenon- 133m (2)	*	*	6.9E+00	*	*	*	6.9E+00
Xenon - 135m (2)	*	*	*	*	2.41E+01	1.3E+00	2.54E+01
Xenon - 138 (2)	*	7.10E+01	*	*	*	9.00E+00	8.00E+01
Krypton - 85m (2)	*	*	*	*	*	7.00E-01	7.00E-01
Xenon - 133 (2)	2.47E+02	7.01E+02	6.69E+02	7.76E+02	9.73E+02	7.89E+02	4.16E+03
Xenon - 135 (2)	2.90E+00	1.35E+01	1.64E+01	1.90E+01	1.86E+02	7.23E+01	3.10E+02
TOTAL	2.51E+02	7.86E+02	6.92E+02	7.95E+02	1.18E+03	8.72E+02	4.58E+03
Iodine - 131	1.37E-03	1.44E-03	3.69E-03	2.05E-03	5.99E-03	1.15E-03	1.57E-02
Iodine - 133 (1)	4.25E-02	3.40E-02	3.40E-02	8.60E-03	6.88E-03	6.88E-03	1.33E-01
Iodine - 135 (1)	7.03E-02	5.63E-02	5.63E-02	4.43E-02	3.54E-02	3.54E-02	2.98E-01
TOTAL	1.14E-01	9.17E-02	9.40E-02	5.49E-02	4.83E-02	4.35E-02	4.47E-01
Strontium - 89	1.49E-04	2.35E-04	1.84E-04	2.34E-04	2.04E-04	1.6E-04	1.17E-03
Strontium - 90	≤6.43E-06	≤6.86E-06	≤1.08E-05	≤1.52E-05	≤9.11E-06	≤9.01E-06	≤5.74E-05
Cesium - 134	4.57E-04	5.13E-05	*	*	4.5E-06	*	5.13E-04
Cesium - 137	1.15E-03	1.27E-04	1.46E-05	4.94E-05	3.82E-05	3.35E-05	1.42E-03
Lanthanum - 140	1.32E-05	1.02E-04	1.86E-04	1.75E-04	1.77E-04	8.72E-05	6.80E-04
Cobalt - 58	*	1.62E-05	*	*	*	*	1.62E-05
Cobalt - 60	2.39E-03	2.5E-04	4.92E-05	4.2E-05	1.32E-04	*	2.86E-03
Zinc - 65	4.44E-03	2.99E-04	*	*	*	*	4.74E-03
Yttrium - 91m	4.23E-05	5.93E-04	7.40E-04	5.85E-04	1.28E-04	1.9CE-04	2.28E-03
Strontium - 91	2.34E-05	1.94E-04	2.87E-04	2.57E-04	1.81E-04	1.06E-04	1.05E-03
Cesium - 138	4.02E-03	8.89E-03	5.30E-03	3.63E-03	3.48E-03	7.36E-03	3.27E-02
Barium - 140	2.15E-05	1.52E-04	2.71E-04	2.54E-04	1.58E-04	1.20E-04	9.78E-04
Rubidium - 88	1.84E-04	4.53E-04	2.93E-03	*	*	*	3.56E-03
TOTAL	≤1.29E-02	≤1.14E-02	≤9.97E-03	≤5.25E-03	≤4.45E-03	≤8.06E-03	≤5.20E-02

* Less than minimum detectable

(1) Quarterly analysis used for monthly estimation.

(2) Based on weekly grab sample

TABLE C

PEACH BOTTOM UNITS 2 AND 3

GASEOUS RADIOACTIVE RELEASE DATA 1980

	JULY	AUGUST	SEPT	OCT	NOV	DEC	TOTAL
Mixed Noble Gases Ci	6.13E+02	8.14E+02	1.04E+03	1.11E+03	1.27E+03	9.32E+02	5.78E+03
% of Tech. Spec. Limit (1)	1.94E+00	2.53E+00	2.45E+00	2.02E+00	1.23E+00	6.00E-01	(4) 1.79E+00
Iodine 131 Ci	1.37E-03	1.44E-03	3.69E-03	2.05E-03	5.99E-03	1.15E-03	1.57E-02
% of Tech. Spec. Limit (2)	1.08E-01	1.19E-01	3.72E-01	1.42E-01	4.31E-01	8.40E-02	(4) 2.09E-01
Particulates > 8 Day Half Life Ci	≥8.62E-03	≤1.14E-03	≤5.30E-04	≤5.95E-04	≤5.47E-04	≤3.23E-04	≤1.18E-02
Particulate Alpha Ci	≤1.31E-06	1.02E-06	8.34E-07	1.76E-06	7.43E-07	≤8.04E-07	≤6.47E-06
% of Tech. Spec. Limit (2)	≤6.96E-01	≤5.38E-02	≤1.37E-02	≤1.51E-02	≤6.36E-02	≤3.76E-02	(4) ≤1.47E-01
Tritium Ci (3)	1.31E+00	1.05E+00	1.05E+00	1.92E+00	1.54E+00	1.54E+00	8.41E+00
Max. Noble Gas Release Rate μ ci/sec	7.88E+03	3.30E+03	1.28E+03	1.01E+04	1.33E+04	1.67E+03	(5) 1.33E+04
Date:	/1/80	8/13/80	9/18/80	10/20/80	11/14/80	12/18/80	11/14/80
% of Tech. Spec. Limit for Maximum Noble Gas Release (1)	4.26E+01	3.95E+00	9.41E+00	4.11E+00	4.32E+00	3.90E-01	(5) 4.26E+01
Maximum % of Tech. Spec. Limit (1)	4.26E+01	4.52E+01	1.47E+01	2.62E+01	3.61E+01	5.83E+00	(5) 4.52E+01

(1) Basis: Tech. Spec. 3.8.C.1
(2) Basis: Tech. Spec. 3.8.C.2
(3) Quarterly analysis used for monthly estimation
(4) Average for 6 month period
(5) Maximum for 6 month period